

Respiratory Health of the Nation

2026



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FOREWORD

We take more than 20,000 breaths every day, and most of us notice them only when they become difficult. For many thousands of people in Ireland living with respiratory disease, breathlessness is a daily reality.

This report continues a body of work that we began more than two decades ago. In 2003, Drs Neil Brennan and Terry O'Connor compiled the first report, *INHALE – Ireland Needs Healthier Airways and Lungs – the Evidence*, which found that one in five deaths in Ireland was due to respiratory conditions. The second INHALE report followed in 2008, and *Respiratory Health of the Nation* in 2018. Each report has reached the same essential point. Respiratory disease is among the most common causes of illness, hospital admission and death in this country – and yet it has never received policy attention in proportion to its burden.

Much has changed since 2018. The COVID-19 pandemic placed respiratory health at the centre of national life. It showed the extraordinary commitment of respiratory teams, and it exposed the limits of our capacity. Real progress has also been made. Integrated community models, such as the hub-and-spoke approach to chronic disease and respiratory virtual ward initiatives, are now cited as examples of good practice. The GP-delivered Chronic Disease Management Programme, part of the Enhanced Community Care Programme, had enrolled 405,131 people with asthma, COPD, type 2 diabetes or cardiovascular disease by the end of 2023, with 97% of GPs taking part. Over 91% of participants now receive their routine chronic disease care in the community rather than in hospital.

Integrated care is delivering results. Twenty-six of a planned thirty Ambulatory Care Hubs are established, 43 pulmonary rehabilitation teams are operational, COPD outreach teams have more than doubled since 2021, and a virtual ward able to care for people with COPD, bronchiectasis and asthma at home now operates in each of the six health regions. Where services have been resourced to deliver the full End to End COPD Model of Care, COPD hospitalisations fell by 12% between 2018 and 2024.

The same is true of treatment and prevention. CFTR modulator therapies have transformed the outlook for many people with cystic fibrosis. New treatments are reaching patients across many respiratory diseases such as asthma, cystic fibrosis and lung cancer. The Lung Health Check pilot lays important groundwork for early detection of lung cancer. The pilot infant RSV immunisation programme achieved 83% uptake in 2024/2025 and was followed by a 78% reduction in RSV hospitalisations among infants born during the programme.

Technology, including artificial intelligence, is beginning to change how respiratory disease is detected and managed. Used appropriately, such tools could bring earlier diagnosis to patients and specialist expertise closer to home. Across Ireland, there is a great deal of excellent work under way in respiratory health, but it now needs to come together under the umbrella of a National Respiratory Strategy, so that services can learn from one another, use resources more efficiently and deliver better outcomes for patients.

Yet many challenges remain. Tobacco smoking is still our leading cause of preventable death, and new nicotine products are creating new risks, especially for young people. Air pollution and a changing climate threaten lung health across the life course. The chapters that follow describe persistent gaps in access to specialist respiratory care, diagnostics and pulmonary rehabilitation. As a result, too much chronic lung disease is detected late and managed in emergency settings.

Respiratory disease caused 6,832 deaths in 2024, almost one in five (19.4%) of all deaths in Ireland. In 2025 it accounted for 82,003 inpatient admissions (11.5% of the total) and 13.3% of inpatient bed days, a larger share on both measures than cardiovascular disease, and just four respiratory diagnoses accounted for almost 10% of emergency inpatient admissions.

Between 2015 and 2024, the age-standardised respiratory death rate fell by 15.8% - little more than half the improvement achieved in cardiovascular disease, and in 2022 Ireland's death rate from diseases of the respiratory system was 24.6% higher than the average of eight comparator European countries. Access to specialist care is deteriorating: 29,169 adults were waiting for a first respiratory outpatient appointment in July 2026, 54% more than in January 2022, and the respiratory consultant workforce would need to grow by a quarter to meet current need. Hospital activity data is now grouped differently, so these figures cannot be compared directly with those published in 2018. They nonetheless tell a consistent story. Many respiratory conditions remain under-recognised and unknown due to data gaps, so this report is still likely to underestimate the true impact of respiratory health in Ireland.

The European picture confirms this. In 2025, the WHO Regional Office for Europe and the European Respiratory Society published the first regional report dedicated to chronic respiratory diseases. It places Ireland among a small group of countries with above-average mortality, disability and prevalence from chronic respiratory disease. It also reports that Ireland has among the highest admission rates for COPD and asthma in Europe. The same report estimates the productivity lost to chronic respiratory disease in Ireland at more than US\$250 million per year. Yet it also recognises Ireland's leadership. Our 2004 workplace smoking ban was a world first and is associated with some 800,000 fewer smokers today. When Ireland acts decisively and collaboratively on respiratory health, the results follow.

We are at a consequential moment for respiratory health. In May 2025, the World Health Assembly adopted resolution WHA78.5, *Promoting and prioritizing an integrated lung health approach*. It addresses communicable and noncommunicable lung diseases together, along with shared risk factors including tobacco and vaping, air pollution and occupational exposures. It urges Member States, Ireland among them, to develop integrated national policy on lung health through whole-of-government and whole-of-society approaches, built into primary care with effective referral pathways to specialist services.

Commitments like this matter, but they are only the beginning. The real test is whether they translate into stronger primary care, earlier diagnosis, affordable medicines, access to technologies and cleaner air for people living with chronic respiratory disease. Behind every figure in this report is a person: a child whose asthma keeps them from school, an adult too breathless to work or a family caring for someone with advanced lung disease. Our success will not be measured by the eloquence of the plans we write, but by what changes in people's lives.

This report is not simply a record; it is a call to action. The challenge is no longer to secure ambition; it is to turn ambition into action. In 2018, we called for a Taskforce to deliver an over-arching Respiratory Strategy for the nation, which did not happen. The bridge we now must build runs from international commitments to national policy, from policy to implementation, and from implementation to better care in every community. The Irish Thoracic Society and our partners across the respiratory community now call on the Government to commit to developing and implementing a National Respiratory Strategy - the kind of integrated national lung health policy that the World Health Organization urges Member States to develop, and consistent with Sláintecare's vision of care. This cannot be left to the health service alone, none of us can deliver it alone. It requires a whole-of-government and whole-of-society approach, with health, environment, employment, education and finance each playing its part, alongside clinicians, patients, communities, advocates, carers, policymakers, Oireachtas members and health system leaders. Let this report prompt the sustained, coordinated action that respiratory health has long deserved - for every person in Ireland, in every community and at every stage of life.



Professor Eddie Moloney
President
Irish Thoracic Society

Respiratory disease includes a wide range of acute and chronic diseases that substantially contribute to the medical and economic burden on Ireland's health system.

Respiratory disease places a huge burden on individuals, the Irish population and the health services. Respiratory disease caused 19.4% of all deaths in Ireland in 2024. Between 2015 and 2024 the age-standardised death rate from respiratory disease fell by 15.8%, little more than half the 28.2% improvement achieved in cardiovascular disease. Excluding lung cancer, respiratory mortality among people aged under 65 years did not improve at all over the decade. Falling rates do not mean a falling burden: the number of deaths from diseases of the respiratory system rose by 10.8%, and the 4,284 deaths registered in 2024 were the highest of the decade. In 2022 Ireland's death rate from diseases of the respiratory system was 24.6% higher than the average of eight comparator European countries, even though Ireland's overall mortality was at the comparator average. Respiratory disease is the cause group on which Ireland performs worst relative to its peers. The International Respiratory Coalition estimates that respiratory disease cost Irish society €15.1 billion in 2023, based on the value of healthy life years lost.

In 2025 respiratory disease accounted for 82,003 inpatient discharges (11.5% of all inpatient admissions) and 559,054 bed days (13.3% of all inpatient bed days) in publicly funded acute hospitals. Comparable figures for cardiovascular disease were 9.1% and 12.4%. Respiratory admissions are longer than average, at 6.8 days against 5.9 days for all causes, and people aged 65 years and over accounted for 73.3% of respiratory bed days. Four respiratory diagnoses (COPD, unspecified acute lower respiratory infection, pneumonia and influenza) accounted for almost 10% of all emergency inpatient admissions and 11.1% of emergency bed days. Because these figures count principal diagnoses in public hospitals only, they understate the true burden.

Access to specialist respiratory care is deteriorating. At the end of July 2026, 29,169 adults were waiting for a first respiratory outpatient appointment, 54% more than in

January 2022. Of these, 20.7% had waited more than a year, against 17.8% across all specialties. National workforce planning estimates that the respiratory consultant workforce would need to grow by approximately a quarter to meet current need, and by 86% by 2038. Unfilled posts are concentrated in smaller hospitals. Lung transplantation has not recovered from the pandemic, with 13 transplants performed in 2024 compared with 38 in 2019. Critical care beds operate at 94% occupancy, and patients in Ireland are more severely ill on admission to intensive care than their UK counterparts.

Respiratory disease falls most heavily at the extremes of life. In 2025, 21.1% of paediatric inpatient admissions were for a respiratory condition, as were 18.8% of admissions among people aged 85 years and over. The age-standardised respiratory death rate among males is 39% higher than among females. Asthma is the exception and is the only respiratory cause of death in Ireland where women die at a higher rate than men.

National data is not available for primary care, but the burden is reflected by the fact that more than one in five people (21.7%) active on the General Medical Services (GMS) scheme received at least one inhaled bronchodilator in 2023, up from 19.7% in 2016. Over the same period the number receiving oral corticosteroids, a marker of poorly controlled asthma and of COPD exacerbation, rose by 28% while the scheme population fell.

Asthma

An estimated 450,000 people have doctor-diagnosed asthma in Ireland. As it typically begins earlier in life than many other chronic diseases, it can impose a high lifetime burden on individuals, caregivers and the community. For the year 2023, the societal cost of asthma in Ireland was estimated at €1.6 billion.

Asthma deaths have not fallen. Between 2016 and 2024 there were between 59 and 94 asthma deaths each year, and the 94 deaths

provisionally registered in 2024 were the highest in that period. The age-standardised death rate in 2024 was essentially unchanged from 2015. Between 2020 and 2024, 64% of asthma deaths were among women. In the UK, more than two thirds of asthma deaths have been found to involve potentially avoidable factors, and Ireland has not undertaken a comparable national review.

In 2024 asthma accounted for 9,521 hospitalisations in publicly funded acute hospitals, of which 4,116 were inpatient discharges; 57% of inpatient discharges were among females. Cost is a barrier to treatment. In a 2026 survey of parents of children with asthma, 9% reported having forgone their child's medication in the previous three months for financial reasons.

Bronchiectasis

Bronchiectasis is a distinct chronic lung disease with its own European guideline and European registry. The prevalence of bronchiectasis in Ireland is unknown. International estimates of 53 to 566 cases per 100,000 adults would correspond to approximately 20,000 to 40,000 people in Ireland. National hospital data report bronchiectasis only in combination with COPD, which conceals its burden. In 2023, 74 deaths were attributed to bronchiectasis, two thirds of them (66%) among women.

In November 2025, brensocatib became the first licensed disease-modifying therapy for bronchiectasis in Europe. There is no national clinical programme in Ireland currently, although a Bronchiectasis Model of Care for Ireland is in development by the National Clinical Programme for Cystic Fibrosis with the HSE, RCPI and ICGP. Irish participation in the European Bronchiectasis Registry is limited to a small number of centres, so Irish patients are largely absent from European comparative data and from the interventional studies that follow from it.

Chronic Obstructive Pulmonary Disease

The prevalence of COPD in Ireland is unknown. HSE estimates suggest that up to 380,000 people may be living with COPD, of whom only around 110,000 have been diagnosed. COPD accounts for approximately 92% of deaths from chronic lower respiratory disease, which caused

1,950 deaths in 2024. Although the age-standardised death rate for chronic lower respiratory disease fell over the decade, the number of deaths rose by 14.6% between 2015 and 2024.

COPD places a significant burden on acute hospitals. In 2025 it was the third most common principal diagnosis among emergency inpatients, with 14,912 discharges. In 2024 there were 16,211 inpatient discharges for COPD and bronchiectasis, using 127,743 bed days, and 76.9% of these admissions were among people aged 65 years and over. Approximately one in four patients is readmitted within 90 days, and COPD-related hospital care is estimated to cost approximately €140 million a year. In 2021 Ireland's age-standardised COPD hospitalisation rate was 219.2 per 100,000 population, almost double the OECD average of 118.8 and the fourth highest of reporting countries.

Where the integrated End to End COPD Model of Care has been fully resourced, hospitalisations fell by 12% between 2018 and 2024. Fewer than one in five patients with COPD enrolled in the Chronic Disease Management Programme have undergone spirometry. There are regional variations in both hospitalisations and mortality, with age-standardised mortality for chronic lower respiratory disease ranging from 36.3 per 100,000 population in Galway to 70.5 in Longford. Around 1 in 25 people in Ireland carry a defective gene for Alpha-1 antitrypsin deficiency, the most common genetic cause of COPD.

Lung Cancer and Mesothelioma

Lung cancer is the leading cause of cancer death in Ireland in both males and females, accounting for one in five cancer deaths in 2023 (19.7%). An average of 2,859 cases were diagnosed each year between 2021 and 2023, together with 51 cases of mesothelioma. Smoking was responsible for 73% of lung cancer cases diagnosed in 2022. Mortality from lung cancer fell by 19.3% between 2015 and 2024. This pattern is more consistent with the effect of decades of tobacco control than with earlier detection.

Age-standardised five-year net survival has

improved by 166% since 1999–2003, to 25%, but remains among the lowest of any cancer. Stage at diagnosis now limits further gains. 61% of cases are diagnosed at stage III or IV and only 20% at stage I, when five-year survival is 59.5%, compared with 5.6% at stage IV. Approximately a quarter of cases are still diagnosed following an emergency presentation. Ireland screens for breast, cervical and colorectal cancer, but not for lung cancer. A Lung Health Check pilot is testing low-dose CT screening in high-risk groups in North Dublin and the North East.

Rapid Access Lung Clinics saw 97% of referred patients within 10 working days, the only rapid-access cancer pathway to meet its target. However, only 61.0% of patients received lung cancer surgery within the recommended timeframe in 2025, against a target of 90%. The radiotherapy target has not been met in any year since 2017. The National Cancer Strategy 2017–2026 expires this year.

Cystic Fibrosis

Ireland has one of the highest reported incidences of cystic fibrosis in the world. Newborn screening identified cystic fibrosis in approximately one in every 2,000 births in 2024, and 1,454 people attended an Irish cystic fibrosis centre for care that year.

Highly effective CFTR modulator therapy has changed the natural history of cystic fibrosis but has not cured it. The predicted median survival for a person born with cystic fibrosis today is 62.6 years, although this estimate is becoming less certain as the number of deaths falls. Cystic fibrosis is now an adult multisystem condition. In 2024, 62% of the registered population were adults and 17.4% were aged 40 years or older, compared with 7.7% in 2014. No member of the Cystic Fibrosis Registry of Ireland underwent a lung transplant in 2023 or 2024, compared with 20 in 2014. However, 4.1% of the registered population were ineligible for any modulator on genotype grounds, and 10.7% of those eligible were not receiving one at their last clinic visit of the year. This minority carries a disproportionate share of the disease burden, and their needs risk becoming less visible as population-level indicators improve.

An older population brings needs for which Ireland has no national pathway. Adults with cystic fibrosis have a five to ten-fold higher risk of colorectal cancer than the general

population, with onset typically two to three decades earlier. International guidance recommends screening colonoscopy from age 40 years, but there is no cystic fibrosis cancer surveillance pathway in Ireland. Twenty women with cystic fibrosis were pregnant in each of 2023 and 2024, and there is no national pre-conception, obstetric or lactation pathway. Depression and anxiety occur at two to three times general population rates, and international guidance recommends annual screening from age 12 years.

In 2024 there were 378 inpatient discharges and 1,493 day-cases for cystic fibrosis. Most care is now delivered through home intravenous therapy, outpatient and virtual review and multidisciplinary input that national hospital data do not capture, so falling admission numbers should not be read as falling demand. The healthcare needs of people with cystic fibrosis are multisystem and include respiratory, gastrointestinal, hepatic, endocrine and diabetes, and reproductive issues, malignant disease and multiple complex atypical infections. Quality of life is further compromised by the major psychological and social issues related to cystic fibrosis. The National Clinical Programme for Cystic Fibrosis (NCPCF) is a unique clinical programme that deals with the healthcare and quality of life of people with cystic fibrosis from birth to over 90 years of age. It includes nominees from the multidisciplinary cystic fibrosis teams throughout Ireland, who work together to plan and direct the delivery of care. The programme has delivered “Cystic Fibrosis: A Model of Care for Ireland” and a model of care for cystic fibrosis and lung transplantation.

Interstitial Lung Disease

Interstitial lung disease (ILD) is a group of more than 200 disorders. Many of them can progress to irreversible scarring of the lungs. An estimated 11,016 people are living with ILD in Ireland. ILD accounted for €935.9 million in annual societal cost in 2023. Neither incidence nor prevalence is measured at national level. Deaths from chronic interstitial lung disease rose by 44%, from 376 in 2016 to 540 in 2023, while deaths from sarcoidosis were unchanged at 20. Between 2013 and 2018, Ireland had the highest age- and sex-standardised mortality rate for idiopathic pulmonary fibrosis of the 24 EU countries studied: 11.1 deaths per 100,000

person-years, against a European mean of 3.9. Lung transplantation fell to 15 procedures in 2024 (all indications), the lowest total in five years. Two actions would make a great difference to ILD in Ireland. The first is a national ILD registry with multi-annual funding and public reporting. The second is formal inclusion of ILD in the National Clinical Programme.

Obstructive Sleep Apnoea

Obstructive sleep apnoea (OSA) is increasingly recognised as a public health problem internationally, owing to its high prevalence, frequent under-diagnosis and association with cardiovascular disease, type 2 diabetes and cognitive dysfunction. There is no national data on its prevalence in Ireland. On international estimates that at least 4% of middle-aged adults are affected, more than 50,000 people in Ireland may have the condition, although this is a projection rather than an Irish estimate.

Sleep studies were the seventh most common principal procedure among elective inpatients in 2024, with 1,931 procedures. There is no national screening programme. The Irish Sleep Society has called for national epidemiological research, and for targeted screening of high-risk groups such as commercial drivers.

Paediatric Respiratory Disease

Respiratory illness is the single largest cause of acute hospital activity among children in Ireland. In 2024, 23.7% of inpatient admissions among children aged 0–14 years were for respiratory disease. Respiratory diagnoses were also the most common reason for admission to paediatric critical care in the two Children's Health Ireland units, at 34% of admissions, and 92% of these admissions were unplanned. In 2023 there were 148 admissions of children aged under 16 years to adult intensive care units, more than double the number in 2022. Mortality from respiratory causes in childhood remains low and is largely confined to the perinatal period and to congenital malformations of the lung.

Prevention works. The pilot infant RSV immunisation programme for the 2024/2025 season achieved 83% uptake. Among infants born during the programme period, it was followed by a 78% reduction in RSV

hospitalisations and a 71% reduction in intensive care admissions. Routine childhood immunisation, however, is in decline. Coverage is below the WHO target of 95% for every routinely reported childhood vaccine, and pneumococcal conjugate vaccine coverage at 24 months is 80.9%. Tuberculosis notifications among children aged under 15 years rose from 8 in 2023 to 14 in 2025, the highest level since 2016. National data on paediatric respiratory activity in primary care are not available.

Prevention

Much respiratory disease is preventable. Ireland has introduced major population-level measures, including smoke-free workplace legislation, standardised tobacco packaging and childhood immunisation programmes, but preventable exposure remains substantial. In 2025, 17% of adults were current smokers. This level has been broadly unchanged since 2019, and Ireland did not meet the Tobacco Free Ireland target of below 5% by 2025. 8% of the population use e-cigarettes, rising to 18% among people aged 15–24 years, and 17% of current users have never smoked.

Poor air quality contributes to an estimated 1,700 premature deaths in Ireland each year. Ireland met EU legal air quality limits in 2024, but it did not meet the more protective WHO guideline levels for several pollutants, and it faces difficulty meeting the stricter EU standards due in 2030. Radon is the second leading cause of lung cancer after smoking, yet public awareness of radon fell from 82% in 2020 to 71% in 2025. Occupational exposures contribute to preventable cases of asthma, COPD, interstitial lung disease, lung cancer and mesothelioma. These risks follow a social gradient: smoking, poor housing conditions and hazardous occupational exposure are all more common among people experiencing disadvantage.

Pulmonary Vascular Disease

National incidence data for pulmonary embolism and prevalence data for pulmonary hypertension are not available. An analysis of Irish acute public hospital data estimated that 25,465 cases of pulmonary embolism were diagnosed among adults between 2015 and 2022, a mean annual incidence of 85 per

100,000 population. There were 149 deaths from pulmonary embolism in 2023. In 2024, pulmonary heart disease and diseases of the pulmonary circulation accounted for 2,068 inpatient discharges using 17,102 bed days. Breathlessness was reported by 65% of patients attending an Irish post-embolism clinic, which underlines the importance of structured follow-up. Pulmonary hypertension is a progressive and often fatal disease. Between 2010 and 2020, 415 patients were referred to the National Pulmonary Hypertension Unit, an estimated annual incidence of 7.93 per million population. This is lower than the incidence reported by other European centres, which suggests that the condition is under-recognised in Ireland. There were 63 deaths from pulmonary hypertension in 2023, one in five of them among people aged under 50 years. Specialist care is centralised in a single national unit with long waiting lists. Pulmonary endarterectomy and balloon pulmonary angioplasty for chronic thromboembolic pulmonary hypertension are not available in the Republic of Ireland and require referral to the United Kingdom.

Respiratory Infectious Diseases

Pneumonia remains an important cause of death and hospital activity, particularly among older people. It caused 929 deaths in 2024, over 90% of them among older people. The five-year age-standardised death rate for pneumonia fell by around two fifths, from 38.87 per 100,000 population in 2015–2019 to 23.82 in 2020–2024. The sharpest fall came in 2020, however, and much of it reflects the certification of deaths to COVID-19 rather than a fall in deaths from lower respiratory infection. Influenza caused 176 deaths in 2024, the highest annual number since at least 2016.

In 2024 there were 17,965 inpatient discharges for pneumonia, using 178,572 bed days, or 31% of all respiratory inpatient bed days; 62.8% of these admissions were among people aged 65 years and over. Influenza notifications reached 38,762 in 2025, the highest of the past six years. Vaccine-preventable infections have re-emerged: pertussis notifications rose from 18 in 2023 to 713 in 2024, and measles notifications from 4 to 207. In 2025 pertussis notifications fell to 348 and measles to 51, both still well above

pre-2024 levels, and there were 7,774 RSV notifications. Invasive pneumococcal disease is rising: incidence increased from 8.4 per 100,000 population in 2023 to 9.5 in 2024, when 488 confirmed cases and 38 deaths were reported. Chronic lung disease was the most commonly recorded risk factor, and disease caused by non-vaccine serotypes increased, particularly among people aged 65 years and over. In 2025 there were 1,554 notified outbreaks of respiratory infection, affecting 11,745 people. Surveillance reporting has not fully recovered from the pandemic: several HPSC annual epidemiological reports from 2019 onwards were not published, so some national figures on respiratory infection are available only for earlier years.

Tuberculosis

Ireland remains a low-incidence country for tuberculosis (TB), with 285 cases notified in 2025, a rate of 5.2 per 100,000 population. However, notifications have returned to pre-pandemic levels and are no longer falling. The number of cases notified in 2025 was more than double the level consistent with the WHO End TB Strategy target for 2030. Notifications among children rose to 14 in 2025, the highest since 2016. An Irish study of 85 patients found the median time from symptom onset to treatment is 110 days. In 2024 TB accounted for 216 hospital admissions and 4,002 bed days.

Ireland's first National TB Strategy was published in 2024. Two years in, of the fifteen actions prioritised for the first year, two have been delivered and seven have not yet begun, and the National TB Lead post remains vacant. A selective BCG vaccination programme for higher-risk infants began with babies born from 1 June 2026. It will begin to close a gap that has been open since universal neonatal vaccination ceased in 2015.

Respiratory Disease Burden for Older People

Respiratory disease falls most heavily on older people, and the older population is growing fastest. The number of people aged 65 years and over rose by 36.7% between 2016 and 2025, more than twice the growth of the population as a whole. In 2024 the age-standardised death rate from respiratory disease was 780.7 per 100,000 among people

aged 65 years and over, against 17.2 among those aged under 65 years, and respiratory disease accounted for 20.7% of the all-cause death rate in this age group, little changed from 20.1% in 2016. More than nine in ten deaths from chronic lower respiratory disease, pneumonia and chronic interstitial lung disease occur at 65 years and over.

People aged 65 years and over accounted for 53.4% of respiratory inpatient admissions in 2025 but 73.3% of respiratory inpatient bed days, because length of stay rises from 7.98 days at ages 65–74 to 11.21 days at 85 years and over. In 2024 older people accounted for 76.9% of admissions for COPD and bronchiectasis and 82.0% of the bed days for that grouping, for 66.9% of lung cancer admissions and for 62.8% of pneumonia admissions. Because bed demand is concentrated in the oldest age groups, and those groups are growing fastest, respiratory bed days will rise faster than admissions unless more care is delivered in the community.

Ireland performs well on influenza vaccination in this age group, with uptake of 75.4% among people aged 65 years and over against an OECD average of 52.4%. It has 3.5 long-term care workers per 100 people aged 65 years and over against an OECD average of 5.0, and 2.9 hospital beds per 1,000 population against 4.2, with 545 avoidable hospital admissions per 100,000 population against an OECD average of 473. RSV vaccination is recommended for adults aged 75 years and over and other high-risk groups, but has not been introduced as a funded programme. No national data are available on the prevalence of chronic respiratory disease among older people, or on respiratory prescribing by age.

Call to Action

The enjoyment of the highest attainable standard of health is a fundamental human right. Achieving it for people in Ireland requires more than a further description of the problem. Therefore, we make three specific asks of Government.

1. A National Respiratory Strategy. Ireland needs a single, over-arching national strategy for respiratory health, covering the acute and chronic conditions set out in this report and

spanning prevention, diagnosis, treatment, rehabilitation and end-of-life care. Its priorities should include national data on the prevalence and outcomes of respiratory disease, early and objective diagnosis in the community, a national lung cancer screening programme, restoration of childhood immunisation uptake to 95%, a tobacco-free generation, air quality standards aligned with WHO guideline values, equitable access to treatment and specialist services, and a respiratory workforce resourced to meet the growing needs of an ageing population.

The individual stand-alone national clinical programmes will continue to play a vital role in the planning and delivery of care for those living with respiratory diseases, standardising care quality and improving health outcomes.

2. A Respiratory Steering Group to deliver it.

The strategy should be developed by an expert Steering Group with a named independent chair, reporting directly to the Minister for Health, comprising policymakers, clinicians across primary and secondary care, allied health professionals, researchers, patient organisations, patients and carers. The Steering Group should publish the strategy within a defined timeframe and continue thereafter as the body responsible for independent oversight of implementation and annual public progress reporting.

3. An Implementation plan with multi-annual funding. A strategy without committed resources changes nothing. The experience of respiratory and cancer care in Ireland is that published plans stall in the absence of dedicated, protected funding. The Respiratory Strategy must therefore be accompanied from the outset by a costed implementation plan with multi-annual funding attached to each commitment, and with responsibility for delivery assigned.

This report describes the burden of respiratory disease on the population of Ireland and its impact on health services.

In 2008 the Irish Thoracic Society published the INHALE report (2nd edition)¹ and in 2018 it published Respiratory Health of the Nation.² This 2026 edition is the successor to both.

Respiratory disease covers a diverse range of acute and chronic conditions, comprising a small number of common diseases and a much larger number of rare ones. It is a major cause of morbidity and mortality and accounts for a substantial share of the overall burden of illness, both in Ireland and globally. Since the last edition of this report Ireland has experienced a pandemic caused by a respiratory virus, which has affected both the burden of respiratory disease and the way in which it is certified and recorded.

The mission of the Irish Thoracic Society is to promote respiratory health and alleviate suffering from respiratory disease. Following the format adopted in 2018, and using the International Classification of Diseases, 10th revision (ICD-10), this report includes an overview of respiratory disease in Ireland, chapters on individual respiratory diseases, a chapter on children's respiratory health and a chapter on prevention.

Who this report is for

This report provides national data on respiratory disease in the Irish population. The authors hope the report will be an invaluable resource for policymakers, health care providers and professionals, researchers, patients and their families as well as the wider public. The data and analyses could inform the development of strategies designed to reduce the impact of respiratory disease on Ireland's health, thereby improving respiratory health and wellbeing and reducing the impact on health services.

Data Sources

A number of databases and published sources were used to compile national data for the overview of respiratory disease in Ireland. These included mortality data from the Central Statistics Office (CSO) and the Public Health

Information System (PHIS); hospital activity data from the Hospital Inpatient Enquiry (HIPE) system; notification data from the Computerised Infectious Disease Reporting system (CIDR); prescribing data for the General Medical Services (GMS) scheme; waiting list data from the National Treatment Purchase Fund (NTPF); and data from national registries and clinical audits. It must be noted that all data sources have limitations, and this report draws on the most recent data available.

Secondary data were obtained from relevant national and international reports and other data sources, which are referenced as appropriate in each chapter.

The lack of national primary care data, medication data at disease and total population level, national diagnostic data, and data on respiratory aids, appliances and other respiratory services means that this report is an underestimate of the burden of respiratory disease in Ireland.

Definition of respiratory disease

The disease coding system used in Ireland for both deaths and hospitalisations is the 10th International Classification of Diseases (ICD-10) convention of the World Health Organization (WHO). Respiratory disease is defined throughout this report as diseases of the respiratory system (ICD-10 J00–J99), COVID-19 (U07), and cancer of the larynx, trachea, bronchus and lung (C32–C34). Not every death attributed to COVID-19 is respiratory in mechanism. COVID-19 is nonetheless a respiratory infection, and its emergence from 2020 displaced certification from pneumonia and from other respiratory causes, so excluding it would overstate the improvement recorded across the remainder of the respiratory burden. Figures compiled on the narrower basis of diseases of the respiratory system alone are given alongside the report definition where the distinction matters. The ICD-10 codes used in this report are listed in the appendix.

Mortality

Data on deaths were sourced from the Department of Health's Health in Ireland: Key Trends 2025, which draws on PHIS, and from PHIS and CSO tables accessed directly. PHIS provides mortality numbers and rates by age and sex for the causes reported across Europe in the Eurostat shortlist, together with additional national categories. In addition to mortality data by cause, age and sex, PHIS provides age-standardised mortality rates, regional variations and years of potential life lost (YPLL) for the specified causes. YPLL is of greater relevance for diseases associated with death in younger age groups. Where data is provisional it is noted in tables and text where these years are presented.

Age standardisation, which takes the ages of people within a population into account, helps to ensure that comparisons of the number of people dying with a condition are not unduly influenced by the number of older people in a particular population at that time. The overview chapter reports annual age-standardised rates as published in Key Trends; several disease-specific chapters report five-year rolling age-standardised rates from PHIS, which smooth year-to-year variation where numbers are small. The two measures are not directly interchangeable.

Provisional mortality data for 2024 report cancer of the larynx, trachea, bronchus and lung together (C32–C34), whereas earlier years report cancer of the trachea, bronchus and lung only (C33–C34). For many respiratory conditions, including chronic obstructive pulmonary disease (COPD) and bronchiectasis, the true contribution to mortality may be underestimated, because the condition is often recorded as a contributing rather than an underlying cause of death.

Notifiable respiratory infectious diseases

Data for notifiable respiratory infectious diseases were accessed from the Health Protection Surveillance Centre (HPSC), including annual notification data for 2020–2025 recorded through CIDR, tuberculosis surveillance reports and the national outbreak notification hub. Many specified infectious diseases of public health significance are notifiable by legislation, and medical

practitioners and clinical directors of diagnostic laboratories must notify these to a Medical Officer of Health. As notifications only reflect diagnosed infection, the data are likely to underestimate true incidence. For example, many people with influenza self-manage and do not present to a medical practitioner.

Prescribing in primary care

National prescribing data are available only for the GMS scheme and were sourced from CSO tables derived from the Primary Care Reimbursement Service (PCRS). The GMS scheme covered 1,374,460 people in 2023, roughly a quarter of the population, compared with approximately 31% in 2016, and is weighted towards older people and those on lower incomes. No equivalent national data are published for people holding GP visit cards, those covered by the Drugs Payment Scheme, or those paying privately, so these data capture only part of the picture. Expenditure data by therapeutic class are no longer published, so the expenditure on respiratory medicines reported in the 2018 edition cannot be brought up to date from published sources.

Hospital activity

The disease coding system used for hospitalisations, as for deaths, is ICD-10. Hospital activity data were drawn from HIPE through three routes: Department of Health tables of discharges, bed days and length of stay by principal diagnosis (2017–2025); the Healthcare Pricing Office's Activity in Acute Public Hospitals in Ireland annual reports for 2024 and 2025; and the HIPE Statistics Reporter, used in the disease-specific chapters for 2017–2024. HIPE data for 2025 are provisional. Other published sources using HIPE included the National Healthcare Quality Reporting System Annual Report 2023 and the National Audit of Hospital Mortality.

Hospitalisations are episodes of hospital care, classified by ICD coding on discharge. They are a measure of health service utilisation and reflect local medical care practices, data coding and recording patterns as well as the epidemiology of the conditions described. In addition to the ICD-10 classification, the overview chapter draws on the Healthcare Pricing Office's case mix analysis, which groups discharges into Major Diagnostic Categories derived from

Australian Refined Diagnosis Related Groups (AR-DRGs). The two classifications do not correspond exactly, and their figures are not combined.

The following measures from HIPE were used throughout:

- **Discharges:** A discharge is a completed episode of hospital care. Figures are presented for all discharges (day-case and inpatient) and for inpatient discharges only. Because most analyses concern inpatient activity, the denominator most commonly used is the total number of inpatient discharges in the year.
- **Bed days used:** The total number of days spent in hospital by inpatients discharged during the period, giving an overall estimate of the burden of a condition on hospital capacity. In the case mix analysis, bed days are estimated by applying the published mean length of stay to the published number of inpatient discharges for each diagnosis related group and are approximate.
- **Length of stay:** The mean, and where available the median, number of days from admission to discharge.
- **Emergency admissions:** Unplanned inpatient admissions, including those through an emergency department or medical assessment unit. Respiratory diagnoses among emergency inpatients are counted from the published list of the twenty most common principal diagnoses, so their share is understated.
- **Age:** In addition to all ages, data are presented for children aged under 15 years, for people aged 65 years and over, and by finer age bands where available.

These statistics relate to the principal diagnosis on discharge, so the true impact of comorbid lung disease may be underestimated. They include only data from publicly funded hospitals reporting to HIPE and do not include private hospital activity. The numbers reflect episodes of care and not individual patients, so a person admitted more than once is counted more than once. The data do not include emergency department presentations discharged without admission, or outpatient activity. National

hospital data report COPD and bronchiectasis only in combination (J40–J44, J47), which limits what can be reported for each condition separately.

Waiting lists, workforce and critical care

Outpatient and inpatient/day-case waiting list data for adult and paediatric respiratory medicine, from January 2022 to July 2026, were sourced from NTPF open data. Consultant workforce data were sourced from HSE National Doctors Training and Planning. Critical care data were sourced from the National Office of Clinical Audit's Irish National ICU Audit and Irish Paediatric Critical Care Audit, and transplant data from Department of Health and Organ Donation Transplant Ireland reports.

Registries and disease-specific sources

Incidence, stage and survival data for lung cancer and mesothelioma were sourced from the National Cancer Registry Ireland. Data on cystic fibrosis were sourced from the Cystic Fibrosis Registry of Ireland, a voluntary registry. Where national incidence or prevalence data are not available, as for COPD, asthma, bronchiectasis, interstitial lung disease and sleep apnoea, chapters present national estimates published by the Health Service Executive or international estimates, including analysis of the Global Burden of Disease Study 2023, and identify them as estimates.

Report Structure

The report comprises an overview chapter, disease-specific chapters, a chapter on prevention and a chapter on the respiratory disease burden for older people. The disease-specific chapters follow a common structure:

- **Key Points:** A summary of the principal findings of the chapter.
- **Background:** A description of the condition and the relevant policy context.
- **Burden of Disease:** Covering incidence, which is a measure of the number or rate of new cases occurring in the population over a specified period such as 12 months; prevalence, which is a measure of the number of cases of existing disease in the population at a given time or over a period; mortality, the number of people who died from the disease in the specified period,

with age-standardised rates where available; impact on health services, which in the absence of other national data focuses largely on public hospital activity; sex, age and regional variation, as available; and international benchmarking.

- **Prevention, Diagnosis and Management:** Covering risk factors, prevention and early detection, access to care, diagnosis, and treatment and management.
- **Conclusions:** A summary of the chapter's findings and priorities for action.
- **References:** The sources cited in the chapter.

Comparison with the 2018 edition

Some figures in this report are not directly comparable with those in the 2018 edition. The 2018 edition compared Irish mortality with the EU-28 average, whereas this report uses a group of eight comparator countries; the definition of respiratory disease now includes COVID-19; and data sources, classifications and denominators differ in places. Where earlier figures are cited, they are presented for context and are not treated as points on a trend unless the methodology is consistent. Overall, the data provided here are the most accurate picture available of the respiratory health of Ireland at a national level.

References

1. Brennan N, O'Connor T, McCormack S. INHALE Report (2nd edition). Dublin: Irish Thoracic Society; 2008.
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Overview of Burden of Respiratory Disease

01

Key Points

- Respiratory disease caused 6,832 deaths in 2024, 19.4% of all deaths in Ireland. The principal causes were cancer of the trachea, bronchus and lung (2,045 deaths), chronic lower respiratory disease (1,950, of which approximately 92% is chronic obstructive pulmonary disease), pneumonia (929) and COVID-19 (503).
- Respiratory disease accounted for 11.5% of inpatient admissions and 13.3% of inpatient bed days in 2025. Comparable figures for cardiovascular disease were 9.1 and 12.4%.
- Four respiratory diagnoses alone accounted for almost 10% of emergency inpatient admissions in 2025 and 11.1% of emergency bed days.
- Almost one in four paediatric admissions to an acute hospital bed in Ireland were for a respiratory condition in 2024 (23.7%).
- 29,169 adults were waiting for a first respiratory outpatient appointment in July 2026, of whom 20.7% had been waiting more than a year.
- Lung transplantation has not recovered from the pandemic: 13 transplants in 2024, against 38 in 2019.

The prevalence of several other respiratory conditions continues to rise. Interstitial lung disease and pulmonary vascular disease are increasingly recognised, and the morbidity associated with obstructive sleep apnoea is better appreciated than it was a decade ago, in part through improved recognition and in part through rising obesity. Bronchiectasis, for many years regarded as a residual diagnosis, is now understood as a distinct disease with its own clinical guideline, its own European registry and, since 2025, its first licensed disease-modifying therapy.

Respiratory health in infancy and childhood is increasingly recognised as a determinant of adult respiratory health. Children with cystic fibrosis now survive into adulthood in numbers that would have been unimaginable a generation ago, and the majority of the Irish cystic fibrosis population is now adult. The improved survival of premature infants brings its own respiratory consequences, and childhood asthma continues to translate into adult disease. The effect of adverse social and environmental circumstances in childhood on adult lung function may be as important a risk factor as smoking.

Since the last edition of this report Ireland has experienced a pandemic caused by a respiratory virus. COVID-19 caused 3,167 deaths in Ireland in 2021, more than any other single respiratory cause in that year, and it remains a material contributor to respiratory mortality. It has also changed the way other respiratory conditions are certified and recorded, which bears on the interpretation of trends throughout this chapter.

Vaccination continues to prevent a substantial part of the acute respiratory infectious disease burden, and the introduction of an infant respiratory syncytial virus immunisation pilot programme has closed a gap identified in the 2018 edition of this report. Against that, uptake of routine childhood immunisation has fallen below the levels required for population protection, and pertussis and measles have re-emerged. Pneumonia remains a major source of illness, death and hospital activity. Tuberculosis, which declined dramatically in Ireland during the twentieth century, continues to present challenges in the twenty-first, particularly where drug resistance is present.

As the population of Ireland grows and ages, the role of co-morbidity alongside respiratory disease presents an additional challenge for care and treatment, and the capacity of the specialist workforce to meet that demand is itself now a constraint.

1.1 Background

Respiratory disease covers a diverse range of acute and chronic conditions, comprising a small number of common diseases and a much larger number of rare ones. It is a major cause of morbidity and mortality and accounts for a substantial share of the overall burden of illness, both in Ireland and globally.

Two of the most common respiratory diseases in terms of prevalence and mortality are chronic obstructive pulmonary disease (COPD) and lung cancer, and the principal risk factor for both is tobacco smoking. The interval of twenty to thirty years between exposure and the development of disease means that both will remain major challenges in Ireland for many years to come, notwithstanding the fall in smoking prevalence achieved since smoke-free workplace legislation took effect in 2004. The rapid growth in the use of e-cigarettes and other nicotine products, particularly among young people, introduces an exposure whose long-term respiratory consequences are not yet known.

1.2 Burden of Disease

Incidence and Prevalence

At a national level, incidence and prevalence data is not available for respiratory disease as a group. For some specific respiratory diseases, there are incidence and/or prevalence data while for some others, there are estimates based on extrapolation from international studies. These are included and referenced in the relevant disease specific chapter.

Mortality

In Ireland the overall picture is one of falling mortality rates against a growing and ageing population. Between 2015 and 2024 the age-standardised death rate from all causes fell by 16.1%.^{1,2}

Respiratory disease is defined throughout this report as diseases of the respiratory system (ICD-10 J00–J99), COVID-19, and cancer of the larynx, trachea, bronchus and lung. Not every death attributed to COVID-19 is respiratory in mechanism. COVID-19 is nonetheless a respiratory infection, and its emergence from 2020 displaced certification from pneumonia and from other respiratory causes, so excluding it would overstate the improvement recorded across the remainder of the respiratory burden. Figures compiled on the narrower basis of diseases of the respiratory system alone are given alongside the report definition where the distinction matters.

Taking respiratory disease as a whole — diseases of the respiratory system, COVID-19, and cancer of the larynx, trachea, bronchus and lung — the age-standardised death rate fell from 197.2 per 100,000 population in 2015 to 166.1 in 2024, a reduction of 15.8%. That is little more than half the improvement achieved in cardiovascular disease over the same decade.^{1,2}

Nor has the reduction been steady. Respiratory mortality declined slowly between 2015 and 2019, from 197.2 to 178.0 per 100,000. It then rose sharply through the pandemic years, reaching 234.5 in 2021, the highest rate recorded in the decade. In 2020, 2021 and 2022 respiratory disease was the second leading cause of death in Ireland by age-standardised rate ahead of non-respiratory cancer. The rate has since fallen back to 166.1, but it remains only 6.7% below its 2019 level, and it has been broadly unchanged since 2022.²

Within that overall picture there has been real and substantial progress in parts of the respiratory burden. Mortality from pneumonia was reported as falling by 46.9% between 2015 and 2024, from 44.3 to 23.5

deaths per 100,000 population but the facts behind this data are important to clarify. The shape of that decline does not support a straightforward reading as improved treatment or survival. The rate fell gradually from 44.3 in 2015 to 33.9 in 2019, then dropped by 27.5% in the single year to 2020 and has been broadly unchanged since, at 23.5 in 2024: almost half the decade-long decline occurred in one year, and that year was the first year of the COVID-19 pandemic. Adding COVID-19 mortality back gives a combined rate of 36.2 per 100,000 in 2024, higher than pneumonia alone in 2019, and among people aged under 65 years the pneumonia rate was 1.68 per 100,000 in 2015 and 1.78 in 2024. Much of the apparent improvement therefore reflects the redistribution of certification to COVID-19 rather than a reduction in deaths from acute lower respiratory infection. Deaths from COVID-19 fell from a peak rate of 90.2 per 100,000 in 2021 to 12.7 in 2024. Mortality from chronic lower respiratory disease fell by 19.1% over the decade. Falling rates should not be read as a falling burden with our growing population. Over the same decade the number of deaths from diseases of the respiratory system rose from 3,865 to 4,284, an increase of 10.8%, and deaths from chronic lower respiratory disease from 1,701 to 1,950, an increase of 14.6%. The 4,284 respiratory system deaths registered in 2024 were the highest of any year in the decade. More people are dying of respiratory disease in Ireland today than ten years ago. Population increases need to be considered, the population has grown by 15.2% since 2016, with the over 65s group increasing by 36.7% between 2016 and 2025. The proportion of the population aged over 65 is expected to grow to 18% by 2030 and towards 30% by the 2050s.¹

Mortality from cancer of the larynx, trachea, bronchus and lung fell by 19.3% between 2015 and 2024, and by 29.2% among people aged under 65 years, consistent with a fall of 30.1% in mortality from selected smoking-related causes over the same period. The proportion of lung cancers diagnosed at Stage I in Ireland remains at 20%, and national key performance indicators for access to surgery and radiotherapy have not been met in recent years. Setting lung cancer aside, the combined death rate from diseases of the respiratory system and COVID-19 fell from 138.9 per 100,000 in 2015 to 119.0 in 2024. Among people aged under 65 years that same measure was 7.72 in 2015 and 7.55 in 2024 — no meaningful improvement across the entire decade for this age category.²

In 2024, 6,832 people in Ireland died from a respiratory cause, accounting for 19.4% of all registered deaths. The comparable figure reported for 2016 in the last edition

of this report was 18.8%. Respiratory disease remains, with cardiovascular disease and non-respiratory cancer, one of the three leading causes of death in Ireland.^{1,3}

The principal respiratory causes of death in 2024 were cancer of the trachea, bronchus and lung (2,045 deaths, 5.8% of all deaths), chronic lower respiratory disease (1,950 deaths, 5.5%), pneumonia (929 deaths, 2.6%) and COVID-19 (503 deaths, 1.4%). Together these four causes accounted for 15.4% of all deaths registered in Ireland in 2024. Chronic obstructive pulmonary disease is not separately identified in national cause-of-death reporting. It falls within chronic lower respiratory disease (ICD-10 J40–J47) and is the dominant component of that category, accounting for approximately 92% of deaths within it, or some 1,790 deaths of the 1950 total deaths in 2024. Wherever chronic lower respiratory disease appears in this chapter it should be read as predominantly chronic obstructive pulmonary disease.¹

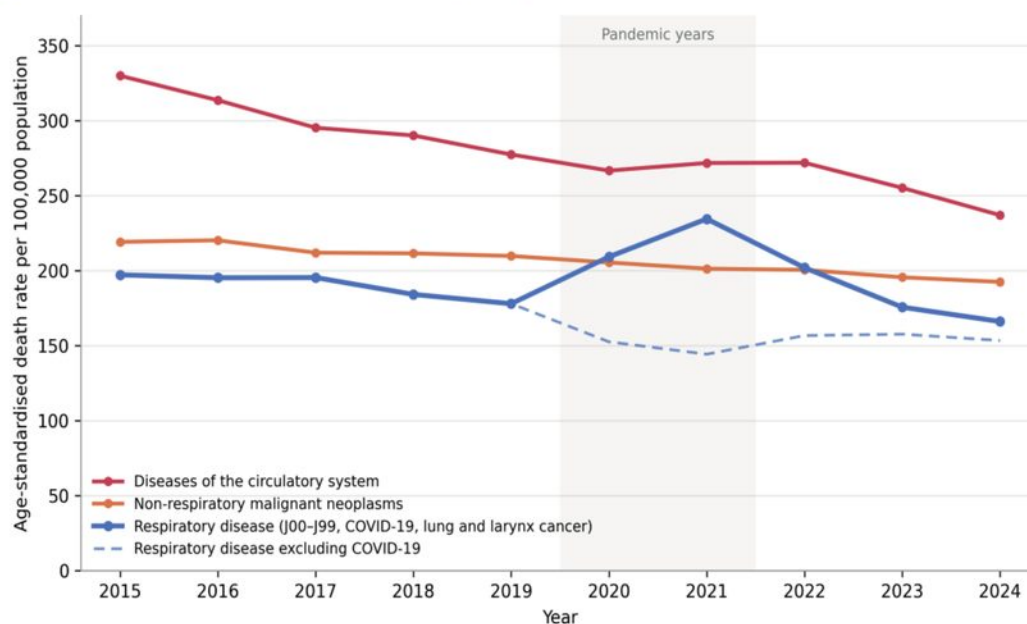
Deaths from asthma have not fallen at all. The age-standardised rate was 2.48 per 100,000 in 2015 and 2.37 in 2024, a difference lying well within the confidence limits of both estimates. For a condition in which death is very largely preventable, a decade without much improvement is a significant issue.²

Ireland continues to compare unfavourably with other European countries, a comparison set out in full later in this chapter. Taking diseases of the respiratory system and COVID-19 together, Ireland's combined age-standardised rate of 149.0 per 100,000 in 2022 was 14.1% above the eight-country average of 130.6.¹

Air quality

A proportion of the deaths described above is attributable to air pollution and is therefore preventable. The Environmental Protection Agency (EPA) estimates that more than 1,700 premature deaths occur in Ireland each year as a result of exposure to fine particulate matter. Fine particulate matter, or PM_{2.5}, is defined by the Environmental Protection Agency as particulate matter with a diameter of 2.5 micrometres or less: a complex mixture of solid and liquid particles of organic and inorganic substances suspended in the air, small enough to pass through the lung barrier and enter the bloodstream. The Agency describes it as the most important air pollutant in Ireland from a health perspective and identifies the burning of solid fuel to heat homes as its principal national source. Exposure in this context means long-term exposure to ambient concentrations of PM_{2.5} in outdoor air, modelled for the population rather than measured for individuals. These deaths are not confined to respiratory disease — the associations identified extend to cardiovascular disease, dementia, type 2 diabetes and neonatal mortality — and the figure should not be added to the respiratory totals given above. But respiratory disease accounts for a substantial share of it, and long-term exposure to ambient air pollution is established as a cause of reduced lung function, respiratory infection and aggravated asthma in both children and adults. Globally, the World Health Organisation attributes some 4.2 million premature deaths a year to ambient air pollution, through stroke, heart disease, lung cancer and chronic respiratory disease.^{4,5}

Figure 1.1. Age-standardised death rates for selected causes, Ireland, 2015–2024



Source: Central Statistics Office, table MORT02. Notes: (i) Respiratory disease comprises diseases of the respiratory system (ICD-10 J00–J99), COVID-19 and cancer of the larynx, trachea, bronchus and lung. (ii) COVID-19 did not exist as a cause of death before 2020, so the two respiratory lines are identical to 2019 by construction. (iii) Rates for 2023 and 2024 are provisional.

Table 1.1. Principal causes of death: numbers and age-standardised death rates per 100,000 population, 2015–2024

Cause of death		2015	2019	2023	2024	% change 2015–24	% change 2023–24
All causes of death	Number	30,127	31,184	35,459	35,173	+16.7	–0.8
	Rate	1,008.9	923.2	898.0	846.7	–16.1	–5.7
Diseases of the circulatory system	Number	9,371	8,928	9,872	9,594	+2.4	–2.8
	Rate	330.0	277.4	255.2	237.0	–28.2	–7.1
Malignant neoplasms (all)	Number	8,877	9,574	10,308	10,307	+16.1	0.0
	Rate	277.6	264.8	245.8	239.6	–13.7	–2.5
Respiratory disease	Number	5,750	5,944	7,090	6,832	+18.8	–3.6
	Rate	197.2	178.0	175.7	166.1	–15.8	–5.4
Diseases of the respiratory system	Number	3,865	3,930	4,200	4,284	+10.8	+2.0
	Rate	138.9	123.0	107.5	106.4	–23.4	–1.1
Cancer of larynx, trachea, bronchus, lung	Number	1,885	2,014	2,121	2,045	+8.5	–3.6
	Rate	58.4	55.0	50.2	47.1	–19.3	–6.2
COVID-19	Number	–	–	769	503	–	–34.6
	Rate	0.0	0.0	18.0	12.7	–	–29.5
Chronic lower respiratory disease	Number	1,701	1,803	1,979	1,950	+14.6	–1.5
	Rate	59.0	54.4	49.4	47.7	–19.1	–3.4
Pneumonia	Number	1,165	1,004	861	929	–20.3	+7.9
	Rate	44.3	33.9	23.4	23.5	–46.9	+0.5

Sources: numbers from Health in Ireland: Key Trends 2025, Department of Health, Table 1.4; rates from Central Statistics Office, table MORT02. Notes: (i) Rates are age-standardised to the European Standard Population. (ii) Figures for 2023 and 2024 are provisional and may be revised for late-registered deaths. (iii) Respiratory disease on the report definition is the sum of diseases of the respiratory system, COVID-19 and cancer of the larynx, trachea, bronchus and lung; age-standardised rates for mutually exclusive causes are additive.

Healthcare Investment

Total current health expenditure in Ireland was €36.6 billion in 2024, of which €28.4 billion, 77.7%, came from government and compulsory schemes, €4.3 billion from voluntary health insurance and €3.9 billion, 10.6%, directly from households out of pocket. Hospitals accounted for €14.7 billion of that total, 40.3%. Within the public system, expenditure by the HSE acute division reached €10,277 million in 2024, an increase of 118.6% since 2015, faster than any of the other HSE care programmes: care of older people grew by 98.2% over the same period, care for people with disabilities by 89.7%, mental health by 77.3% and primary care and community health by 77.0%.⁹

Respiratory disease accounted for 13.3% of all inpatient bed days in 2025 and 11.5% of inpatient admissions, but the acute division budget of €10,277 million cannot simply be apportioned in those proportions: it also funds emergency departments, outpatient clinics, day-case activity and diagnostics, and a day in intensive care and a day on a general ward do not cost the same.⁹

Respiratory Medication Use

Most people with respiratory disease are cared for in the community by their general practitioner and primary care team, and prescribing data offers the clearest available measure of that activity.

National data is available for the General Medical Services (GMS) scheme, which covered 1,374,460 people in 2023, roughly a quarter of the population and weighted towards older people and those on lower incomes. No equivalent

national data is published for people holding GP visit cards, those covered by the Drugs Payment Scheme, or those paying privately, so the figures below capture only part of the picture. The scale of what is not captured is considerable: 2,423,017 people, 45.0% of the population, held private health insurance in 2024, rising to 52.2% of those aged 70 to 79, the age group in which respiratory disease is most concentrated.^{6,7}

In 2023, 298,620 people active on the GMS scheme received at least one inhaled bronchodilator (ATC class R03A), representing 21.7% of the scheme population. A further 133,200 people, or 9.7%, received other inhaled drugs for obstructive airway disease (R03B), a group comprising inhaled corticosteroids, long-acting anticholinergics and related preparations. More than one person in five on the scheme therefore received treatment for obstructive airway disease during the year.⁶

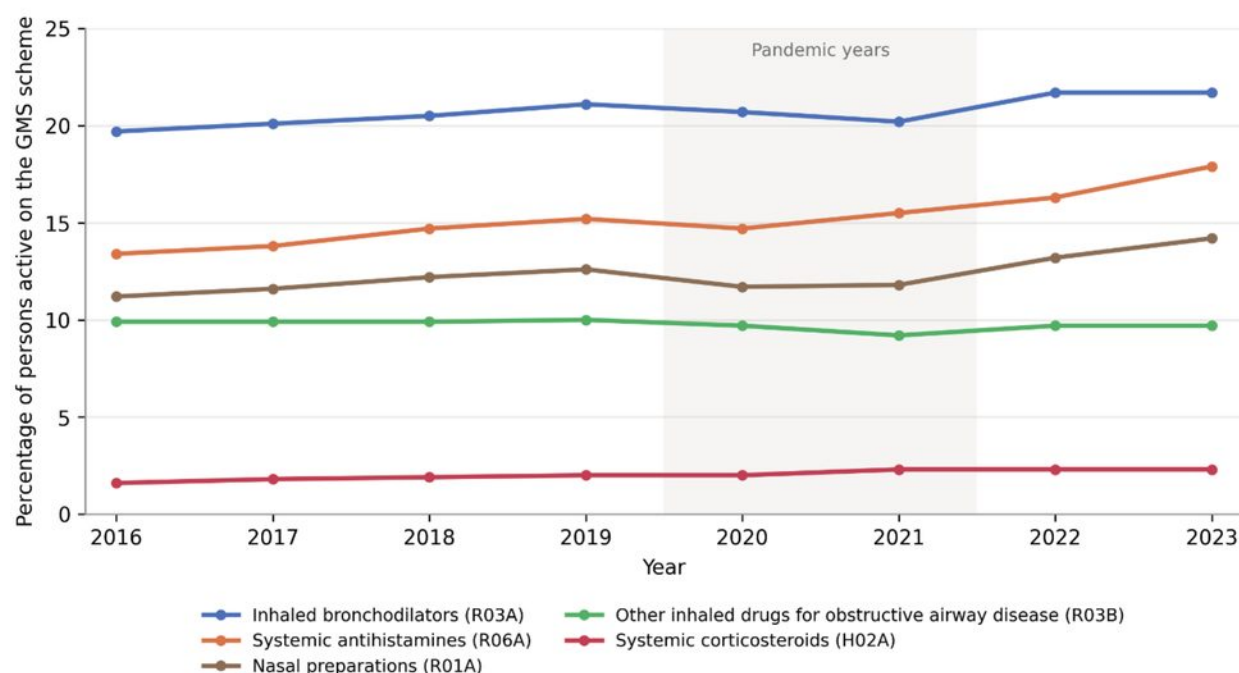
Use of inhaled bronchodilators has risen steadily, from 19.7% of the scheme population in 2016 to 21.7% in 2023, with a dip in 2020 and 2021 during the pandemic. Use of other inhaled preparations has remained flat at close to 10% throughout. Prescribing data cannot show why use has risen. A genuine increase in the treated prevalence of obstructive airway disease, improved case-finding, changes in prescribing practice and changes in the composition of the scheme population would each produce the same pattern, and this data does not distinguish between them. Two other patterns are notable.

Prescribing of systemic antihistamines rose from 13.4% of the scheme population in 2016 to 17.9% in 2023, and of nasal preparations from 11.2 to 14.2%. Neither medicine is specific to respiratory disease — systemic antihistamines are also used for urticaria, allergic conjunctivitis and other indications — so these figures cannot on their own establish a rising burden of allergic respiratory disease. They are consistent with European evidence that warming temperatures and rising atmospheric carbon dioxide concentrations are lengthening pollen seasons, increasing pollen concentrations and increasing the allergenicity of pollen itself, although no reliable estimate of the health burden of pollen allergy on respiratory health in Europe currently exists.²¹

Prescribing of plain systemic corticosteroids rose from 1.6 to 2.3% of the scheme population, with the number of people receiving them rising by 28%, from 24,290 to 31,040, at a time when the scheme population itself was falling; oral corticosteroid exposure is a recognised marker of poorly controlled asthma and of chronic obstructive pulmonary disease exacerbation and carries substantial long-term risk.⁶

Total GMS prescription expenditure has since risen slightly, to €1,085.1 million in 2024 on 71.2 million items dispensed, an average of €15.23 per item; over the decade from 2014 the number of items rose by 19.9% while total expenditure fell by 2.4% and the average cost per item fell by 18.6%, reflecting generic substitution and price agreements. No equivalent breakdown of expenditure by therapeutic class is published, however, so the 2016 figure of €113.7 million cannot be brought up to date from published sources. Nor do these figures include medicines supplied in hospitals, drugs dispensed under the Drugs Payment Scheme or the Long-Term Illness Scheme, or the out-of-pocket costs borne by patients who pay privately. The true cost of respiratory disease medication in Ireland is therefore not known.^{3,8} Prescribing of inhaled bronchodilators varied comparatively little by sex in 2023, at 21.5% of males and 21.9% of females active on the scheme, and by region, from 20.3% in HSE West and HSE North-West to 22.9% in HSE Dublin and Midlands.

Figure 1.2. Respiratory and related medication use among persons active on the General Medical Services scheme, 2016–2023



Source: Central Statistics Office, table GMSA02. Notes: (i) The denominator is persons active on the GMS scheme in each year, which fell from 1,477,680 in 2016 to 1,374,460 in 2023. (ii) A person receiving medicines from more than one class is counted in each, so the classes shown are not mutually exclusive and must not be summed. (iii) Data was not available for HSE Midwest and HSE South West for 2018. (iv) Prescription expenditure figures in the text are from Department of Health table KTA38 and relate to all prescription items dispensed under the GMS scheme, not to respiratory medicines alone.

Respiratory Waiting Lists

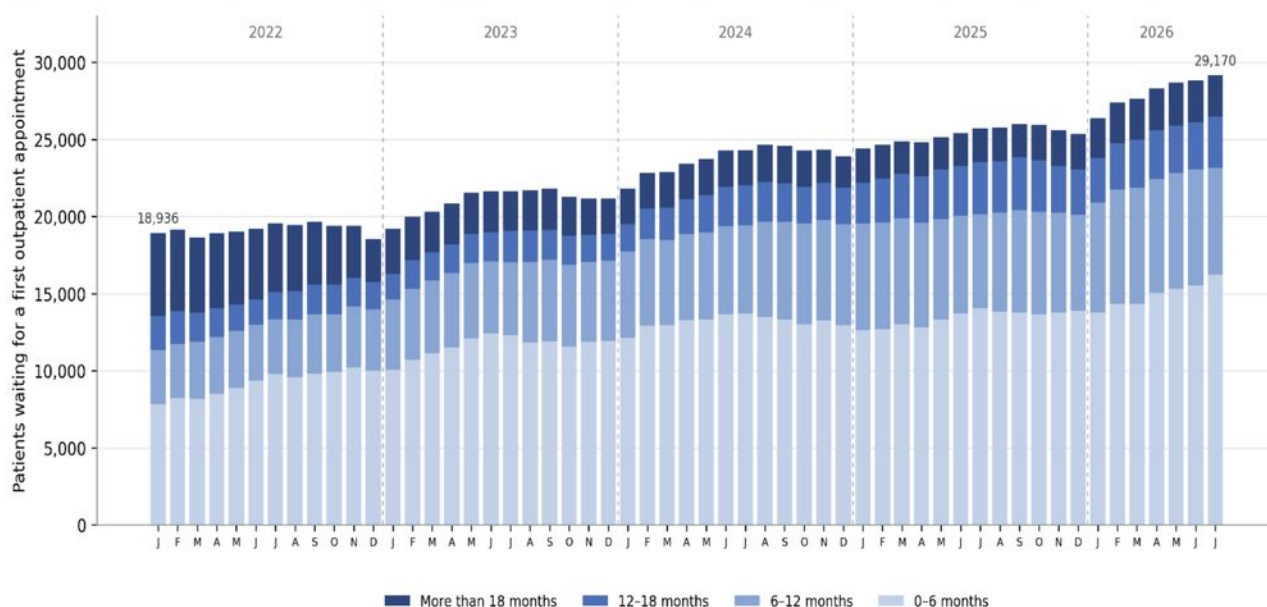
At the end of July 2026 there were 29,169 adults waiting for a first outpatient appointment in respiratory medicine, together with 1,471 children waiting under paediatric respiratory medicine. Respiratory medicine was the eighth largest of the fifty-nine outpatient specialties, and the two lists combined accounted for 30,640 people, 4.5% of the national outpatient waiting list of 683,553.¹⁰

The list has grown substantially and the growth is accelerating. In January 2022, the first full year for which comparable data was published, 18,936 adults were waiting; by July 2026 the figure was 29,169, an increase of 54%. Comparing the same month in successive years, the list rose 5.7% between July 2024 and July 2025 and 13.5% between July 2025 and July 2026. The paediatric outpatient list has moved in the opposite direction, falling from around 2,000 through 2022 to 1,471 in July 2026.¹⁰ In January 2022, 7,597 adults, 40.1% of the respiratory list, had been waiting more than twelve months for a first outpatient appointment. That proportion fell steadily to 24.6% by December 2022, 19.0% by December 2023 and a low of 18.3% in December 2024, when 4,373 people were affected. It has risen since. In July 2026, 6,034 adults had been waiting more than twelve months, 20.7% of the list, and 2,685 of those had been waiting more than eighteen months.

Two comparisons put this in context. The proportion waiting more than twelve months across all specialties nationally was 17.8% in July 2026, so patients referred to respiratory medicine wait longer than the national average. Cardiology, a list of broadly similar size, had 10.9% waiting more than a year in December 2025 against 20.6% in respiratory medicine: a patient referred to cardiology is about half as likely to wait a year as one referred to respiratory medicine. Among children on the paediatric respiratory outpatient list, 206 had been waiting more than twelve months in July 2026.¹⁰ Paediatric respiratory outpatient waiting shows the clearest sustained improvement. In January 2022, 1,044 children, 55.8% of the paediatric respiratory list, had been waiting more than twelve months for a first appointment. By July 2026 that had fallen to 206 children, 14.0% of the list, a reduction of 80% in the number affected.

improvement was continuous rather than episodic, holding through every year of the period, and the list itself fell from 1,870 to 1,471 over the same time.¹⁰ The reason for this improvement could not be identified in published data and research at this time.

Figure 1.3. Adults waiting for a first outpatient appointment in respiratory medicine, by time waiting, January 2022 to July 2026



Source: National Treatment Purchase Fund, national outpatient waiting list open data. Notes: (i) Figures relate to adults on the respiratory medicine outpatient waiting list at each monthly archive date. Where a monthly archive contains more than one record for a specialty, the records have been summed. (ii) Waiting lists count referrals rather than individuals, and a person may appear on more than one specialty list. (iii) A substantial amount of respiratory care is delivered under general medicine rather than respiratory medicine, so these figures understate the number of people waiting for respiratory assessment.

In July 2026 there were 1,081 adults on the respiratory medicine inpatient and day-case list and 1,567 children under paediatric respiratory medicine.¹¹

The proportion of adults waiting more than twelve months fell from 18.8% in January 2022 to 3.9% by December that year, then rose steadily through 2023 and 2024 to a peak of 32.4% in September 2024, when 278 adults had been waiting more than a year. It fell back through 2025 and 2026 to 1.9% in July 2026, with 20 people affected. Those waiting more than eighteen months fell from 172 in December 2024 to four. The list itself has grown over the period, from 547 in January 2022 to 1,081, so more people are waiting for respiratory procedures than four years ago but very few of them are waiting long.¹¹

In January 2022, 475 children, 36.9% of the paediatric respiratory list, had been waiting more than twelve months, and that proportion deteriorated through 2023 to 49.0% by December, when almost half of the children waiting for a respiratory procedure had been waiting over a year. During 2024 it improved dramatically, falling to 19.0% by December with 214 children affected. That gain has since been partly reversed: by July 2026 the proportion had risen to 27.6% and the number to 433, against a figure of 18.1% across all specialties nationally. The paediatric list has also grown, from 1,288 in January 2022 to 1,567.¹¹ Set beside the outpatient figures, this identifies a specific gap. Paediatric respiratory outpatient waiting improved by 80% over the same period, while the number of children waiting more than a year for a respiratory procedure fell by only 9%, from 475 to 433, and has been rising since the end of 2024.^{10,11}

Figure 1.4. Patients waiting for a respiratory procedure or admission, by time waiting, January 2022 to July 2026

Source: National Treatment Purchase Fund, national inpatient, day-case and planned procedure waiting list open data. Notes: (i) Figures relate to the respiratory medicine and paediatric respiratory medicine inpatient and day-case waiting lists at each monthly archive date. (ii) 2022 is the first full year for which comparable data are published. (iii) The two panels share a common vertical scale.

Hospitalisations

In 2025 there were 1,997,823 discharges from acute public hospitals among residents of Ireland, comprising 1,283,118 day-case patients and 714,705 inpatients. Inpatient discharges used 4,205,340 bed days. Within the public hospitals themselves, private discharges accounted for 10.5% of activity in 2024, down from 12.9% in 2020.¹²

Respiratory disease accounted for 101,958 of those discharges, 5.1% of the total, and for 559,054 bed days, 13.3% of all inpatient bed days. By comparison, diseases of the circulatory system accounted for 4.2% of discharges and 12.4% of bed days, and neoplasms for 8.2% of discharges and 8.3% of bed days. This is shown in Table 1.2 below. These figures count discharges by principal diagnosis only. Respiratory conditions recorded as secondary diagnoses, including the large number of patients admitted with another principal condition in whom chronic respiratory disease contributes to the admission or prolongs the stay, are not captured, so the totals understate the contribution of respiratory disease to acute hospital activity.

Within respiratory disease, the largest categories in 2025 were chronic obstructive pulmonary disease and bronchiectasis (18,519 discharges), acute upper respiratory infections and influenza (16,638), pneumonia (15,561), unspecified acute lower respiratory infection (14,104), asthma (9,925) and chronic diseases of tonsils and adenoids (4,161). Admissions for acute upper respiratory infection and influenza rose by 21.7% on 2024, reflecting a severe influenza season, while pneumonia fell by 14.1% and unspecified acute lower respiratory infection by 16.0%. Chronic obstructive pulmonary disease and bronchiectasis are reported together in this grouping (ICD-10 J40–J47) but can be separated in the Australian Refined Diagnosis Related Group data published in Activity in Acute Public Hospitals. On that basis chronic obstructive airways disease accounted for 14,486 inpatient discharges in 2025 and bronchiectasis for 572, so bronchiectasis represents a small fraction of the combined figure.¹³

The burden falls disproportionately on the youngest and the oldest. Respiratory disease accounted for 14.8% of all discharges among children aged under 15 years, falling to 2.3% at ages 25 to 34 before rising again to 6.1% at ages 75

to 84 and 10.0% among those aged 85 years and over. It accounted for 5.4% of discharges among males and 4.9% among females.¹²

Measured by inpatient admissions rather than by all discharges, the gap is wider still. There were 82,003 inpatient discharges with a principal diagnosis of a disease of the respiratory system in 2025, against 65,054 for diseases of the circulatory system and 36,408 for neoplasms. Respiratory disease accounted for 11.5% of all inpatient admissions, cardiovascular disease for 9.1%. Respiratory admissions are also longer. The mean length of stay for a respiratory discharge was 6.8 days in 2025 against 5.9 days for all causes. Respiratory inpatients used 38,497 more bed days than cardiovascular disease and 210,317 more than all neoplasms combined.¹²

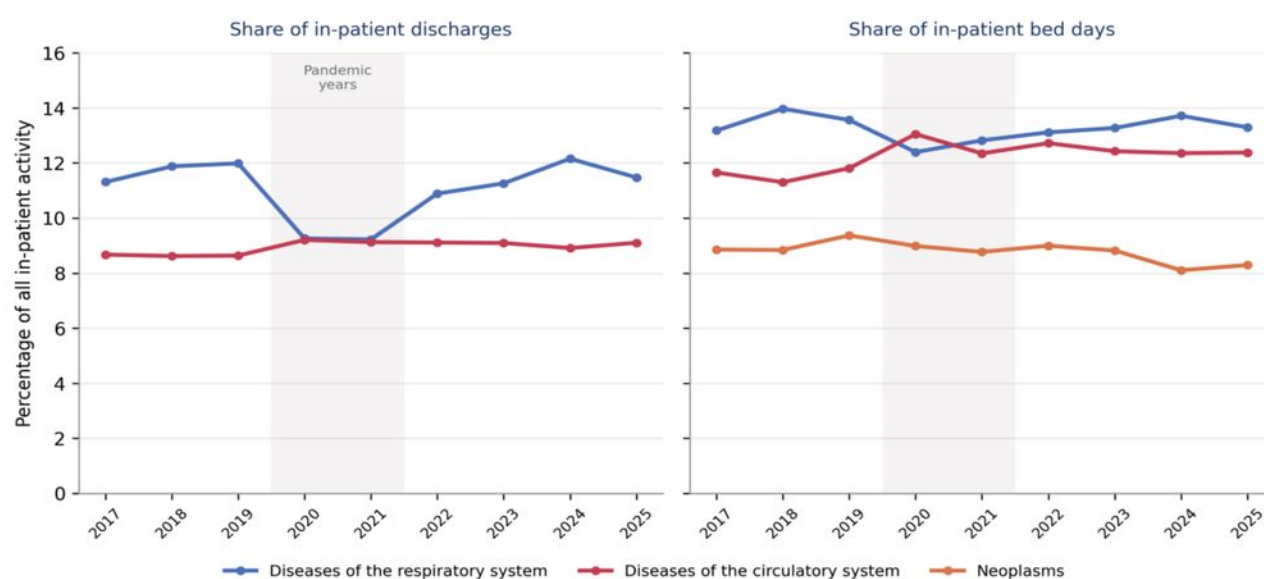
Table 1.2. Hospitalisations and Bed Days by Disease Group 2025

Disease group	Discharges	% of all discharges	Bed days	% of all bed days	Mean length of stay
All causes	1,997,823		4,205,340		5.9
Diseases of the respiratory system	101,958	5.1	559,054	13.3	6.8
Diseases of the circulatory system	84,882	4.2	520,557	12.4	8.0
Neoplasms	163,521	8.2	348,737	8.3	9.6
All other causes	1,647,462	82.5	2,776,992	66.0	5.2

Source: Department of Health, tables DHA90 and DHA91, derived from the Hospital Inpatient Enquiry system. Notes: (i) Discharges include both inpatients and day-cases; bed days relate to inpatients only. (ii) Figures relate to residents of Ireland and exclude non-residents. (iii) Mean length of stay is derived from bed days and inpatient discharges. (iv) Disease groups are mutually exclusive. Cancer of the trachea, bronchus and lung is classified within Neoplasms in this table, unlike Table 1.1, where it is counted as a respiratory cause of death; see the note on definitions.

Respiratory admissions separate to COVID-19 collapsed during the pandemic, falling from 12.0% of inpatient discharges in 2019 to 9.2% in 2021, before recovering to 12.2% in 2024. The share of bed days barely moved, remaining between 12.4 and 14.0% throughout. The fall in the respiratory share is in large part a product of how COVID-19 is classified. COVID-19 is coded to ICD-10 U07 and therefore falls outside diseases of the respiratory system (J00–J99), so admissions for COVID-19 appear in the residual group in Table 1.2 rather than as respiratory admissions. The apparent collapse reflects two things at once: public health measures did suppress influenza, respiratory syncytial virus and other respiratory infections, and the one respiratory infection (COVID-19) that was filling hospital beds was counted elsewhere.

Figure 1.5. Share of inpatient discharges and inpatient bed days by disease group, Ireland, 2017–2025

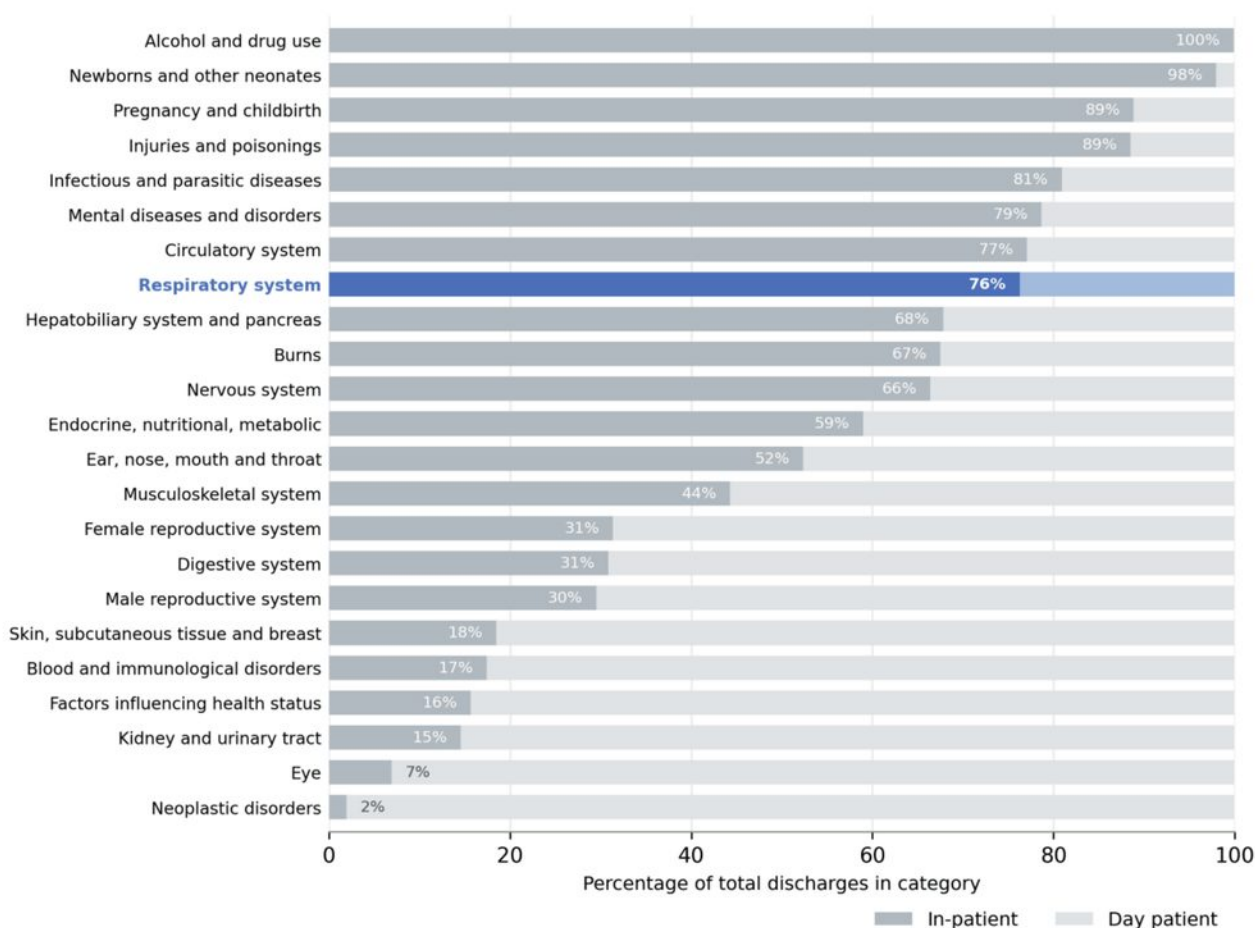


Source: Department of Health, tables DHA90 and DHA91. Notes: (i) Data for 2025 is provisional.

Case mix

The case mix analysis published by the Healthcare Pricing Office groups discharges into Major Diagnostic Categories, which are derived from diagnosis related groups rather than from the ICD classification used above. On that basis Diseases and Disorders of the Respiratory System (MDC 4) accounted for 105,180 discharges in 2025, comprising 24,946 day-case patients and 80,234 inpatients, or 11.2% of total inpatients. Diseases and Disorders of the Circulatory System (MDC 5) accounted for 117,207 discharges, of which 90,297 were inpatients, 12.6% of the total. On this basis circulatory disease ranks ahead of respiratory disease, the reverse of the order recorded on the ICD basis earlier in this chapter. The two classifications do not correspond exactly, and their figures should not be combined, but the case mix analysis is the only published source that describes respiratory activity at the level of individual conditions.¹³ Only 23.7% of respiratory discharges in 2025 were day-cases, against 76.3% admitted as inpatients. Several of the categories that record more total discharges consist almost entirely of day-case attendance and do not compete for hospital beds: neoplastic disorders records 309,789 discharges of which 303,720 are day patients attending for chemotherapy and related treatment, and diseases and disorders of the kidney and urinary tract records 268,345 of which 229,293 are day patients, largely dialysis.¹³

Figure 1.6. Total discharges by Major Diagnostic Category & Patient Type 2025



Source: Activity in Acute Public Hospitals in Ireland, Annual Report 2025, Healthcare Pricing Office, Health Service Executive, September 2026, Table 4.2 and Figure 4.3. Categories are ordered by inpatient share. Unassignable to MDC and Pre-MDC are omitted.

Table 1.3 sets out respiratory activity by condition as published in the *Activity in Acute Public Hospitals in Ireland, Annual Report 2025*, grouping the fifty diagnosis related groups within MDC 4 into clinical categories and ordering them by bed days used.¹³ Three groups dominate. Respiratory infections and inflammations alone accounted for 18,818 inpatient discharges and an estimated 185,808 bed days, almost a third of all respiratory bed days. The condition groups in this table are Australian Refined Diagnosis Related Groups rather than diagnostic categories.

Respiratory infections and inflammations cover pneumonia, empyema, lung abscess and related infective and inflammatory conditions of the lung and pleura. Chronic obstructive airways disease accounted for a further 14,486 inpatients and 99,469 bed days, and other respiratory system disorders for 15,195 inpatients and 85,639 bed days. Between them these three groups account for 64% of respiratory bed days. Other respiratory system disorders is a residual group covering respiratory conditions not assigned to one of the more specific groups.¹³

The table also shows how differently respiratory conditions consume hospital resources. Respiratory signs and symptoms generated 8,481 inpatient discharges but a mean stay of only 1.6 days, whereas non-invasive ventilation was recorded for 3,010 inpatients at a mean stay of 16.0 days and ventilator support for 275 at 17.5 days. Lung and heart-lung transplantation, at twelve procedures, had a mean stay of 86.4 days. Bronchoscopy, cystic fibrosis, respiratory neoplasms and interstitial lung disease are substantially day-case activities, while chronic obstructive airways disease, respiratory infections and major chest trauma are almost entirely inpatient.¹³

Table 1.3. Respiratory Hospitalisations & Bed Days by Condition Group 2025

Condition group	Day patients	Inpatients	Bed days (estimated)	% of respiratory bed days	Mean length of stay
Respiratory infections and inflammations	105	18,818	185,808	32.2	9.9
Chronic obstructive airways disease	716	14,486	99,469	17.2	6.9
Other respiratory system disorders	858	15,195	85,639	14.8	5.6
Non-invasive ventilation	0	3,010	48,097	8.3	16.0
Respiratory neoplasms	3,085	1,892	19,965	3.5	10.6
Bronchoscopy	7,261	1,437	18,114	3.1	12.6
Respiratory signs and symptoms	2,057	8,481	13,184	2.3	1.6
Pulmonary embolism	41	1,861	12,822	2.2	6.9
Major chest interventions	22	1,049	12,300	2.1	11.7
Major chest trauma	0	1,084	10,008	1.7	9.2
Bronchitis and asthma	5,743	4,030	9,969	1.7	2.5
Other respiratory system interventions	510	686	9,337	1.6	13.6
Interstitial lung disease	2,132	1,082	9,164	1.6	8.5
Pleural effusion	271	1,060	8,719	1.5	8.2
Pneumothorax	2	880	5,524	1.0	6.3
Whooping cough and acute bronchiolitis	30	2,060	4,926	0.9	2.4
Pulmonary oedema and respiratory failure	1	477	4,827	0.8	10.1
Ventilator support	0	275	4,812	0.8	17.5
Bronchiectasis	333	572	4,688	0.8	8.2
Cystic fibrosis	1,372	368	4,493	0.8	12.2
Sleep apnoea	177	1,296	2,175	0.4	1.7
Respiratory tuberculosis	225	99	1,849	0.3	18.7
Lung or heart-lung transplant	0	12	1,037	0.2	86.4
Respiratory problems arising in the neonatal period	5	24	223	0.0	9.3
Total	24,946	80,234	577,148	100.0	7.2

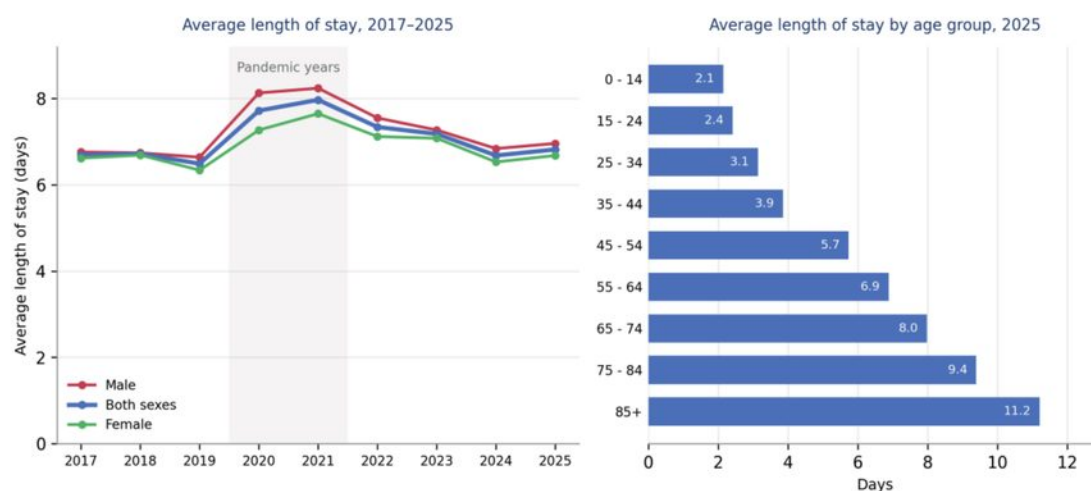
Source: Activity in Acute Public Hospitals in Ireland, Annual Report 2025, Healthcare Pricing Office, Health Service Executive, September 2026, Table 4.6. Notes: (i) The fifty AR-DRG version 10.0 groups within MDC 4 have been combined into clinical groupings by aggregating complexity levels. (ii) Bed days are estimated by applying the published mean inpatient length of stay to the published inpatient discharge count for each diagnosis related group; they are approximate. (iii) Components may not sum exactly to the totals shown because of rounding. (iv) These figures rest on the MDC 4 grouping and are not directly comparable with Table 1.2.

Length of stay

Length of stay is a direct measure of the demand respiratory disease places on hospital inpatient capacity. The average length of stay for a discharge with a principal diagnosis of a disease of the respiratory system was 6.82 days in 2025, against 6.49 days in 2019. The median was three days in both years.¹²

The series shows a clear pandemic effect. Average length of stay rose from 6.49 days in 2019 to 7.72 in 2020 and 7.97 in 2021, an increase of 23%, reflecting the severity of COVID-19 admissions, infection control requirements and constrained discharge pathways. It has since fallen back to 7.34 days in 2022, 7.18 in 2023 and 6.68 in 2024, before rising slightly to 6.82 in 2025. Respiratory length of stay has therefore returned to approximately its pre-pandemic level but has not fallen below it.¹² Men stayed longer than women in every year of the series, by an average of 0.28 days.¹²

Figure 1.7. Average length of stay for discharges with a principal diagnosis of diseases of the respiratory system (J00–J99), Ireland



Source: Department of Health, table DHA92, derived from the Hospital Inpatient Enquiry system. Notes: (i) Figures relate to county of residence and exclude non-residents. (ii) Data for 2025 are provisional.

Paediatrics

Respiratory disease is the dominant cause of hospital admission in childhood. In 2025 there were 15,383 inpatient discharges among children aged under 15 years with a principal diagnosis of a disease of the respiratory system, accounting for 21.1% of all paediatric inpatient admissions, together with a further 1,609 day-cases. These admissions used 33,114 bed days, 13.5% of all bed days used by children.¹²

Almost one in four paediatric inpatient admissions to an acute hospital bed in Ireland were for a respiratory condition in 2024 (23.7%), the highest in the series, against 21.1% in 2025. This is a substantially greater share than respiratory disease accounts for in the population, where it represented 11.5% of inpatient admissions in 2025.¹²

The pandemic years stand out sharply. Paediatric respiratory admissions fell from 16,324 in 2019 to 6,899 in 2020, a reduction of 58%, and the respiratory share of paediatric admissions fell from 21.1 to 12.2%. This was far steeper than the fall recorded at any other age and reflects the near disappearance of circulating respiratory infection among children under public health restrictions. Admissions recovered to 15,395 by 2022 and peaked at 18,446 in 2024.¹²

Children stay in hospital for much shorter periods than adults. The mean length of stay for a paediatric respiratory admission was 2.15 days in 2025, against 6.82 days across all ages, and it has fallen steadily from 2.53 days in 2023 and 2.26 in 2024 to the shortest figure in the series. Respiratory disease therefore accounts for a larger share of paediatric admissions (21.1%) than of paediatric bed days (13.5%) — the reverse of the pattern at older ages. Admission rates were similar for boys and girls, at 21.3 and 20.9% of inpatient admissions respectively in 2025.¹²

Table 1.4. Respiratory Hospitalisations among Children aged under 15 years, 2017–2025

Year	Inpatient discharges	% of all paediatric inpatients	Bed days	% of all paediatric bed days	Mean length of stay	Day cases
2017	15,174	19.4	35,866	13.0	2.36	1,075
2018	16,359	20.7	41,267	15.3	2.52	1,254
2019	16,324	21.1	40,491	16.0	2.48	1,338
2020	6,899	12.2	17,464	8.2	2.53	708
2021	9,633	15.2	23,940	10.5	2.49	822
2022	15,395	20.8	36,371	14.9	2.36	1,143
2023	16,206	22.5	40,954	16.5	2.53	1,612
2024	18,446	23.7	41,658	16.1	2.26	1,732
2025	15,383	21.1	33,114	13.5	2.15	1,609

Source: Department of Health, tables DHA90, DHA91 and DHA92, derived from the Hospital Inpatient Enquiry system. Notes: (i) Principal diagnosis of a disease of the respiratory system, ICD-10 J00–J99. (ii) Percentages are of all paediatric inpatient discharges and all paediatric inpatient bed days respectively. (iii) Bed days and mean length of stay relate to inpatients only.

Lung Transplant

Lung transplantation is the definitive treatment for a small number of people with end-stage respiratory disease, and the size of the national programme is a direct measure of the capacity available to them. Thirteen lung transplants were performed in Ireland in 2024, the lowest number in the period reported.¹⁴

Activity has not recovered from the pandemic. Thirty-eight lung transplants were performed in 2019. The programme fell to sixteen in 2020, and in the five years since it has not returned to pre-pandemic levels: twenty in 2021, eighteen in 2022, nineteen in 2023 and thirteen in 2024. That is 66% below the 2019 figure.¹⁴ Transplant activity as a whole has also not fully recovered, but the shortfall in lung transplantation is of a different order. All transplants performed in Ireland fell from 274 in 2019 to 241 in 2024, a reduction of 12%. Lung transplantation over the same period fell from 38 to 13, a reduction of 66%.¹⁴

Table 1.5. Transplants performed in Ireland by type, 2019–2024

Type of transplant	2019	2020	2021	2022	2023	2024
Lung	38	16	20	18	19	13
Heart	15	9	10	10	5	9
Liver	66	37	35	51	46	40
Kidney	153	123	139	163	189	175
Pancreas	2	5	2	8	6	4
All transplants	274	190	206	250	265	241

Source: Organ Donation Transplant Ireland, Annual Report 2024, Table 2 and Figures 11, 16, 20, 22 and 24. Notes: (i) Figures relate to transplants performed in Ireland in each calendar year. (ii) Kidney figures include living-donor transplants; the other organs are from deceased donors. (iii) UK paired kidney exchange and desensitised patients are excluded, consistent with ODTI reporting. (iv) ODTI reports from 2019 onwards, so earlier years are not shown

Emergency Inpatient Hospitalisations

Emergency admissions dominate acute hospital activity in Ireland, and respiratory disease is among their leading causes.

In 2025 there were 516,301 emergency inpatient discharges, accounting for 25.8% of all discharges and 71.9% of inpatients as counted by the Healthcare Pricing Office. These admissions used 3,290,421 bed days, or 78.2% of all inpatient bed days. Almost 65% of emergency inpatients were admitted through an Emergency Department, with a further 4.4% admitted as inpatients through a medical assessment unit. The mean length of stay was 6.4 days and the median 2 days.¹³

Four of the twenty most common principal diagnoses among emergency inpatients in 2025 were respiratory conditions. Other chronic obstructive pulmonary disease (J44) was the third most common of all principal diagnoses, accounting for 14,912 discharges or 2.9% of emergency inpatients. Unspecified acute lower respiratory infection (J22) ranked fourth with 13,109 discharges (2.5%), pneumonia, organism unspecified (J18) ranked fifth with 12,643 (2.5%), and influenza due to other identified influenza virus (J10) rose to eighth with 9,436 (1.8%), from fifteenth the previous year. Together these four diagnoses accounted for 50,100 emergency admissions, almost 10% of all emergency inpatient activity, and an estimated 366,000 bed days, or 11.1% of all emergency inpatient bed days. Abnormalities of breathing (R06), which is classified outside the respiratory category of ICD-10, accounted for a further 5,669 emergency admissions.¹³

Because only those diagnoses reaching the published top twenty can be counted, these figures understate the true respiratory share of emergency admissions.¹³

The same pattern is evident in the case mix analysis. Three of the ten most common diagnosis related groups among emergency inpatients fell within Major Diagnostic Category 4, Diseases and Disorders of the Respiratory System: Chronic Obstructive Airways Disease, Minor Complexity (10,403 discharges); Respiratory Infections and Inflammations, Minor Complexity (10,377); and Respiratory Infections and Inflammations, Major Complexity (7,880). Together these three groups accounted for 28,660 emergency inpatient discharges, or 5.6% of the total. A fourth respiratory group, Otitis Media and Upper Respiratory

Infections, Major Complexity, accounted for a further 8,562 discharges, although it is classified within the ear, nose and throat category rather than MDC 4.¹³

Respiratory intervention is equally prominent among procedures. Non-invasive ventilatory support was the third most reported principal procedure block for emergency inpatients in 2025, recorded for 7,710 discharges with a mean length of stay of 14.1 days. Ventilatory support was recorded for a further 3,521 discharges, with a mean length of stay of 23.2 days. In the 2016 data presented in the last edition of this report, non-invasive ventilation ranked seventh and ventilatory support ninth among emergency inpatient procedure blocks.¹³

Critical Care

Respiratory failure is among the commonest reasons for admission to intensive care in Ireland, alongside sepsis, malignancy, trauma, cardiac arrest and post-operative care. The Irish National ICU Audit documented 17,307 admissions of 16,394 patients to 29 intensive care and high dependency units across 25 adult public hospitals in 2024, with a crude mortality rate of 19%.¹⁵

The audit does not report admissions by diagnostic category, but the provision of advanced respiratory support gives a direct measure of respiratory demand on critical care. In 2024, 7,606 patients admitted to intensive care in Ireland required invasive mechanical ventilation, 44.0% of all admissions. The proportion of patients ventilated varied widely between units, from around a quarter in some general units to more than three-quarters in others, reflecting differences in case mix and severity.¹⁵

Respiratory infection continues to shape critical care demand. Influenza became a prominent feature in late 2024 and early 2025, with up to 22% of intensive care patients testing positive at one point, and patients with influenza occupied 6% of all critical care bed days between November 2024 and April 2025. Respiratory syncytial virus (RSV) accounted for a further 1% over the same period. COVID-19 has receded steadily as a source of critical care demand, accounting for 3% of bed days in 2024 against 5% in 2023, 12% in 2022 and 29% in 2021, and for 1.5% of admissions.¹⁵

The audit also records the specialty under which patients were being cared for when they had to be transferred from one intensive care unit to another. Of

473 such transfers in 2024, 39 were of patients under respiratory medicine (8.2%) and a further 15 under paediatric respiratory medicine (3.2%). Taken together, respiratory specialties accounted for 54 of these transfers, 11.4% of the total and the second largest share after general medicine.¹⁵

Capacity remains the binding constraint. An average of 315 critical care beds were open daily in adult public hospitals in 2024, equivalent to 5.8 beds per 100,000. By March 2026 this had improved and had risen to 332 beds, or 6.1 per 100,000. Bed occupancy averaged 94% nationally against a recommended level of 85%, with several units exceeding 100%. Nearly a third of discharges from intensive care to a ward were delayed by more than 24 hours — 4,042 of 13,695 discharges, or 29.5% — and 9.4% of all bed days were occupied by patients who had already been cleared for discharge.¹⁵

The consequences are visible in the severity of illness at the point of admission. The mean APACHE II score in Ireland was 15.6 against 14.6 in the United Kingdom, and the median predicted risk of death on admission was 7.7% against 5.0%. The audit concludes that patients have to be sicker before they are admitted to intensive care in Ireland, that critically ill patients who would be in intensive care in the United Kingdom are being cared for on ordinary wards, and that those patients would have a lower risk of death if admitted to intensive care earlier in their illness.¹⁵

Outcomes once patients reach intensive care are good. The national standardised mortality ratio for 2024 was 0.93, with 95% confidence limits of 0.90 to 0.97, meaning that fewer patients died than the risk-prediction model would have predicted given their severity of illness on admission. The pressure identified by the audit lies in access to critical care rather than in the care delivered within it.

Table 1.6. Selected critical care indicators, Ireland and the United Kingdom, 2024

Indicator	Ireland	United Kingdom
Patients receiving invasive ventilation (% of admissions)	44%	41.5%
Patient days on invasive ventilation (% of all patient days)	37.7%	37.5%
Mean APACHE II score on admission	15.6	14.6
Median predicted risk of death on admission	7.7%	5.0%
Mean length of stay in critical care (days)	5.5	5.1
Critical care beds per 100,000 population	5.8	7.0*

Source: Irish National ICU Audit, National Report on 2024 Data, National Office of Clinical Audit, May 2026. Notes: (i) Invasive ventilation is reported by the audit as advanced respiratory support. (ii) United Kingdom comparators are drawn from the Intensive Care National Audit and Research Centre Case Mix Programme as reported in the same source. (iii) Comparisons of critical care bed numbers between countries are affected by differing definitions of an intensive care bed*. (iv) Patient days receiving organ support are counted differently from bed days elsewhere in the audit: a part-day of support counts as a full day, whereas bed days are calculated from hours spent in the unit.

Sex

In 2024, the age-standardised death rate from respiratory disease was 196.8 per 100,000 population among males and 142.0 among females, a male excess of 39%. The pattern holds across the component causes: for diseases of the respiratory system the rates were 123.5 and 93.2, for cancer of the larynx, trachea, bronchus and lung 55.8 and 39.6, for pneumonia 27.1 and 20.8, and for COVID-19 17.5 and 9.2.^{1,2}

For comparison, for diseases of the circulatory system the male rate was 48% higher than the female rate and for all malignant neoplasms 35% higher, while mortality from selected smoking-related causes was 64% higher in males. Setting COVID-19 aside, within respiratory disease the gap is widest for lung and larynx cancer, at 41%, and narrowest for chronic lower respiratory disease, at 16%; the male excess for COVID-19 was wider still, at 90%.^{1,2}

Asthma is the exception. In 2024 the age-standardised death rate from asthma was 2.61 per 100,000 among females and 1.99 among males, and female mortality has exceeded male mortality in eight of the ten years since 2015. Asthma is the only respiratory cause of death in Ireland where women die at a higher rate than men.²

In hospital the picture is different again and depends on how it is measured. In 2025 there were 41,159 inpatient discharges with a principal respiratory diagnosis among males and 40,844 among females, so in absolute terms respiratory admissions were almost evenly divided. As a share of each sex's hospital activity, however, respiratory disease accounted for 13.5% of male inpatient admissions against 10.0% of female admissions, because women are admitted to hospital more often overall, principally in connection with pregnancy and childbirth. Respiratory disease accounted for 13.9% of male inpatient bed days and 12.7% of female bed days, and men stayed slightly longer, 6.96 days against 6.68.¹²

Community prescribing shows almost no difference between the sexes. In 2023, 21.5% of males and 21.9% of females active on the General Medical Services scheme received at least one inhaled bronchodilator, and 10.1% of males and 9.4% of females received other inhaled drugs for obstructive airway disease. The divergence between the sexes therefore appears not in who is treated for respiratory disease in the community but in mortality rates.⁶

Age

Age-standardised death rate from respiratory disease was 17.2 per 100,000 among people aged under 65 years and 780.7 among those aged 65 years and over, a difference of more than forty-fold. Age-standardised rates adjust for differences in the age structure of the population but not for co-morbidity. Because respiratory disease in older people commonly coexists with cardiovascular, renal and cognitive impairment, and because only one underlying cause is assigned to each death, these figures understate the contribution of respiratory disease to mortality in older age groups. Respiratory disease accounted for 12.3% of the all-cause death rate in the under-65s and 20.7% in the over-65s.^{1,2,3}

The composition of that burden differs sharply between the two groups. Among people aged under 65 years the largest single respiratory cause of death is cancer of the larynx, trachea, bronchus and lung, at 9.7 per 100,000, which exceeds the rate for all diseases of the respiratory system combined at 6.9. Among people aged 65 years and over the position reverses: diseases of the respiratory system account for 516.9 per 100,000 against 201.4 for lung and larynx cancer, with chronic lower respiratory disease at 232.5 and pneumonia at 113.2. In working-age adults the respiratory burden is largely malignant; in older people it is largely not.^{1,2}

Hospital activity follows a pronounced U-shaped distribution by age. In 2025 respiratory disease accounted for 21.1% of all inpatient admissions among children aged under 15 years, falling to a low of 2.8% among adults aged 25 to 34, then rising through 7.9% at 45 to 54, 14.4% at 65 to 74 and 16.4% at 75 to 84, to 18.8% among those aged 85 years and over. Only at the two extremes of life does respiratory disease approach one in five of all admissions.¹²

Bed days tell a different story from admissions, and it is the more important one for hospital capacity. People aged 65 years and over accounted for 53.4% of respiratory inpatient admissions in 2025 but 73.3% of respiratory bed days. Children aged under 15 years accounted for 18.8% of respiratory admissions but only 5.9% of respiratory bed days. The reason is length of stay, which rises from 2.15 days among children under 15 to 5.74 days at 45 to 54, 7.98 at 65 to 74, 9.39 at 75 to 84 and 11.21 days among those aged 85 years and over. Paediatric respiratory admissions are numerous and short. Respiratory care of children is discussed further above and in the chapter on paediatric respiratory disease.¹²

This has a direct consequence for planning. Because respiratory bed demand is concentrated in the oldest age groups, and because those groups are growing faster than the population as a whole, the bed days required by respiratory disease will rise more quickly than the number of respiratory admissions. Respiratory disease already accounts for 18.4% of all inpatient bed days used by people aged 85 years and over, and 16.6% of those used by people aged 75 to 84.¹²

International Benchmarking

Respiratory disease imposes a heavy burden worldwide. The Global Burden of Disease 2023 study ranks chronic obstructive pulmonary disease the third leading cause of death globally, lower respiratory infections the fourth and cancer of the trachea, bronchus and lung the seventh: three of the seven leading causes of death in the world are respiratory. Measured in disability-adjusted life years, which combine years of life lost with years lived in poor health, lower respiratory infections rank fourth among all causes and chronic obstructive pulmonary disease seventh. COVID-19, which was the leading cause of death worldwide in 2021 and killed an estimated 18 million people between 2019 and 2023, had fallen to twentieth place by 2023. Lung cancer remains the most commonly diagnosed cancer and the leading cause of cancer death internationally, accounting for more than 1.8 million deaths a year.¹⁷

The risk factors driving that burden are the same ones that matter in Ireland. Of the leading risk factors for early death and poor health worldwide in 2023, particulate matter air pollution ranks second and smoking third, behind only high blood pressure. Health loss attributable to each fell by about a quarter between 2010 and 2023, and the study concludes that addressing the leading risk factors could halve the number of healthy years lost globally each year.¹⁶

Within Europe the position was set out in detail for the first time in a report published in 2025 by the World Health Organization Regional Office for Europe and the European Respiratory Society. It estimates that chronic respiratory diseases affect 81.7 million people across the 53 countries of the WHO European Region, cost the Region an estimated US\$21 billion a year in lost productivity, and are the sixth leading cause of death in the Region. Chronic obstructive pulmonary disease accounts for approximately 80% of deaths from chronic respiratory disease, and the number of people living with the condition is projected to rise by 23% globally between 2020 and 2050, with the steepest increases among women and in low- and middle-income countries.²⁰ The report identifies the same modifiable causes that arise throughout this chapter. Tobacco remains the principal avoidable cause of lung disease in the Region, where 25.3% of adults' smoke against a global average of 20.9%, and it draws attention to the growing use of e-cigarettes and heated tobacco products among young people. In Ireland, 17% of adults were current smokers in 2025, a level broadly unchanged since 2019 and short of the Tobacco Free Ireland target of below 5% by 2025. 8% of the population used e-cigarettes, rising to 18% among people aged 15 to 24 years, and 17% of current e-cigarette users had never smoked. More than 90% of people in the WHO European Region breathe air with levels of pollution above World Health Organization guideline values, which the report describes as by far the most important environmental cause of chronic respiratory disease. Occupational exposure accounts for approximately 17% of adult-onset asthma and 14% of chronic obstructive pulmonary disease, and extreme weather events increase the risk of asthma hospitalisation in Europe by a factor of 1.17.²⁰

Its conclusions about health systems bear directly on the argument of this report. The World Health Organisation and the European Respiratory Society find that chronic respiratory diseases across the Region are ineffectively prevented, substantially underdiagnosed and underreported, and poorly managed, and that their impact on health systems is significantly underestimated. Spirometry is frequently unavailable, diagnosis is often delayed or incorrect, and in some countries clinicians are not trained to identify chronic respiratory disease at an early stage. The report also observes that, unlike other major non-communicable diseases, chronic respiratory diseases lack robust international targets, which it identifies as an obstacle to national prioritisation and a brake on progress. Its central recommendation is that respiratory health be made a public health policy priority and that respiratory care be embedded within national strategies for non-communicable disease.²⁰

Against that background, Ireland compares poorly with comparable European countries. In 2022 the age-standardised death rate from diseases of the respiratory system in Ireland was 104.6 per 100,000 population, against an eight-country average of 84.0, a difference of 24.6%. That average includes Ireland itself; measured against the other seven countries alone the difference is 29.1%. Only Denmark, at 107.3, recorded a higher rate. Ireland's rate was almost double that of France, at 55.6, and of Sweden, at 55.8, and above Belgium (94.2), Portugal (90.0), Norway (88.2) and the Netherlands (76.0). This is shown in Table 1.7.

The significance of that gap lies in what surrounds it. Ireland's all-cause mortality rate was 914.1 per 100,000, marginally below the eight-country average of 921.3. Mortality from external causes of injury and poisoning was 27.9% below the average and mortality from COVID-19 4.6-4.7% below. Only three cause groups placed Ireland above the average: cancers by 7.4%, diseases of the circulatory system by 18.2%, and diseases of the respiratory system by 24.6%. Respiratory disease is therefore the cause group on which Ireland performs worst relative to its peers, and it does so in a country whose overall mortality is at the comparator average.¹

Table 1.7. Age-standardised death rates per 100,000 population by principal cause of death, Ireland and selected comparator countries, 2022

Cause	Ireland	Belgium	Denmark	France	Netherlands	Norway	Portugal	Sweden	Average	% diff
All causes	914.1	921.4	992.8	848.3	1,011.7	832.3	1,000.3	849.7	921.3	-0.8
Cancers	248.2	218.2	259.6	222.4	254.1	221.8	219.5	205.0	231.1	+7.4
Circulatory system diseases	266.5	221.6	210.8	171.6	225.7	210.9	237.9	258.7	225.5	+18.2
Respiratory system diseases	104.6	94.2	107.3	55.6	76.0	88.2	90.0	55.8	84.0	+24.6
COVID-19	44.4	52.6	27.6	50.3	49.4	57.7	58.3	32.1	46.6	-4.8
External causes of injury and poisoning	37.6	64.9	41.5	59.4	63.8	54.3	46.2	49.6	52.2	-27.9

Source: Health in Ireland: Key Trends 2025, Department of Health, Table 1.5, derived from Eurostat. Notes: (i) Rates are age standardised to the European Standard Population. (ii) Figures for all causes relate to 2021. (iii) The average is the unweighted mean of the eight countries shown, and therefore includes Ireland.

The last edition of this report recorded the same pattern in a different form: in 2014 Ireland's all-cause mortality was 6.4% below the EU-28 average while respiratory mortality was 38.2% above it. The comparator group has since changed from the EU-28 to a basket of eight countries, so the two figures are not points on a trend and the apparent narrowing should not be read as improvement. What has persisted across both comparisons, and across eight years, is the shape of the finding, Ireland performs at or better than average on mortality overall and materially worse than average on respiratory disease.^{1,3}

Hospital admission rates point the same way. On the ambulatory care sensitive measure used by the OECD, Ireland's age-standardised hospitalisation rate for chronic obstructive pulmonary disease was 219.2 per 100,000 population aged 15 and over in 2021, against an OECD average of 118.8, and was the fourth highest of the countries reporting. The corresponding asthma admission rate was 28.5 against an OECD average of 23.3. Admission for these conditions is regarded internationally as an indicator of the accessibility and effectiveness of primary and community care rather than of hospital performance.¹⁸

Critical care capacity is also below comparable levels. Ireland had an average of 5.8 adult critical care beds per 100,000 population open daily in 2024, against 7.0 in the United Kingdom. Patients admitted to intensive care in Ireland were more severely ill on arrival than their United Kingdom counterparts, with a mean APACHE II score of 15.6 against 14.6 and a median predicted risk of death of 7.7% against 5.0%, and a greater proportion required invasive mechanical ventilation, 44.0% against 41.5%.¹⁵

None of this can be attributed to under-spending on health in aggregate. Ireland spent US\$7,813 per person on health in 2024 in purchasing power parity terms, above Denmark, the United Kingdom, Belgium and France, and equivalent to 11.5% of modified gross national income. Ireland also performs well on one respiratory prevention measure: influenza vaccination uptake among people aged 65 and over reached 75.4% in 2021, against an OECD average of 52.4%. The disparity in respiratory outcomes therefore reflects how respiratory care is organised and delivered rather than the resources available to the health service as a whole.^{9,19}

Other indicators from Health at a Glance 2025 add to that picture. Ireland had 2.9 hospital beds per 1,000 population, less than the OECD average of 4.2, and 545 avoidable hospital admissions per 100,000 population (age-sex standardised), more than the OECD average of 473. Measured against gross domestic product, which overstates

national income in Ireland, health expenditure was equivalent to 6.9%, compared with 9.3% on average across the OECD.²²

Workforce

The capacity to respond to the burden described above rests on the size and distribution of the specialist workforce. The number of consultants employed in publicly funded services in Ireland has grown substantially, from 3,089 in 2018 to 4,620 in December 2024, and the number of consultants per 100,000 population from 63.8 to 86.3 over the same period. HSE National Doctors Training and Planning nonetheless records that the ratio remains below that of comparator countries.²³

Ireland's overall supply of doctors is close to the international average. The OECD records 3.8 practising doctors per 1,000 population in Ireland in 2023 against an OECD average of 3.9, placing Ireland 23rd of the 43 countries reported and ahead of the United Kingdom and Belgium (both 3.4), Finland (2.9) and Canada (2.7). The same holds for hospital staffing more broadly. Ireland's hospital workforce stood at 16.4 per 1,000 population in 2023 against an OECD average of 15.5, placing Ireland 14th of the 37 countries reported and above Czechia, Finland, Portugal, Spain and Italy. Respiratory medicine is among the larger specialties of medicine in Ireland. In December 2024 there were 146 Respiratory Consultants employed, equivalent to 132.2 whole-time equivalents. The specialty grew by 12% between 2023 and 2024, above the 9% recorded across all specialties as per Table 1.8.²³

Table 1.8. Consultant Workforce in the specialties of medicine, December 2024

Specialty	Headcount	WTE	% female	% aged 55+	% permanent
Geriatric medicine	203	188.1	49	30	79
Respiratory medicine	146	132.2	28	26	81
Cardiology	134	124.1	19	31	84
Gastroenterology	126	117.4	35	27	85
Endocrinology and diabetes	107	100.9	34	27	81
Nephrology	77	70.2	38	31	77
Neurology	74	66.6	43	22	88
Rheumatology	64	58.0	41	23	78
Infectious diseases	53	47.3	58	13	87
All consultants (all specialties)	4,620	4,235.1	45	31	86

Source: Medical Workforce Analysis Report 2024–2025, HSE National Doctors Training and Planning, Table 20. Notes: (i) Figures relate to consultants employed in publicly funded services as of December 2024 and exclude private practice. (ii) Dual-trained consultants occupying General Medicine posts are recorded against the specialty in which they hold specialist registration.

Two characteristics distinguish respiratory medicine within that group. It has the second lowest proportion of female consultants of any specialty of medicine, at 28% against 45% across all consultants, and one of the higher rates of non-permanent employment: 13% of respiratory consultants hold temporary contracts against 8% across all specialties, and 7% are registered on the general rather than the specialist division of the Medical Council register. Only three respiratory trainees have used the HSE Supernumerary National Flexible Training Scheme in the 22 years to 2024, and none since 2021. There were 287 consultants in paediatrics employed in publicly funded services in December 2024. Paediatric respiratory medicine is not separately identified in the Doctors Integrated Management E-System, and no figure for the number of consultants practising paediatric respiratory medicine in Ireland is published.

The workforce is also smaller than service planning requires. HSE National Doctors Training and Planning estimates current unmet demand for respiratory consultants at 35.4 whole-time equivalents, comprising 14.9 unfilled posts and 20.5 whole-time equivalents of unmet demand, against 142.1 whole-time equivalents in post — a shortfall of approximately one quarter. Projected demand growth of 2.5% per year would require 264.8 whole-time equivalents by 2038, an increase of 86% on the current workforce. Demand growth is attributed to rising demand for General Internal Medicine and to epidemiological drivers including chronic obstructive pulmonary disease, asthma, interstitial lung disease, lung cancer and sleep disorders. Table 1.8 sets out the projections for respiratory medicine alongside the other dual training specialties of medicine.

Table 1.9. Current and projected consultant workforce requirement, dual training specialties of medicine, whole-time equivalents, 2024–2038

Specialty	In post	Unfilled posts	Unmet demand	Required now	Growth to 2038	Required 2038
Geriatric medicine	187.8	24.4	22.8	234.9	131.3	366.2
Cardiology	164.0	9.0	38.0	211.0	27.7	238.7
Respiratory medicine	142.1	14.9	20.5	177.5	87.3	264.8
Gastroenterology and hepatology	129.7	3.8	20.8	154.2	82.5	236.7
Endocrinology and diabetes	110.9	14.8	7.8	133.4	72.8	206.2
Rheumatology	72.2	5.4	11.6	89.3	25.7	114.9
Nephrology	70.3	3.5	0.0	73.8	44.6	118.4
Infectious diseases	48.1	2.3	19.7	70.1	32.4	102.5
Clinical pharmacology and therapeutics	14.9	1.0	7.1	23.0	0.0	23.0
Total	940.1	79.0	148.2	1,167.2	504.2	1,671.5

Source: Dual Training Specialties of Medicine: Medical Workforce in Ireland 2024–2038, HSE National Doctors Training and Planning, 2024, Table 22. Notes: (i) Unfilled posts include five General Medicine posts allocated across specialties. (ii) Required now is the sum of the workforce in post, unfilled posts and unmet demand. (iii) Unmet demand for respiratory medicine is estimated by raising consultant numbers per capita in Model 3 hospital areas to 70% of the level in Model 4 hospital areas. (iv) The workforce in post recorded here differs from the whole-time equivalent figure given for December 2024 in Table 1.7 because the two National Doctors Training and Planning publications use different reference dates and counting bases.

The Unfilled Posts are geographically concentrated. All six respiratory consultant posts that had been unfilled for more than eighteen months were in Model 3 or Model 2 hospitals, with none in Model 4 hospitals. Respiratory consultant density ranges from 3.5 per 100,000 population in the best served area to 1.8 in the least well served, against a national average of 2.6. Meeting the projected requirement would mean Model 3 hospitals holding an average of 4.1 whole-time equivalent respiratory consultants each. The training pipeline has been expanded in response. There were 71 doctors in higher specialist training in respiratory medicine in the 2024/2025 training year, and the planned intake rises from 13 in 2023 to 20 by 2029. Training comprises two years of basic specialist training and five years of higher specialist training, so an increase in intake takes approximately seven years to reach the consultant workforce. Table 1.9 sets out the planned expansion.

Table 1.10. Higher Specialist Training in Respiratory Medicine - Actual and Planned, 2023–2030

Training year (July)	Annual intake	Total in higher specialist training
2023	13	64
2024	14	71
2025	15	72
2026	16	77
2027	18	81
2028	18	87
2029	20	92
2030	20	96

Source: Dual Training Specialties of Medicine: Medical Workforce in Ireland 2024–2038, HSE National Doctors Training and Planning, 2024, Tables 23 and 24. Note: figures for 2025 onwards are planned rather than actual.

Workforce constraints are visible in access to care. Respiratory medicine had the second largest outpatient waiting list of the specialties of medicine in 2023 and waits well above the average: 44% of those waiting had been waiting more than six months and 10% more than eighteen months, against 41% and 8% across all specialties of medicine. The position on inpatient and day-case waiting was more pronounced still, with 48% waiting more than six months and 13% more than eighteen months, against averages of 15% and 1% across all specialties. Table 1.10 sets out the comparison.

Table 1.11. Outpatient and inpatient or day-case waiting lists, specialties of medicine, 2023

Specialty	Outpatient	% >6m	% >18m	IP/day case	% >6m	% >18m
Cardiology	40,574	41	5	4,064	20	1
Respiratory medicine	23,722	44	10	903	48	13
Endocrinology and diabetes	20,625	54	23	62	42	6
Gastroenterology	16,932	32	2	408	17	1
General medicine	13,464	39	7	32	0	0
Rheumatology	12,077	37	7	218	76	30
Geriatric medicine	4,380	13	2	-	-	-
Nephrology	4,002	29	4	40	5	0
Infectious diseases	1,535	53	7	-	-	-
Total	137,311	41	8	29,869	15	1

Source: Dual Training Specialties of Medicine: Medical Workforce in Ireland 2024–2038, HSE National Doctors Training and Planning, 2024, Tables 15 and 17.

Notes: (i) Outpatient figures exclude paediatric patients. (ii) The inpatient and day-case total includes 24,142 patients awaiting endoscopy, which is reported separately from gastroenterology. (iii) More recent National Treatment Purchase Fund data for respiratory outpatient waiting are given earlier in this chapter.

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Asthma

02

Key Points

- 450,000 people in Ireland are estimated to have doctor-diagnosed asthma.
- **In 2023, asthma accounted for more than half of all chronic respiratory disease cases worldwide. Approximately 300 million people worldwide are living with asthma.**
- Between January 2022 and December 2023, asthma accounted for 86,048 (14%) of the 615,372 total diagnoses recorded in the HSE Chronic Disease Management Programme.
- An estimated 5–10% of people with asthma have severe or difficult-to-control asthma.
- Asthma can be a fatal disease. In 2023, 81 people in Ireland died from asthma. There were 25% more asthma deaths among women than men that year (45 compared with 36). This also represents a 35% increase from the 60 people who died in 2020.
- Asthma deaths are not inevitable. The UK's National Review of Asthma Deaths found that over two-thirds of asthma deaths involved potentially avoidable factors.
- Asthma policy requires a coordinated approach: ensuring that health, housing, energy, transport, environmental and tobacco policies recognise and respond to their combined impact on respiratory health.

2.1 Background

Asthma is the most common chronic respiratory disease in Ireland. It is a potentially fatal chronic disease of the lungs characterised by persistent inflammation of the airways.¹ The two key defining features of asthma are a history of variable respiratory symptoms such as wheezing, shortness of breath, chest tightness and/or coughing, and variable expiratory airflow limitation.

In people with asthma, the airways are hypersensitive to viral infections and airborne irritants, which can act as “triggers” and provoke symptom flare-ups. During a flare-up, the airway lining swells, sticky mucus is produced, the surrounding muscles tighten, and airflow becomes restricted - trapping air in the lungs. This makes breathing difficult and often results in the wheezing sound synonymous with asthma. Common asthma triggers include respiratory infections, cigarette smoke, exercise, air pollution (both natural and man-made), and allergens such as pollen, animal dander, and dust mites.

Although asthma cannot be cured, it can be effectively treated to control symptoms and minimise the risk of flare-ups (exacerbations). When well controlled, the patient can expect to experience few or no asthma symptoms. However, when uncontrolled or untreated, asthma can seriously disrupt daily life and, in some cases, be fatal.

An estimated 5–10% of all people with asthma have either severe or difficult-to-control asthma, with ongoing symptoms despite maximal medical therapy.¹ The term ‘severe refractory asthma’ is “*reserved for patients with asthma in whom alternative diagnoses have been excluded; comorbidities have been treated; trigger factors have been removed and compliance with treatment has been checked, but still have poor asthma control, or frequent severe attacks, despite the prescription of high-dose inhaled treatment, or can only maintain adequate control when taking systemic steroids*”.¹ Following the publication of Sláintecare in 2017, Ireland has made a significant move towards integrated chronic disease management in the community. Asthma is one of the chronic diseases included in HSE's Enhanced Community Care (ECC) model, alongside COPD, cardiovascular disease and diabetes.

Launched in 2020, HSE's Chronic Disease Management Programme (CDMP) has created a more structured approach to managing chronic conditions in general practice, with the respiratory pathway providing opportunities for earlier intervention and management outside the acute hospital system. Between January 2022 and December 2023, asthma accounted for 86,048 (14%) of the 615,372 diagnoses recorded in the Chronic Disease Management Programme.² A key issue raised by the HSE in their report is the need for improved access to diagnostics across the Chronic Disease Ambulatory Hubs. Asthma diagnosis should incorporate objective assessment of variable airflow limitations, but

access to spirometry and other lung-function testing remains variable. This is particularly relevant as asthma is a condition that can be both over- and under-diagnosed. The welcome expansion of community respiratory services provides an opportunity to address this, but requires sufficient respiratory physiology capacity, equipment, training and referral pathways.

Irish health policy has increasingly prioritised prevention and a more holistic approach to health & wellbeing, reflecting the principles of *Sláintecare* and its emphasis on preventing ill health and addressing the wider determinants of health. For asthma, this extends beyond clinical treatment to vaccination, tobacco and vaping control, housing, energy poverty and air quality. Respiratory infections can trigger asthma exacerbations, while exposure to tobacco smoke, vaping, damp, mould, cold homes and indoor and outdoor air pollution can worsen respiratory health. Policy developments such as the Warmth and Wellbeing Scheme pilot, which linked energy-efficiency improvements with the health needs of people living with chronic respiratory disease, demonstrate growing recognition of these connections. Together, these developments reflect a shift towards considering asthma within the broader context of a person's home, environment and socioeconomic circumstances, rather than solely as a condition managed through medication.

Air quality has also become an increasingly prominent health and environmental policy issue. At EU level, tighter ambient air quality standards are increasing pressure on Member States to reduce exposure to harmful pollutants. In Ireland, the Clean Air Strategy provides the overarching framework for improving air quality, while the Environmental Protection Agency (EPA) monitors air quality and communicates its potential health impacts through the Air Quality Index for Health (AQIH). This creates an increasingly explicit policy link between air pollution reduction and respiratory health. For people with asthma, reducing exposure to pollutants is an important component of prevention and effective disease management.

The challenge for asthma policy, therefore, increasingly lies in achieving cross-sectoral/department

coordination: ensuring that health, housing, energy, transport, environmental and tobacco policies are aligned and responsive to their collective impact on respiratory health.

2.2 Burden of Disease

A note on data: hospital figures from the Hospital Inpatient Enquiry (HIPE) count discharges (episodes of care) rather than individual patients. Mortality figures for 2016–2023 are CSO deaths occurring in each year, while 2024 figures are provisional deaths registered.

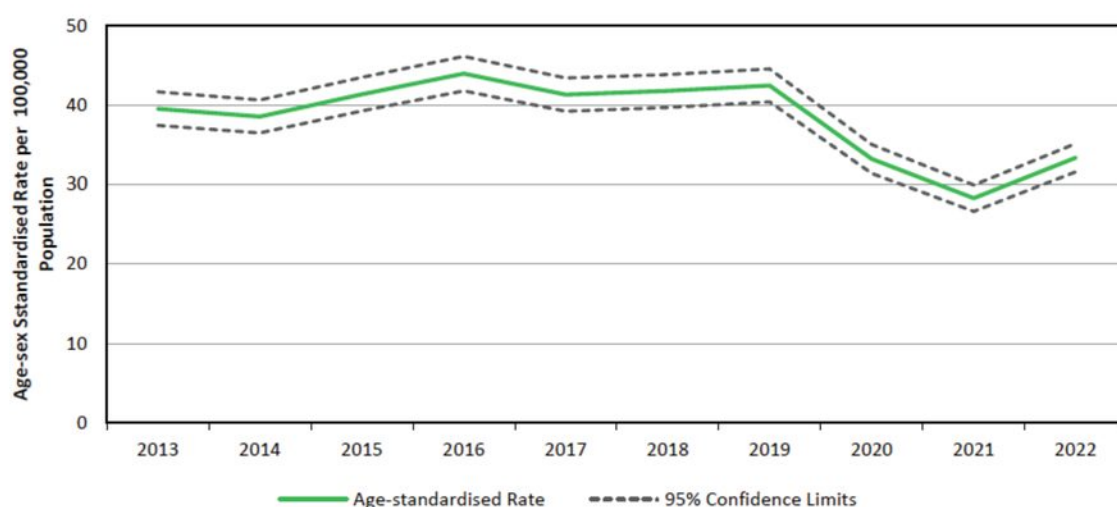
Incidence and Prevalence

Neither incidence nor prevalence data for asthma are available at a national level in Ireland. However, the HSE estimates that approximately 450,000 people in Ireland have doctor-diagnosed asthma.¹ In addition, lifetime prevalence estimates suggest that up to 890,000 people in Ireland either currently have asthma or have experienced the condition at some point in their lives.³

Poor asthma control leads to greater healthcare utilisation, avoidable emergency visits, and poorer long-term outcomes. Potential long-term effects of poorly controlled or uncontrolled asthma include reduced lung function, airway remodelling, increased risk of respiratory infections, gastro-oesophageal reflux disease, and obesity. It can also pose risks to cardiovascular and mental health. This is a costly cycle. In 2023, asthma had an estimated societal cost of €1.6 billion.⁴

In the absence of robust national epidemiological data, hospitalisation rates serve as a proxy indicator of disease burden. In 2022, the age- and sex-standardised hospitalisation rate for asthma was 33.4 per 100,000 population. This marked an increase compared with the rate reported in 2021 (28.29 per 100,000), although it remained notably below the pre-pandemic level observed in 2019 (42.49 per 100,000) as shown in Figure 2.1. During the three-year period from 2020 to 2022, the national age- and sex-standardised hospitalisation rate for asthma was 31.6 per 100,000 population.⁵

Figure 2.1. Age-sex standardised hospitalisation rates for asthma per 100,000 population in Ireland, 2013–2022



Source: National Healthcare Quality Reporting System Annual Report 2023

Mortality

Asthma can also be a fatal disease. In 2023, 81 people in Ireland died from asthma. There were 25% more asthma deaths among women than men that year (45 compared with 36).⁷ Provisional CSO data has 94 asthma deaths registered in 2024 and 81 registered in just the first three quarters of 2025 (Table 2.1).^{8,9}

These deaths from asthma are not inevitable. The UK's National Review of Asthma Deaths found that over two-thirds of asthma deaths involved potentially avoidable factors.¹⁰ While Ireland has not yet undertaken a comparable national review, Ireland's asthma mortality figures suggest that similar system-level issues may be contributing to preventable deaths. In 2022, Ireland recorded the second-highest asthma mortality rate among EU Member States.¹¹

Table 2.1. Asthma: ICD-10 J45–46. Deaths, crude mortality rate and five-year age-standardised mortality rate, 2016–2024

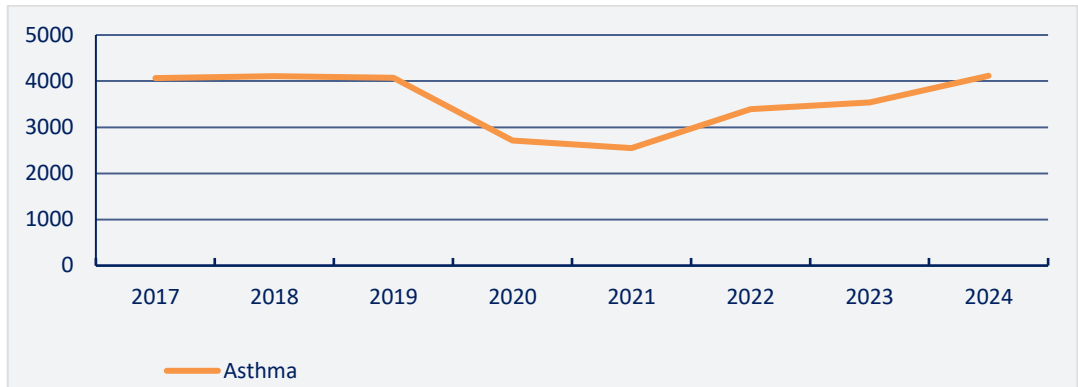
Year	Total J45–46	/100,000 population	Five-year period	Five-year Age-Standardised Mortality Rate
2016	64	1.35		
2017	59	1.23		
2018	80	1.64		
2019	69	1.39	2015–19	2.27
2020	60	1.19	2016–20	2.05
2021	65	1.28	2017–21	2.08
2022	88	1.70	2018–22	2.25
2023	81	1.53	2019–23	2.17
2024*	94	1.75	2020–24	2.18

Source: Health Statistics (PHIS) / CSO⁶. *Provisional deaths registered in 2024; 2016–2023 are deaths occurring. Five-year age-standardised mortality rates were not available for 2016–2018.

Hospitalisations

In 2024, asthma accounted for 9,521 hospitalisations in acute publicly funded hospitals (day-cases and inpatients). Of these, 4,116 (43.2%) were inpatient discharges, which occupied 12,183 bed days (0.29% of all inpatient bed-days, 2.12% of all respiratory inpatient bed days). Of asthma inpatient discharges in 2024, 4.8% were classified as major complexity (Figure 2.2).^{12,13}

Figure 2.2. Inpatient hospitalisations with a primary diagnosis of asthma, 2017–2024



Source: HIPE 2017–2024¹⁴.

Sex

During the five-year period from 2020 to 2024, asthma (ICD-10: J45–J46) resulted in 139 (35.82%) deaths among males and 249 (64.18%) deaths among females in Ireland. Similarly, during the 2019–2023 period, females represented 64.74% of asthma deaths. Five-year age-standardised mortality rates were also consistently higher among females, ranging from 2.27 to 2.55 deaths per 100,000 population, compared to 1.40 to 2.08 per 100,000 among males.

These findings indicate a persistent higher burden of asthma mortality in women in Ireland (Table 2.2).⁶ Provisional single-year data for 2024 show the female excess at every age: the age-standardised asthma mortality rate was 2.61 per 100,000 among females and 1.99 among males overall, 12.18 and 9.65 among people aged 65 and over, and 0.29 and 0.14 among those aged under 65.⁶

Asthma-related hospitalisations in Ireland were higher among females than males in each year from 2019 to 2024. In 2024, there were 4,116 inpatient discharges for asthma, with females accounting for 2,344 discharges (56.9%) and males for 1,772 discharges (43.1%).¹⁴

Table 2.2. Asthma (ICD-10 J45–J46) deaths and five-year age-standardised mortality rates by sex in Ireland, 2019–2024

Year	Total asthma deaths (Male) J45–46	Total asthma deaths (Female) J45–46	5 yrs - J45–J46	Five-year age-standardised mortality rate - Male	Five-year age-standardised mortality rate - Female	Five-year age-standardised mortality rate – Both sexes
2019	24	45	2015–19	1.58	2.52	2.27
2020	20	40	2016–20	1.4	2.42	2.05
2021	20	45	2017–21	1.63	2.41	2.08
2022	28	60	2018–22	1.81	2.55	2.25
2023	36	45	2019–23	2.08	2.27	2.17
2024*	35	59	2020–24	1.99	2.38	2.18

Source: Health Statistics (PHIS) / CSO⁶. *Provisional deaths registered in 2024; 2016–2023 are deaths occurring.

Age

Asthma mortality in Ireland was predominantly observed in older adults, with deaths occurring before the age of 65 accounting for a relatively small proportion of total asthma deaths between 2017 and 2024. The proportion of deaths among individuals aged 0–64 years ranged from 3.08% in 2021 to 17.39% in 2019. In 2024, provisional data indicated that 9 asthma deaths occurred in this age group, representing 9.57% of all asthma deaths (Table 2.3).

Years of Potential Life Lost (YPLL) varied over time, with the highest value observed in 2022 (304 YPLL; 6.93 per 100,000 population) and the lowest in 2021 (33 YPLL; 0.74 per 100,000 population). In 2024, asthma accounted for 169 YPLL, equivalent to 3.74 per 100,000 population

Table 2.3. Asthma (ICD 10: J45–46) Years of Potential Life lost (YPLL): 2017–2024

Year	Standardised Mortality Rate All ages	Total Deaths J45–46	Deaths J45–46 age 0–64yrs	YPLL 0 - 64 yrs J45–46	YPLL Crude rate per 100,000 J45–46	Lower 95% CI	Upper 95% CI
2017	1.87	59	10 (16.95%)	196	4.38	0.7	8.06
2018	2.5	80	13 (16.25%)	171	4.11	1.43	6.8
2019	2.22	69	12 (17.39%)	163	3.94	0.7	7.17
2020	1.83	60	6 (10%)	174	3.63	0.13	7.13
2021	2.03	65	2 (3.08%)	33	0.74	0	1.78
2022	2.41	88	14 (15.91%)	304	6.93	2.67	11.19
2023	2.2	81	10 (12.35%)	89	2.05	0.4	3.7
2024*	2.37	94	9 (9.57%)	169	3.74	0.55	6.92

Source: Health Statistics (PHIS) / CSO⁶. * Provisional deaths registered in 2024; 2016–2023 are deaths occurring.

In 2024, a total of 260,693 inpatient discharges were recorded among people aged 65 years and over in Ireland. Of these, 661 admissions (0.25%) were associated with asthma. Among the 2,432,266 inpatient bed days recorded for this age group, 3,345 (0.14%) were attributable to asthma-related admissions. Overall, of the 4,116 admissions and 12,183 inpatient bed days associated with asthma in 2024, 16.06% of admissions occurred among individuals aged 65 years and over, accounting for 27.6% of asthma inpatient bed days.¹⁴

Among individuals aged 15–64 years, asthma accounted for 0.53% of all inpatient hospitalisations and 0.36% of inpatient bed days. This age group represented the largest proportion of asthma admissions, accounting for 46.48% of all asthma-related hospitalisations and 44.91% of asthma inpatient bed days.¹⁴

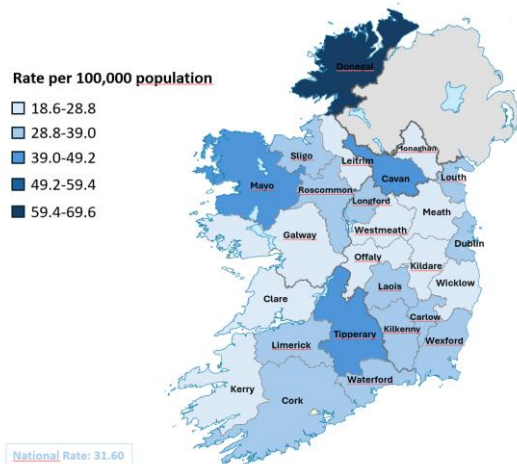
In children aged 0–14 years, asthma represented 1.97% of all inpatient hospitalisations and 1.26% of inpatient bed days in 2024, indicating a proportionally higher impact of asthma admissions in this age group compared with adults. Children accounted for 37.46% of all asthma admissions and 27.59% of asthma inpatient bed days.¹⁴

Regional Variation

During the 2020–2022 period, the national age-sex standardised asthma hospitalisation rate in Ireland was 31.6 hospitalisations per 100,000 population. Regional variation was observed across counties, with rates ranging from 18.6 per 100,000 population in Kerry to 69.6 per 100,000 population in Donegal, representing more than a three-fold difference. Although these findings should be interpreted with caution due to the small absolute number of hospitalisations in some counties, substantial variation between areas was observed (Figure 2.3).⁵

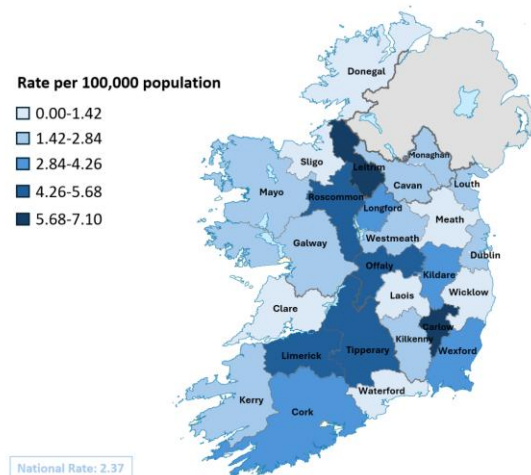
In 2024, the age-standardised asthma mortality rate by county of residence ranged from 0 deaths per 100,000 population in Clare, Laois, Sligo, and Wicklow to 7.09 deaths per 100,000 population in Leitrim. The national age-standardised mortality rate was 2.37 deaths per 100,000 population (Figure 2.4). Counties including Leitrim, Carlow, Offaly, Tipperary, Limerick, and Roscommon reported rates above the national average, while the lowest non-zero rates were in Waterford (0.98) and Meath (1.34).⁶ Because each county rate is based on a small number of deaths in a single year, these differences should be interpreted with caution. County variation reflects deaths among older people almost entirely: 21 of 26 counties recorded no asthma deaths among people aged under 65 in 2024.

Figure 2.3. Age-sex standardised hospitalisation rate for asthma per 100,000 population by county of residence, 2020–2022



Source: National Healthcare Quality Reporting System Annual Report 2023⁵.

Figure 2.4. Age-standardised mortality rate for asthma per 100,000 population by county of residence, 2024*



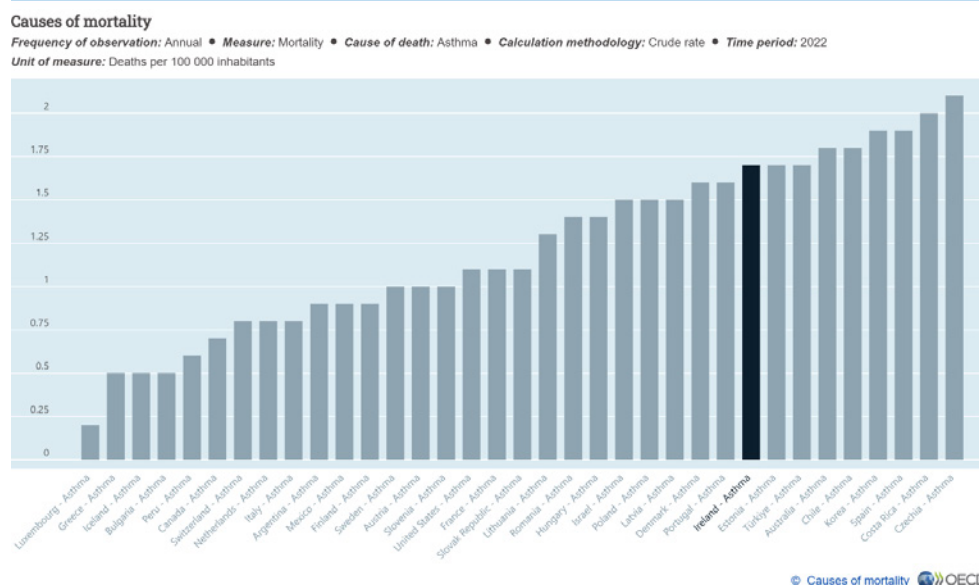
Source: Health Statistics (PHIS) / CSO⁶. (provisional data for 2024)

International Benchmarking

According to the Global Initiative for Asthma (GINA) 2026 summary guide¹⁵, approximately 300 million people worldwide are living with asthma, and the condition is becoming increasingly prevalent in many economically developing countries. In 2023, asthma represented more than half of all chronic respiratory disease cases globally. In terms of mortality, chronic respiratory diseases accounted for 4.2 million deaths globally, with COPD remaining the leading contributor, while asthma ranked second, accounting for 10.6% of chronic respiratory disease-related deaths.¹⁶

International comparisons of crude asthma mortality rates in 2022 also demonstrated considerable variation across OECD countries. Czechia reported the highest crude mortality rate at 2.1 deaths per 100,000 population, followed by Costa Rica (2.0), Korea and Spain (both 1.9), and Australia and Chile (both 1.8). Ireland reported a crude asthma mortality rate of 1.7 deaths per 100,000 population, similar to Estonia and Türkiye, and above rates observed in countries such as France (1.1), Canada (0.7), and Italy (0.8). The lowest crude mortality rates were reported in Luxembourg (0.2), Greece and Iceland (both 0.5), and Peru (0.6).²³

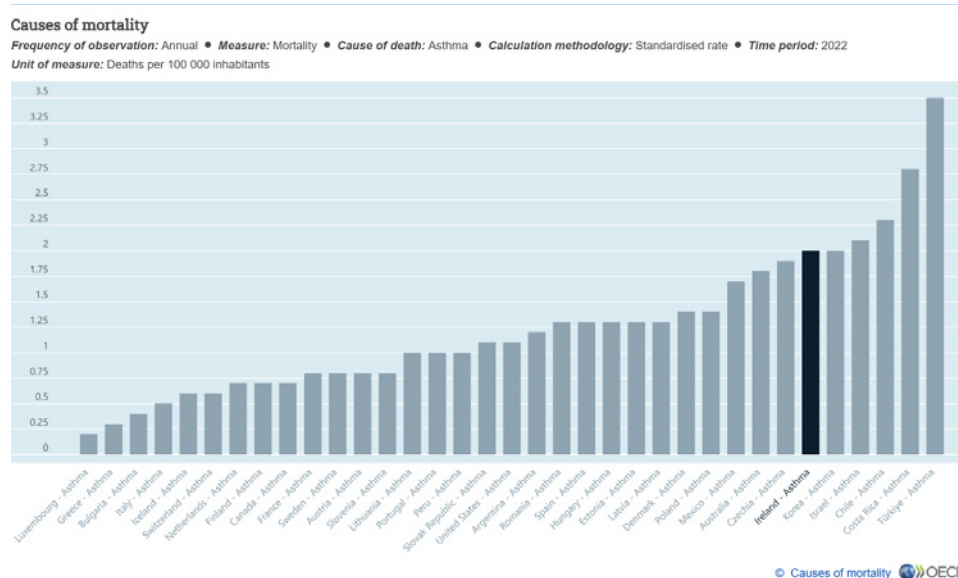
Figure 2.5. International comparison of Asthma crude mortality rates per 100,000 population, OECD countries, 2022



Source: OECD Health Statistics, 2022. Causes of mortality – Asthma (ICD-10: J45–J46)²³.

Age-standardised asthma mortality rates also varied substantially across OECD countries in 2022. Türkiye reported the highest mortality rate at 3.5 deaths per 100,000 population, followed by Costa Rica (2.8), Chile (2.3), and Israel (2.1). Ireland reported an age-standardised asthma mortality rate of 2.0 deaths per 100,000 population, similar to Korea and above the rates observed in many other OECD countries, including France (0.8), Canada (0.7), and Italy (0.5). The lowest mortality rates were reported in Luxembourg (0.2), Greece (0.3), and Bulgaria (0.4).²

Figure 2.6. International comparison of age-standardised Asthma mortality rates per 100,000 population, OECD countries, 2022



Source: OECD Health Statistics, 2022. Causes of mortality – Asthma (ICD-10: J45–J46), age-standardised rates²³.

According to the most recent OECD data available (2021 or nearest year), Ireland recorded 28.56 asthma-related hospitalisations per 100,000 population aged 15 and over, exceeding the OECD average of 23.3 per 100,000 population.⁵ OECD Health at a Glance 2025 also shows Ireland with the highest combined adult hospital admission rates for asthma and COPD among OECD countries, although rates have fallen since 2013 (see Chapter 4, Figure 4.9).²⁴

Even though asthma can be effectively controlled (i.e. where symptoms are minimal or absent with proper treatment), avoidable asthma hospital admissions in Ireland remain 23% higher than the EU average.²⁵

Survey data point to widespread poor control. In a 2024 Asthma Society of Ireland survey of 1,205 people with asthma or parents of children with asthma, using questions based on the Asthma Control Test, 51% had had an asthma attack in the previous 12 months and 24% in the previous month, 24% had used their reliever inhaler every day, 43% had needed oral steroid tablets at least twice in the previous 12 months, and 74% reported disrupted sleep due to symptoms.²⁶

Asthma Society of Ireland

The Asthma Society of Ireland is the national patient representative organisation for people with asthma, having supported people with asthma and their families for over 50 years as a non-profit organisation. Its work is grounded in the lived experience of people affected by asthma, with public awareness campaigns and patient engagement helping to identify and highlight the challenges that people face in managing the condition.

Recent patient research illustrates the extent to which asthma continues to affect children's health, daily lives and family wellbeing.²⁷ Survey findings published to mark World Asthma Day and the start of Asthma Awareness Week found that 61% of children were woken at night by symptoms such as coughing, wheezing or breathlessness, while over half had to limit or stop physical activity due to asthma and 41% missed at least one week of school in the past year. Night-time waking and reduced activity are important indicators of poor asthma control and demonstrate that, for many children, asthma continues to have a substantial impact despite the availability of effective treatments.

The effects also extend beyond the child. Nearly half of parents reported missing work to care for their child, while over 80% worried about their child having an

asthma attack. Healthcare utilisation remains significant, with more than one in three children with asthma reporting hospitalisation in the past year, including 14% who were hospitalised at least twice.

Importantly, the findings also highlight the role of affordability in access to asthma care. One in ten parents reported that their child had gone without asthma medication in the previous three months due to financial constraints. This demonstrates that the experience of living with asthma is shaped not only by the clinical management of the condition, but also by its impact on family finances, education, employment, physical activity and emotional wellbeing.

Taken together, these findings demonstrate the value of incorporating patient experience alongside clinical and health-system measures when assessing the state of asthma care in Ireland. Hospitalisations, prescribing and mortality provide important measures of disease burden, but patient-reported experience provides insight into whether asthma is actually well controlled and whether people can access and use the care they need.

Severe Asthma

In November 2024, the Asthma Society of Ireland published *Towards Optimal Severe Asthma Care*, examining the experiences of people living with severe asthma alongside the challenges facing the healthcare system.²⁸ The report drew on a patient survey, focus group discussions and a roundtable with healthcare professionals, providing a patient-informed perspective on the gaps in severe asthma care in Ireland.

For people living with severe asthma, the condition can have a profound and sustained impact on quality of life. Focus group participants described lengthy delays in receiving an accurate diagnosis, periods of inadequate treatment and inconsistent approaches to care. These experiences can compound the physical burden of severe asthma, leaving people uncertain about their condition and how best to manage it.

The experiences shared through the report point to a need for a more consistent and patient-centred approach to severe asthma care. Participants identified greater access to specialist care, improved affordability of medicines, better awareness and education, standardised care pathways and the establishment of a severe asthma registry as important measures for improving outcomes.

The findings demonstrate that understanding severe asthma requires more than measuring hospitalisations or treatment use. Patients' experiences of delayed

diagnosis, fragmented care, financial pressure and the impact of the condition on their lives provide important evidence of where the health system is falling short. Incorporating this lived experience into the design and evaluation of severe asthma services is therefore essential to developing care that is not only clinically effective, but responsive to the realities of living with severe disease.

2.3 Prevention, Diagnosis and Management

Asthma is influenced by a range of factors beyond clinical care, with the conditions in which people live, work, and grow shaping both the risk of developing asthma and the ability to manage it effectively. Socioeconomic circumstances, housing, environmental exposures, and behaviours can all influence respiratory health and asthma outcomes. This links asthma policy with wider policies on transport, urban planning, emissions, and climate.

Genetics

Asthma is a complex, polygenic condition influenced by many genes interacting with environmental triggers. There is no single gene for asthma; instead, inherited variations across multiple chromosomes affect immune system modulation, inflammation, and lung structure, making people with a family history more vulnerable. Asthma severity is also influenced by specific genes that modulate pulmonary function or a pharmacogenetic response to asthma therapy.

Research results in a recent online medical journal published by the European Respiratory Society (ERS) found that lifestyle and genetic factors jointly play critical roles in the development of asthma, and the effect values of lifestyle on incident adult-onset asthma were greater than that of genetic risk. Findings highlighted the necessity of a comprehensive intervention for the prevention of asthma despite the genetic risk.²⁹

Housing

Housing is particularly important. Damp, mould, inadequate ventilation, cold homes and indoor pollutants can exacerbate respiratory symptoms and contribute to poor asthma control. The World Health Organization estimates that 15% of new childhood asthma cases in Europe are attributable to indoor dampness and mould.³⁰ Irish evidence reflects this trend. A 2023 Healthy Homes Ireland report found that people living with mould were more likely to experience

respiratory illness, allergies, and asthma.³¹ Similarly, a 2024 study in Dublin's Oliver Bond House found asthma prevalence was up to 2.4 times higher than in the surrounding practice population, with residents reporting widespread problems relating to damp, mould, poor insulation, and inadequate ventilation.³²

For households experiencing energy poverty, there can be difficult trade-offs between keeping a home adequately warm and managing energy costs. As Ireland transitions towards more energy-efficient and low-carbon housing, ensuring that retrofit, and housing policies also consider respiratory health will be important. The benefits of this approach have already been demonstrated through the Warmth and Wellbeing Scheme pilot, a joint initiative between the Departments of Health and Climate, the HSE and Sustainable Energy Authority of Ireland (SEAI). An independent evaluation found that participants experienced improved respiratory health, fewer symptoms affecting daily life, reduced GP and hospital visits, and lower antibiotic use following energy efficiency upgrades.³³ However, the Warmer Homes Scheme, introduced after the pilot, does not include respiratory conditions among its eligibility criteria.²⁶

Air Quality

Ambient (outdoor) air quality is another important determinant. Exposure to traffic-related air pollution (NO₂), particulate matter and other pollutants can contribute to respiratory symptoms and exacerbate asthma.³⁴ Research shows that traffic-related air pollution during pregnancy and early childhood is associated with an increased risk of asthma development among children and adolescents.³⁵

This issue is being recognised through policies and initiatives such as An Taisce's Green-Schools Travel programme which provides schools and communities with information and tools necessary to reduce exposure to emissions of pollutants through initiatives such as No Car Idling outside Schools.³⁶

Ireland's reliance on solid fuels is a particular concern, with residential solid fuel burning accounting for a large proportion of fine particulate matter pollution levels in our air.³⁴ Ireland has a comparatively high reliance on solid fuels for residential heating despite national commitments to decarbonisation and improvements in energy efficiency. Eurostat data shows that solid fuels account for 3.1% of final residential energy consumption, considerably above the EU average of 1.9%, ranking Ireland third highest in the EU-27 Countries after Poland and Czechia.³⁴ When space heating alone is considered, reliance is even more

pronounced, with solid fuels accounting for 12.8% of heating energy consumption, the second highest share in the EU-27. Conversely, Ireland has the lowest share of renewable and biofuel energy use in the residential sector (4.6%), highlighting the scale of the transition still required to cleaner heating sources.

Climate Change

The World Health Organization (WHO) has warned that climate change is the biggest global threat to humanity in the 21st century.³⁷ Climate change occurrences present clear and major threats to respiratory patients. In a position statement published in 2023, the European Respiratory Society (ERS) outlines how climate change represents a major threat to respiratory patients, "through many different direct and indirect pathways, including the increase in temperature and related increase in ozone exposure, prolonged aeroallergen seasons and introduction of aeroallergens to new areas, and increased frequency of extreme weather events such as heatwaves, droughts, wildfires, wind and dust storms, heavy rainfall and flooding.³⁸ Indirect effects include stress on society due to migration, conflicts, and economic burdens with adverse consequences for healthcare systems, ecosystems, and education".

During the past decades, shifts have been observed in pollen and other aeroallergen onset, duration, and intensity, in Europe and elsewhere.³⁹ This is key considering 80% of people with asthma also have allergic rhinitis. Current evidence suggests that climate change might have been partly responsible for these changing temporal and spatial patterns in the pollen season and in pollen composition, which are expected to alter further in the coming decades, as well as the introduction of new aeroallergens to new areas, along with warming climate and related changes in biodiversity.^{40,41} These changes will be challenges for both patients (longer/changed pollen seasons, new allergens) and caregivers (new patient groups, diagnostics for new allergens, etc.).

Additionally, climate change will likely increase the frequency of thunderstorms, which have been associated with increasing allergic asthma outbreaks mediated through allergen exposure, notably pollens and wet-air fungal spore.

Behavioural and Social Factors

Behavioural and social factors also matter. Smoking and exposure to second-hand smoke are established risks for respiratory ill-health, while the longer-term respiratory effects of vaping remain an evolving area of evidence. Tobacco consumption is the single largest

avoidable health risk, and the most significant cause of premature death in the EU, responsible for nearly 700,000 deaths every year. Around 50% of smokers die prematurely (on average 14 years earlier).⁴²

Cigarette smoke is a common trigger for asthma and is associated with more severe asthma symptoms, an accelerated decline in lung function, and can even cause asthma.⁴³ Modern methods of consuming nicotine can also pose threats to respiratory health. 8% of the population currently uses e-cigarettes, double the figure recorded in 2021.⁴⁴ Young people are most affected, with 20% of men and 15% of women aged 15-24 using e-cigarettes. Research shows that sustained e-cigarette use is associated with the development of chronic lung diseases such as asthma and COPD.⁴⁵

BMI, dietary patterns, and physical activity are lifestyle factors which are closely linked to asthma incidence and control. Obesity was not only linked to asthma incidence through altering immune inflammatory responses in diverse ways but was also associated with a decrease in response to asthmatic medications, especially inhaled corticosteroids.^{46,47}

Research shows that, for obese individuals with asthma, decreasing fat mass and increasing muscle mass can result in a reduction of airway responsiveness, reduced risk of asthma exacerbations and improved pulmonary function.^{48,49} Meanwhile, physical exercise modulated pulmonary allergic inflammation by increasing anti-inflammatory cytokines and decreasing proinflammatory mediators, thus playing a protective role in asthma.^{50,51} Moreover, different dietary patterns have been reported to affect asthma incidence, possibly through production of unique intestinal microbiota or through food ingredients characterised by antioxidant, anti-allergic and anti-inflammatory properties.^{52,53} For example, research has found that consumption of a high fat diet and small amounts of fruit and vegetables was associated with worse asthma outcomes, while a high intake of fish, fruit and vegetables decreased asthma risk.⁵⁴

Occupation can also be relevant, with exposure to dusts, chemicals, fumes and other irritants contributing to occupational asthma or worsening existing disease. Occupational asthma develops from workplace exposure to substances like dust or chemicals, sometimes taking weeks or years to appear. It differs from work-aggravated asthma, where existing asthma worsens due to work conditions.⁵⁵

These determinants do not operate independently. People experiencing socioeconomic disadvantage may be more likely to live in poorer-quality housing,

experience energy poverty or have greater exposure to environmental pollutants, while also facing greater barriers to accessing healthcare. Understanding these intersecting factors is therefore important when considering inequalities in asthma outcomes. A comprehensive approach to asthma requires action not only within the health service, but across housing, environment, energy, transport, employment and social policy.

Vaccination

According to the GINA guidelines, 'primary prevention' refers to preventing the onset of the disease.⁵⁶ GINA 2026 gives new emphasis to vaccination. Respiratory viruses are the most common cause of asthma exacerbations in children and adults, and GINA advises that people with asthma be vaccinated against influenza, COVID-19, respiratory syncytial virus (RSV), pneumococcus and pertussis in line with local immunisation schedules. Maternal RSV immunisation and nirsevimab for infants reduce severe RSV infection and hospitalisation in infancy, which could potentially help reduce the incidence of childhood-onset asthma.⁵⁶ In Ireland, HSE data for September to December 2024 show that 24 RSV hospitalisations among infants, compared with 413 in the same period in 2023. The National Immunisation Advisory Committee also recommends RSV immunisation for adults aged 60 and over, but vaccines for older adults are currently available in Ireland only on private prescription.²⁶

Gene-Environment Interactions

The development and persistence of asthma are driven by gene–environment interactions. There is assumed to be a 'window of opportunity' in utero and in early life to prevent asthma in children, but intervention studies are limited. Factors associated with increased or decreased risk of asthma in children can inform advice about asthma prevention. Evidence for allergen avoidance strategies aimed at preventing asthma in children suggest:

- Strategies directed at a single allergen have not been effective in reducing the incidence of asthma
- Multifaceted strategies may be effective, but the essential components have not been identified

Current recommendations for preventing asthma in children, based on high-quality evidence or consensus are:

- To avoid exposure to environmental tobacco smoke during pregnancy and the first year of life
- To encourage vaginal delivery where possible
- To avoid use of broad spectrum antibiotics during the first year of life, where possible.

Access

Primary care

For most people with asthma, general practice is the first and most important point of contact. GPs and practice nurses play a central role in diagnosing asthma, initiating and reviewing treatment, monitoring control, providing asthma action plans, managing exacerbations and identifying patients who require onward referral. The 2020 Irish College of General Practitioners (ICGP) Asthma – Diagnosis, Assessment and Management in General Practice Quick Reference Guide was developed specifically to support more consistent, evidence-based asthma care in primary care, including diagnosis, assessment, treatment and monitoring.⁶⁰

The HSE's chronic disease model has further strengthened the role of primary care in the ongoing management of asthma, including through structured reviews, vaccination, risk-factor management and referral to specialist services where asthma is difficult to control.¹

Community and specialist care

For people whose asthma is difficult to control, the pathway should extend beyond routine general practice. The HSE model envisages community specialist respiratory services and integrated care, including respiratory clinical nurse specialists, physiotherapy, community diagnostics, structured patient education and closer links between GPs and hospital-based specialist teams.

The development of community-based care hubs is an important step in this direction. People whose asthma becomes difficult to control can be referred by their GP to a care hub, providing an additional level of specialist support without necessarily requiring hospital-based care.⁶¹ Twenty-six of a planned thirty Ambulatory Care Hubs are now established according to the HSE. Each fully operational hub has a Chronic Disease Community Specialist Team whose respiratory stream covers both asthma and COPD, including respiratory consultants, clinical nurse specialists, advanced nurse practitioners, physiotherapists and physiologists, with each team serving a population of approximately 150,000. Hub

services are available to all patients, regardless of medical card or GP visit card status.⁶² Separately, the HSE National Virtual Care Programme allows patients who need hospital-level care to receive monitoring and treatment at home. Following pilot virtual wards at St Vincent's University Hospital and University Hospital Limerick in June 2024, the HSE reports a virtual ward site in each of the six health regions; by April 2026, virtual wards had supported 3,000 patients and freed more than 25,000 hospital bed days.⁶³ This represents a broader shift in respiratory care towards bringing specialist expertise closer to patients and managing chronic disease proactively in the community.

Severe asthma and specialist services

A smaller proportion of people with asthma develop severe asthma, requiring a significantly more specialised pathway. These patients may require assessment in specialist severe asthma clinics, multidisciplinary care, specialist nursing input and, where appropriate, advanced treatments including biologic therapies. The HSE model places monoclonal antibody (biologic) clinics within consultant-led acute specialist ambulatory care (Level 3), and provides for referral of patients who meet defined criteria, such as a life-threatening attack or a requirement for maintenance oral steroids, to a tertiary severe asthma centre (Level 4).¹ Adult severe asthma care is currently provided through clinics at hospitals including Cork University Hospital, Galway University Hospitals, University Hospital Limerick, Letterkenny University Hospital, St Vincent's University Hospital, Beaumont Hospital, Tallaght University Hospital, the Mater Misericordiae University Hospital and St James's Hospital.²⁸ Each adult severe asthma clinic is resourced with a clinical nurse specialist, and the Asthma Society has called for every clinic to also have at least one Advanced Nurse Practitioner in post.²⁶

For people with severe asthma, access is therefore not simply about having an asthma service available; it is about timely access to the right level of specialist expertise. Delays in diagnosis, referral or access to specialist assessment can prolong poor disease control and expose patients to avoidable exacerbations, oral corticosteroid use and hospitalisation.²⁸

This makes the interface between primary, community and specialist services particularly important. Effective care requires clear referral pathways and communication between services, alongside sufficient specialist capacity to meet demand. The experience of people with severe asthma also highlights the importance of ensuring that specialist care is not viewed solely through the lens of acute treatment, but includes

ongoing management, education and support to improve quality of life.

Supporting people outside formal healthcare settings

Access to asthma care extends beyond contact with the health service. People with asthma manage their condition every day, often outside a clinical setting, and therefore require reliable information, education and support to make decisions about their treatment and recognise when their asthma is deteriorating.

The Asthma Society of Ireland provides an important complementary source of support through its free Asthma Adviceline, staffed by asthma nurses, as well as its nurse-led WhatsApp service, educational resources and asthma management tools.⁶⁴ The service provides evidence-based information and support on issues including asthma management, medication, inhaler technique, childhood asthma, asthma attacks, exercise, pregnancy and what to do following a GP or consultant appointment.

The Adviceline does not replace clinical care or provide diagnosis or treatment; rather, it helps people understand and navigate their asthma care and supports them between interactions with healthcare professionals. Healthcare professionals can also refer patients to the service.

Diagnosis

For children and young people, early diagnosis matters: treatment cannot cure asthma, but starting inhaled corticosteroids early, together with changes to the child's environment, may reduce asthma severity and prevent exacerbations.⁵⁷ Early diagnosis is essential in adult-onset asthma attributed to occupational exposure, as persistent exposure is associated with worse outcomes.^{58,59}

In relation to severe asthma, recent research from the Asthma Society looking at the experience of severe asthma in Ireland found that delayed diagnosis was a key issue experienced by a majority of patients, with many waiting several years for an official diagnosis. This delay often resulted in prolonged suffering and inadequate treatment, as patients were misdiagnosed, or their symptoms were attributed to other causes such as anxiety or incorrect inhaler use. Delayed diagnosis not only exacerbates the condition but also leads to frustration and a sense of helplessness among patients.²⁸ An accurate diagnosis is necessary to properly manage asthma and improve quality of care. Up to 30% of patients in primary care diagnosed with asthma have not been objectively proven to have

asthma.¹ GINA estimates that 25–35% of people diagnosed with asthma in primary care may not actually have asthma.¹⁵ Objective measurement of diagnostic criteria is key to improving diagnostic accuracy.

Over diagnosis is increasingly recognised as a problem in a range of diseases, including asthma. Asthma has traditionally been diagnosed on the basis of history and response to a trial of treatment; however, asthma presents with respiratory symptoms that are common to a wide range of disease processes and are not specific to asthma. In addition, the physical examination is usually normal, unless a patient is exacerbating at the time of the examination. As asthma is so common, the majority of diagnoses are made in primary care, where access to objective testing in asthma is limited.⁶⁵ Even if objective tests are available, there is no gold standard test for asthma and many of the tests that are available (e.g. spirometry, fractional exhaled nitric oxide (FeNO) and bronchial provocation tests) do not necessarily exclude asthma even if they are normal, particularly if the patient has started treatment prior to testing. This complexity makes both under- and over-diagnosis an obstacle that clinicians need to work to avoid in asthma. Both possibilities carry costs to both the patient's health and to healthcare systems.

Diagnosis of asthma remains an ongoing issue which can affect medication adherence and proper care. In the Asthma Society of Ireland's April 2026 survey, only 10% of parents reported that their child's asthma had been diagnosed using a diagnostic test. The role now recommended in the UK joint guideline from the British Thoracic Society, the National Institute for Health and Care Excellence and the Scottish Intercollegiate Guidelines Network (BTS/NICE/SIGN) of blood eosinophil cell and FeNO levels in asthma diagnosis may further complicate discussions regarding equitable access to diagnostics in asthma.⁶⁶ Diagnostic capacity also depends on the respiratory physiology workforce. A 2022 Irish Lung Health Alliance survey found that two-thirds of pulmonary function laboratories in Ireland had vacancies for respiratory physiologists, most of them multiple vacancies, and unfilled posts have since been lost under the HSE Pay and Numbers Strategy. New undergraduate degrees in Clinical Measurement Physiology are expected to increase supply, but physiologists are not yet subject to statutory registration with CORU.²⁶

Patient distrust in diagnosis or treatment can result in low and inconsistent adherence, particularly if the treatment is effective and symptoms decrease. Equally, prevalence, treatment efficacy, and systems performance data can all be compromised by ambiguous diagnoses.⁶⁷

Treatment and Management

Ireland's treatment and management of asthma is guided by several key models of care. The Global Initiative for Asthma (GINA) develops and publishes evidence-based, annually updated resources for clinicians. GINA guidance is adopted by national asthma guidelines in many countries – including Ireland – and is adapted to fit local healthcare systems, practices, and resource availability.

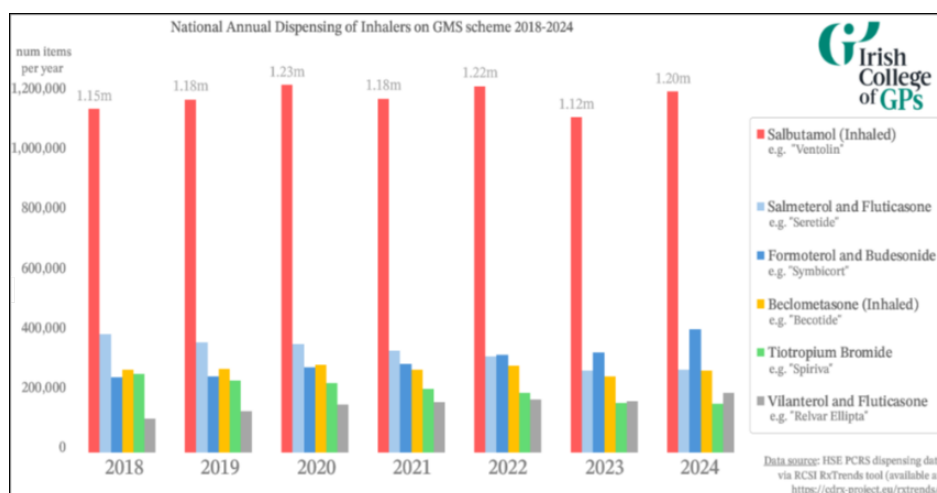
In 2021, the HSE National Clinical Programme (NCP) Respiratory launched *An End-to-End Model of Care for Asthma | Part 1: Adult Asthma*.¹ The document details how patients should be able to access care at various stages of their asthma, and also the duties of those providing this health care. What is missing is a paediatric model of care, but recently, the HSE committed to launching this alongside an updated adult model of care in 2027. *A national paediatric model of care for asthma is under development as part of the wider revision of the 2016 National Model of Care for Paediatric Healthcare Services in Ireland*.⁶⁸ The revised model of care, including its paediatric asthma component, is targeted for completion in 2027.

Historically, asthma management has relied heavily on short-acting beta₂-agonist (SABA, “blue”) inhalers for symptom relief. However, this approach is no longer considered safe or effective when used in isolation. The HSE Model of Care identifies over-reliance on SABA as a

significant problem in Ireland.¹ Updated clinical guidance from the Global Initiative for Asthma (GINA) advises against SABA-only treatment due to its association with increased risk of severe exacerbations and asthma-related deaths.⁶⁹ GINA notes that dispensing of three or more 200-dose SABA canisters a year is associated with increased risk of severe exacerbations, and twelve or more with increased risk of asthma death.¹⁵ The ICGP report rightly recognises this important shift in terms of asthma medication and recommends the use of inhaled corticosteroids (ICS) in symptomatic patients regardless of asthma severity, including those with mild disease.

Since the publication of these guidelines, GINA recommendations have evolved. For adults and adolescents, GINA's preferred approach (Track 1) uses low-dose ICS-formoterol as an anti-inflammatory reliever: taken as needed only at Steps 1–2, and as Maintenance and Reliever Therapy (MART), a single inhaler for both daily maintenance and symptom relief, at Steps 3–5.¹⁵ This approach ensures that anti-inflammatory treatment is delivered whenever symptoms occur, while also simplifying treatment regimens. This is preferred because it reduces the risk of severe exacerbations compared with regimens using a SABA reliever, with similar symptom control. For children aged 6–11 years, as-needed low-dose ICS-formoterol is an option at Step 1 and low-dose MART is an option at Steps 3–4.¹⁵ Despite this change in guidelines, salbutamol (SABA) inhalers continue to be dispensed far more often than combination ICS-formoterol inhalers under the GMS scheme, although dispensing of budesonide-formoterol has risen since 2018 (Figure 2.7).

Figure 2.7. National annual dispensing of inhalers under the GMS scheme, 2018–2024



Source: Irish College of GPs, using HSE Primary Care Reimbursement Service (PCRS) dispensing data via the RCSI RxTrends tool.

Adherence

According to the Irish College of General Practitioners, poor compliance/adherence to medication is one of the main reasons for poor asthma control.⁶⁰

Medication adherence among asthma patients is frequently identified as an area of critical concern. The HSE's End to End Model of Care for Adult Asthma notes that adherence to asthma medications is only about 30% and lists contributory factors to non-adherence, including "worries about side effects, cost of medications and a lack of education about the mode of action of these medications" (e.g. inhaler technique).¹ The Asthma Society of Ireland gives a less pessimistic figure, reporting that approximately half of people with asthma do not take their medication as prescribed, and that patients routinely identify medication costs of €100 or more a month as a barrier to adherence.²⁶ The two estimates are not directly comparable. The HSE Model of Care figure is drawn from GINA and reflects international evidence rather than Irish measurement, and the Asthma Society figure is attributed to the HSE but without a published primary source. A recent Irish study found that non-adherence to medication has potentially serious implications for patients and healthcare systems. The research highlights that, to prevent financial burden, reducing the payment barriers to accessing care is an obvious solution to cost-related non-adherence and non-attendance at a system level, given that user fees are associated with a reduction in healthcare utilisation.⁷⁰

Reimbursement

Ireland's reimbursement system has not necessarily evolved at the same pace. A significant structural issue remains that asthma is not included in the Long-Term Illness Scheme. No new conditions have been added to the scheme's list of 16 illnesses since the 1970s, although a 2022 Department of Public Expenditure and Reform spending review recommended that issues of equity and fairness within the scheme be addressed. The Drugs Payment Scheme threshold was reduced to €80 per month in 2022 and has not been reduced since.²⁶ Consequently, people with asthma can face recurring prescription costs throughout their lives, despite asthma being a chronic disease requiring ongoing treatment. In a bid to reduce cost as a barrier to this basic essential medication for asthma management and control, the Asthma Society has been calling on Government to reimburse MART combination inhalers. GINA's theme for World Asthma Day 2026, 'Access to anti-inflammatory inhalers for everyone with asthma – still an urgent need', reinforces this call. GINA 2026 also added evidence for anti-inflammatory reliever therapy in younger children: in the CARE trial of children aged 5–15 years, as-needed budesonide-formoterol reduced asthma attacks by 45% compared with as-needed salbutamol, and GINA does not recommend SABA-only treatment for children aged 6–11 years.⁵⁶ Economic evaluations in the UK and Canada have found as-needed budesonide-formoterol to be cost-saving compared with low-dose maintenance ICS plus a separate reliever inhaler. In its Pre-Budget Submission 2026, the Asthma Society called for phased universal subsidisation of asthma medication and related devices beginning with combination inhalers, at an estimated cost of €14 million, a reduction in the Drugs Payment Scheme threshold to €72 per month, and publication of a full review of the Long-Term Illness Scheme.²⁶

Financial strain of asthma on households

People with asthma need access to the right treatment at the right time and, for too many families across Ireland, cost is getting in the way. A key concern coming through year after year from people with asthma and their families is the cost of medication, with too many choosing to skip doses or forgo medication due to cost. In the Asthma Society's April 2025 survey of 627 people with asthma or parents of children with asthma, 24% had gone without their own or their child's asthma medication in the previous three months because of cost, 56% reported difficulty making ends meet, and 25% had fallen into arrears on essential bills in the previous year. In a parallel survey of more than 100 healthcare professionals, 86% had observed patients changing how they used their asthma medication, such as skipping doses or reducing frequency, because of cost.²⁶

The Asthma Society conducted a survey in April 2026 where 549 parents and guardians of children with asthma in Ireland highlighted the reality of caring for a child with asthma. Financial strain was a common theme for too many of these households. When asked how managing a child's asthma affected a parent, 46% reported that they have been affected by financial costs:

“It has cost us a lot of money as well over all these years, but we make sacrifices to be able to pay for his meds etc”

Worryingly, almost 1 in 10 (9%) of respondents stated that they had to forgo their child’s medication in the last 3 months due to financial constraints. While this is distressing, it is not surprising. ICS-formoterol combination inhalers, used as an anti-inflammatory reliever or as Maintenance and Reliever Therapy (MART), are the preferred treatment under international guidelines for those aged 12 and over.¹⁵ Despite this, their cost remains prohibitive, with some families reaching the maximum monthly threshold under the Drugs Payment Scheme to access this life saving medication.

Along with direct costs, families are hit with indirect costs caused by absenteeism from school and work. Uncontrolled asthma impacts productivity and performance in the workplace, with research showing an overall work productivity loss of 36% due to asthma (from both time off and productivity whilst at work).⁷¹ Common challenges cited by people with asthma in the workplace include fatigue, cognitive strain, and concerns about stigma or perceptions of underperformance by colleagues — factors that may compound existing health-related challenges. In Ireland, asthma has been estimated to cause an average of five missed school days and seven missed workdays a year.³

Severe Asthma Treatments

There has been increasing recognition and understanding of severe asthma as a distinct area requiring specialist multidisciplinary management, particularly with the development and availability of biologic therapies. Ongoing investment and funding towards biologic therapies means a wider availability to those most in need with new biologics that target different phenotypes continuing to enter the market. GINA 2026 includes depemokimab, a long-acting anti-IL-5 injection given every 26 weeks, and the first biosimilar biologic for severe asthma, omalizumab-igec.⁵⁶ In Ireland, omalizumab is funded from hospital medicines budgets; benralizumab, mepolizumab and reslizumab are reimbursed through Managed Access Protocols overseen by the Acute Hospital Drug Management Programme; and dupilumab has been reimbursed under the High-Tech Arrangement, also subject to a Managed Access Protocol, since November 2023. In each case, the patient must meet eligibility criteria following specialist

assessment, and applications can only be made by a consultant respiratory physician at a recognised severe asthma centre.²⁸ In 2024, 1,011 people received biologic therapy for severe asthma. Tezepelumab, an anti-TSLP biologic that can benefit some patients who do not respond to other biologics, is available in Ireland but is not yet reimbursed: a Managed Access Protocol is being developed for patients with blood eosinophil counts above 300 cells/ μ L, and a Health Technology Assessment by the National Centre for Pharmacoeconomics is under way for those with counts of 150–300 cells/ μ L.²⁶

The introduction of the European Health Data Space (EHDS) regulations has enhanced conversations around patient registries, including the need for a severe asthma registry and perhaps even a full asthma registry. Ethical approval has been granted for the development of a Paediatric Severe Asthma Registry in CHI hospitals with expansion to Limerick, Cork and Galway. The Future of Registries Taskforce (FoRT) is a multistakeholder coalition which has been looking at the standardisation and integration of registries across Ireland with a view to optimising their potential.

Because there is no registry, there is no comprehensive national picture of severe asthma prevalence, treatment pathways, outcomes and geographical variation in access to specialist services. This is particularly important from a health-system perspective because registry data can support service planning, evaluation of expensive therapies and identification of inequalities in access. The Asthma Society of Ireland estimates that a national severe asthma registry would cost €400,000–500,000 a year, including two to three dedicated staff, and recommends that it be interoperable with planned digital health records and potentially linked to the International Severe Asthma Registry (ISAR). Severe asthma registries already operate in the UK, Spain, Italy, Norway, Germany and Poland.³⁰

2.4 Conclusions

Asthma is the most common chronic respiratory disease in Ireland, affecting an estimated 450,000 people. It can be effectively controlled, yet it continues to cause substantial illness, hospital use and preventable death. Survey evidence suggests that around half of people

with asthma have had an asthma attack in the past year, and Ireland's asthma hospitalisation and mortality rates remain high by international standards. Women account for almost two-thirds of asthma deaths. International evidence indicates that most asthma deaths involve avoidable factors, but Ireland has not undertaken a national review of asthma deaths.

Progress since the 2018 Respiratory Health of the Nation has been real. The 2021 End to End Model of Care for Asthma provides a national framework, the Chronic Disease Management Programme has brought structured asthma review into general practice, community specialist teams in the Ambulatory Care Hubs now cover asthma, and access to biologic therapies for severe asthma has expanded.

Accurate diagnosis remains a fundamental gap. The expansion of community respiratory services is an opportunity to close this gap, but only if it is matched by sufficient respiratory physiology capacity, equipment, training and clear referral pathways. Respiratory physiologist vacancies, and the absence of statutory registration for physiologists, currently constrain that capacity.

Cost and access shape asthma outcomes. Asthma is not included in the Long-Term Illness Scheme, recommended combination inhalers can be expensive, and almost one in ten parents surveyed had gone without their child's asthma medication because of cost; in a broader survey, almost one in four people with asthma or their parents had done so. Medication adherence is widely recognised as poor, yet Ireland has no national data with which to measure it. People with severe asthma describe delayed diagnosis, fragmented care and financial pressure, and there is no national severe asthma registry and no paediatric model of care for asthma.

Asthma care should be an explicit part of the National Respiratory Strategy that the Irish Thoracic Society is calling on Government to develop, consistent with World Health Assembly resolution WHA78.5 on an integrated approach to lung health. Priorities include objective diagnosis in the community, removing cost barriers to recommended treatment, timely access to specialist severe asthma services, a national severe asthma registry, a paediatric model of care, a national review of asthma deaths, and coordinated action across health, housing, energy, transport, environmental and tobacco policy.

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Bronchiectasis

03

Key Points

- The prevalence of bronchiectasis in Ireland is unknown. International estimates suggest that approximately 20,000 to 40,000 people in Ireland may be living with bronchiectasis, with prevalence increasing with age and higher among women. No population-based Irish estimate currently exists.
- Bronchiectasis deaths show a marked female predominance. In 2023, 49 deaths (66.22%) occurred among females compared with 25 (33.78%) among males. COPD deaths in the same year were near evenly distributed, at 48.50% male and 51.50% female.
- Internationally, bronchiectasis prevalence and incidence have been reported to increase with age, with the highest rates observed among older adults.
- The burden of bronchiectasis cannot be measured from Irish hospital data. Inpatient activity is reported only for the combined grouping (ICD-10: J40–J44, J47), which simultaneously conceals bronchiectasis burden and inflates the COPD figures due to coding limitations. Separate reporting of J47 would provide Ireland with its first national data on bronchiectasis hospitalisation.
- The National Clinical Programme for Cystic Fibrosis is currently developing a policy document in conjunction with the HSE, RCPI and ICGP - “Bronchiectasis: A Model of Care for Ireland” with collaborative input from respiratory physicians, specialised health professionals and patient body representatives throughout Ireland.

Disease progression is conventionally described as a vicious vortex which depicts the underlying pathophysiological interplay driving impaired mucociliary clearance, chronic airway infection, persistent inflammation and progressive structural lung damage. Exacerbations and daily symptoms have the greatest impact on patients and on health services and are therefore the principal focus of treatment¹³. Approximately 40% of cases have no identified cause after investigation, although this proportion varies depending on the extent of testing undertaken^{15,19}.

In health, the airways are kept clear by cilia, which move mucus from the small airways upwards towards the throat. In bronchiectasis this clearance is impaired, secretions accumulate in the dilated airways, and the retained mucus provides a reservoir in which bacteria establish. Repeated infection causes further airway damage and progressive widening, so that each element of the cycle drives the next¹³.

The clinical picture extends beyond cough and sputum. People with bronchiectasis commonly also report breathlessness, repeated chest infections and persistent fatigue, and some experience chest pain or systemic features such as fever, chills, sweats and unexplained weight loss. The condition is not transmissible, although susceptibility to infection acquired from others is increased. There is no cure, but the disease can be managed effectively through airway clearance, prompt treatment of infection and measures that support general lung health¹³.

The scale of the condition is better established in countries that report it separately. In the United States an estimated 350,000 to 500,000 adults are living with bronchiectasis, and approximately 70,000 adults are newly diagnosed each year²⁹. Expressed as a rate, that prevalence is broadly consistent with the figure of 139 per 100,000 adults reported for the United States in Table 3.6.

Over recent decades, bronchiectasis has become an increasingly recognised global health problem, with rising incidence and prevalence reported worldwide⁶. Bronchiectasis places a substantial burden on both patients and healthcare systems, being associated with frequent exacerbations and considerable rates of hospitalisation, particularly in regions with greater disease severity, such as Central and Eastern Europe^{7,15}.

Bronchiectasis has long been described as a neglected disease, but the position has changed materially in the past decade with renewed research interest. A revised European clinical practice guideline was published in 2025¹³; the first licensed disease-modifying therapy for

3.1 Background

Bronchiectasis is a chronic inflammatory lung disease defined by permanent dilatation of bronchi on computed tomography, together with compatible clinical symptoms — typically persistent cough, daily sputum production and recurrent respiratory infections¹³. It is not a single disease but the common endpoint of a wide range of infectious, immunological, autoimmune, allergic and genetic conditions^{13,19}. Identifying the underlying cause is a core part of assessment, because it changes management in a meaningful proportion of patients^{13,19}.

the condition has been authorised in Europe;^{16,17} and an international Commission has since set out a research and service agenda for the field²⁷. Irish policy and service planning have yet to reflect these developments.

This chapter concerns bronchiectasis coded to ICD-10 J47. Bronchiectasis occurring in people with cystic fibrosis is coded separately under ICD-10 E84 and is therefore not included in the figures presented here; cystic fibrosis is addressed in its own chapter. The Irish data in this chapter accordingly relate to non-cystic fibrosis bronchiectasis. It should be noted that the clinical distinction between cystic fibrosis and non-cystic fibrosis bronchiectasis is narrowing. In the era of CFTR modulator therapy, people with cystic fibrosis increasingly live with the problems of chronic structural airway disease that characterise bronchiectasis, and the two conditions share microbiology, treatable traits and, increasingly, management approaches. While there is significant overlap in the clinical features and care needs of those with CF and non-CF bronchiectasis there are clear differences in multisystem involvement of CF and the current demographics of these patient groups. There are also differences in delivery of care and medications access for those with CF and non-CF bronchiectasis requiring appropriate service planning into the future.

A note on coding and data availability

Bronchiectasis (ICD-10: J47) is not reported as a standalone disease category in Irish health statistics. It is currently grouped with COPD in national reporting.

- **Mortality.** Deaths are reported under the Eurostat shortlist heading “Chronic Lower Respiratory Disease” (ICD-10: J40–J47), which includes asthma (J45–J46). Where asthma is excluded, the residual grouping (J40–J44, J47) is described as COPD but includes bronchiectasis. Separate counts for J47 mortality are published by PHIS to 2023.¹
- **Hospitalisations.** HIPE inpatient data for COPD is reported for the grouping ICD-10 J40–J44 and J47. Activity attributable to bronchiectasis alone is not separately reported.²

- **Five-year age-standardised rates.** Unlike the broader chronic lower respiratory disease category, five-year age-standardised mortality rates are not publicly available for COPD and bronchiectasis separately.¹

Throughout this chapter, figures presented as “COPD and bronchiectasis” are regularly combined due to current coding limitations and cannot be disaggregated.² Figures presented for J47 relate to bronchiectasis alone when available.¹

3.2 Burden of Disease

Incidence and Prevalence

The incidence and prevalence of bronchiectasis in Ireland are unknown.^{1,2} Estimates of global prevalence and burden of chronic respiratory diseases remain variable.⁹ The European Respiratory Society guidelines report prevalence estimates ranging from 53 to 566 cases per 100,000, increasing with age and female sex.³

Applied to an Irish population of approximately 5.4 million, this range would correspond to between 2,900 and 30,600 people; applied to the adult population alone. The width of this range is a significant finding. It reflects not only genuine variation in disease frequency but methodological differences between studies, differing case definitions, variation in access to computed tomography and widespread underdiagnosis⁹. It is presented here to indicate the order of magnitude of the population likely to be affected in Ireland; it should not be read as a national estimate.

Incidence and prevalence have been reported to be rising in several areas^{4,6,8}. In the United Kingdom, there was a year-on-year increase between 2004 and 2013⁴. How far this represents a true increase in disease and how far it reflects improved ascertainment through greater use of computed tomography and population longevity is yet to be determined.

Table 3.1. Chronic lower respiratory disease (ICD-10: J40–J47): deaths, crude mortality rate and five-year age-standardised mortality rate, 2016–2024

Year	Total deaths J40–J47	Deaths excluding asthma (J45–J46)	Crude mortality rate, J40–J47 per 100,000 population	Five-year period	Five-year age-standardised mortality rate
2016	1729	1665	36.48		
2017	1626	1567	33.80		
2018	1751	1671	35.85		
2019	1828	1759	36.87	2015–19	55.58
2020	1552	1492	30.86	2016–20	52.4
2021	1536	1471	30.27	2017–21	49.42
2022	1832	1744	35.34	2018–22	49.21
2023	1926	1845	36.47	2019–23	48.82
2024*	1950	1856	36.24	2020–24	46.84

Source: Health Statistics (PHIS) / CSO¹. *Provisional data for 2024. Five-year age-standardised mortality rates were not available for 2016–2018.

In 2024, there were 1,950 deaths registered as chronic lower respiratory disease (ICD-10: J40–J47), corresponding to a crude mortality rate of 36.24 deaths per 100,000 population. Of these deaths, 1,856 were recorded after excluding asthma (ICD-10: J45–J46), indicating that approximately 95% of deaths within the broader chronic lower respiratory disease grouping were attributable to COPD and bronchiectasis. The five-year age-standardised mortality rate for the period 2020–2024 was 46.84 per 100,000 population¹.

Table 3.2 shows mortality trends for COPD (ICD-10: J40–J44) and bronchiectasis (ICD-10: J47) separately from 2017 to 2023. During this period, COPD accounted for the majority of deaths within these categories. In 2023, COPD (ICD-10: J40–J44) accounted for 1,771 deaths, representing approximately 92% of all chronic lower respiratory disease deaths (codes J40–J47; n=1,926), while bronchiectasis (ICD-10: J47) accounted for 74 deaths (approximately 3.8%). A significant proportion of asthma and COPD patients have coexisting bronchiectasis and these patients are not accounted for in bronchiectasis datasets. Unlike the broader chronic lower respiratory disease category (ICD-10: J40–J47), five-year age-standardised mortality rates were not publicly available for COPD and bronchiectasis separately¹.

Table 3.2. COPD (ICD-10: J40–J44) and bronchiectasis (ICD-10: J47) deaths, 2017–2023

Year	Total deaths J40–J44	/100,000 population J40–44	Total deaths J47	/100,000 population J47
2017	1498	31.14	69	1.43
2018	1595	32.65	76	1.56
2019	1688	34.04	71	1.43
2020	1432	28.47	60	1.19
2021	1394	27.47	77	1.52
2022	1666	32.14	78	1.50
2023	1771	33.53	74	1.40

Source: Health Statistics (PHIS) / CSO¹.

Figure 3.1. Deaths attributed to bronchiectasis only (ICD-10: J47) and rate per 100,000 population, 2017–2023

Source: Health Statistics (PHIS) / CSO¹.

Bronchiectasis deaths show no downward trend across this time period. Because five-year age-standardised mortality rates are not published separately for J47, it is not possible to determine whether the age-standardised rate is stable, rising or falling once the ageing of the population is considered.

Hospitalisations

Inpatient activity attributable to bronchiectasis alone is not separately reported in HIPE data.² Table 3.3 therefore presents the combined COPD and bronchiectasis grouping (ICD-10: J40–J44, J47), within which bronchiectasis activity is contained.²

Inpatient discharges for the combined grouping rose from 15,652 in 2017 to 16,211 in 2024.

In 2024, COPD and Bronchiectasis together accounted for 18,113 (0.9%) hospitalisations including day-cases. Excluding day-case admissions, the grouping accounted for 19% (16,211) of respiratory inpatient hospitalisations, or 2.31% of all inpatient hospitalisations, and 22.23% of respiratory inpatient bed days in all hospitals reporting activity to HIPE (Table 3.3).²

Table 3.3. Inpatient hospitalisations with a primary diagnosis of COPD and bronchiectasis in adult acute hospitals, 2017–2024

Year	Discharges COPD and Bronchiectasis	% of all inpatient discharges	Rate/100,000 population	Bed days used COPD and Bronchiectasis	% of all inpatient bed days used	Mean LOS	Median LOS
2017	15652	2.44%	325	125,216	3.40%	8	5
2018	16592	2.55%	340	128,920	3.41%	7.77	5
2019	16590	2.55%	335	126,914	3.34%	7.65	5
2020	11822	2.08%	235	89,020	2.67%	7.53	5
2021	10292	1.71%	203	78,940	2.25%	7.67	5
2022	12660	2.06%	244	102,166	2.68%	8.07	5
2023	14437	2.20%	273	115,640	2.85%	8.01	5
2024	16211	2.31%	301	127,743	3.02%	7.88	5

Source: Hospital Inpatient Enquiry (HIPE), Health Pricing Office (HPO)².

These figures are dominated by COPD, which accounts for the majority of deaths and admissions within the grouping. They therefore establish neither the volume of bronchiectasis admissions nor the associated bed days, length of stay or readmission rate, which may be highly variable between the two disease groups. Nor are national data available on outpatient attendances, home intravenous antibiotic therapy, nebulised antibiotic use, or respiratory aids and appliances available for bronchiectasis. The measurable burden is consequently confined to inpatient episodes within a combined grouping; this materially understates the demand this condition places on health services.

Sex

Bronchiectasis differs from COPD in its sex distribution. Separate mortality data by sex for COPD (ICD-10: J40–J44) and bronchiectasis (ICD-10: J47) were not available for 2024; the most recent data available from 2023 has been used.¹ In 2023, COPD-related deaths were similarly distributed between the sexes, with 859 deaths (48.50%) among males and 912 deaths (51.50%) among females. In contrast, bronchiectasis-related deaths were more frequently reported among females, accounting for 49 deaths (66.22%), compared with 25 deaths (33.78%) among males.¹ Female sex has been identified as a factor associated with higher bronchiectasis prevalence in the international literature,⁸ and higher prevalence among women has been reported in the United Kingdom,⁴ the United States¹⁰ and Spain.¹¹

Table 3.4. Deaths by sex: COPD and bronchiectasis, 2023

Sex	COPD (J40–J44)	% of COPD deaths	Bronchiectasis (J47)	% of J47 deaths
Male	859	48.50%	25	33.78%
Female	912	51.50%	49	66.22%
Total	1,771	100%	74	100%

Source: Health Statistics (PHIS) / CSO¹.

For hospitalisations by sex, there were 16,211 inpatient discharges with a principal diagnosis of COPD and bronchiectasis combined in 2024, of which 7,547 (46.55%) occurred among males and 8,664 (53.45%) among females².

Age

Age-specific data for bronchiectasis alone is not published.^{1,2} The figures below relate to chronic lower respiratory disease and to the combined COPD and bronchiectasis grouping. Most deaths attributed to chronic lower respiratory disease (ICD-10: J40–J47) occurred among individuals aged over 64 years (93.79%). Deaths within this category were primarily attributable to COPD, reflected by the relatively small difference between total deaths and deaths excluding asthma (ICD-10: J45–J46). In 2024, the age-standardised mortality rate for all ages was 47.73. From 2017 to 2024, the age-standardised mortality rate showed an overall decline, decreasing from 52.28 per 100,000 population in 2017 to 47.73 in 2024, despite some year-to-year variation during the period¹.

Although most deaths occurred among older adults, the years of potential life lost (YPLL) findings indicate an ongoing impact of premature mortality among individuals aged under 64 years across period 2017–2024. In 2024, the YPLL for chronic lower respiratory disease (ICD-10: J40–J47) among individuals aged 0–64 years was 931 years, corresponding to 21.35 years lost per 100,000 population. Excluding asthma-related deaths (ICD-10: J45–J46), the YPLL remained high at 762 years.¹

Table 3.5. Chronic lower respiratory disease (ICD-10: J40–J47): years of potential life lost (YPLL), 2017–2024

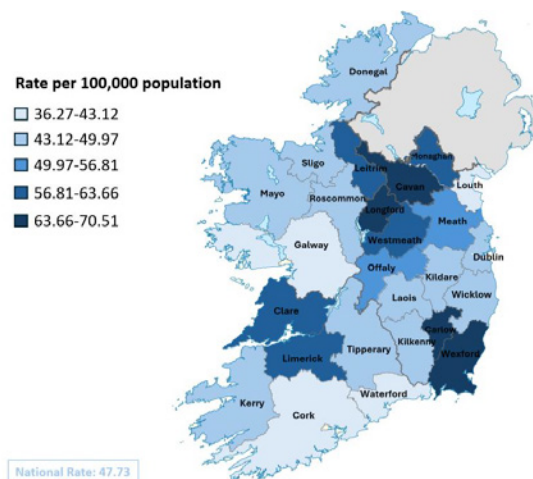
Year	Standardised Mortality Rate All ages	Total Deaths J40–47	Total Deaths - (no asthma 45–46)	Deaths J40–47 age < 64yrs	YPLL 0 – 64 yrs J40–47	YPLL 0 – 64 yrs J45–46 excluded	YPLL/100,000 population J40–47	Lower 95% CI	Upper 95% CI
2017	52.28	1626	1567	110 (6.77%)	770	574	21.06	15.6	26.52
2018	53.85	1751	1671	123 (7.02%)	763	592	20.87	16.03	25.71
2019	54.39	1828	1759	127 (6.95%)	821	658	22.65	17.27	28.03
2020	44.83	1552	1492	103 (6.64%)	709	535	17.81	12.85	22.77
2021	43.39	1536	1471	100 (6.51%)	624	591	16.71	12.57	20.85
2022	48.76	1832	1744	118 (6.44%)	966	662	23.22	17.45	28.98
2023	49.39	1926	1845	144 (7.48%)	918	829	21.89	16.84	26.94
2024*	47.73	1950	1856	121 (6.21%)	931	762	21.35	16.00	26.69

Source: Health Statistics (PHIS) / CSO¹. *Provisional data for 2024.

For the combined COPD and bronchiectasis grouping in 2024, 76.87% of admissions occurred among individuals aged 65 years and over, accounting for 81.95% of inpatient bed days. Among individuals aged 15–64 years, the grouping accounted for 1.02% of all inpatient hospitalisations and 1.22% of inpatient bed days.² Internationally, bronchiectasis prevalence and incidence have been reported to increase with age, with the highest rates observed among older adults.^{3,11} Given the age structure of the Irish population, the number of people affected would be expected to rise over the coming decade irrespective of any change in age-specific incidence.

Regional Variation

Regional data for bronchiectasis alone is not published.^{1,12} Figure 3.2 presents age- and sex- standardised mortality for chronic lower respiratory disease (ICD-10: J40–J47) by county of residence, the grouping within which bronchiectasis deaths fall. In 2024 the age- and sex-standardised mortality rate by county of residence ranged from 36.27 deaths per 100,000 population in Galway to 70.51 per 100,000 in Longford, against a national rate of 47.73. Counties including Wexford, Cavan, Carlow and Westmeath reported rates substantially above the national average, while lower rates were observed in Galway, Louth and Cork.¹ These figures are dominated by COPD, and whether comparable geographic variation exists for bronchiectasis cannot be established from published data.

Figure 3.2. Age-sex standardised mortality rate for chronic lower respiratory disease per 100,000 population by county of residence, 2024*

Source: Health Statistics (PHIS) / CSO¹. *Provisional data for 2024.

International Benchmarking

Reported prevalence of bronchiectasis varies widely between countries. Estimates of the prevalence and burden of chronic respiratory disease remain variable owing to methodological differences, limited population-based studies and underdiagnosis,⁹ and bronchiectasis epidemiology is influenced by case ascertainment and by factors including sex, socioeconomic deprivation and access to healthcare.⁸

UK data from 2013 reported a prevalence of 566 per 100,000 population in women and 486 per 100,000 population in men.⁴ Similar findings were reported in the United States, where bronchiectasis prevalence was estimated at 139 cases per 100,000 persons in 2013, with higher prevalence observed among women and older adults.¹⁰ In Spain, a population-based study conducted in Catalonia reported a prevalence of 36.2 cases per 10,000 inhabitants and an incidence of 4.81 cases per 10,000 inhabitants in 2012. Both prevalence and incidence were higher in women and increased with age.¹

Table 3.6. Reported international prevalence and incidence estimates for bronchiectasis

Country / setting	Measure	Estimate	Year	Reference
United Kingdom	Prevalence, females	566 per 100,000	2013	4
United Kingdom	Prevalence, males	486 per 100,000	2013	4
United States	Prevalence, adults	139 per 100,000	2013	10
Catalonia, Spain	Prevalence	36.2 per 10,000	2012	11
Catalonia, Spain	Incidence	4.81 per 10,000	2012	11
ERS guideline range	Prevalence	53–566 per 100,000	2017	3

Each of the comparators above derives from a population-based dataset in which bronchiectasis is identified as a distinct condition, whereas Irish inpatient reporting identifies it only within the combined COPD grouping.² The European Bronchiectasis Registry (EMBARC) provides the most detailed comparative data on the condition across Europe, describing aetiology, disease severity, microbiology and treatment¹⁵. Ireland has no national registry, and Irish participation is limited to a small number of centres in Dublin and Galway, so Irish patients are largely absent from European comparative data. The EMBARC registry now holds comprehensive clinical data on more than 20,000 people with bronchiectasis, contributed by 300 research sites across 27 EU and non-EU countries, comprising baseline data together with annual follow-up on exacerbation, hospitalisation and mortality. The member countries listed by EMBARC are Ireland, Austria, Belgium, Bulgaria, Croatia, Finland, Germany, Greece, Israel, Italy, Kyrgyzstan, Malta, Moldova, the Netherlands, North Macedonia, Pakistan, Poland, Portugal, Romania, Serbia, Slovenia, South Korea, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom. The constraint for Ireland is therefore the extent of national participation rather than access to the registry itself³⁰. Bronchiectasis is estimated to affect approximately 600,000 people across Europe³¹.

3.3 Prevention, Diagnosis and Management

Prevention and Early Detection

There is no primary prevention programme for bronchiectasis, and population screening is not warranted based on current evidence. Early diagnosis nonetheless matters, because established structural damage is irreversible and treatment is directed at preventing further progression and complications. Prevention and early detection therefore present several practical opportunities.

Sustained uptake of childhood immunisation against pertussis and measles, continued tuberculosis control, and prompt and adequate treatment of severe lower respiratory tract infection, particularly in children, address the post-infective pathway that accounts for a substantial share of disease⁸. Chronic productive cough is frequently attributed to asthma, smoking, to COPD, or to “recurrent chest infections” without further investigation. Persistent daily sputum

production, particularly where purulent; recurrent lower respiratory tract infection; haemoptysis; or chronic productive cough in a person who has never smoked should prompt consideration of computed tomography^{5,13}.

Patients already under specialist care for COPD, severe asthma, rheumatoid arthritis, inflammatory bowel disease and antibody deficiency are enriched for undiagnosed bronchiectasis, and represent a practical route to earlier diagnosis without population screening and increased awareness exists among clinicians looking after these patients^{8,15}

Vaccination

Annual influenza vaccination, pneumococcal vaccination and COVID-19 vaccination in line with national immunisation guidance are recommended for people with bronchiectasis. RSV Vaccination is recommended by the National Immunisation Advisory Committee for adults aged 65 years and over but has not been introduced as a funded programme. At present, the RSV vaccination is available privately.

Diagnosis

Bronchiectasis should be considered in adults with persistent productive cough, particularly where there are large volumes of purulent sputum, recurrent bacterial infection or haemoptysis, or where symptoms are disproportionate to smoking history^{5,13}. It should be considered specifically in the differential diagnosis of COPD, and in patients labelled as having difficult asthma or recurrent chest infections.⁵ Diagnosis requires computed tomography demonstrating bronchial dilatation, interpreted together with compatible clinical symptoms; radiological dilatation in the absence of symptoms does not constitute clinically significant bronchiectasis. Thin-section or high-resolution computed tomography is the standard investigation^{5,13}.

Delay between symptom onset and diagnosis is common and often prolonged, and patients frequently report having been treated for other conditions in the interim¹⁸. Because bronchiectasis frequently coexists with COPD and asthma rather than presenting in isolation⁴, and because underdiagnosis of chronic respiratory disease is widely reported⁹, delay is likely to be substantial in Ireland, although no Irish data are available. The 2025 European Respiratory Society clinical practice guideline recommends standardised testing to identify the underlying cause of bronchiectasis, to evaluate disease severity and activity, and to identify comorbidities and associated treatable traits.¹³ Assessment of future exacerbation risk takes into account not only prior exacerbation history but also baseline symptom severity and additional risk factors, including the underlying cause and infection with pathogens such as *Pseudomonas aeruginosa*.¹³ A minimum panel comprises full blood count with differential, serum immunoglobulins, total IgE with *Aspergillus*-specific IgE and *Aspergillus* IgG, and sputum culture for microbiological and mycobacterial testing. Targeted investigations follow from the clinical picture and may include sweat testing and CFTR genetic analysis, nasal nitric oxide measurement with downstream ciliary investigation where primary ciliary dyskinesia is suspected, extended immunological assessment, and autoimmune serology. Standardised, algorithm-based aetiological testing identifies a cause in a higher proportion of patients than ad hoc investigation.^{13,19}

Screening for comorbidities Alongside aetiological testing, the guideline recommends active screening for comorbidities that are common in bronchiectasis and independently treatable, including cardiovascular disease, osteoporosis, depression and anxiety, chronic rhinosinusitis and gastro-oesophageal reflux. These are frequently missed when assessment focuses on the airway alone, and several carry their own treatment pathways once identified¹³.

Assessing severity and future risk Validated severity scores, including the Bronchiectasis Severity Index, support risk stratification and are widely used in research and increasingly in clinical practice²⁴.

Access to diagnostic services

Several of the investigations recommended by the European guideline are not uniformly available in Ireland. Nasal nitric oxide measurement, the first-line screening test for primary ciliary dyskinesia, is available in only a small number of centres, and there is no nationally designated adult diagnostic service for primary ciliary dyskinesia. Sweat testing and CFTR genotyping are available through the cystic fibrosis services but are not routinely accessed from general respiratory clinics. Mycobacterial culture of sputum is not consistently requested at the point of diagnosis. The practical consequence is that the aetiological work-up a patient receives depends substantially on the centre

Specialist assessment

Patients are managed within general respiratory services, with wide variation in access to specialist bronchiectasis expertise. Integrated or “one-stop” models, in which specialist review, physiological testing, microbiology sampling and airway clearance assessment are delivered in a single visit, are used in a small number of centres and offer a practical means of reducing repeated attendances and shortening the time to a complete aetiological diagnosis.

Airway clearance and pulmonary rehabilitation

Airway clearance carries a strong recommendation in the European guideline and is best taught and reviewed by a respiratory physiotherapist with relevant experience; pulmonary rehabilitation carries a strong recommendation for patients with impaired exercise capacity, and its educational component should be bronchiectasis specific. These are among the strongest recommendations in the guideline and among the least consistently resourced services in Ireland. A small number of centres have dedicated bronchiectasis clinical nurse specialist posts locally and provision is not clear at a national level¹³.

Management of complex disease

Access to nebulised antibiotic therapy, home intravenous antibiotic therapy, and multidisciplinary review for non-tuberculous mycobacterial disease or diagnostics for PCD varies between centres and is not covered by any national pathway²⁵.

Medicines access

The European authorisation of brensocatib raises the question of how the first licensed therapy for bronchiectasis will be assessed for reimbursement in Ireland, who will be eligible, where treatment will be initiated and how it will be monitored^{16,17}.

Registry and data infrastructure

Ireland has no national bronchiectasis registry. Participation in the European Bronchiectasis Registry is limited to a small number of centres, so Irish patients are largely absent from European comparative data and Irish services cannot benchmark their outcomes¹⁵. Ireland is already a listed EMBARC member country and EMBARC operates a formal data request procedure, so extending participation to all centres and securing a national extract would build on an existing arrangement rather than require new registry infrastructure³⁰.

Patient representation and advocacy

The European Lung Foundation (ELF) has been fundamental in establishing a Bronchiectasis Patient Advisory Group (PAG) to support patients and healthcare professionals in managing bronchiectasis. The group engages in various activities, including hosting online events, participating in guideline panel discussions, and sharing patient experiences. They also contribute to research and education initiatives, such as the annual ERS Congress and the Bronchiectasis Patient Conference. The self-care guide and checklist for patients developed by PAG members is available in multiple languages and is warmly received by Irish patients.

The absence of a dedicated Irish patient advocacy organisation for bronchiectasis poses significant challenges for patient representation in health policy. Without a focused group to voice the specific needs and concerns of bronchiectasis patients, policymakers may not fully understand the complexities of bronchiectasis, leading to insufficient resources and support. Advocacy groups often drive funding for research in their disease area and frequently collaborate with health authorities to shape policies. Advocacy organisations can support data collection and input to disease registries, critical for understanding the disease's impact and shaping effective interventions. These groups are often an integral source of community support for patients living with their condition. To enhance representation, fostering collaboration among patients, healthcare professionals, and existing organisations may help bridge the gap until a dedicated advocacy group is established.

ELF also publishes a plain-language version of the 2025 ERS guideline itself, setting out what each recommendation means and what care a patient should expect. It and the checklist are free to use and could be adopted directly by Irish services, at no cost, in the absence of any Irish equivalent³².

Determinants and Risk Factors

Post-infective disease

Severe lower respiratory infection in childhood or adult life remains among the most frequently identified causes, including tuberculosis, pertussis, measles and severe pneumonia^{8,15}. This is of particular relevance in Ireland, where older cohorts were exposed to a substantially greater burden of tuberculosis and to a period preceding routine immunisation against pertussis and measles.

Coexisting chronic airway disease

Bronchiectasis commonly coexists with COPD and with asthma^{4,15}. Coexistence is not the same as causation, and the ROSE criteria (radiology, obstruction, symptoms and exposure) were developed to define a true association between COPD and bronchiectasis rather than an incidental radiological finding²⁰. This distinction matters because it determines which treatment paradigm should predominate. Bronchiectasis is often incorrectly coded as its more commonly recognised counterparts, asthma and COPD, even when bronchiectasis may be the predominant pathology.

Immunodeficiency

Primary antibody deficiency, most commonly common variable immunodeficiency, and secondary immunodeficiency arising from haematological malignancy or immunosuppressive therapy, are identifiable and treatable causes^{13,19}.

Allergic bronchopulmonary aspergillosis

ABPA is an important and treatable cause, and should be actively sought in patients with asthma, elevated total IgE and peripheral eosinophilia¹³.

Non-tuberculous mycobacterial disease

Non-tuberculous mycobacterial infection may be either a cause or a consequence of bronchiectasis, and requires a distinct diagnostic and treatment pathway²⁵ with its own European guidelines.

Genetic and structural causes

Primary ciliary dyskinesia and late-diagnosed or atypical cystic fibrosis account for a small but important minority of cases, and diagnosis has implications for the patient's family as well as for treatment^{13,26}. Alpha-1 antitrypsin deficiency is a recognised association, and testing is available in Ireland through the screening programme¹⁴. Genetic testing is available for PCD and CF if clinical suspicion is high and is carried out in centres with experience in this diagnostic pathway including additional testing such as nasal NO or ciliary testing.

Systemic and inflammatory disease

Rheumatoid arthritis, Sjögren syndrome, inflammatory bowel disease and other connective tissue diseases are recognised associations; bronchiectasis in these groups has known associations with worse outcomes^{8,15}.

Aspiration, reflux and airway obstruction

Recurrent aspiration, gastro-oesophageal reflux and localised airway obstruction, including retained foreign body and endobronchial tumour, account for a further group of cases, some of which are correctable.

Idiopathic disease

Even after systematic investigation, approximately 40% of cases have no identified cause^{15,19}. Female sex, socioeconomic deprivation and increasing age are consistently reported as associated with higher prevalence⁸.

Treatment and Management

Management of bronchiectasis aims to reduce exacerbations and symptoms, improve quality of life and limit disease progression.¹³ The 2025 European Respiratory Society clinical practice guideline for adult bronchiectasis updates the 2017 guideline³ and provides the current evidence-based framework.¹³

The treatable traits approach — identifying and addressing the specific, measurable and modifiable characteristics present in an individual patient, rather than treating a disease label — is well suited to a condition as heterogeneous as bronchiectasis and underpins the guideline's structure²³.

The 2025 guideline differs substantially from its 2017 predecessor, and the changes bear directly on how services should be organised. The investigation and management of the deteriorating patient is entirely new and is one of a number of significant changes; Table 3.7 summarises those with the greatest bearing on clinical management.

Table 3.7. Selected changes between the 2017 and 2025 ERS bronchiectasis guidelines

Topic	Changes between 2017 and 2025
Testing for the underlying cause	Testing for non-tuberculous mycobacteria is now advised in all patients, rather than in selected patients on the basis of clinical features. The 2025 guideline adds an algorithm and detailed guidance on when to use other investigations; neither was present in 2017.
Risk assessment and comorbidities	Individualised risk assessment, and recommendations on investigating and managing comorbidities and treatable traits, are new in 2025.
Airway clearance	Upgraded from a conditional to a strong recommendation. Training in airway clearance techniques should now be offered to all patients, not only those with chronic productive cough or difficulty expectorating.
Bronchodilators and surgery	Addressed in 2017; not addressed in 2025.
Inhaled antibiotics	Upgraded from conditional to strong for patients with <i>P. aeruginosa</i> . The threshold for starting treatment has moved from three or more exacerbations a year to an individualised assessment of future risk incorporating daily symptoms and other risk factors. First line for <i>P. aeruginosa</i> in 2017; equal first line with macrolides in 2025.
Long-term macrolides	Conditional in 2017, first line in patients without <i>P. aeruginosa</i> and second line in those with it. Now a strong recommendation and first line in both groups. The treatment threshold has moved from three or more exacerbations a year to individualised future-risk assessment, and a new algorithm is provided.
Long-term oral non-macrolide antibiotics	A conditional recommendation in favour of second-line use in 2017 has become a conditional recommendation against use in 2025, while remaining appropriate for selected patients in whom other treatments have been tried and found ineffective.
Management of exacerbations	The 2017 guideline set a standard 14-day antibiotic course without detailed guidance. The 2025 guideline gives much broader guidance on investigation and management, retains 14 days as generally appropriate, and identifies clinical scenarios in which shorter courses may suffice.
Investigation and management of the deteriorating patient	Entirely new since 2017.

Source: adapted from Chalmers et al., *The European Respiratory Society guideline for management of adult bronchiectasis: clinical summary*, *Breathe* 2026.²⁸

Several of these changes carry direct resource implications for Irish services, particularly the extension of airway clearance to most patients and the strong recommendation for bronchiectasis-specific pulmonary rehabilitation.

Non-pharmacological management

Among non-pharmacological interventions, the guideline makes a strong recommendation in favour of airway clearance techniques for most patients with bronchiectasis, which are best taught and reviewed by a respiratory physiotherapist with appropriate experience, as well as a strong recommendation for pulmonary rehabilitation for patients with impaired exercise capacity. The educational component of pulmonary rehabilitation (PR) should be bronchiectasis-specific and include airway clearance strategies, alongside regular physical activity.¹³ At present, there are no dedicated community facilities for PR for bronchiectasis yet in Ireland.

Pharmacological management

Pharmacological management is directed by exacerbation risk and airway infection status. The guideline makes strong recommendations for long-term macrolide treatment in patients at high risk of exacerbations, and for long-term inhaled antibiotics in patients with chronic *Pseudomonas aeruginosa* infection who remain at high risk of exacerbations despite standard care. Conditional recommendations support eradication treatment following new isolation of *Pseudomonas aeruginosa*, and mucoactive drugs in specific circumstances. The guideline suggests not routinely using long-term oral non-macrolide antibiotic treatment or inhaled corticosteroids¹³.

Recommendations in the guideline are graded by the strength of the evidence and the balance of benefit and harm, and the wording matters when services are being planned. A strong recommendation in favour means the benefits clearly outweigh the harms and the intervention should be offered routinely; a conditional recommendation in favour means it suits some patients and should be discussed rather than applied uniformly. A strong recommendation against means the harms clearly outweigh the benefits and the intervention should not be offered, while a conditional recommendation against means it is likely to cause more harm than benefit for most, though some patients may still

reasonably choose it. Where the evidence did not allow a judgement, no recommendation was made. The strong recommendations are the ones against which a service can reasonably be held to account¹³.

Table 3.8. Summary of principal treatment recommendations, ERS 2025 guideline

Intervention	Population	Recommendation
Airway clearance techniques	Most patients with bronchiectasis	Strong, in favour
Pulmonary rehabilitation	Breathlessness or impaired exercise capacity	Strong, in favour
Long-term macrolides	High risk of exacerbations	Strong, in favour
Long-term inhaled antibiotics	Chronic <i>P. aeruginosa</i> infection, high exacerbation risk	Strong, in favour
Long-term inhaled antibiotics	High exacerbation risk without <i>P. aeruginosa</i>	Conditional, in favour
Eradication treatment	New isolation of <i>P. aeruginosa</i>	Conditional, in favour
Mucoactive drugs	Selected patients with difficulty expectorating	Conditional, in favour
Long-term oral non-macrolide antibiotics	General bronchiectasis population	Conditional, against
Long-term inhaled corticosteroids	No coexisting asthma or COPD	Conditional, against
Recombinant DNase	General bronchiectasis population	Conditional, against

Source: Chalmers et al., European Respiratory Society clinical practice guideline for the management of adult bronchiectasis, 2025¹³.

Disease-modifying therapy

In 2025 brensocatib, an oral, once-daily, reversible inhibitor of dipeptidyl peptidase-1, became the first therapy licensed specifically for bronchiectasis. Dipeptidyl peptidase-1 activates neutrophil serine proteases, which are principal drivers of the neutrophilic airway inflammation characteristic of the condition. In the phase 3 ASPEN trial, the largest clinical trial conducted in bronchiectasis, once-daily brensocatib reduced the annualised rate of pulmonary exacerbations by 19.4% at the 25 mg dose compared with placebo, and significantly, the decline in FEV1 was smaller with the 25 mg dose than with placebo.¹⁶ The European Commission granted marketing authorisation on 18 November 2025, for the 25 mg dose, for the treatment of non-cystic fibrosis bronchiectasis in patients aged 12 years and older with two or more exacerbations in the preceding 12 months¹⁷.

The 2025 ERS guideline was developed before authorisation and does not address the place of brensocatib in therapy¹³. For Ireland, reimbursement status, eligibility criteria, the setting in which treatment would be initiated and the arrangements for monitoring all remain to be determined. The arrival of a licensed therapy also changes the significance of accurate diagnosis and coding: a population that cannot be counted cannot be planned for. In June 2026 EMBARC announced its intention to collaborate with the manufacturer on a long-term interventional study of brensocatib 25 mg, open-label and single-arm, enrolling up to 3,000 patients over three years. The study is designed to test whether earlier use alters the course of the disease rather than only slowing it, building on trial evidence that brensocatib reduces exacerbation

frequency, slows lung function decline and produces structural change in the airways. Recruitment is planned in the United Kingdom, Spain, Germany, Belgium, France and Italy. Ireland is not among the announced participating countries, despite being an EMBARC member, which illustrates the practical consequence of limited national participation in the network: Irish patients are unlikely to have access to the largest interventional study yet undertaken in this disease³¹.

Inhaled corticosteroids

Inhaled corticosteroids are widely prescribed in bronchiectasis despite the absence of an indication in patients without coexisting asthma or COPD²¹. Their use is associated with an increased risk of pneumonia in patients with COPD–bronchiectasis overlap²². Review and, where appropriate, discontinuation of inhaled corticosteroids in patients without a clear indication represents a practical quality improvement opportunity, and one that follows directly from distinguishing bronchiectasis from COPD.

Non-tuberculous mycobacterial disease

Non-tuberculous mycobacterial pulmonary disease occurs in a minority of patients with bronchiectasis but requires a distinct diagnostic pathway, prolonged multidrug therapy and specialist multidisciplinary input²⁵. Its presence also alters decisions about long-term macrolide therapy, since macrolide monotherapy in undiagnosed non-tuberculous mycobacterial disease risks inducing macrolide resistance. Sputum culture for mycobacteria before commencing long-term macrolides is therefore essential.

Exacerbations and the deteriorating patient

The 2025 guideline sets out for the first time how exacerbations and clinical deterioration should be investigated and managed. An exacerbation is identified by sustained worsening of symptoms — increased cough, greater sputum volume or a change in its character, breathlessness, fatigue, fever or haemoptysis. A sputum sample should be taken before antibiotics are started wherever possible, and repeated if there is no response. Fourteen days remains the standard course, particularly in severe exacerbations or where *Pseudomonas aeruginosa* is implicated, with shorter courses appropriate in milder disease or with more readily treated organisms. Written self-management plans, which allow trained patients to start antibiotics at home at the first sign of deterioration, are recommended, as is intensified airway clearance during an exacerbation¹³.

A separate algorithm addresses the patient who is deteriorating rapidly, whether through increasingly frequent exacerbations, abrupt symptomatic worsening or accelerated lung function decline. It directs a full reassessment of diagnosis and treatment, confirmation that airway clearance is being performed effectively and that prescribed therapy is being taken, a search for contributory conditions including allergic bronchopulmonary aspergillosis, non-tuberculous mycobacterial infection and new airway infection, and repeat computed tomography. Treatment is then personalised through the treatable traits approach. The algorithm also directs prompt referral to a clinician with bronchiectasis expertise where the patient is not already under specialist care, consideration of surgery in the minority with localised disease refractory to medical treatment, and early referral for transplant assessment where deterioration continues¹³.

Both algorithms turn on prompt referral to bronchiectasis expertise, which assumes a pathway Ireland does not have; this is discussed under Access to Care.

3.4 Conclusions

Bronchiectasis is a common, progressive and increasingly treatable chronic lung disease that Ireland currently cannot count. It has its own diagnostic criteria, its own European guideline, its own European registry and, since 2025, its own licensed therapy — yet in Irish national reporting, it remains embedded within COPD, and in Irish service planning, it appears nowhere at all.

We therefore recommend the following is considered:

- Separate reporting of bronchiectasis (ICD-10: J47) in national hospitalisation outputs, rather than aggregation within the COPD grouping, and continued separate reporting of J47 mortality including age-standardised and five-year rates.
- A national bronchiectasis registry, established by extending participation in the European Bronchiectasis Registry (EMBARC) to all centres and securing a national data extract, governed and funded.
- Capture of outpatient, primary care, home therapy and respiratory aids and appliances activity, so that measurement of the burden is not confined to inpatient episodes.
- A population-based prevalence study, or a validated estimate derived from primary care records, to allow Ireland to be benchmarked against the jurisdictions in Table 3.6.
- A national clinical programme and model of care for bronchiectasis, equivalent to those in place for CF, COPD, asthma, defining the pathway from primary care to specialist assessment, referral criteria for complex disease, and a specialist centre network.
- Structured and equitable access to a full aetiological work-up, including nasal nitric oxide measurement, sweat testing, genetic testing, and extended immunology and mycobacterial culture, so that the investigation a patient receives does not depend on the centre they attend.
- Resourcing of specialist airway clearance physiotherapy and pulmonary rehabilitation, which carry the strongest recommendations in the European guideline and are among the least consistently available services, together with the development of dedicated bronchiectasis clinical nurse specialist posts and multidisciplinary team involvement of dietitians and psychologists.
- A national framework for brensocatib — eligibility, initiation and monitoring — agreed ahead of rather than following reimbursement, so that access to the first licensed therapy for bronchiectasis is equitable from the outset.
- Increased access to clinical trials in Ireland with the development of a bronchiectasis clinical trial network to allow equitable access for bronchiectasis patients regardless of location.

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Chronic Obstructive Pulmonary Disease

04

Key Points

- COPD is a major and growing health challenge globally as one of the leading causes of illness and death worldwide. Its burden is expected to rise significantly, with cases projected to reach 600 million by 2050 due to continued exposure to risk factors, population growth, and ageing.
- In Ireland, COPD remains a leading cause of morbidity and mortality. In 2023, it was responsible for 1,771 deaths, accounting for around 92% of all chronic lower respiratory disease deaths.
- Ireland also faces a significant hidden burden: HSE estimates from 2024 suggest up to 380,000 people may be living with COPD, yet only around 110,000 have received a formal diagnosis — leaving approximately 270,000 people, or 71%, undiagnosed.
- Alpha-1 antitrypsin deficiency (AATD) is the most common genetic cause of COPD, with approximately 1 in 25 people in Ireland carrying a defective Alpha-1 antitrypsin gene which can cause lung, liver, and skin disease.
- In 2023, COPD was estimated to cost Ireland €4.2 billion. This underlines that COPD is not only a clinical issue, but also a major economic and system-level challenge.
- COPD-related hospital care alone is estimated to cost approximately €140 million per year, indicating substantial pressure on acute services that can be reduced through targeted investment in prevention, earlier diagnosis, and better-resourced community-based management.
- COPD places a substantial burden on acute hospitals, with high admission and readmission rates and hospitalisation levels above the OECD average.
- The Activity in Acute Public Hospitals report for 2024 reported that of inpatient discharges with COPD, 25.1% were classified as major complexity and had median and mean length of stay of 9 and 13.1 days respectively.
- In 2021, Ireland's age- and sex-standardised COPD hospitalisation rate was 219.2 per 100,000 population, substantially higher than the OECD average of 118.8 per 100,000. Recent HSE data (2024) estimates that there are more than 15,000 hospital admissions for COPD annually, with approximately one in four patients readmitted within 90 days.
- There is notable regional variation in COPD hospitalisation and mortality rates across Ireland, indicating geographic differences in disease burden and healthcare utilisation.
- As a common, preventable, and treatable disease, COPD presents a clear opportunity for policy action through stronger surveillance, earlier diagnosis, sustained tobacco control, equitable access to respiratory services, and greater investment in integrated community-based care.

4.1 Background

COPD is defined as a heterogeneous lung condition characterised by chronic respiratory symptoms, including dyspnoea, cough, and sputum production, resulting from persistent abnormalities of the airways and/or alveoli that often lead to progressive airflow limitation¹. COPD represents a major chronic respiratory disease burden among adults in Ireland² and is associated with substantial morbidity, premature mortality, impaired quality of life and healthcare utilisation^{3,4}. The consequences of COPD extend well beyond physiological impairment. Progressive breathlessness, reduced exercise capacity, chronic cough, exacerbations and multimorbidity can restrict independence and participation in family, occupational and social life. Exacerbations are particularly important because they may accelerate deterioration, adversely affect quality of life and lead to emergency department attendance and hospitalisation. For healthcare systems, these episodes contribute substantially to demand for acute hospital care. COPD is the third leading cause of death globally, with an estimated 3.4 million deaths in 2023, around 6% of all deaths worldwide. Nearly 90% of COPD deaths in people under 70 years of age occur in low- and middle-income countries, highlighting significant global health inequalities⁵. Recent projections suggest that the global burden of COPD will continue to increase, with the number of cases expected to approach 600 million worldwide by 2050, representing an estimated 23% increase compared with 2020⁶. The main risk factors include tobacco smoking, exposure to household and outdoor air pollution, and inhalation of toxic particles and gases. Early-life events and exposures, including those occurring in utero, are also increasingly recognised as increasing the risk of developing COPD. Some individuals may not achieve maximal lung development in early adulthood, particularly in the presence of other risk factors, leaving them more susceptible to COPD in later life.⁷ Alpha-1 antitrypsin deficiency (AATD) is the most common genetic cause of COPD.⁷ Severe AATD (caused by 2 defective AAT genes) is estimated to affect more than 3,000 people on the island of Ireland.⁸ AATD most often leads to COPD so it is of paramount importance that people with AATD avoid smoking and harmful occupational exposures completely.⁹ It is reassuring that people with AATD have been shown to have high quit smoking rates following their diagnosis¹⁰. Notably, AATD can also cause liver disease, and a rare skin condition called panniculitis.

Findings from the Global Burden of Disease Study 2021 further identified smoking as the leading contributor to

COPD disability-adjusted life years (DALYs), accounting for 34.8% of the global burden, followed by ambient particulate matter pollution (22.2%), household air pollution from solid fuels (19.5%), and occupational exposure to particulate matter, gases, and fumes (15.8%)¹¹.

COPD also occurs among people who have never smoked. In the WHO European Region, COPD mortality associated with major risk factors has shown a declining trend over the past two decades. Despite these reductions, tobacco exposure remains the primary contributor to COPD-related mortality¹². Contemporary understanding therefore extends beyond COPD as a disease caused predominantly by cigarette smoking and recognises the importance of multiple interacting genetic, developmental, environmental and socioeconomic determinants operating across the life course. These international trends are also reflected within the Irish context. Findings from the Healthy Ireland Survey 2025 indicate that tobacco use remains an important public health concern in Ireland. Overall, 17% of the population reported current smoking, including 13% who smoked daily and 4% who smoked occasionally, with smoking prevalence remaining largely unchanged since 2019.¹³

Poor air quality is estimated to cause approximately 1,700 premature deaths annually in Ireland, primarily linked to fine particulate matter¹⁴. A 2025 report from the WHO and the European Respiratory Society found that over 90% of people in Europe breathe air exceeding WHO guideline levels¹². Ireland currently meets European Union air quality standards but is projected to reach only 93% compliance for fine particulate matter and 78% for nitrogen dioxide against the stricter standards applying from 2030. The principal sources are domestic solid fuel burning and traffic emissions¹⁴.

Underdiagnosis remains a major concern. HSE estimates of 380,000 people living with COPD in Ireland, against around 110,000 formal diagnoses, imply that approximately 270,000 people, or 71% of the estimated total, are living with the condition undiagnosed.¹⁵ COPD represents a significant and growing health, social, and economic challenge for Ireland and must be recognised as a critical priority in any future respiratory strategy and planning. As a common, preventable, and treatable disease, COPD presents a clear opportunity for policy action through stronger surveillance, earlier diagnosis, sustained tobacco control, equitable access to respiratory services, and greater investment in integrated community-based care.

4.2 Burden of Disease

A note on data coding: national mortality and hospital activity data are reported using ICD-10 codes J40–J44, which combine COPD with bronchiectasis and cannot be separated in the source. Where figures in this chapter cover both conditions, this is stated explicitly; bronchiectasis is otherwise addressed in Chapter 3.

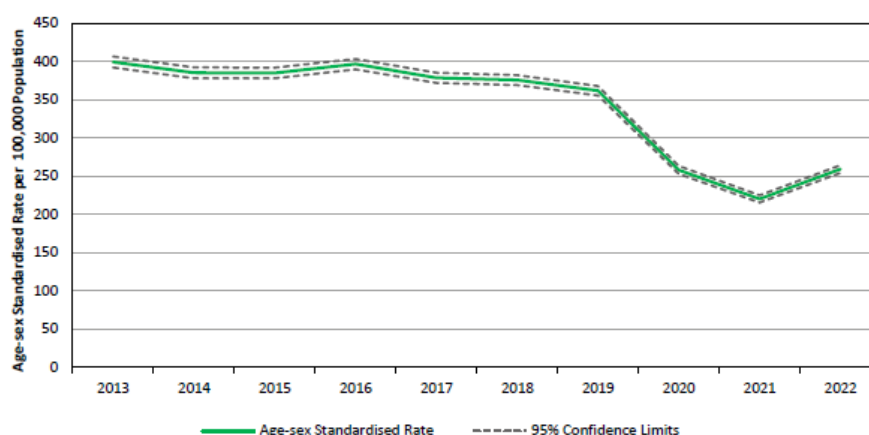
Incidence and prevalence

National estimates from the Health Service Executive (HSE) in 2024 suggest that up to 380,000 people may be living with COPD, of whom only around 110,000 have been formally diagnosed, indicating substantial underdiagnosis.¹⁵ According to the European Respiratory Society's analysis of GBD Study 2023 data for Ireland, COPD places a substantial burden on the population, accounting for 43,697 years of healthy life lost (YLL) and an estimated EUR4.2 billion in societal costs. YLL is a measure of premature death that takes into account both the rate of deaths (mortality) and the

age at which it occurs. The economic value of healthy years lost because of a condition is presented as the societal cost of a condition's burden, calculated at EUR4.2 billion for Ireland. This is calculated by applying a cost based on a country's national wealth per citizen, referred to as the gross domestic product (GDP) per capita, to a metric of healthy years lost because of specific conditions and risk factors, referred to as disability-adjusted life-years (DALYs).¹⁶

In the absence of population-based prevalence data for COPD, hospitalisation rates serve as a proxy indicator of disease burden, particularly for more severe cases. According to the National Healthcare Quality Reporting System¹⁷, the age- and sex-standardised hospitalisation rate for COPD in Ireland was 259.31 per 100,000 population in 2022. This represents an increase compared to 2021 levels reported from the same source (220.15 per 100,000), although rates remain lower than pre-pandemic levels observed in 2019 (361.73 per 100,000) (Figure 4.1).

Figure 4.1. Age-sex standardised hospitalisation rates for COPD per 100,000 population in Ireland, 2013–2022



Source: National Healthcare Quality Reporting System Annual Report 2023¹⁷

Mortality

The five-year age-standardised mortality rates for chronic lower respiratory disease reported by Department of Health are presented in Table 4.1. All columns, except the third, relate to Chronic Lower Respiratory Disease (ICD-10 J40–J47). However, given the relatively small difference in numbers between total deaths and those excluding asthma (J45–J46), the data largely reflects mortality associated with COPD¹⁹.

Table 4.1. Chronic lower respiratory disease (ICD-10: J40–J47). Deaths, crude mortality rate and five-year age-standardised mortality rate, 2016–2024

Year	Total deaths J40–J47	Deaths excluding asthma (J45–J46)	Crude mortality rate per 100,000 (J40–J47)	5yrs*	Five-year age-standardised mortality rate (J40–J47)
2016	1729	1665	36.48		
2017	1626	1567	33.80		
2018	1751	1671	35.85		
2019	1828	1759	36.87	2015–19	55.58
2020	1552	1492	30.86	2016–20	52.4
2021	1536	1471	30.27	2017–21	49.42
2022	1832	1744	35.34	2018–22	49.21
2023	1926	1845	36.47	2019–23	48.82
2024*	1950	1856	36.24	2020–24	46.84

Source: Health Statistics (PHIS) / CSO¹⁹. * Provisional data for 2024. Five-year age-standardised mortality rates were not available for 2016–2018.

In 2024, there were 1,950 deaths registered as chronic lower respiratory disease (ICD-10: J40–J47), of which 1,856 (approximately 95%) were attributable to COPD and bronchiectasis codes combined (ICD-10 J40–J44 and J47). In comparison, there were 1,926 deaths recorded in 2023, indicating that mortality remains high in absolute terms despite improvements in age-standardised mortality rates¹⁹.

Table 4.2 shows mortality trends for COPD (ICD-10: J40–J44) from 2017 to 2023. In 2023, COPD (ICD-10: J40–J44) accounted for 1,771 deaths, representing approximately 92% of all chronic lower respiratory disease deaths (codes J40–J47; n=1,926). Unlike the broader chronic lower respiratory disease category (ICD-10: J40–J47), five-year age-standardised mortality rates were not publicly available for COPD separately¹⁹.

Table 4.2. Chronic Obstructive Pulmonary Disease (ICD-10: J40–J44). Deaths, 2017–2023

Year	Total deaths J40–J44	/100,000 population J40–44
2017	1498	31.14
2018	1595	32.65
2019	1688	34.04
2020	1432	28.47
2021	1394	27.47
2022	1666	32.14
2023	1771	33.53

Source: Health Statistics (PHIS) / CSO¹⁹.

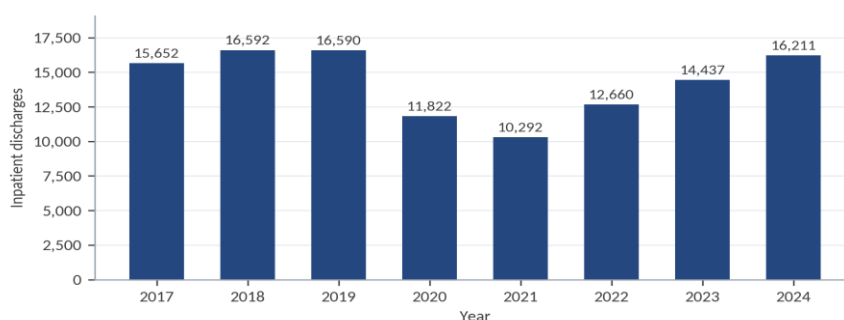
Hospitalisations

Recent HSE data estimates that there are more than 15,000 hospital admissions for COPD annually, with approximately one in four patients readmitted within 90 days. COPD-related hospital care is estimated to cost approximately €140 million per year²⁰.

Since the implementation of the HSE End to End COPD Model of Care (Figure 4.11), improvements have been observed in hospital activity indicators. A recent report by the National Clinical Programme (NCP) Respiratory compared COPD data from 2018 with 2024. The 2024 data demonstrated a 12% reduction in hospitalisations, a 3% reduction in 90-day readmissions, 7,874 bed days saved, and an estimated €9.9 million reduction in COPD-related acute hospital costs at sites where services were adequately resourced to deliver a complete integrated model of care for COPD patients²⁰.

Figure 4.2 shows the number of inpatient hospitalisations with a primary diagnosis of COPD and bronchiectasis (data reported together) between 2017 and 2024. Hospital discharges increased from 15,652 in 2017 to 16,211 in 2024, following a marked reduction during the COVID-19 pandemic period, when admissions fell to 11,822 in 2020 and 10,292 in 2021. Since then, hospitalisations have progressively increased, returning to levels similar to those observed prior to the pandemic²¹.

Figure 4.2. Inpatient hospitalisations with a primary diagnosis of COPD and bronchiectasis, 2017–2024



Source: HIPE 2017–2024²¹.

Table 4.3. Inpatient hospitalisations with a primary diagnosis of COPD and bronchiectasis in adult acute hospitals, 2017–2024

Year	Discharges COPD and Bronchiectasis	% of all inpatient discharges	Rate/ 100,000 population	Bed days used COPD and Bronchiectasis	% of all inpatient bed days used	Mean LOS	Median LOS
2017	15652	2.44%	325	125,216	3.40%	8	5
2018	16592	2.55%	340	128,920	3.41%	7.77	5
2019	16590	2.55%	335	126,914	3.34%	7.65	5
2020	11822	2.08%	235	89,020	2.67%	7.53	5
2021	10292	1.71%	203	78,940	2.25%	7.67	5
2022	12660	2.06%	244	102,166	2.68%	8.07	5
2023	14437	2.20%	273	115,640	2.85%	8.01	5
2024	16211	2.31%	301	127,743	3.02%	7.88	5

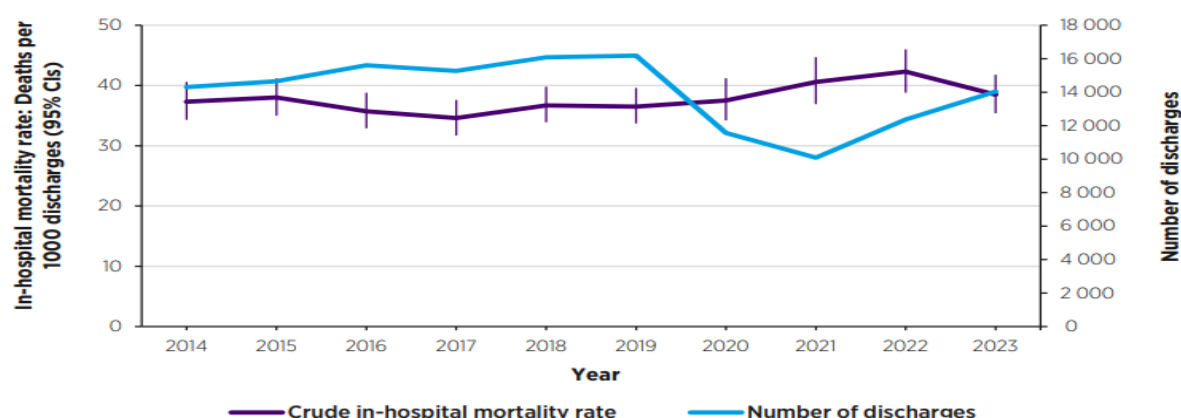
Source: Hospital Inpatient Enquiry (HIPE), Health Pricing Office (HPO)²¹. LOS: length of stay.

COPD and Bronchiectasis accounted for 127,743 (3.02%) bed days in 2024. Excluding day-case admissions, COPD and bronchiectasis accounted for 19% (16,211) of respiratory inpatient hospitalisations (2.31% of inpatient hospitalisations) and 22.23% of respiratory inpatient bed days (3.02% inpatient bed days) in 2024 in all hospitals reporting activity to HIPE (Table 4.3)²¹.

Respiratory conditions are among the leading causes of emergency inpatient admissions. According to HIPE emergency inpatient activity data, COPD only (ICD-10: J44) remained one of the leading disease-specific causes of emergency hospitalisation in Ireland in 2024. Emergency inpatient discharges with a principal diagnosis of other chronic obstructive pulmonary disease accounted for 14,600 admissions, representing 2.9% of all emergency inpatient discharges. In addition, unspecified acute lower respiratory infection (ICD-10: J22) accounted for 15,793 emergency inpatient discharges, representing 3.1% of all emergency inpatient activity reported to HIPE²². In addition to these inpatient admissions, COPD represented approximately 4.5% of unscheduled care delivered through emergency departments in 2024.²³

The Activity in Acute Public Hospitals report for 2024 reported that of those admitted with COPD as inpatients, 25.1% were classified as major complexity and had median and mean length of stay of 9 and 13.1 days respectively²². The crude in-hospital mortality rate for COPD increased during the COVID-19 pandemic but returned to approximately pre-pandemic levels by 2023, with 38.5 deaths per 1,000 hospital discharges compared with approximately 37 per 1,000 in 2014. Between 2022 and 2023, the rate declined from 42.3 to 38.5 deaths per 1,000 discharges, although this reduction was not statistically significant ($p=0.13$) (Figure 4.3). Overall, no statistically significant change in crude COPD in-hospital mortality was observed between 2014 and 2023²⁴.

Figure 4.3. National in-hospital mortality rate and number of discharges following a principal diagnosis of chronic obstructive pulmonary disease at discharge, 2014–2023



Source: National Office of Clinical Audit (2025). National Audit of Hospital Mortality National Report 2022 and 2023²⁴.

Sex

During the five-year period from 2020 to 2024, chronic lower respiratory disease (ICD-10: J40–J47) resulted in 4,257 deaths among males and 4,539 deaths among females in Ireland. Although the total number of deaths was slightly higher among females, mortality was relatively similar between sexes overall. However, the five-year age-standardised mortality rate in 2024 was higher among males (53.23) compared with females (42.92)¹⁹. Between 2019 and 2024, the five-year age-standardised mortality rate for chronic lower respiratory disease showed a gradual decline for both sexes, decreasing from 66.96 to 53.23 per 100,000 population among males and from 48.77 to 42.92 among females. Despite this decline, mortality rates remained consistently higher among males across all years presented.¹⁹ Separate mortality data for COPD (ICD-10: J40–J44) and bronchiectasis (ICD-10: J47) by sex were not available for 2024. Therefore, the most recent available data, 2023, were used. In 2023, COPD accounted for 859 deaths (48.50%) among males and 912 deaths (51.50%) among females.¹⁹ Regarding hospitalisations, in 2024 there were 16,211 inpatient discharges with a principal diagnosis of COPD and bronchiectasis, of which 7,547 (46.55%) occurred among males and 8,664 (53.45%) among females²¹.

Age

The majority of deaths attributed to chronic lower respiratory disease (ICD-10: J40–J47) occurred among individuals aged over 64 years (93.79%) in data 2017–2024, Table 4.4. As described in the previous section, most deaths within this category were attributable to COPD, reflected by the relatively small difference between total deaths and deaths excluding asthma (ICD-10: J45–J46). In 2024, the age-standardised mortality rate for all ages was 47.73. From 2017 to 2024, the age-standardised mortality rate showed an overall decline, decreasing from 52.28 per 100,000 population in 2017 to 47.73 in 2024, despite some year-to-year variation during the period (Table 4.4)¹⁹.

Although most deaths occurred among older adults, the YPLL findings indicate an ongoing impact of premature mortality among individuals aged 0–64 years across the study period. In 2024, the YPLL for chronic lower respiratory disease (ICD-10: J40–J47) among individuals aged 0–64 years was 931 years, corresponding to 21.35 years lost per 100,000 population. Excluding asthma-related deaths (ICD-10: J45–J46), the YPLL remained high at 762 years¹⁹.

Table 4.4. Chronic lower respiratory disease (ICD 10: J40–47). Years of potential life lost (YPLL), 2017–2024

Year	Standardised Mortality Rate All ages	Total Deaths J40–47	Total Deaths - (no asthma 45–46)	Deaths J40–47 age < 64yrs	YPLL 0 – 64 yrs J40–47	YPLL 0 – 64 yrs J45–46 excluded	YPLL/100,000 population J40–47	Lower 95% CI	Upper 95% CI
2017	52.28	1626	1567	110 (6.77%)	770	574	21.06	15.6	26.52
2018	53.85	1751	1671	123 (7.02%)	763	592	20.87	16.03	25.71
2019	54.39	1828	1759	127 (6.95%)	821	658	22.65	17.27	28.03
2020	44.83	1552	1492	103 (6.64%)	709	535	17.81	12.85	22.77
2021	43.39	1536	1471	100 (6.51%)	624	591	16.71	12.57	20.85
2022	48.76	1832	1744	118 (6.44%)	966	662	23.22	17.45	28.98
2023	49.39	1926	1845	144 (7.48%)	918	829	21.89	16.84	26.94
2024	47.73	1950	1856	121 (6.21%)	931	762	21.35	16	26.69

Source: Health Statistics (PHIS) / CSO¹⁹. CI: confidence interval.

In 2024, a total of 260,693 inpatient discharges were recorded among patients aged 65 years and over in Ireland. Of these, 12,462 admissions (4.78%) were associated with COPD and bronchiectasis. Among the 2,432,266 inpatient bed days recorded for this age group, 104,681 (4.30%) were attributable to COPD and bronchiectasis-related admissions. Overall, of the 16,211 admissions and 127,743 inpatient bed days associated with COPD and bronchiectasis in 2024, 76.87% of admissions occurred among individuals aged 65 years and over, accounting for 81.95% of COPD and bronchiectasis inpatient bed days. In comparison, among individuals aged 15–64 years, COPD and bronchiectasis accounted for 1.02% of all inpatient hospitalisations and 1.22% of inpatient bed days in 2024²¹.

Genetics

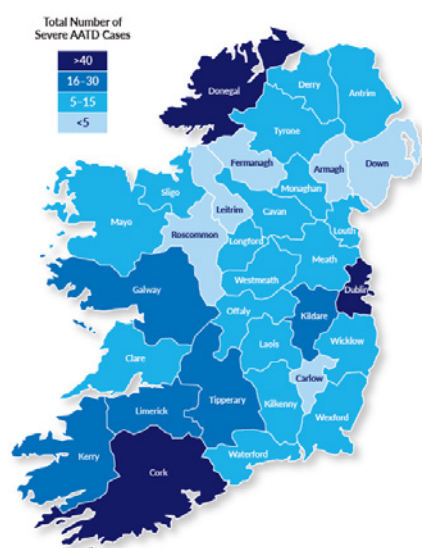
Alpha-1 antitrypsin deficiency (AATD) is the most common genetic cause of COPD. Severe AATD (caused by 2 defective AAT genes) is estimated to affect more than 3,000 people on the island of Ireland. Research shows that 1 in 25 people in Ireland carry a defective AAT gene.⁷ This means that a further 250,000 Irish

people with a single defective AAT gene are also at risk of COPD if they smoke. AATD most often leads to COPD, so it is of paramount importance that people with AATD avoid smoking and harmful occupational exposures completely. It is reassuring that people with AATD have been shown to have high quit smoking rates following their diagnosis. Notably, AATD can also cause liver disease, and a rare skin condition called panniculitis.

National Alpha-1 Antitrypsin Deficiency Registry

The National AATD Registry was re-developed and re-launched on 31st July 2017 and to date, there are over 900 individuals enrolled on the registry. The registry has many new features including a family tree tool to highlight the impact of the condition within a family and to help identify further family members who may be affected.

The distribution of severe AATD cases per 10,000 population demonstrates regional variation across the island of Ireland, with higher case concentrations observed in counties including Donegal and Cork⁷ (Figure 4.4).

Figure 4.4. Distribution of severe AATD cases per 10,000 population

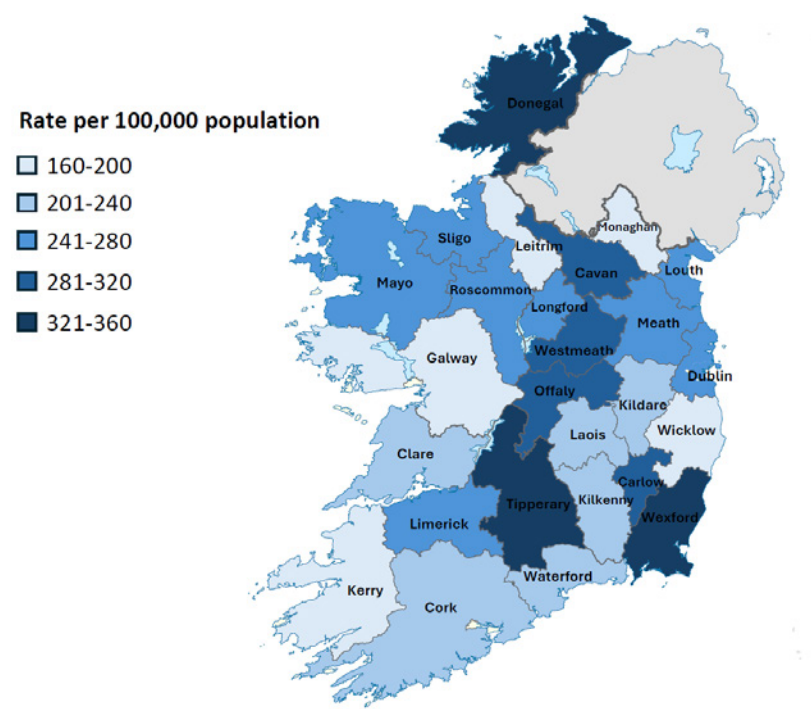
Source: National AATD Registry⁸.

Regional Variation

Regional variation in COPD hospitalisation rates was observed across Ireland during the 2020–2022 period. As shown in Figure 4.5, age- and sex-standardised hospitalisation rates by county of residence ranged from 169.5 hospitalisations per 100,000 population in Leitrim to 355.8 per 100,000 population in Donegal. The national rate was 245.8 hospitalisations per 100,000 population. These findings highlight substantial geographic variation in hospitalisation burden across the country, although the underlying factors contributing to these differences remain unclear and warrant further investigation¹⁷.

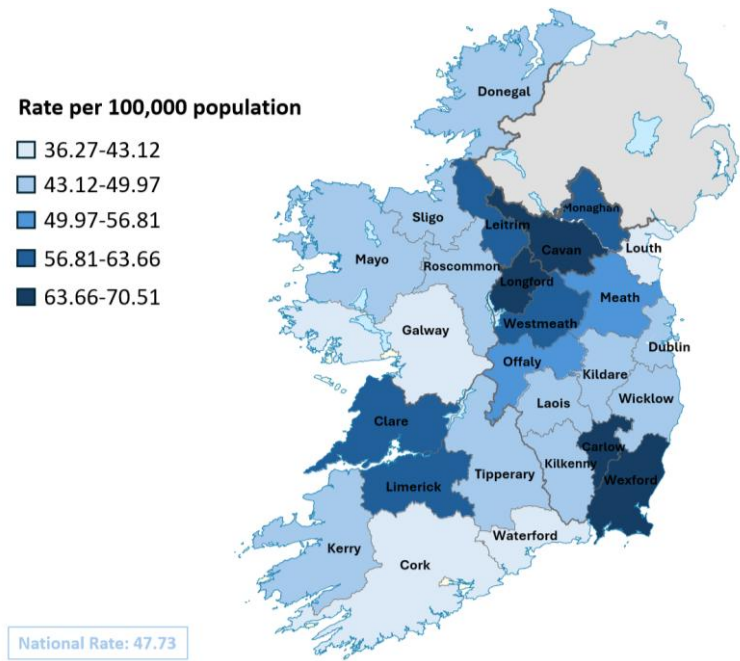
A similar pattern of regional variation was observed for chronic lower respiratory disease mortality (ICD-10: J40–J47). In 2024, the age- and sex-standardised mortality rate by county of residence ranged from 36.27 deaths per 100,000 population in Galway to 70.51 deaths per 100,000 population in Longford. The national age-standardised mortality rate was 47.73 deaths per 100,000 population. Counties including Wexford, Cavan, Carlow, and Westmeath reported rates substantially above the national average, while lower mortality rates were observed in Galway, Louth, and Cork¹⁹.

Figure 4.5. Age-sex standardised hospitalisation rate for COPD per 100,000 population by county of residence, 2020–2022



Source: National Healthcare Quality Reporting System Annual Report 2023¹⁷; Hospital Inpatient Enquiry. Average annual rate 2020–2022, standardised to the OECD standard population.

Figure 4.6. Age-sex standardised mortality rate for chronic lower respiratory disease (ICD-10: J40–J47) per 100,000 population by county of residence, 2024*



Source: Health Statistics (PHIS) / CSO¹⁹. * Provisional data for 2024.

International Benchmarking

Estimates of the global prevalence and burden of chronic respiratory diseases remain variable due to methodological differences, limited population-based studies, and underdiagnosis across many regions²⁵.

More recent findings from the GBD Study 2023 indicated that COPD remained one of the leading chronic respiratory diseases globally, ranking second only to asthma, with an estimated 214.6 million prevalent cases worldwide (95% UI: 193.5–232.1 million) and an age-standardised prevalence rate of 2,373.0 cases per 100,000 population (95% UI: 2,143.9–2,565.1)²⁶. COPD was also identified as the third leading cause of death worldwide in 2023 based on age-standardised mortality rates²⁷. In Ireland, COPD also represents a substantial public health burden. It is estimated that approximately 380,000 people are living with COPD, although only 110,000 have been formally diagnosed¹⁵. According to the World Health Organization health statistics for Ireland, COPD was the fourth leading cause of death in 2021, with a mortality rate of 42.4 deaths per 100,000 population¹⁸. National mortality data from 2023 indicate that chronic obstructive pulmonary disease remained among the leading causes of death in Ireland, accounting for 4.7% of all deaths and ranking as the fourth most common cause of death nationally²⁸.

International benchmarking using OECD mortality data in Figure 4.7 for 2022 demonstrates marked variation in COPD mortality rates across countries. National mortality data from the CSO reported a crude mortality rate of 32.14 deaths per 100,000 population in Ireland for COPD (ICD-10: J40–J44), comparable to Austria (32.6) and Czechia (31.4), while remaining lower than Denmark (62.1), Hungary (50.2), and the United States (42.8). In contrast, lower mortality rates were observed in countries such as France (14.9), Korea (9.3), and Israel (12.2)²⁹.

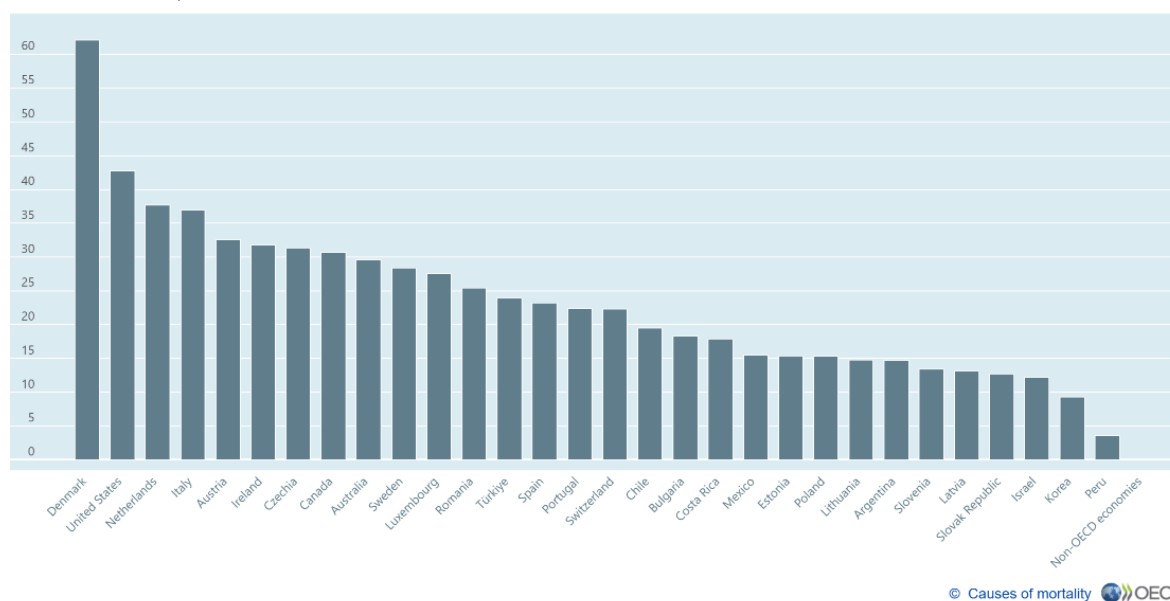
Figure 4.7. International comparison of COPD crude mortality rates per 100,000 population, OECD countries, 2022

Causes of mortality

Frequency of observation: Annual • Measure: Mortality • Cause of death: Chronic obstructive pulmonary diseases • Calculation methodology: Crude rate •

Time period: 2022

Unit of measure: Deaths per 100 000 inhabitants



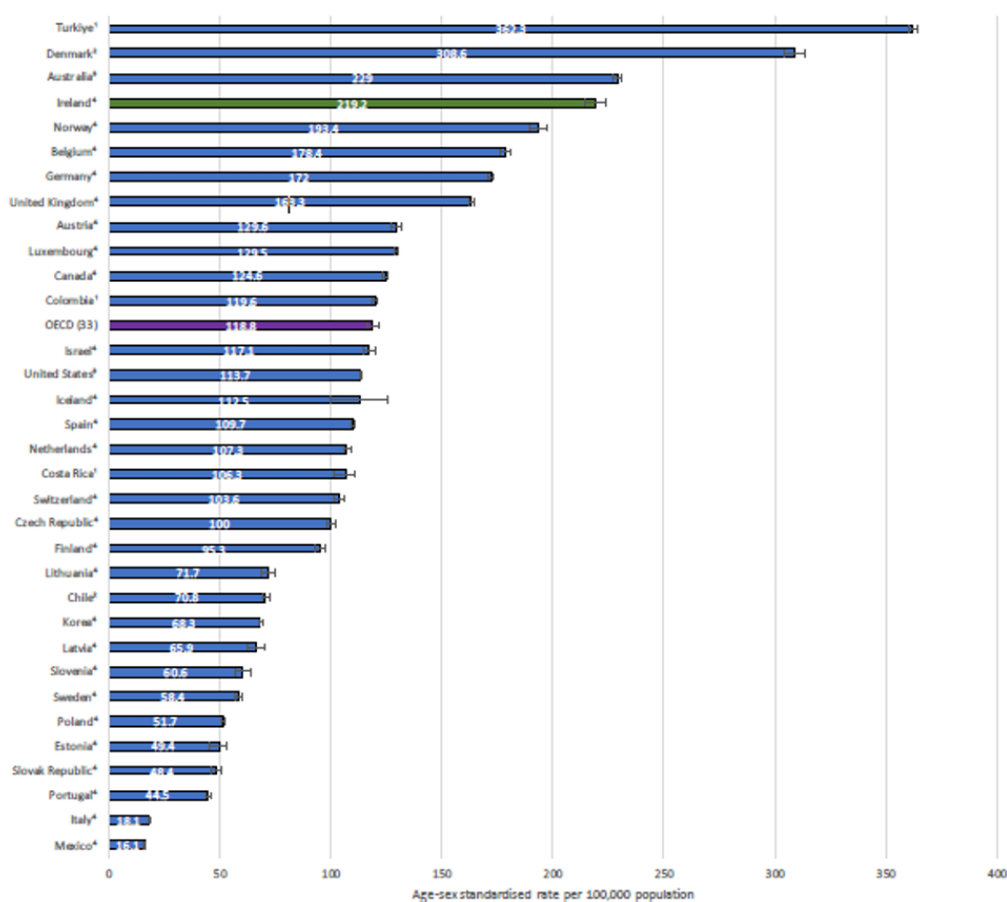
Source: OECD Health Statistics, 2022. Causes of mortality – COPD (ICD-10: J40–J44)²⁹.

OECD age-standardised mortality data for 2022 demonstrated substantial international variation in COPD mortality rates. Ireland recorded an age-standardised mortality rate of 36.5 deaths per 100,000 population, remaining higher than several European countries, including Portugal (14.5), Spain (16.9), Switzerland (18.0), Italy (21.5), and Sweden (22.1). However, mortality rates in Ireland remained lower than those reported in Denmark (51.0), Türkiye (45.7), the United States (42.5), and Mexico (40.7)²⁹. These findings indicate that COPD continues to represent a substantial mortality burden in Ireland within an international context.

In terms of hospital activity as per Figure 4.8, OECD data indicate that in 2021, Ireland's hospitalisation rate for COPD (219.2 per 100,000 population) was substantially higher than the OECD average (118.8 per 100,000 population),

suggesting a comparatively greater impact on the healthcare system. In addition, notable regional variation exists, with hospitalisation rates differing considerably across counties, indicating potential inequalities in disease burden and healthcare utilisation¹⁷.

Figure 4.8. Age-sex standardised hospitalisation rates for COPD per 100,000 population (15 years or older) for selected OECD countries, 2021 (or nearest year)

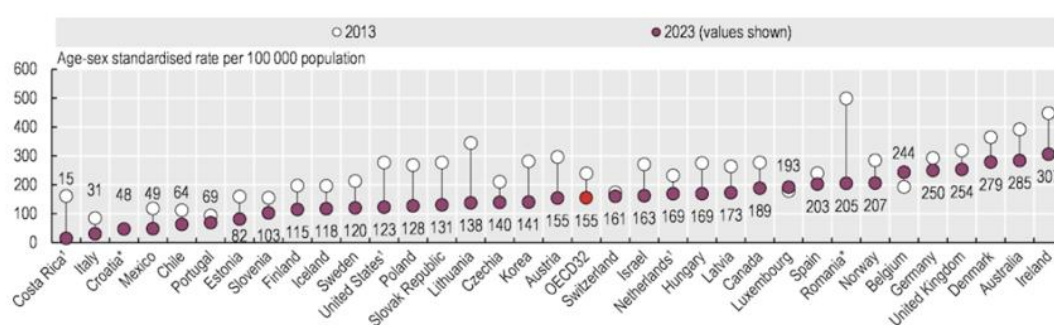


^a 2017; ^b 2019; ^c 2020; ^d 2021

Source: National Healthcare Quality Reporting System Annual Report, 2023¹⁷.

OECD data in Figure 4.9 show that Ireland has the highest combined hospital admission rates for asthma and COPD between 2013 and 2023. However, the data trend also indicates gradual improvement over time, with the hospital admission rates declining since 2013.

Figure 4.9. Asthma and chronic obstructive pulmonary disease hospital admissions in adults, 2023 and 2013 (or nearest year)



1. Latest data from 2021-2022. * Accession/partner country.

Source: OECD Health Statistics 2025.

Source: OECD Health at a Glance 2025³⁰.

4.3 Prevention, Diagnosis and Management

COPD is a preventable and manageable disease, and its burden can be reduced through interventions targeting major risk factors and broader social determinants of health. Factors associated with COPD include tobacco use, indoor and outdoor air pollution, occupational exposures, respiratory infections, lower educational attainment, socioeconomic disadvantage, and poverty³¹.

Strategies for COPD prevention and early detection include primary prevention aimed at the general population, secondary prevention focused on individuals with symptoms suggestive of COPD, and tertiary prevention for those with established disease².

International guidance from GOLD emphasises that reducing exposure to major risk factors is important not only for the primary prevention of COPD, but also as part of disease management. Smoking cessation remains the most effective intervention to reduce COPD progression and improve outcomes. Additional preventive measures include reducing exposure to indoor and outdoor pollutants, improving household ventilation, and minimising exposure to respiratory irritants where possible⁷.

Initial assessment and ongoing management should consider symptom burden, exacerbation history, smoking status, lung function, and the presence of comorbidities in order to guide treatment decisions and disease monitoring. Pharmacological treatment is primarily aimed at reducing symptoms, improving

quality of life, and preventing exacerbations, while non-pharmacological interventions such as pulmonary rehabilitation, exercise, and self-management support remain important components of care⁷.

Regular review and follow-up are essential in COPD management and should include assessment of symptoms, exacerbations, smoking exposure, inhaler adherence and technique, physical activity, vaccination status, and the need for additional interventions such as oxygen therapy, non-invasive ventilation, lung volume reduction procedures, or palliative care approaches where appropriate⁷.

The identification of at-risk populations, including smokers, ex-smokers, individuals with smoking-related diseases, genetic screening and those presenting with respiratory symptoms, together with access to spirometry, are recognised as essential components of COPD prevention and early diagnosis³¹. Cardiovascular disease, lung cancer, and type 2 diabetes are common comorbidities among individuals living with COPD. Smoking cessation not only improves COPD management and slows disease progression but may also reduce the risk of developing these coexisting conditions³¹. Management of COPD requires a comprehensive and individualised approach combining pharmacological and non-pharmacological interventions.

In Ireland, despite the importance of early diagnosis, underdiagnosis remains a significant challenge². Limited awareness of COPD may contribute to delays in recognising symptoms, seeking medical attention, and initiating interventions aimed at slowing disease progression³².

The HSE End to End COPD Model of Care reflects the continuum of care provided across hospital and community settings, ranging from primary prevention and early detection to specialist and tertiary care³². Further aspects of service delivery and management are discussed in the following section.

Screening

In 2004, Alpha-1 Foundation Ireland³³ began a national screening programme funded by the HSE to reduce the under diagnosis and misdiagnosis of Alpha-1. This targeted detection programme is the only national screening programme for Alpha-1 in the world. More than 30 hospitals around Ireland participate in the detection programme. A total of 26,000 people have been tested so far, with over 7,500 people diagnosed with either moderate or severe AATD. Many attend the National Centre of Expertise for AATD at Beaumont Hospital, under the clinical leadership of Consultant Respiratory Physicians Professor Gerry McElvaney, Professor Cedric Gunaratnam, and Dr. Michelle Casey.

Who should be tested:

- Adults with symptomatic emphysema or COPD (regardless of age or smoking history)
- Adults with asthma with airflow obstruction that is incompletely reversible after aggressive treatment with bronchodilators.
- Asymptomatic individuals with persistent obstruction on pulmonary function tests with identifiable risk factors (e.g. cigarette smoking, occupational exposure).
- Adults with panniculitis
- Siblings of individuals with Alpha-1
- Individuals with unexplained liver disease, including neonates, children and adults, particularly the elderly

The National Alpha-1 Clinic is based at the National Centre of Expertise for AATD at Beaumont Hospital in Dublin. Here, a rapid access specialist Alpha-1 clinic is available for newly diagnosed individuals with severe AATD. The clinic provides a holistic approach to care by a multidisciplinary team including doctors, nurses, respiratory scientists, and physiotherapists.

COPD Model of Care

The Irish COPD Model of Care, led by the HSE NCP Respiratory, provides an integrated “end-to-end”

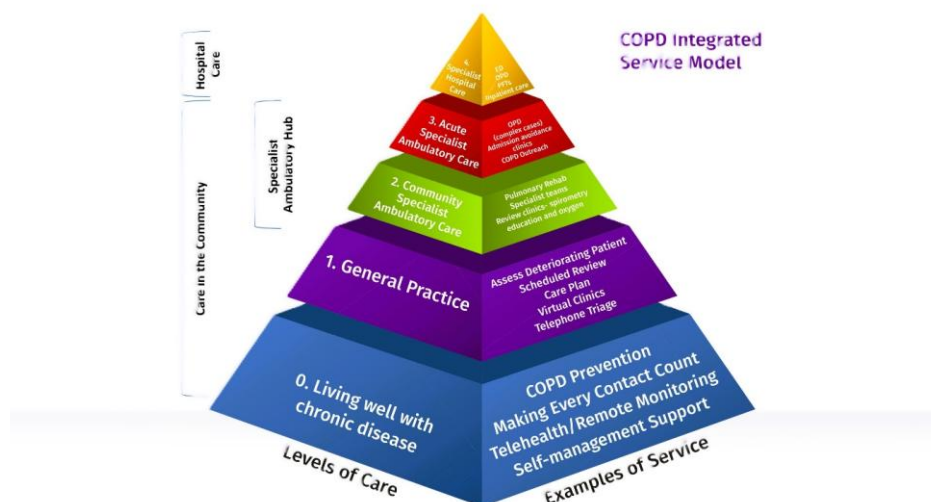
framework for the delivery of COPD services across primary, community, and acute care settings². First introduced through the national End to End COPD Model of Care, the strategy promotes a coordinated and patient-centred approach spanning prevention, early diagnosis, disease management, pulmonary rehabilitation, integrated respiratory care, COPD outreach services, and specialist inpatient care. A key principle underpinning the model is the transition from hospital-focused care towards multidisciplinary community-based management, supporting earlier intervention, integrated care pathways, and improved continuity of care for people living with COPD.

The HSE End to End COPD Model of Care reflects the continuum of services required across the full disease pathway, from prevention and early detection to specialist and tertiary care. As illustrated in Figure 4.10, the spectrum of COPD services spans five interconnected Levels of Service delivery: Level 0 Living well with a chronic disease, (Level 1) General Practice, (Level 2) Community Specialist Ambulatory Care, (Level 3) Acute Specialist Ambulatory Care, and (Level 4) Specialist Inpatient Care. The End to End COPD Model of Care proposes a multicomponent model for quality COPD care which includes the GP-led Chronic Disease Management Programme, early access to spirometry diagnostics, Community specialist medical, nursing and physiotherapy teams, pulmonary rehabilitation, COPD outreach and acute specialist COPD care.

None of these services are expected to work in isolation; to deliver quality COPD care, input is required from the range of healthcare providers working together to best support the needs of their patient population. At all levels of care, primary prevention and health promotion strategies must also be implemented. The relationship between these care settings is not linear; it is anticipated that the same individual with COPD may require the services offered within each of care settings at varying, concurrent, and often multiple time points throughout their lifetime.

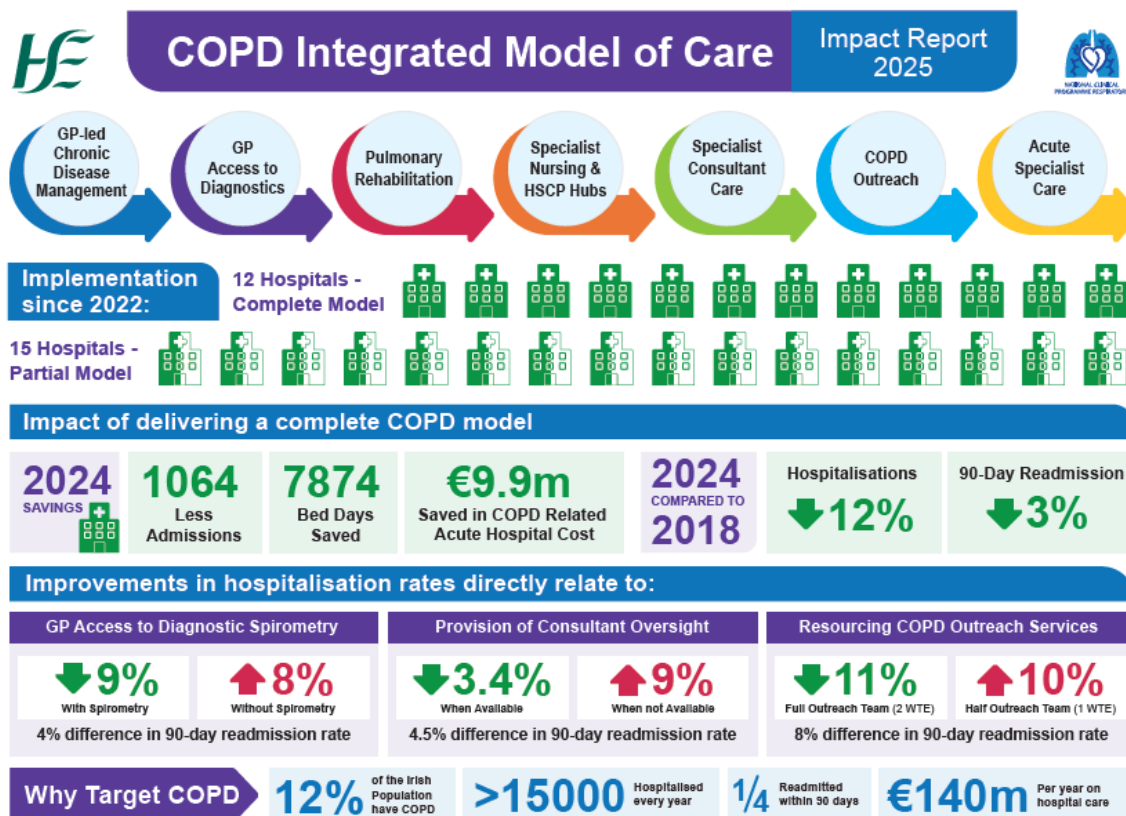
The model also highlights the importance of enabling supports across all levels of care, including education and training, audit and evaluation, and initiatives aimed at making every contact count. Together, this integrated approach aims to improve timely access to appropriate services, enhance continuity of care, and support better outcomes for people living with COPD.

Figure 4.10. Integrated Model of Care for COPD across levels of service delivery and enabling supports



Source: HSE National Clinical Programme for Respiratory. End to End COPD Model of Care. 2019².

Figure 4.11. HSE COPD Integrated Model of Care in Ireland



Source: HSE National Clinical Programme, Respiratory – Impact Report 2025: HSE COPD Integrated Model of Care²⁰.

GP-led Chronic Disease Management Programme (CDM)

The Chronic Disease Management Programme (CDM) was established in January 2020 with 95% of GP Practices participating. The GP arranges 2 scheduled reviews in a 12-month period to support GMS (General Medical Services) patients manage their chronic condition.

The programme covers all eligible adults 18 years and over who have a diagnosis of COPD³⁴.

- 400,000 people enrolled
- 30% reduction in emergency department presentations
- 12% of diagnoses are COPD; up 15% in 2024 vs 2023

The CDM has also delivered significant benefits, and these benefits should also be recognised and built on. For example, from the 1st of January 2022 to 31st December 2023, 405,131 patients were enrolled in the Treatment Programme. Across this cohort, 615,372 diagnoses were recorded as shown in Table 4.5. COPD accounted for 12.12% of diagnosis, despite limited access to spirometry.

Table 4.5. Number and proportion of each chronic disease diagnosed, 1 January 2022 to 31 December 2023

Diagnosis	No. Diagnosis	%
Diabetes	145,209	23.6%
Ischaemic heart disease	130,659	21.23%
Asthma	86,048	13.98%
Atrial fibrillation	84,833	13.79%
COPD	74,611	12.12%
Heart failure	39,559	6.43%
Cerebral vascular accident	28,728	4.67%
Transient ischaemic attack	25,724	4.18%
Total	615,372	100%

Source: The Third Report of the Structured Chronic Disease Management Treatment Programme in General Practice. HSE, January 2025³⁴.

Of the 74,611 patients diagnosed with COPD in the Programme, only 18.44% underwent spirometry. Table 4.6 shows the number and % of patients diagnosed with COPD who had spirometry testing. This highlights a clear gap in access to diagnostics which needs to be addressed. Expanded spirometry provision is required. It should be noted that the CDM Programme records only whether spirometry was undertaken, not where or when it was performed, so these figures cannot indicate whether testing took place at the time of diagnosis.

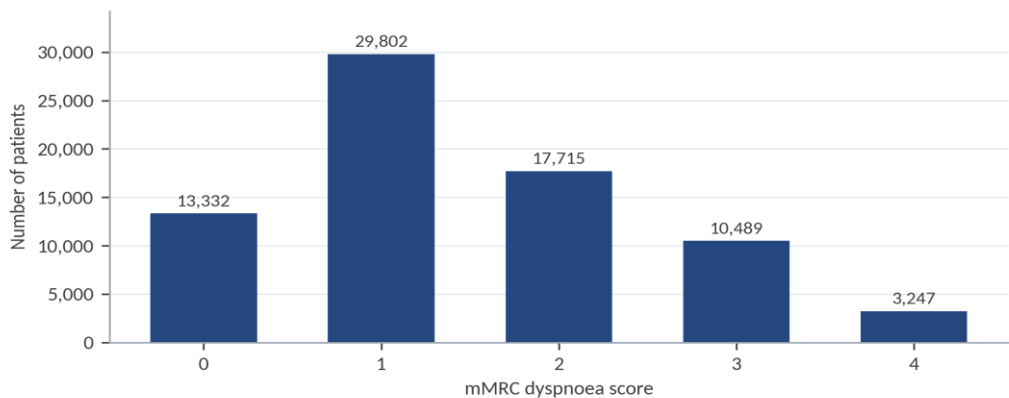
Table 4.6. COPD diagnosed patients who had spirometry

Spirometry recorded for COPD Patients	Number of Patients	% of Patients
No	60,854	81.56%
Yes	13,757	18.44%
Total	74,611	100%

Source: The Third Report of the Structured Chronic Disease Management Treatment Programme in General Practice. HSE, January 2025³⁴.

The modified Medical Research Council (mMRC) dyspnoea score is a simple 5-point scale used to grade the severity of activity-related breathlessness or the degree of functional disability due to dyspnoea. Figure 4.12 shows the mMRC dyspnoea score for patients with COPD; categories 2, 3 and 4 of patients on the score require pulmonary rehabilitation.

Figure 4.12. mMRC dyspnoea score for patients with COPD in the Chronic Disease Management Programme, 1 January 2022 to 31 December 2023



Source: The Third Report of the Structured Chronic Disease Management Treatment Programme in General Practice. HSE, January 2025³⁴.

Table 4.7. Patients with COPD with mMRC recorded

mMRC Recorded COPD	Number of Patients	% of Patients
Yes	74,585	99.97%
No	26	0.03%
Total	74,611	100%

Source: The Third Report of the Structured Chronic Disease Management Treatment Programme in General Practice. HSE, January 2025³⁴.

Pulmonary Rehabilitation (PR)

Pulmonary rehabilitation is a multidisciplinary programme of care for patients with COPD. It is individually tailored and designed to optimise each patient’s physical and social performance and autonomy. It is a key evidence-based component of international guidelines for COPD. The principal goals of pulmonary rehabilitation are to reduce symptoms, improve quality of life, and increase physical and emotional participation in everyday activities. Pulmonary rehabilitation for persons living with COPD is primarily delivered from Specialist Ambulatory Care Hubs to which patients can be referred directly by their GP, community ambulatory care team, or acute hospital team. In some regions, PR is also delivered within the acute hospital settings to serve the needs of patients with higher complexity. It is recommended that PR should be available across both acute and community services^{15,35}.

Virtual Pulmonary Rehabilitation (VPR) is an ideal method for PR delivery with proven efficacy when offered in isolation or as a hybrid model with traditional face-to-face PR pulmonary rehabilitation. VPR offers continued access for service users, prevents service interruption and is a viable alternative for those

patients who may not be able to attend face-to-face PR due to lack of transport or other barriers.^{36,37}

As of July 2026, there are 43 PR teams operational in Ireland (29 community based and 14 acute hospital based).

Community Specialist Ambulatory Care Hubs

The HSE has established 26 of a planned 30 Ambulatory Care Hubs around the country. Each Chronic Disease Hub, when fully operational, has a dedicated Chronic Disease Community Specialist Team (CD - CST) in the areas of Respiratory (Asthma and COPD), Cardiovascular and Diabetes. Each CD-CST serves a population of approximately 150,000 people and is linked to a local hospital as well as the GPs in their catchment area³⁸.

Current clinical members of the Respiratory CD-CST include Respiratory Consultants, Respiratory Integrated Care (RIC) Clinical Nurse Specialists, RIC Advanced Nurses Practitioners, RIC Physiotherapists, RIC physiologists, and the COPD Outreach team.

The purpose of the CD-CST is to provide timely access to diagnostics and specialist multidisciplinary team review and intervention to support GPs in the delivery of chronic disease care within the community. Access to

the Chronic Disease Hubs is for all patients, regardless of Medical Card or GP Visit card status.

Services available to a GP when referring a person with COPD to the local Chronic Disease Hub include some or all of the following:

- Diagnostic spirometry
- Specialist respiratory review by consultant, advanced nurse practitioner, clinical nurse specialist or physiotherapist
- Pulmonary rehabilitation
- Consultant–GP email advisory service
- Smoking cessation

It is important to ensure that the care provided for people with COPD is delivered in a patient-centred manner and empowers people with COPD to live well with their chronic disease.

COPD Outreach

COPD outreach is an evidence-based model of supported discharge care delivered by respiratory specialist teams which is proven to be as effective as hospital-based care, and in some studies reduce COPD readmission. The principal aim of a COPD Outreach Service is to improve support to patients during an exacerbation of COPD in a quality safe manner.^{39–42}

A COPD Outreach programme may facilitate admission avoidance (pre-hospital care or same day discharge), early supported discharge (<72 hours in hospital), and assisted discharge (>72 hours in hospital), depending on local resources and protocols.

As of 2026, there are 26 Outreach teams nationally which is up from 12 teams in 2021.⁴³ All COPD Outreach teams are linked to Model 3 or Model 4 Hospitals and compliment existing hospital services.

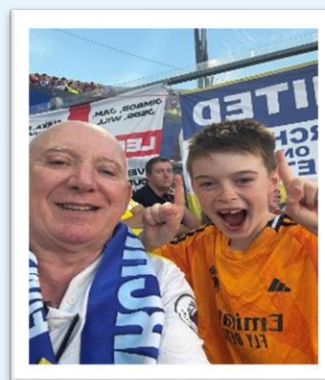
COPD Support Ireland

COPD Support Ireland is a charity that was founded in 2013 to support all those living with COPD in Ireland. They are Ireland's only national COPD support and advocacy body, bringing together local support groups from around the country, to help those living with, and caring for someone with COPD.

COPD Support Ireland has 60 support groups nationwide funded by the HSE and provide the following services:

- Peer-to-peer support
- Weekly exercise classes specific to those living with COPD
- Regular educational talks
- Singstrong – singing for lung health programme
- Webinars
- Quarterly newsletters
- Annual events
- Social activities

Membership is free and open to anyone with a diagnosis of COPD. They also have a large library of information resources about COPD available to patients and Healthcare professionals and work closely with similar organisations to ensure the best possible service for their members⁴⁴.



"COPD is an incurable disease of the lungs which can be very debilitating for lots of people — but COPD Ireland has helped me enormously in dealing with my COPD. They run support groups and exercise classes for patients, exercise may sound crazy for people with breathing difficulties, but the specific exercises designed to help patients works because fit muscles use less oxygen and therefore you need less effort with normal everyday tasks. The other aspect that helps a lot is peer support, being able to talk to people who understand and know how you feel is vital, for both the mind and the body. I would encourage anyone who has been diagnosed with COPD to join COPD Support Groups, who will help to find support exercise groups in your local area. COPD Support Ireland also have some very good articles and advice on their website."

Joe Claffey — COPD Support Ireland member, with his grandson

HSE Virtual Wards

In 2024, the HSE established the pilot sites for the Virtual Ward Programme – St Vincent’s University Hospital Dublin and University Hospital Limerick – with the purpose of providing acute care, monitoring and treatment for suitable patients in their home⁴⁵. A virtual ward is an alternative to HSE bedded care, giving patients requiring hospital-level care the option of receiving this care in their own home. Technology is used to provide the same level of care, monitoring and treatment to patients, as if they were in hospital, all from the comfort and convenience of their home environment. Virtual wards offer an alternative to hospital admission at an emergency department (ED) or can facilitate an earlier discharge from a hospital ward for medical and surgical patients.

Virtual Ward care may be offered to patients who are admitted to hospital with certain Respiratory and Cardiology conditions that includes COPD, bronchiectasis and asthma.

There is now a virtual ward site operational in each of the 6 Health Regions with the expansion to the following hospitals:

- Our Lady of Lourdes Hospital, Drogheda
- Midland Regional Hospital, Tullamore
- Mercy University Hospital, Cork
- St Luke’s General Hospital, Carlow Kilkenny
- Galway University Hospital

As of April 2026, 3,000 patients have been safely supported, freeing up more than 25,000 physical bed days for patients who require more traditional care. This means that 5,320 patients have benefitted; those patients using the virtual ward and those patients who had a shorter wait for admittance to an in-hospital bed.

Diagnosis

COPD should be considered in individuals presenting with dyspnoea, chronic cough, sputum production, and/or a history of exposure to risk factors for the disease, particularly tobacco smoking. According to GOLD, confirmation of persistent airflow obstruction using post-bronchodilator spirometry is mandatory to establish the diagnosis of COPD, typically defined by a post-bronchodilator FEV1/FVC ratio <0.7 ⁷.

In selected patients with persistent symptoms following initial assessment and treatment, additional

investigations such as lung volume measurement, diffusion capacity testing, exercise testing, and lung imaging may support further clinical assessment and disease evaluation. In addition, bronchiectasis should also be considered in the differential diagnosis of COPD, particularly in individuals presenting with large volumes of purulent sputum and recurrent bacterial infections. Chest imaging, especially high-resolution computed tomography (HRCT), may demonstrate bronchial dilatation suggestive of bronchiectasis⁷.

Early recognition of respiratory symptoms is an important component of COPD diagnosis and public health awareness. Educating patients, healthcare professionals, and the general population that symptoms such as chronic cough, sputum production, and breathlessness are not a normal part of ageing or smoking remains essential to supporting earlier diagnosis and intervention. Although physical examination forms part of patient assessment, the absence of physical signs does not exclude COPD².

4.4 Conclusions

COPD remains one of the largest and most avoidable chronic disease burdens in Ireland. National estimates suggest that up to 380,000 people may be living with the condition, while only around 110,000 have been formally diagnosed. That gap of approximately 270,000 people is the central finding of this chapter: a disease that is preventable, treatable, and identifiable through a simple and inexpensive test is going unrecognised in roughly seven of every ten people who have it.

The consequences are visible throughout the acute system. Ireland’s age-sex standardised COPD hospitalisation rate of 219.2 per 100,000 population remains close to double the OECD average of 118.8, and COPD accounts for a disproportionate share of avoidable admissions. In 2024 there were 16,211 inpatient discharges with a principal diagnosis of COPD and bronchiectasis, accounting for 127,743 inpatient bed days, and more than three quarters of those admissions occurred among people aged 65 and over. COPD was responsible for 1,771 deaths in 2023, approximately 92% of all deaths from chronic lower respiratory disease. In 2023 the estimated societal cost of COPD in Ireland was €4.2 billion, 27.8% of the total cost of respiratory disease.

Progress since the 2018 Respiratory Health of the Nation has been real.

The HSE End to End Model of Care for COPD has given the system a coherent framework spanning prevention, diagnosis, management and end-of-life care. Twenty of a planned thirty Ambulatory Care Hubs are established, 43 pulmonary rehabilitation teams are operational, and COPD Outreach teams have grown from 12 in 2021 to 26 in 2026. The Chronic Disease Management Programme has brought structured review into general practice at scale, and the HSE Virtual Ward has begun to demonstrate that exacerbations can be safely managed at home.

What remains uneven is implementation. Of the 74,611 patients carrying a COPD diagnosis in the Chronic Disease Management Programme, 18.44% had undergone spirometry, which means a substantial number of people are being managed for a condition that has never been objectively confirmed. Hospitalisation rates vary more than twofold across the country, from 169.5 per 100,000 population in Leitrim to 355.8 in Donegal, and access to pulmonary rehabilitation, outreach and specialist services continues to depend heavily on where a person lives. Ireland also still lacks population-based prevalence data for COPD, and national coding combines COPD with bronchiectasis, which limits what can be measured and therefore what can be managed. COPD is a common, preventable and treatable disease. The scale of undiagnosed disease, the cost to the acute system and the persistence of regional inequity together make a clear case for policy action, and the infrastructure needed to act is now largely in place.

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Lung Cancer and Mesothelioma

05

Key Points

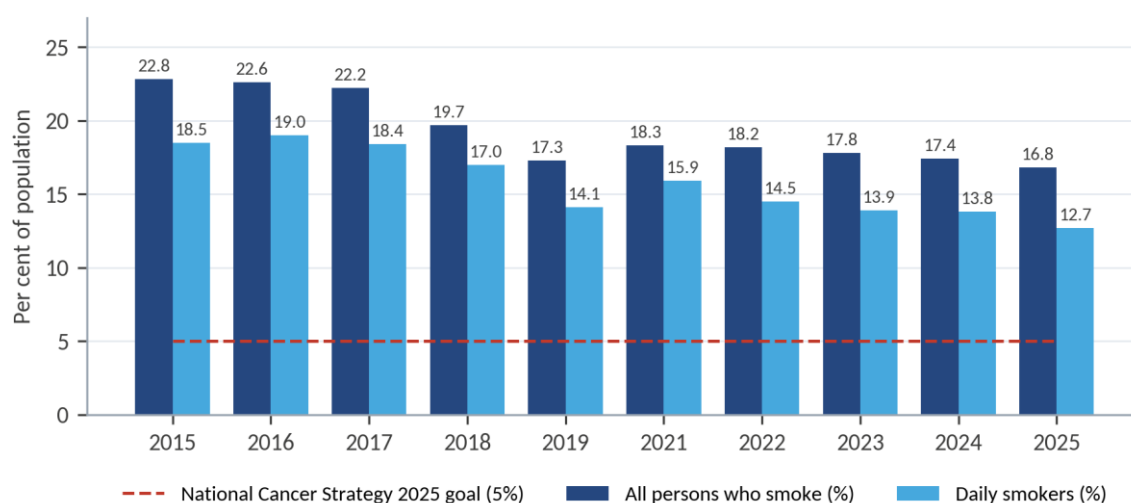
- In 2023 cancer was the leading cause of death in Ireland with 29.4% of all deaths, ahead of cardiovascular disease at 27.4%. Lung cancer was the leading cause of cancer death in both sexes in Ireland, at 1 in 5 cancer deaths (19.7%).
- 73% of lung cancer cases in Ireland in 2022 were attributable to smoking.
- 61% of lung cancers in Ireland are diagnosed at stage III or IV, and 42% at stage IV alone. A stage I diagnosis carries roughly ten times the five-year survival of a stage IV diagnosis (59.5% versus 5.6%), yet only 20% of cases are caught at stage I.
- Age-standardised five-year net survival is 25% (2019–2023), among the lowest of any cancer site, but this is a 166% relative improvement since 1999–2003, the second largest gain of any cancer after pancreas.
- Ireland screens for breast, cervical and colorectal cancer, but not for the cancer that kills the most people. The Beaumont RCSI Irish Cancer Society Lung Health Check, Ireland's first mobile lung health check pilot, is testing low-dose CT screening in high-risk groups in North Dublin and the North East. Stage at diagnosis is the single largest lever available on lung cancer survival.
- In 2025, 61.0% of patients received lung cancer surgery within the recommended 25 working days, against a National Cancer Strategy target of 90%.
- The Rapid Access Lung Clinics met their target, with 97% of referred patients seen within 10 working days against a 95% standard — the only one of the designated rapid-access cancer pathways to do so. Lung cancer surgery timeliness, though short of target, was the best of the four cancers for which surgical targets are defined, and radiation therapy access recovered from 63.4% in 2023 to 78% in early 2025.
- Of the almost 231,000 people living in Ireland with or beyond a cancer diagnosis at the end of 2023, only 7,046 — 3.1% — had been diagnosed with lung cancer, even though lung cancer causes 19.7% of all cancer deaths. The case for investment rests on mortality and on the scope for earlier diagnosis, not on prevalent need.
- Workforce capacity remains a critical challenge across the Irish cancer care pathway, directly affecting timely treatment and service performance. Persistent failure to meet national radiotherapy KPIs since 2017 highlights the operational impact of insufficient staffing and equipment limitations.
- The National Cancer Strategy 2017–2026 is due to expire this year, making it essential to put a new strategy in place without delay.

5.1 Background

Lung cancer is the most diagnosed cancer worldwide and the leading cause of cancer-related mortality, accounting for approximately 2.48 million new cases and 1.82 million deaths in 2022.¹ Despite advances in prevention and treatment, its global impact is expected to continue increasing.²

Tobacco smoking remains the primary risk factor for lung cancer worldwide and is estimated to account for at least 85% of all cases.^{3,4} In Ireland, lung cancer accounted for the highest number of smoking-attributable cancer cases in both men and women, with 74.8% of cases in men (1,066/1,426) and 71.7% in women (944/1,316) attributable to smoking.⁵

Figure 5.1. Prevalence of smoking by year, 2015–2025 (%)



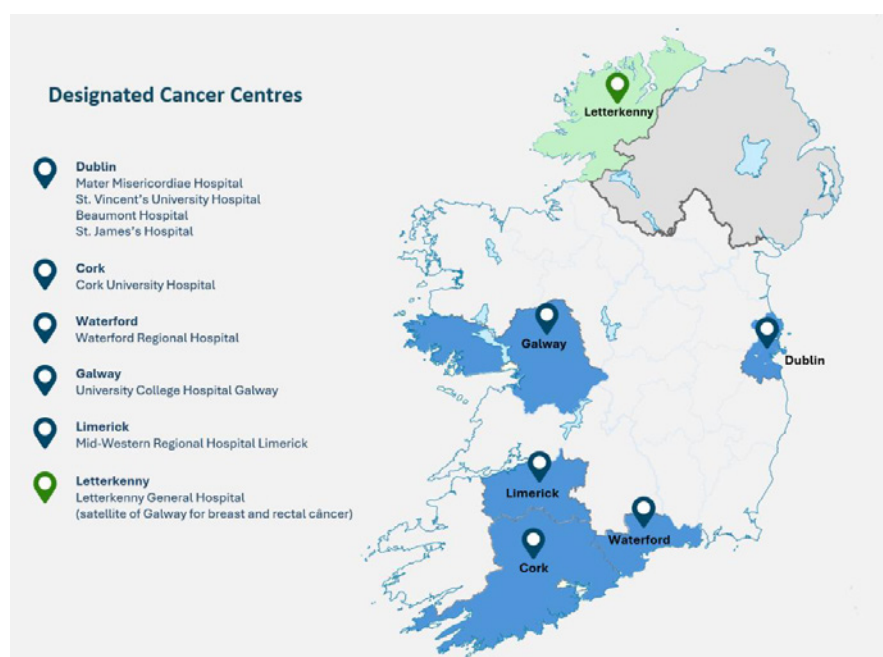
Source: Healthy Ireland Survey 2025, Department of Health.⁶

Apart from tobacco smoking, other established risk factors for lung cancer include radon exposure, second-hand smoke, asbestos, air pollution, arsenic, pulmonary fibrosis, and infections such as HIV and tuberculosis. In addition, cannabis smoking, electronic cigarettes, heated tobacco products, and COVID-19 have also been proposed as potential contributors to lung cancer development.^{2,7,8}

The National Cancer Registry Ireland's 2026 report, *Cancer in Ireland 1994–2023*, sets out the scale of the problem in Ireland. Cancer was the leading cause of death in the country in 2023, accounting for 29.4% of all deaths, ahead of cardiovascular disease at 27.4%. Respiratory disease was the third leading cause of death in Ireland in 2023, at 11.6% of all deaths; together, cancer, cardiovascular disease and respiratory disease accounted for 68.4% of deaths.⁹ Lung cancer was the leading cause of cancer death in both men and women, accounting for almost one in five cancer deaths — nearly twice as many as colorectal cancer, the next most common.

Access to lung cancer care in Ireland is delivered through a dual healthcare system, combining public and private services similar to other respiratory diseases. Within the public system, the National Cancer Control Programme (NCCP) oversees the organisation and delivery of cancer services through eight designated cancer centres located across the country, including four in Dublin and one each in Cork, Waterford, Galway, and Limerick (Figure 5.2). This network aims to provide specialised, multidisciplinary care and improve timely access to diagnosis and treatment for patients with lung cancer.¹⁰ Trinity St James's became the first OECl-accredited Comprehensive Cancer Centre in Ireland, accredited in June 2025.¹¹

Figure 5.2. Cancer Services in Ireland



Source: Department of Health Ireland. *Diagnosis, Staging and Treatment of Patients with Lung Cancer: National Clinical Guideline*. National Patient Safety Office; 2017.¹²

In addition to this centralised model, the Irish cancer system operates under a structured framework of key performance indicators (KPIs) established within the 10-year National Cancer Strategy (2017–2026), enabling continuous monitoring of access, timeliness, and quality of care across the cancer pathway. This long-term performance framework reinforces accountability and supports ongoing evaluation and improvement of cancer services nationwide.

The National Cancer Strategy 2017–2026 is due to expire this year, making it essential to put a new strategy in place without delay. The most recent implementation report covers 2023, leaving a significant gap in public reporting, which reinforces the need for greater transparency and more regular updates on progress.¹³ A successor strategy should therefore not only set out new priorities for cancer prevention, diagnosis, treatment, and survivorship, but also include clear reporting commitments so progress can be tracked openly and consistently. The Irish Cancer Society has set out what that should look like in practice: a National Cancer Strategy for 2027–2036 underpinned by a multi-annual funding mechanism rather than annual allocations, with €20 million ring-fenced for implementation in 2027 and capital funding for infrastructure and equipment planned on the same multi-annual basis.¹⁴

Lung cancer is the point at which cancer policy and respiratory policy meet. It is the leading cause of cancer

death in Ireland, it is a disease of the lung driven largely by what people breathe, and almost every lever that would improve outcomes sits at least partly within respiratory services rather than within oncology alone: tobacco control, radon and occupational exposure, air quality, earlier detection through low-dose CT, rapid access lung clinics, bronchoscopy and thoracic surgery. The next National Cancer Strategy and the future National Respiratory Strategy should therefore be interconnected, with lung cancer written into both as a shared pillar rather than left to fall between them. Neither strategy will deliver on lung cancer on its own.

5.2 Burden of Disease

In the sections which follow, unless otherwise specified, lung cancer refers to cancer of the trachea, bronchus and lung (ICD-10: C33, C34). Mesothelioma is a malignant neoplasm arising from mesothelial cells, most commonly involving the pleura and strongly associated with prior asbestos exposure; here it refers to mesothelioma of any site (C45).

Incidence and Prevalence

Lung cancer (ICD-10: C34) accounted for 10.8% of all invasive cancers diagnosed in Ireland (excluding NMSC).⁹ During 2021–2023 an average of 2,859 new cases of lung cancer (C33–34) were diagnosed each year, of which 1,365 (47.7%) were in females and 1,494 (52.3%) in males. (Table 5.1) This equates to a European

age-standardised incidence rate of 69.3 per 100,000 overall – 77.2 in males and 62.9 in females. Non-small cell lung cancer accounted for an average of 2,504 cases a year and small cell lung cancer for 352. The lifetime risk of developing lung cancer is approximately 1 in 15 in males and 1 in 16 in females. In males the age-standardised rate fell by 0.4% per year between 1994 and 2013 and then by 2.2% per year between 2013 and 2023. In females the rate rose by 2.4% per year between 1994 and 2013 and has since been static (–0.4% per year over 2013–2023, not statistically significant). Cancer of the trachea (C33) remains very rare, averaging four cases a year.⁹

Table 5.1. Incidence, 2021–2023 (Annual Average)

Cancer Site	Case Numbers		
	Male	Female	Both sexes
C34 bronchus and lung	1,491	1,364	2,856
C33 trachea	3	1	4
C33–34 bronchus, lung and trachea	1,494	1,365	2,859
C34 small cell (SCLC)	164	188	352
C34 non-small cell (NSCLC)	1,328	1,176	2,504
C45 mesothelioma	41	10	51

Source: National Cancer Registry Ireland. Cancer in Ireland 1994–2023: Annual Statistical Report of the National Cancer Registry. 2026.

Malignant mesothelioma (ICD-10: C45) remained a relatively rare cancer in Ireland between 1994 and 2022, accounting for less than 0.3% of all invasive cancers diagnosed annually. The number of cases increased from 9 in 1994 to 47 in 2022, having reached a peak of 62 cases in 2016. During 2021–2023 an average of 51 cases were diagnosed each year. The disease was also more commonly diagnosed in males than females.¹⁵

Survival Rates

Cancer survival in Ireland has improved markedly over the past two decades, with five-year age-standardised net survival for all invasive cancers combined (excluding NMSC) rising from 50% in 1999–2003 to 66% in 2019–2023. Five-year net survival for lung cancer in Ireland improved steadily over the study period, reaching 25% for patients diagnosed in 2019–2023 – a relative improvement of approximately 166% on 1999–2003, the second largest gain recorded for any cancer site after pancreatic cancer.⁹

Table 5.2. Five-year net survival by Lung Cancer stage, C33–34, 2019–2023 (unstandardised)*

Stage	Both sexes n (%)	Survival (95% CI)	Male n (%)	Male survival	Female n (%)	Female survival
All stages	11,367 (100%)	22.6% (21.7–23.5)	5,934 (100%)	18.8%	5,433 (100%)	26.8%
I	2,222 (20%)	59.5% (56.9–62.0)	977 (16%)	51.4%	1,245 (23%)	66.3%
II	722 (6%)	37.0% (33.4–40.7)	392 (7%)	33.8%	330 (6%)	40.6%
III	2,175 (19%)	19.1% (17.4–20.8)	1,170 (20%)	16.7%	1,005 (18%)	22.0%
IV	4,766 (42%)	5.6% (4.9–6.3)	2,631 (44%)	5.5%	2,135 (39%)	5.8%
Unstaged	1,482 (13%)	19.6% (15.3–24.3)	764 (13%)	17.4%	718 (13%)	22.0%

Source: National Cancer Registry Ireland. Cancer in Ireland 1994–2023: Annual Statistical Report of the National Cancer Registry. 2026.

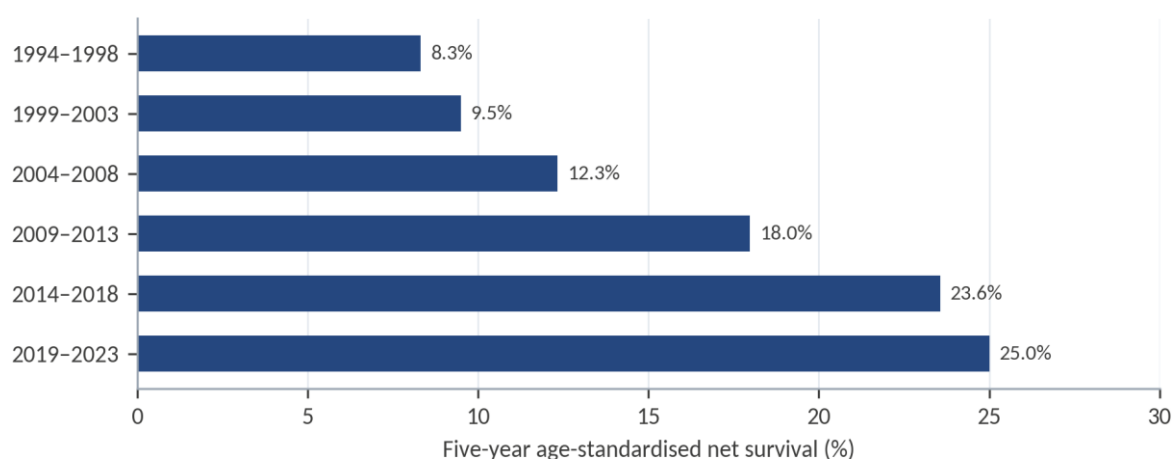
*Note: The 25% quoted elsewhere in this chapter is age-standardised (ICSS weights), for comparison across cancer sites and countries. The 22.6% here, and every stage-specific figure, is unstandardised — the observed experience of patients actually diagnosed in Ireland, who are older than the standard population.

A stage I diagnosis carries roughly ten times the five-year survival of a stage IV diagnosis (59.5% versus 5.6%). Only 20% of cases are caught at stage I.

Female survival exceeds male survival at every stage and overall (26.8% versus 18.8%), partly because women are more often diagnosed at stage I (23% versus 16%).

At the end of 2023 an estimated 7,046 people in Ireland were living with a previous diagnosis of lung cancer, 3.1% of the 230,946 people living with or beyond an invasive cancer diagnosis. Lung cancer ranks sixth among all cancers by number of survivors despite ranking fourth by number of new cases, a direct consequence of its poor survival. Service planning that relies on prevalence therefore systematically under-represents the true burden of the disease.¹⁵

Figure 5.3. Five-year age-standardised net survival for lung cancer (ICD-10 C33–34) in Ireland by period of diagnosis (1994–2023)



Source: National Cancer Registry Ireland. *Cancer in Ireland 1994–2023: Annual Statistical Report of the National Cancer Registry*. 2026.

Mortality

The National Cancer Registry recorded an average of 1,972 deaths from lung cancer (C33–34) each year during 2021–2023, comprising 1,069 deaths in males and 903 in females. This equates to European age-standardised mortality rates of 56.8 per 100,000 in males and 42.0 per 100,000 in females, or 48.8 per 100,000 overall, and makes lung cancer the leading cause of cancer death in both sexes, accounting for 19.7% of all cancer deaths. Lung, colorectal, breast and prostate cancers together account for 45% of all cancer deaths in Ireland. The cumulative risk of dying from lung cancer before the age of 75 is approximately 1 in 48 for men and 1 in 58 for women.⁹

Between 2016 and 2024, mortality from lung cancer in Ireland remained consistently high, with annual deaths ranging from 1,835 to 2,045 cases. However, the five-year age-standardised mortality rate for larynx, trachea, bronchus, and lung cancers (ICD-10 C32–C34) showed a gradual decline over time, decreasing from 56.94 per 100,000 population in 2015–2019 to 50.24 per 100,000 population in 2020–2024. It is worth noting that the most recent provisional mortality data available for 2024 included malignant neoplasms of the larynx, trachea, bronchus, and lung (ICD-10 C32–C34), whereas previous years included only trachea, bronchus, and lung cancers (ICD-10 C33–C34) (Table 5.3).¹⁶

Table 5.3. Lung Cancer: Mortality data, 2016–2024

Year	Total Deaths C33–34	Crude mortality rate per 100,000	5yrs	Five-year Age-Standardised Mortality Rate per 100,000† (C32–C34)
2016	1920	40.51		
2017	1922	39.95		
2018	1835	37.56		
2019	1961	39.55	2015–19	56.94
2020	1991	39.58	2016–20	56.06
2021	1913	37.70	2017–21	54.13
2022	1969	37.98	2018–22	52.77
2023	2034	38.51	2019–23	52.46
2024*	2045	38.01	2020–24	50.24

Source: Health Statistics (PHIS) / CSO¹⁶. *Provisional data for 2024 include malignant neoplasms of the larynx, trachea, bronchus and lung (ICD-10 C32–C34).

†Five-year age-standardised mortality rates refer to ICD-10 C32–C34. Five-year age-standardised mortality rates were not available for 2016–2018.

During 2021–2023 an average of 51 mesothelioma cases were diagnosed each year (41 in males and 10 in females), an age-standardised incidence rate of 1.3 per 100,000, and an average of 45 people died from the disease annually, an age-standardised mortality rate of 1.2 per 100,000.⁹

Table 5.4. Lung Cancer: Mortality and Years of Potential Life Lost (YPLL), 2017–2024

Year	Standardised Mortality Rate All ages (C32–C34)	Total Deaths C33–34	Deaths C33–34 age < 64yrs	YPLL < 64 yrs C32–34	YPLL/100,000 population C32–34	Lower 95% CI	Upper 95% CI
2017	58.05	1922	421 (21.90%)	3242	88.28	78	98.56
2018	53.48	1835	415 (22.62%)	3333	87.58	77.19	97.97
2019	55.02	1961	423 (21.57%)	3245	84.04	74.46	93.62
2020	53.88	1991	436 (21.90%)	3410	85.68	75.82	95.54
2021	51.09	1913	395 (20.65%)	2942	73.5	64.53	82.48
2022	50.32	1969	396 (20.11%)	3026	73.47	64.62	82.32
2023	50.18	2034	403 (19.81%)	3058	71.51	62.45	80.58
2024*	47.09	2045	397 (19.41%)	3322	74.86	65.37	84.35

Source: Health Statistics (PHIS) / CSO¹⁶. * Provisional 2024 total deaths and deaths aged <64 years refer to ICD-10 C32–C34. Standardised mortality rates, and YPLL measures refer to ICD-10 C32–C34 throughout.

Sex

Between 2021 and 2023, lung cancer (C33–34) was the third most common cancer among males and the second most common among females. The cumulative risk of death from lung cancer before the age of 75 during 2021–2023 was 1 in 48 among males and 1 in 58 among females. Over the same period, lung cancer accounted for 19.9% of all cancer deaths in males and 19.4% in females. Five-year net survival for lung cancer for the period 2019–2023 was 22.6% overall and was consistently higher in females (26.8%) than in males (18.8%). Females were also more likely to be diagnosed at stage I (23% of cases, compared with 16% in men).⁹ In 2024, 55.50% of lung cancer deaths occurred among males and 44.50% among females.¹⁶ Inpatient hospitalisations for lung cancer were consistently higher among males than females between 2019 and 2024. In 2024, hospitalisations were similar between sexes, with males accounting for 50.77% of admissions and females accounting for 49.23%.¹⁷

The trends of the past three decades have also diverged sharply by sex. Age-standardised incidence in men has fallen since 1994 and that decline has accelerated since 2013, while in women incidence rose steadily until 2013 and has

been static since, with mortality only beginning to fall in 2014. Ireland sits at a later point on the tobacco epidemic curve for women than the EU average, and the female burden will take longer to turn.⁹

Age

For the years 2021–2023, the median age at diagnosis of lung cancer was 72 years, with an interquartile range of 65 to 79 years. Looked at in greater detail, over the period 2019–2023 an average of 6.7% of cases were diagnosed before the age of 55, 35.1% at ages 55–69, 49.5% at ages 70–84 and 8.7% at 85 years or over. Incidence rises steeply with age, from 15.5 per 100,000 at ages 40–54 to 121.8 at ages 55–69 and 315.7 at ages 70–84.⁹

Lung cancer mortality was predominantly observed among older adults; however, approximately one-fifth of all deaths each year occurred in individuals aged under 65 years. Between 2017 and 2024, the proportion of lung cancer deaths occurring in those aged under 65 years ranged from 19.41% to 22.62%.

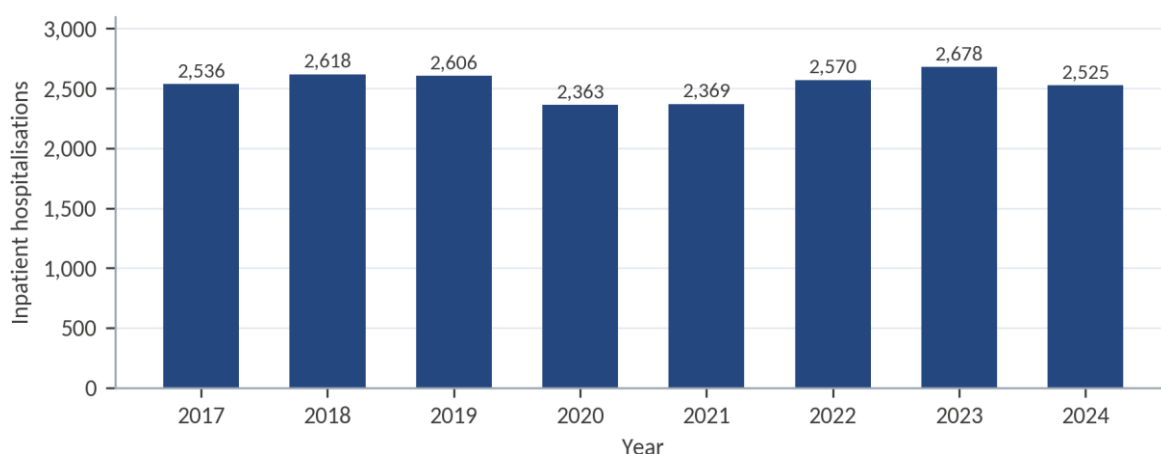
Registry data show the same age pattern in mortality, but more sharply still: 52.2% of lung cancer deaths occur at ages 70–84 and a further 12.6% at 85 years or over.

Among people aged 85 and over, the lung cancer mortality rate (312.0 per 100,000) now exceeds the incidence rate (305.0 per 100,000). The close correspondence between the age distributions of incidence and mortality is itself a marker of poor prognosis and short survival following diagnosis, in contrast to cancers such as colorectal, where deaths are displaced to considerably older ages than diagnoses.⁹

The age-standardised years of potential life lost (YPLL) rate declined overall from 88.28 per 100,000 population in 2017 to 74.86 per 100,000 population in 2024, suggesting a gradual reduction in premature mortality associated with lung cancer.

Hospitalisations

Figure 5.4. Inpatient hospitalisations with a primary diagnosis of lung cancer, 2017–2024



Source: HIPE 2017–2024. All hospitals reporting data to HIPE.¹⁷

Figure 5.4 shows the number of inpatient hospitalisations with a primary diagnosis of lung cancer in Ireland between 2017 and 2024, illustrating the annual trends in hospital admissions associated with the disease, which remained relatively stable throughout the study period.

In 2024, lung cancer accounted for 2,525 inpatient hospitalisations (2.97% of respiratory inpatient hospitalisations, 0.36% of all inpatient hospitalisations) and 28,280 inpatient bed days (4.92% of respiratory inpatient bed days, 0.67% of all inpatient bed days). Of inpatient hospitalisations for lung cancer in 2024, none (0%) were aged 0–14, 837 (33.15%) were aged 15–64 years using 3.37% of respiratory inpatient bed days (0.57% of all inpatient bed days) in that age group and 1,688 (66.85%) were aged 65 years or over, using 4.05% of respiratory inpatient bed days (0.81% of all inpatient bed days) in that age group.¹⁷

Regional Variation

The Health Service Executive (HSE) has transitioned to a regional healthcare model comprising six health regions:

Dublin and Northeast (DNNE), Dublin and Midlands (DNML), Dublin and South East (DNSE), Mid West (MW), South West (SW), and West and North West (WNW).

During 2020–2022, lung cancer incidence showed considerable geographic variation across these regions. A total of 61% of all lung cancer cases occurred within the three eastern regions (DNNE, DNML, and DNSE). DNNE, DNML, and DNSE recorded the highest annual average numbers of new cases, with 566, 546, and 456 cases per year, respectively. The age-standardised incidence rate was highest in DNML at 74 cases per 100,000 population, exceeding the national average of 64 per 100,000, while DNSE reported a lower incidence rate of 56 per 100,000 population. These findings indicate a concentration of lung cancer burden within the eastern regions of Ireland.¹⁸ Five-year age-standardised net survival for lung cancer was 20.8% nationally during 2009–2018. Survival was comparable across most regions but was significantly lower in the MW (16.1%) than the national average (20.8%) ($p < 0.001$).¹⁸

Socio-economic Analysis

Socio-economic inequalities are known to influence lung cancer outcomes through differences in smoking exposure, environmental risk factors, healthcare access, treatment, and survival.^{19,20} In 2014–2018, males in the most deprived quintile had a 59% higher age-standardised incidence rate of lung cancer than those in the least deprived quintile. Similar disparities were observed in earlier periods, with incidence rates 55% higher in 2004–2008 and 48% higher in 2009–2013. Among females, lung cancer incidence was significantly higher in the most deprived quintile than in the least deprived quintile, with differences of 71% in 2014–2018, 56% in 2004–2008, and 55% in 2009–2013. Five-year survival was significantly lower among lung cancer patients in the most deprived quintile, who had a 20% higher age- and sex-adjusted mortality risk than those in the least deprived quintile during 2014–2018. No significant socioeconomic differences were observed in the risk of late-stage (stage III/IV) lung cancer diagnosis during 2014–2018. Importantly, there was no evidence that socioeconomic disparities in incidence or survival narrowed or widened over the study period.²¹

International Benchmarking

Over the past three decades, lung cancer has remained one of the leading causes of death among adults worldwide. According to estimates from the GBD 2023 study, lung cancer was the seventh leading cause of death globally in 2023 when causes were ranked by age-standardised mortality rate.²² Global cancer statistics published by GLOBOCAN 2022, based on estimates from the International Agency for Research on Cancer (IARC), further highlight its substantial burden. Lung cancer was identified as the most diagnosed cancer worldwide, accounting for 12.4% of all new cancer cases. It also remained the leading cause of cancer-related mortality, responsible for 18.7% of all cancer deaths globally, followed by colorectal cancer (9.3%), liver cancer (7.8%), female breast cancer (6.9%), and stomach cancer (6.8%).¹

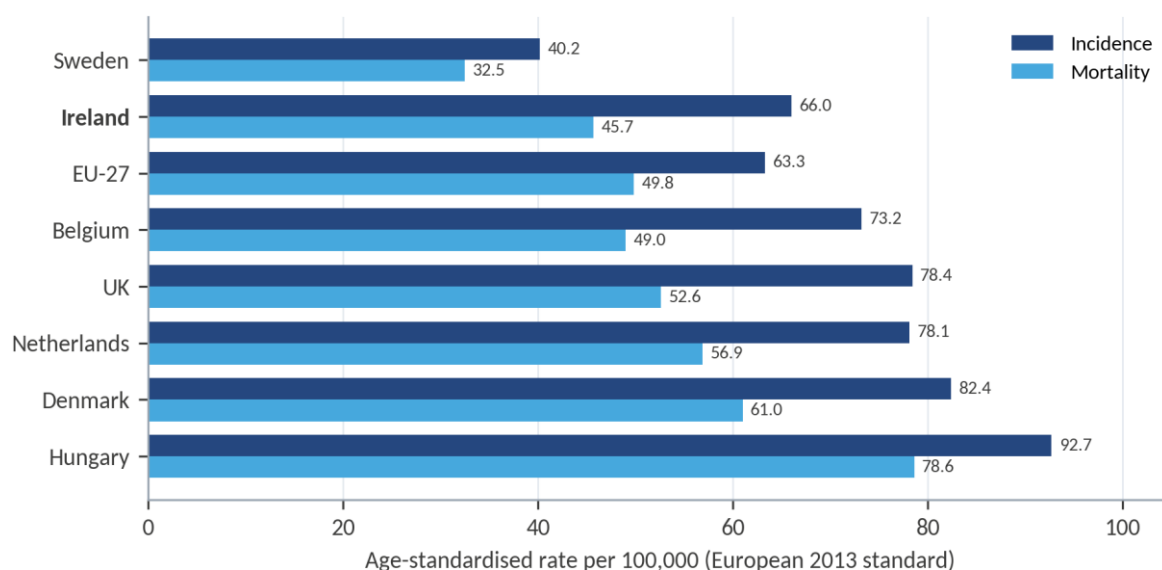
European Union-27 Comparison

According to the NCRI Annual Statistical Report 2026, age-standardised cancer mortality data show that Ireland compares favourably with the EU-27 average for premature cancer mortality (ages 0–74), with an overall rate 11% lower than the EU average. This points to relatively positive outcomes for cancers most amenable to prevention, early detection, and effective treatment, including tobacco-related and screen-detectable cancers. By contrast, across all ages (0–85+), Ireland's overall cancer mortality rate is 2.6% higher than the EU-27 average. The National Cancer Registry attributes this to deaths at older ages, beyond the upper age limits of screening programmes, where cancers are more likely to be diagnosed symptomatically and at a later stage, treatment decisions are increasingly influenced by frailty and multimorbidity, and survival into older age is common in Ireland.⁹

Among selected European comparator countries, Ireland reported one of the lowest estimated age-standardised lung cancer incidence and mortality rates in 2024, at 66.0 and 45.7 per 100,000 population, respectively. Although the incidence rate was slightly above the EU-27 average (63.3 per 100,000), the mortality rate remained below the EU-27 average (49.8 per 100,000). Only Sweden reported lower incidence and mortality rates than Ireland. Using crude rates, Ireland recorded 2,833 new lung cancer cases and 1,931 deaths in 2024, corresponding to incidence and mortality rates of 54.3 and 37.0 per 100,000 population, respectively. Both rates were substantially lower than

the EU-27 averages of 70.1 and 55.6 per 100,000. Among the selected comparator countries, only Sweden reported lower crude incidence and mortality rates than Ireland.²³

Figure 5.5. ECIS - 2024 Estimates - Lung Cancer - Age-Standardised Rate (European 2013) per 100,000



Source: ECIS - European Cancer Information System.²³

International Mortality

Ireland's position is stronger still when the comparison is restricted to deaths before the age of 75, which are widely used as an indicator of avoidable mortality. On this measure Ireland's lung cancer mortality rate in 2024 was 25.1 per 100,000, some 25.5% below the EU-27 average of 33.7 per 100,000. This is one of the largest favourable margins recorded for any cancer site, alongside pancreatic and stomach cancer and cancers of the oral cavity, pharynx and larynx. The National Cancer Registry attributes this pattern primarily to primary prevention and particularly tobacco control, indicating that sustained policy action on smoking has already delivered measurable gains at population level⁹

According to the World Health Organisation, trachea, bronchus, and lung cancers were among the main causes of death in Ireland in 2021, accounting for 39.4 deaths per 100,000 population and ranking as the fifth leading cause of death nationwide.²⁴ Despite this substantial burden, mortality trends have shown improvement in recent years. Between 2015 and 2024, the overall cancer age-standardised mortality rate in Ireland declined by 13.7%, while mortality from trachea, bronchus, and lung cancers decreased by 19.3%.²⁵

International Lung Cancer Survival

The most recent international comparisons of lung cancer survival are available from the CONCORD-3 study. The five-year age-standardised net survival for patients diagnosed between 2010 and 2014 was 18% in Ireland, exceeding the EU-27 average of 15%. Survival in Ireland was similar to that reported in Belgium (18%), slightly higher than in Denmark (17%) and the Netherlands (17%), and lower than in Sweden (20%).²⁶ More recent estimates from the European Country Cancer Profiles indicate continued improvement, with five-year net survival in Ireland increasing to 24% for patients diagnosed between 2014 and 2018. Similar gains have also been reported in Denmark, highlighting broader advances in lung cancer outcomes across high-income European health systems.²⁷

5.3 Prevention, Diagnosis and Management

Prevention

Lung cancer prevention strategies in Ireland focus primarily on tobacco control and smoking cessation. Ireland was the first country worldwide to introduce a workplace smoking ban in 2004, a landmark public health measure that has since been adopted by 74 countries. Since its implementation, smoking prevalence in Ireland has reduced from 27% in 2004 to 17% in 2025, although the Healthy Ireland Survey reports that the rate has been static since 2019.^{6,28}

Building on this progress, the Irish government launched the Tobacco Free Ireland policy in 2013, which set the ambitious goal of reducing smoking prevalence to less than 5% and establishing Ireland as a tobacco-free society. This “tobacco endgame” target was subsequently incorporated into the National Cancer Strategy (NCS) 2017–2026, where it remains a key objective for cancer prevention.^{4,29} In 2015, Ireland became the first country in the European Union, and the second in the world after Australia, to legislate for standardised (plain) packaging of tobacco products. The requirement took effect on 30 September 2017, at which point Ireland became the fourth country worldwide to implement it, reinforcing national efforts to reduce tobacco consumption and smoking initiation.^{29,30}

A modelling analysis of tobacco control policies in Ireland over the period 1998–2016 suggested that these measures significantly reduced smoking prevalence and prevented an estimated 969 smoking-attributable deaths. Among the policies evaluated, increases in tobacco taxation and the introduction of smoke-free workplace legislation in 2004 were identified as the most influential contributors to the reduction in smoking prevalence.²⁹ The Public Health (Tobacco Products and Nicotine Inhaling Products) Amendment Bill 2026 is currently before Seanad Éireann.

Radon is the second leading cause of lung cancer after smoking and, according to the WHO, is estimated to account for 3–14% of cases worldwide. Most radon-induced lung cancer cases occur among smokers due to the synergistic effect of combined exposure to tobacco smoke and radon.³¹ In Ireland, radon exposure is estimated to contribute to approximately 350 lung cancer cases annually. In response to this public health burden, the Government launched the National Radon Control Strategy (NRCS) in 2014, a national framework designed to reduce radon exposure and its associated

health risks.³² A national survey conducted in 2015 found that the population-weighted average indoor radon concentration had decreased by 13%, from 89 Bq/m³ to 77 Bq/m³.³³

Radon is by some distance the largest single source of radiation exposure in Ireland, accounting for 59% of the average annual dose of 4.172 mSv. The scale of the problem is also better understood than it was. Radon risk maps published by the EPA in 2022, built from approximately 30,000 measurements combined with detailed geological data, designate one-third of the country as a high radon area — areas where one home in five is likely to have a high radon level. On that basis some 170,000 homes nationally could be above the national reference level of 200 Bq/m³, an increase of 45,000 homes on the 2002 estimate. Householders can check the risk for their own address by Eircode.³⁴ Prevention in new and existing housing is the practical lever. Protection against radon is a priority of the National Radon Control Strategy, whose second phase covered 2019 to 2024, and updated building guidance issued in 2023 references the new risk map and restates the requirement for radon protection in new buildings. The Government’s target of retrofitting 500,000 homes by 2030 is an opportunity to address radon in older housing stock at the same time, but older buildings remain the area requiring most focus.³⁴

Occupational exposure to substances such as asbestos, arsenic, diesel exhaust, and certain forms of silica and chromium is associated with an increased risk of lung cancer.³⁵ Asbestos was not regulated in Ireland until the early 1970s, and recognition of its health risks has increased considerably over recent decades. In 2006, Ireland introduced the Asbestos Regulations to reduce occupational exposure and the associated risk of asbestos-related diseases, including lung cancer and mesothelioma.³⁶ The residual burden is nonetheless substantial. WHO and ILO modelled estimates attribute 19% of lung cancer deaths in Ireland in 2016 to occupational asbestos exposure, and the attributable death rate rose from 9.0 to 9.8 per 100,000 population between 2010 and 2016, having fallen over the preceding decade.^{11,51}

The Irish Cancer Society’s Lung Cancer Action Plan further emphasises the role of the Health and Safety Authority (HSA)³⁷ in preventing occupational exposure to carcinogens, while also recommending the strengthening of the Cancer Prevention Network³⁸ to enhance public awareness through coordinated prevention messages.³⁵

Measures to improve air quality represent an additional component of lung cancer prevention; however, a detailed discussion of these policies is provided in Chapter 10. It is worth noting here that Ireland did not meet the World Health Organization guideline value for fine particulate matter in 2024, with an annual mean PM_{2.5} concentration of 7.6 micrograms per cubic metre against a target of 5; only 7% of EPA monitoring stations achieved the PM_{2.5} target, compared with 89% for PM₁₀.¹¹

Lung Cancer Screening

Ireland screens for breast, cervical and colorectal cancer but not for the cancer that kills the most people. Although there is no national lung cancer screening programme, the HSE National Screening Service is supporting the European SOLACE project to help evaluate and inform future implementation in Ireland.³⁹

In parallel, the Lung Health Check pilot has been introduced to assess the feasibility of low-dose CT screening for high-risk individuals and to generate evidence for a potential national programme. The pilot forms part of the €4.9 million Beaumont RCSI Irish Cancer Society Lung Outreach Programme, the largest single investment in lung cancer in the State. It is funded by the Irish Cancer Society, led by the Beaumont RCSI Cancer Centre, and supported by the EU4Health SOLACE consortium and the Department of Health's Women's Health Fund. It invites men and women aged 55–74 at high risk through selected GP practices in North Dublin and the North East, beginning with the Centric Health network, with eligibility refined by structured telephone risk assessment before a lung health check delivered from a mobile scanning unit operated by Alliance Medical Diagnostic Imaging and sited in local GAA clubs, including Croke Park. The check comprises questionnaires, spirometry, smoking cessation support and a low-dose CT scan. Around 30,000 people are expected to be invited to pre-screening, of whom approximately 2,300 are expected to meet full eligibility and enrol. As of January 2026 some 1,500 individuals had been scanned, with reported participation of 75–80%, and the first curative surgeries connected to the pilot were performed in 2026. Any move to a national programme will require review by the National Screening Advisory Committee and a health technology assessment commissioned through HIQA.^{11,14,40}

In the US National Lung Screening Trial, annual low-dose CT screening reduced lung cancer mortality by 20% compared with chest radiography. Evidence from around the world is also available⁴¹ where national and

regional lung screening programmes have been introduced successfully. Croatia became the first country in the European Union to introduce a national lung cancer screening programme in 2020, targeting current and former smokers with annual low-dose CT scans.⁴² The report *Advancing lung cancer screening: learning from implementation in Europe*, published in August 2026, makes a strong case that the debate is no longer whether lung cancer screening works, but how quickly health systems can implement it well.⁴³ Crucially, the report shows that successful implementation depends on more than technology alone: programmes must use risk-based eligibility criteria, targeted outreach to reach underserved high-risk groups, integration with smoking cessation, and strong pathways for diagnosis, treatment and quality assurance. Taken together, these lessons strengthen the policy case for implementing lung cancer screening across Ireland as a practical, evidence-based measure to improve outcomes and reduce avoidable deaths.

Diagnosis

Early diagnosis is critical in determining lung cancer prognosis. However, many patients experience prolonged delays between their initial diagnostic investigation and a definitive diagnosis, with most cases identified at an advanced stage of disease. Consistent with this pattern, 61% of lung cancers in Ireland are diagnosed at stage III or IV, and 42% at stage IV alone.⁹

The most recent registry data quantify the cost of that late presentation and show that it has not eased. Of the 11,367 lung cancers diagnosed during 2019–2023, 20% were stage I, 6% stage II, 19% stage III and 42% stage IV, with a further 13% unstaged. Among cases diagnosed in the preceding registry period, 2014–2018, the equivalent figures were 21% stage I, 9% stage II, 22% stage III, 39% stage IV and 9% unstaged. Stage I has therefore fallen by one percentage point, stage II by three and stage III by three, while stage IV has risen by three points and the unstaged share by four. The combined stage III/IV proportion is unchanged at 61%, and early-stage diagnosis, at stage I or II, has fallen from 30% to 26%. Because part of that shift reflects the growth in unstaged cases, the comparison is also worth making among cases with a recorded stage alone: on that basis stage IV accounted for 48% of staged cases in 2019–2023 against approximately 43% in 2014–2018, while the stage I share was broadly static at around 23% in both periods. Five-year net survival was 59.5% for stage I disease, 37.0% for stage II, 19.1% for stage III and 5.6% for stage IV. A patient diagnosed at stage I is therefore more than ten times as likely to survive five

years as a patient diagnosed at stage IV, yet only one in five lung cancers in Ireland is currently caught at stage I. Stage at diagnosis remains the single strongest

determinant of lung cancer survival, and closing the gap between stage I and stage IV detection represents the largest available opportunity to improve outcomes.⁹

Table 5.5. Stage at diagnosis, lung cancer, 2014–2018 and 2019–2023

Stage	2014–2018	2019–2023	Change (percentage points)
I	21%	20%	–1
II	9%	6%	–3
III	22%	19%	–3
IV	39%	42%	+3
Unstaged	9%	13%	+4
Stage III/IV combined	61%	61%	0
Stage I/II combined	30%	26%	–4

Source: National Cancer Registry Ireland. Cancer Factsheet: Bronchus and Lung (stage data for cases diagnosed 2014–2018); Cancer in Ireland 1994–2023: Annual Statistical Report of the National Cancer Registry. 2026 (stage data for cases diagnosed 2019–2023).

Note: 2014–2018 figures relate to bronchus and lung (C34); 2019–2023 figures relate to bronchus, lung and trachea (C33–34).

A key initiative to strengthen diagnostic pathways in Ireland has been the implementation of National Clinical Guidelines through the National Clinical Effectiveness Committee (NCEC). These guidelines establish national standards for evidence-based care, aiming to reduce variation in clinical practice and improve the accuracy and timeliness of lung cancer diagnosis.¹²

Rapid Access Lung Clinics

To improve timely access to diagnosis, Ireland has established Rapid Access Lung Clinics (RALCs) across its designated NCCP cancer centres. These services provide specialist assessment for patients with suspected lung cancer, aiming to review referrals within two weeks in line with NCCP and Irish Thoracic Society recommendations. Receiving referrals from GPs, hospital teams, and external hospitals, RALCs are designed to facilitate early diagnosis and timely treatment, with the goal of improving surgical eligibility, survival rates, and overall patient outcomes.⁴⁴

The RALC pathway provides an accelerated route for the investigation of suspected lung cancer in Ireland. Patients presenting with concerning symptoms are typically referred by their GP for an urgent chest X-ray, followed by rapid specialist assessment and diagnostic investigations, including CT and bronchoscopy, where appropriate. This streamlined pathway aims to reduce diagnostic delays and improve early access to treatment. The guideline underpinning it dates from 2012; the Department of Health reported that an update to the National Lung Cancer GP referral guideline commenced in 2023, but no revised version has yet been published.^{13,45}

Ireland's National Cancer Strategy (NCS) 2017–2026,⁴ aimed at improving early detection and survival outcomes, has shown mixed progress in relation to diagnostic targets, which are monitored through KPIs. A notable success has been the performance of RALCs for lung cancer, where 97% of patients were assessed within 10 working days, surpassing the national target of 95%. That figure needs an important qualification: it covers only patients referred through the Rapid Access Lung Clinics at the eight NCCP-designated centres, which account for roughly half of all lung cancer diagnoses in Ireland. Performance along the diagnostic pathway for the other half is not measured nationally. The same caveat applies to the surgical timeliness figures below. The 97% figure also relates to January to May 2025 specifically, during which 58 patients still waited longer than the recommended interval. Set against the other designated pathways, however, this is the system working. Lung was the only one of the three to meet its standard: 69% of women reached an urgent symptomatic breast disease clinic within 10 working days against a 95% target, and 8 in 10 men reached a prostate rapid access clinic within 20 working days against a 90% target. Whatever the limits of its coverage, the rapid access model is delivering for the patients who enter it. That performance held through 2025, with almost all patients attending a lung Rapid Access Clinic within the recommended 10 working days.^{11,14,46} However, broader targets remain more challenging. The NCS also aimed to reduce cancer diagnoses through emergency department presentations by 50% by 2026, using 2013 as the baseline. Despite this objective, progress has

been limited, as lung cancer continues to be frequently diagnosed through emergency presentation, accounting for approximately 25% of cases.⁴⁶ The baseline for that target was 13.5% of all cancers diagnosed through an emergency department in 2013; the most recent figure available is 14%, so on the published evidence there has been no progress towards a 50% reduction, and the target is formally judged not on track.⁴⁶

MDT care is also a key component of modern cancer management, improving clinical decision-making, care coordination, and overall quality of care. In Ireland, all patients diagnosed with cancer are recommended to have their cases formally reviewed at an MDT meeting.⁴ This approach has been largely achieved at national level, with National Cancer Strategy KPI 12 reporting that 94% of patients with invasive cancers were formally discussed at MDT meetings, marginally short of the 95% target.⁴⁶ Limited access to advanced diagnostic technologies, including robotic-assisted bronchoscopy, remains a significant gap in Ireland's lung cancer pathway, despite growing international evidence supporting its role in earlier diagnosis, improved safety, and streamlined staging.⁴⁷ Molecular diagnosis is a further constraint. Lung cancer is the clearest example of a tumour type with multiple actionable targets, for which multi-biomarker testing by next-generation sequencing is increasingly standard of care. A European survey found small NGS panels only usually, rather than routinely, available in Ireland for lung cancer, with no nationally coordinated implementation of molecular technologies and no national Molecular Tumour Board at that time. Governance of the Irish Molecular Tumour Board programme has since transferred to Cancer Trials Ireland, and the National Genomic Test Directory launched in January 2025 is expected to extend to oncology. A single-centre audit of non-small cell lung cancer managed in Dublin between 2015 and 2019 illustrates the scale of the gap: among stage IV non-squamous cases, testing was requested for EGFR in 86%, ALK in 75% and ROS1 in 58%, and for PD-L1 in 81% once that test was available locally. Between 9% and 13% of requests could not yield an evaluable result because of insufficient tissue, and 63% of patients required more than one diagnostic procedure to obtain adequate material.^{11,48} Similarly, access to CT-guided biopsy and public Positron Emission Tomography imaging remains constrained, contributing to delays in diagnosis and treatment. Combined with increasing pressure on chemotherapy and surgical services, these challenges affect timely care delivery and performance against national KPIs and are expected to intensify as lung cancer cases are projected to double by 2040 compared with 2015 levels.^{46,49} Research capacity is a related gap: about 1.5% of cancer patients in Ireland were enrolled in interventional clinical trials in 2023, against a National Cancer Strategy target of 6%.⁴⁸ Ireland had 3.7 CT, MRI and PET scanners per 100,000 population in 2024, 23% below the EU-27 average of 4.8, with numbers static since 2019. Adjusted for cancer incidence, Ireland had 3.8 CT scanners, 3.3 MRI units and 0.3 PET scanners per 1,000 cancer cases, all below the EU average. National data on the number of diagnostic scans performed are not published in Ireland, unlike in nearly all other EU countries. The Irish Cancer Society has called for ring-fenced capital funding to purchase additional CT, MRI and PET scanners specifically to bring Ireland up to the EU average.^{14,48} In OECD comparisons, Ireland had 38 CT scanners, MRI units and PET scanners per million population, compared with an OECD average of 51.⁵⁰

Access

Nationally, 61.0% of lung cancer surgeries took place within the recommended 25 working days in 2025 — two in five did not — against a National Cancer Strategy target of 90%. More than 100 patients did not receive lung cancer surgery within the recommended interval in 2025. Earlier years show the same pattern: about 7 in 10 patients were operated on within target in 2023 and 58.7% on incomplete data for 2024. These figures cover patients diagnosed through Rapid Access Lung Clinics at the eight NCCP-designated centres, which account for roughly half of all lung cancer diagnoses in Ireland; performance for the remainder is not measured nationally.^{11,14,46} Access to new medicines is another constraint. Only 25% of cancer medicines approved by the European Medicines Agency between 2020 and 2023 had been reimbursed in Ireland as of January 2025, the lowest rate in western Europe and half the EU-27 average of 50%, with a mean time from approval to reimbursement of 644 days against an EU average of 586. The HSE has questioned that methodology, noting that around 30% of the medicines counted had not been submitted for pricing and reimbursement in Ireland and a further 40% were still under review pending information from the applicant company. The growing role of private health insurers in covering some new cancer medicines before public reimbursement raises equity concerns, with oncologists reporting that treatment choices can depend on a patient's insurance status.⁴⁸

Workforce

Workforce capacity remains a critical challenge across the Irish cancer care pathway, directly affecting timely treatment and service performance. Persistent failure to meet national radiotherapy KPIs since 2017 highlights the operational impact of insufficient staffing and equipment limitations. These pressures are likely to intensify with projected growth in lung cancer burden, reinforcing the urgent need for long-term workforce planning, recruitment, and retention strategies to ensure equitable and sustainable access to care.⁴⁶

Data Gap

Underlying all of this is a measurement gap. Ireland has no national clinical lung cancer registry. The NCCP operates structured internal monitoring across the eight designated centres, but it covers only the Rapid Access Lung Clinic pathway, is confined to a defined set of indicators. When the IHE Lung Cancer Performance Framework was applied to Ireland in 2026, 11 of its 27 indicators could be assessed only through proxy evidence and three could not be assessed at all for want of public data. Establishing a national clinical lung cancer registry with routine public reporting, building on the existing NCCP infrastructure, would be a valuable and impactful investment. Of the National Cancer Strategy targets assessed in the most recent independent scorecard, fourteen had not been met, seven had no data available at all, one was judged not on track, three carried 2026 deadlines that could not yet be assessed, and three had been met.

ensuring equitable and sustainable access to treatment, building partnerships and investment, and combating the stigma that still attaches to the disease.

Treatment capacity is the other constraint. Two in five patients do not receive lung cancer surgery within the recommended timeframe, against a National Cancer Strategy target of 90%, and the radiotherapy target has not been met in any year since the Strategy was launched in 2017. The therapeutic advances that produced the survival gains of the last two decades can only deliver for patients who reach them on time. The gap between how many people lung cancer kills and how many survive is itself a measure of the problem. Of the almost 231,000 people living in Ireland with or beyond a cancer diagnosis at the end of 2023, only 7,046 — 3.1% — had been diagnosed with lung cancer, even though lung cancer causes 19.7% of all cancer deaths. The case for investment rests on mortality and on the scope for earlier diagnosis, not on prevalent need. Approximately 25% of lung cancer cases are still diagnosed through emergency presentation. The Lung Health Check pilot is the most promising route to earlier diagnosis, with reported participation of 75–80%. National expansion of integrated screening, smoking cessation, advanced diagnostics, and workforce capacity will be essential to improve outcomes and meet future demand.

5.4 Conclusions

Lung cancer outcomes remain poor, and the reason is largely a matter of timing. Age-standardised five-year net survival is 25%, among the lowest of any cancer. Stage at diagnosis is what limits survival: 61% of cases are found at stage III or IV, when curative treatment is rarely possible, and a patient diagnosed at stage I is more than ten times as likely to survive five years as one diagnosed at stage IV. Ireland has no national lung cancer screening programme, which would support earlier diagnosis. Smoking was responsible for 73% of lung cancer cases diagnosed in 2022, showing the continuing need for ambitious action on tobacco control, prevention, early detection, and timely access to diagnosis and treatment. Internationally, the Lung Cancer Consensus Statement agreed at the 9th International Lung Cancer Network meeting sets out five principles for strengthening lung cancer control: expanding prevention, focusing on early detection,

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Cystic Fibrosis

06

Key Points

- Ireland has one of the highest reported incidences of CF in the world. Newborn screening identified CF in approximately one in every 2,000 births in 2024.
- Highly effective CFTR modulator therapy has changed the natural history of cystic fibrosis but has not cured it. In 2024, 4.1% of the registered CF population in Ireland was ineligible for any CFTR modulator on genotype grounds, and 10.7% of those eligible were not receiving one at their last clinic visit of the year.
- In 2024, 17.4% of people with CF in Ireland were aged 40 years or older, compared with 7.7% in 2014, and 62% of the population were adults. Cystic fibrosis is no longer a paediatric disease with an adult tail; it is an adult multisystem condition, and services designed for the former are not configured for the latter.
- Depression and anxiety occur at two to three times general population rates in people with cystic fibrosis and their caregivers. International CF Foundation and European Cystic Fibrosis Society consensus guidance recommends annual screening from age 12 years.
- Adults with cystic fibrosis have a 5–10 fold higher risk of colorectal cancer than the general population, rising to 25–30 fold following solid organ transplantation, with onset typically two to three decades earlier. International guidance recommends screening colonoscopy from age 40 years (age 30 years post-transplant). Ireland's national bowel screening programme currently commences at age 57 years, and there is no CF-specific cancer surveillance pathway. Establishing one is an achievable and high-value priority.
- Improved CFTR function has restored fertility for many women with cystic fibrosis, and pregnancy rates have risen. In Ireland, where the registry began recording pregnancies in 2023, 20 women with CF were pregnant in each of 2023 and 2024. Ireland has no national pre-conception, obstetric or lactation pathway for cystic fibrosis, and the evidence base for modulator use in pregnancy and breastfeeding remains limited. This is a predictable and rapidly growing service demand.
- The pattern of transplantation has changed considerably over the past decade due to the impact of CFTR modulator therapies. In 2023 and 2024, no individuals who were members of the CF Registry of Ireland underwent a lung transplant compared with 20 individuals in 2014.

6.1 Background

Ireland has one of the highest reported incidences of cystic fibrosis (CF) in the world.¹

CF is a life-limiting inherited genetic disorder caused by mutations in the CFTR (cystic fibrosis transmembrane conductance regulator) gene. Defective or absent CFTR protein impairs salt and water transport across epithelial tissues, leading to the accumulation of thick mucus in multiple organs, particularly the lungs. This results in airway obstruction, recurrent infections, chronic inflammation, and progressive respiratory damage, which remains the leading cause of mortality.³

The primary determinant of CF is the inheritance of pathogenic mutations in the CFTR gene, while disease severity and progression are influenced by genetic, environmental, and healthcare-related factors. Among the main contributors are chronic bacterial colonisation, particularly with *Pseudomonas aeruginosa* and *Stenotrophomonas maltophilia*, viral respiratory infections, systemic inflammation, and nutritional deficiencies, all of which are associated with poorer clinical status and a higher frequency of pulmonary

exacerbations. In addition, low socioeconomic status and geographic disparities may further affect outcomes by limiting access to healthcare, treatment availability, and increasing exposure to adverse environmental factors.^{4–8}

To date, approximately 2,000 mutations of the CFTR gene have been identified, contributing to variable clinical manifestations and disease severity in CF. In Ireland, the F508del mutation is the most prevalent CFTR variant, accounting for 73.2% of all tested alleles, with 91.9% of patients carrying at least one copy, compared with an estimated European average of 80%. Among these, over half of patients are homozygous for F508del (54.5%), compared with approximately 39% in European registry data, while 37.5% are heterozygous. Other common mutations include G551D and R117H, identified in 15.4% and 6.0% of patients, respectively.²

However, despite its historically poor prognosis, the past six decades have seen remarkable improvements in health outcomes for people with CF, transforming a once fatal childhood disease into a chronic condition with increasing life expectancy.⁹ One of the most significant advances in CF care has been the introduction of CFTR modulator therapies, which target

the underlying molecular defect and have led to improved survival and reduced mortality.¹⁰

CF remains associated with substantial healthcare utilisation, requiring lifelong multidisciplinary management and frequent monitoring. The economic burden associated with diagnosis is also considerable, with an average diagnostic cost of €2,663 per patient.¹ Recent evidence from Ireland further underscores the economic value of early diagnosis, demonstrating that children diagnosed clinically incur healthcare costs 2.62 times higher during the first two years of life than those identified through newborn screening, largely driven by increased hospital admissions.¹¹ To support early diagnosis and timely intervention, newborn screening programmes have been implemented in many countries worldwide, including Ireland through the National Newborn Bloodspot Screening Programme.

CF is often perceived as an invisible illness. Someone with CF may appear well to others while, beneath the surface, managing significant physical, emotional and systemic challenges. Although public understanding of CF has improved, greater awareness is still needed of the many challenges people with CF (pwCF) continue to face. While therapeutic advances have been transformational for many, not everyone with CF has benefited, and the need to continue working towards effective treatment for all remains as important as ever.

6.2 Burden of Disease

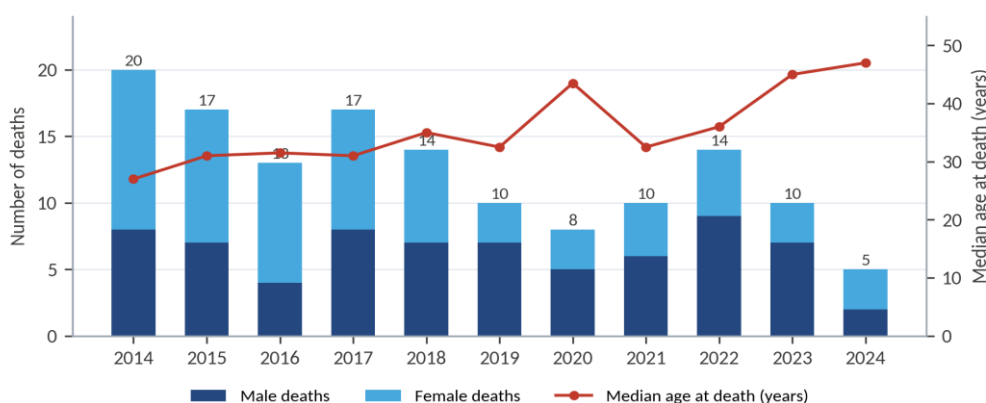
Incidence and Prevalence

Between 2015 and 2024, on average 29 individuals were diagnosed with CF each year in Ireland (range 15–39). The median age of diagnosis was 0.21 years. Of the 289 people newly diagnosed and registered with the CFRI between 2015 and 2024, 39 (13.5%) were diagnosed other than through newborn screening. In 2024, 1,454 people attended an Irish CF Centre for care, of whom 1,376 (94.6%) were registered with the (voluntary) Cystic Fibrosis Registry of Ireland (CFRI)².

Mortality

Since 2014, an average of 13 people with CF have died annually, with between 5 and 20 deaths recorded each year². The 5 people who died in 2024 (3 females, 2 males) ranged in age from 39 to 64 years. Figure 6.1 shows deaths by sex and increasing median age of death for the years 2014–2024². As estimates derived from a single year of data can fluctuate substantially due to random variation, a rolling five-year estimate (2020–2024) is often used to provide a more robust measure of survival outcomes. Using this approach, the predicted median survival age for individuals born today with cystic fibrosis is estimated to be 62.6 years, although this estimate is becoming less certain as the number of deaths falls (95% confidence interval 59.6 years to not estimable)².

Figure 6.1. Deaths associated with cystic fibrosis 2014–2024



Source: Adapted from Cystic Fibrosis Registry of Ireland Annual Report 2024

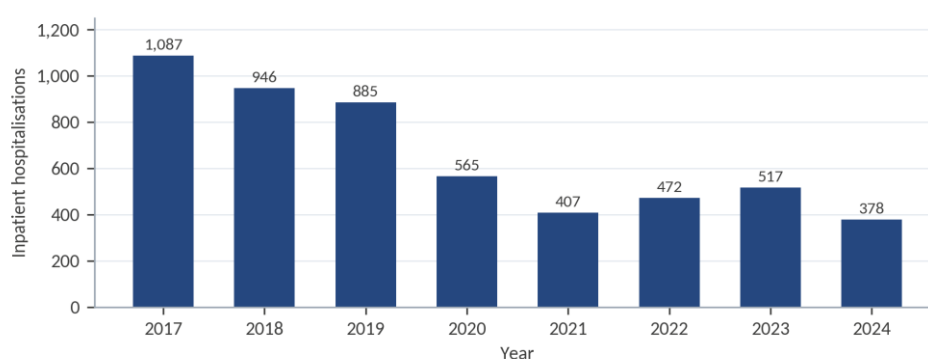
Hospitalisations

The number of inpatient hospitalisations for CF from HIPE reporting hospitals over the years 2017–2024 is shown in Figure 6.2. Inpatient discharges with a principal diagnosis of CF fell by 65%, from 1,087 in 2017 to 378 in 2024, and the inpatient bed days they used fell from 14,642 to 6,192. Mean length of stay was 16.4 days in 2024, longer than in any year since 2017 (range 9.3–14.6 days), so the admissions that remain are fewer but longer.¹²

There were approximately 5.4 visits to outpatient settings for each person with CF in 2024². Registry data also show how the pattern of care has changed. The CFRI recorded 401 hospitalisations in 2024, 43% fewer than in 2014. Pulmonary exacerbations accounted for 54.9% of these, compared with 98.6% in 2014, while other CF-related admissions, such as for bronchoscopy or gastrostomy and port procedures, rose from 1.4% to 43.9%. Of 7,448 outpatient visits recorded in 2024, 1,291 (17.3%) were virtual, compared with 14 (0.2%) in 2014.²

In 2024, there were 378 inpatient hospitalisations for CF (0.44% of respiratory inpatient hospitalisations, 0.05% of all inpatient hospitalisations) which used 6,192 inpatient bed days (1.08% of respiratory inpatient bed days, 0.15% of all inpatient bed days). In addition, there were 1,493 day-cases¹². Of inpatient discharges in 2024, 28% were classified as CF with major complexity with a mean and median length of stay (LOS) of 22.7 and 14 days respectively. For discharges classified as CF with minor complexity, the mean and median LOS was 10.6 and 10 days respectively¹³.

Figure 6.2. Inpatient hospitalisations with a principal diagnosis of cystic fibrosis, 2017–2024



Source: HIPE 2017–2024¹².

Sex

Over the last decade, males have consistently represented the larger proportion of the cystic fibrosis population, accounting for 56.5% of individuals living with cystic fibrosis in 2024, compared with 43.5% females. Similar sex distributions have also been reported internationally.^{2,14}

Age distribution also differed between sexes. In 2024, the median age of females living with cystic fibrosis was 21.2 years (IQR 11.4–34.1), compared with 25.6 years (IQR 14.8–37.7) among males, with this difference being statistically significant ($p < 0.001$). While males outnumbered females across most age groups, females were more represented in the youngest age band (0–3 years), the 8–11-year age group, and among individuals aged over 60 years. The younger median age among females is consistent with previous reports of sex-based differences in disease progression and survival².

Between 2020 and 2024, 47 people registered with the CFRI died, of whom 29 (61.7%) were male and 18 (38.3%) were female².

Hospital utilisation remained broadly similar between sexes, although males accounted for a slightly greater proportion of inpatient discharges in every year from 2019 to 2024. In 2024, there were 378 inpatient discharges related to cystic fibrosis, of which 194 (51.3%) occurred among males and 184 (48.7%) among females¹².

Age

The age profile of people with cystic fibrosis in Ireland has changed substantially over the past decade, reflecting improvements in survival and long-term disease management. In 2024, there were more adults (aged 18 years or older) living with cystic fibrosis than children, with 870 adults and 528 children recorded in the CFRI. The median age of the CF population was 23.7 years (IQR 13.2–36.2), meaning that half of all registered individuals were younger than 23.7 years and half were older. Ages ranged from birth to 75 years, with 243 individuals (17.4%) aged 40 years or older². This represents a marked demographic shift compared with 2014, when only 7.7% of individuals were aged 40

years or above and the median age was 19.5 years (IQR 10.0–29.7). Over the ten-year period, the median age increased by more than four years, highlighting the growing adult cystic fibrosis population and the increasing need for long-term management of age-related and extrapulmonary complications².

With 62% of the CF population in Ireland now adult and paediatric cohorts continuing to move through into adulthood, adult services face sustained growth for the foreseeable future². Transition from paediatric to adult care is a period of recognised clinical risk, associated with reduced adherence and disengagement, and requires structured, protocolised handover with dedicated transition coordination. Capacity planning for adult CF services should be based on projected rather than current numbers¹⁵.

Despite improvements in life expectancy, cystic fibrosis remains associated with premature mortality. Between 2017 and 2023, the majority of cystic fibrosis-related deaths occurred before the age of 50 years, ranging from 66.7% to 100% annually (Table 6.1). These findings underline the substantial progress made in extending survival, while also emphasising that cystic fibrosis continues to impose a significant burden of premature mortality¹⁶

Table 6.1. Deaths 2017–2023: Cystic Fibrosis (ICD 10: E84)

Year	Total Deaths E84	Deaths E84 age < 50yrs
2017	13	11 (84.62%)
2018	12	11 (91.67%)
2019	9	7 (77.78%)
2020	4	4 (100.00%)
2021	6	6 (100.00%)
2022	8	7 (87.50%)
2023	3	2 (66.67%)

Source: Health Statistics (PHIS) / CSO¹⁶

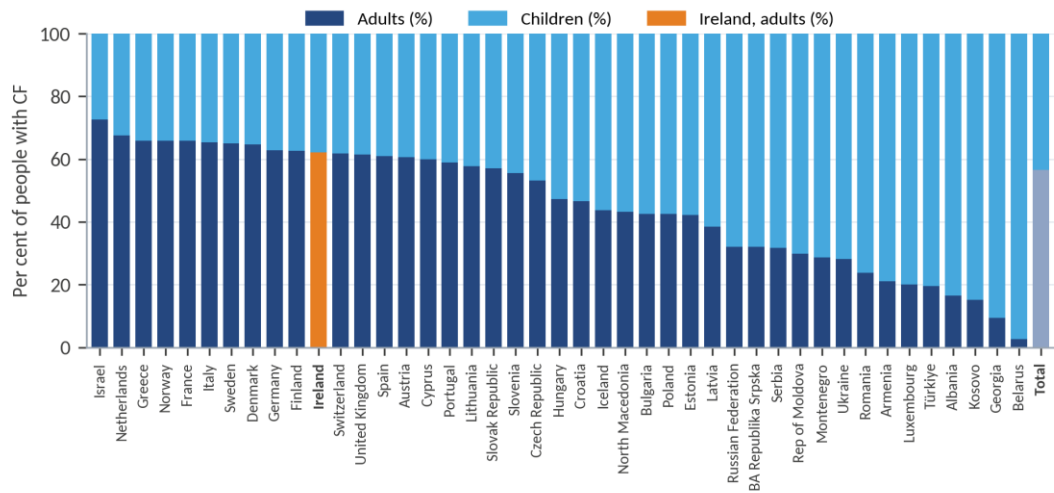
International Benchmarking

Cystic fibrosis remains a significant global health burden, although its distribution varies substantially across regions. Recent estimates indicate that approximately 105,352 individuals across 94 countries have been diagnosed with CF worldwide, with nearly 90% of these cases identified through national patient registries. In addition to the diagnosed population, a further 57,076 individuals are estimated to remain undiagnosed across 49 countries, bringing the total estimated global CF burden to 162,428 people. This figure may range between 144,606 and 186,620, reflecting uncertainty in regions with limited diagnostic capacity and incomplete registry coverage¹⁷.

The global distribution of CF numbers is highly uneven, with the highest prevalence reported in high-income countries where newborn screening programmes, specialised care centres, and comprehensive registries are well established. In contrast, many low- and middle-income countries are likely to have substantial underdiagnosis, contributing to lower reported prevalence despite probable unmet disease burden.

The age distribution of people living with CF varies considerably across Europe and provides an indirect marker of survival outcomes and healthcare effectiveness (Figure 6.3). The highest proportions of adults are reported in Israel (72.7%) and the Netherlands (67.5%). At 62.2%, Ireland is above the figure for all ECFSPR countries combined (56.6%), reflecting improved survival and successful transition into adult care. In contrast, adults make up less than a third of the CF population in several countries in Eastern Europe and the Balkans, including Ukraine (28.1%) and Montenegro (28.6%), which may indicate differences in healthcare access, diagnostic practices, and long-term survival.

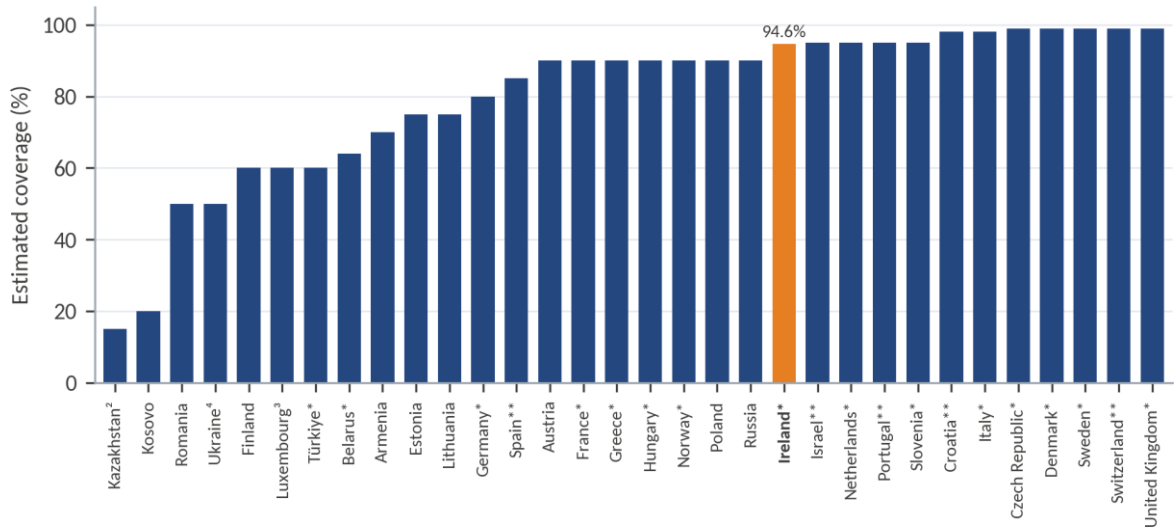
Figure 6.3. Proportion of adults and children living with CF across European countries (2024).



Source: Adapted from ECFSPR Annual Data Report 2024¹⁴.

Registry coverage also differs substantially between countries, influencing the accuracy of prevalence estimates and international comparisons (Figure 6.4). At an estimated 94.6%, Ireland’s registry coverage is high by European standards and supports robust national epidemiological data, although several countries, including the United Kingdom, Denmark and Sweden, report coverage of 99%. By contrast, several countries report substantially lower coverage, including Kazakhstan (15%), Kosovo (20%) and Romania (50%), suggesting that disease burden in these settings may be underestimated.

Figure 6.4. Estimated national CF registry coverage across European countries (2024).



Source: Adapted from ECFSPR Annual Data Report 2024¹⁴.

Rory Tallon, person with CF, married and father of two, lives and works in Dublin.

Living with CF and CF related diabetes, I count myself very fortunate that my health is still relatively stable for a homozygous F508del person with CF in my mid-50s. My daily life requires constant active management from medication regime to exercise to lifestyle choices. I must listen to my body's CF demands and respect the limitations in my lifestyle it regularly imposes. I am thankful for the stabilising CFTR modulator therapy and the excellent CF care in Ireland. Yet there is room for improvements: Continuity of care across medical personnel and disciplines and across hospitals, out of hours and weekend specialist CF team access, shared decision making, access to remote monitoring and improved GP awareness. The challenge of living with CF is significant but hidden and both the need for and access to social, family and employment supports is very poorly understood and poorly recognised by the state. I am so thankful we have Cystic Fibrosis Ireland and the CF Registry of Ireland to help shine the light on the unique health and social needs of the CF population.



6.3 Prevention, Diagnosis and Management

Although CF is caused by inheriting two pathogenic CFTR variants, its severity and progression are shaped by other factors, including chronic infection, nutritional status and socioeconomic circumstances.^{4–8}

These socioeconomic influences are particularly relevant in the Irish context. In Ireland, a Cystic Fibrosis Ireland (CFI) Members Survey conducted in March 2025

found that 44.9% of people with CF reported difficulty meeting their monthly bills, while 36% of respondents relied on social welfare payments as their primary source of income. Among those receiving Disability Allowance, 63.8% reported experiencing enforced deprivation, defined as being unable to afford essential items or activities considered a normal part of everyday life.¹⁸ Financial hardship was also evident among people with CF in employment, with 30.3% of respondents working full-time experiencing enforced deprivation, compared with 9.4% among people in full-time employment in the CSO Survey on Income and Living Conditions (SILC) data cited by CFI.¹⁸ Financial strain also extends to families: 34% of parents of children with CF reported difficulty meeting monthly bills, and 45% of parents of adults with CF reported financial hardship.¹⁸

Beyond these measurable socioeconomic pressures, living with CF continues to impose a considerable time and psychosocial burden on pwCF and their families. Daily treatment, nutrition and exercise requirements, frequent healthcare appointments and periods of acute illness can affect quality of life and place additional financial pressure on households. These challenges may extend beyond healthcare to housing, education, employment and access to financial products^{18,19}.

Treatment adherence is an important determinant of effective CF management. Despite the simplified treatment burden offered by oral CFTR modulators, real-world adherence remains variable, with a recent systematic review reporting objectively measured adherence ranging from 62% to 99% using pharmacy data and 61% using electronic monitoring. Adherence may be influenced by several factors, including age, treatment duration and complexity, adverse effects, financial barriers and psychosocial factors, and may decline over time. These findings highlight the importance of routinely monitoring adherence and addressing individual barriers to treatment as part of ongoing CF care²⁰.

Equitable access to appropriate treatment and specialist care is equally important in shaping outcomes for people with CF. In Ireland, CFTR modulators are reimbursed through the HSE, facilitating access to these high cost therapies²¹. In 2024, CFRI data show that 90.3% of people eligible for CFTR modulator therapy were receiving a modulator². However, access to effective treatment may still be influenced by factors including therapeutic eligibility, reimbursement processes and health-system capacity²².

Prevention and Early Detection

As cystic fibrosis is an inherited autosomal recessive disorder, opportunities for primary prevention are limited. Preventive strategies are largely centred on genetic counselling, carrier testing and prenatal diagnosis for families at increased risk of having an affected child²³.

Early detection of CF in Ireland is achieved through the National Newborn Bloodspot Screening Programme, which introduced cystic fibrosis screening in July 2011. The programme uses a two-tier immunoreactive trypsinogen (IRT)/DNA testing strategy to identify infants at increased risk of CF before the onset of significant respiratory symptoms or malabsorption. Prior to the introduction of newborn screening, the median age at diagnosis in Ireland was 11 months among children without a family history or meconium ileus²⁴. When all routes to diagnosis are included, CFRI data indicate a pre-NBS median age at diagnosis of approximately 5 months².

Between 2011 and 2021, more than 650,000 infants were screened, with the programme demonstrating a sensitivity of 97.9% and identifying 284 cases of cystic fibrosis. The median age of referral to a specialist CF centre was 21 days, enabling timely diagnostic confirmation and initiation of multidisciplinary care. The programme also achieved an uptake rate exceeding 99.9%, reflecting strong national coverage and acceptance²⁴.

Recent programme data demonstrate the continued scale and effectiveness of newborn screening in Ireland. In 2024, 54,319 newborns were screened through the National Newborn Bloodspot Screening Programme, with 828 samples (1.52%) showing elevated IRT levels and requiring further genetic testing. A total of 69 infants were referred to specialist CF centres, resulting in 27 confirmed diagnoses of cystic fibrosis and 40 carrier identifications (Table 6.2)². These findings highlight the ongoing role of newborn screening in facilitating the early identification of affected infants and timely referral to specialist services.

Table 6.2. National Newborn Bloodspot Screening Programme outcomes, 2022–2024²

	2022, N	2023, N	2024, N
Total number of newborns screened in NBS	54784	54820	54319
Number of samples with raised IRT sent to National Centre for Medical Genetics (NCMG)	799 (1.46%)	882 (1.61%)	828 (1.52%)
Number of newborns with one mutation identified	64	71	46
Number of newborns with two mutations identified	20	20	27
Number of newborns referred to a CF Specialist Centre	84	95	69
Number of newborns diagnosed with CF	21	30	27
Number of newborns diagnosed as carriers	60	62	40

Source: Cystic Fibrosis Registry of Ireland Annual Report 2024².

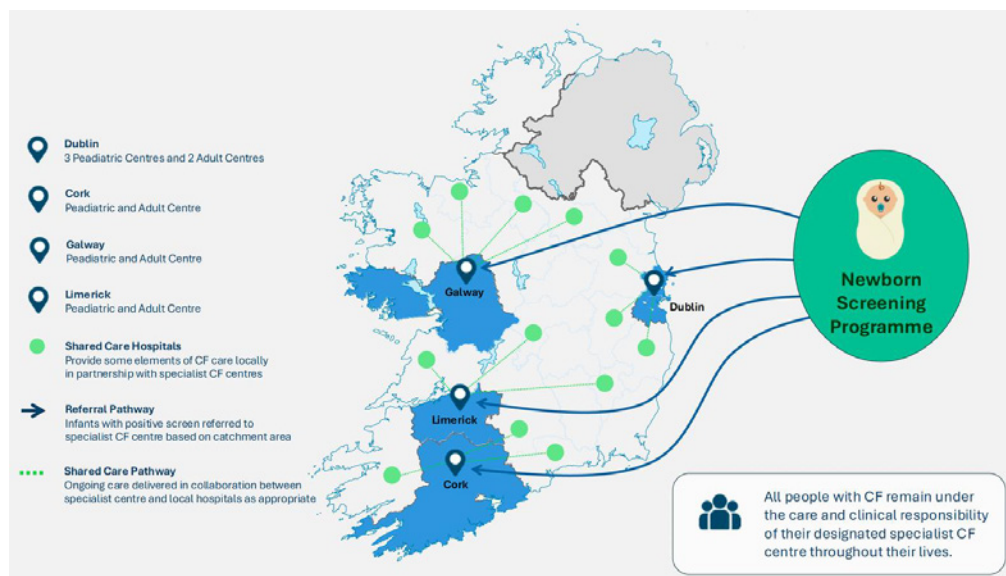
Ireland's cystic fibrosis newborn screening programme compares favourably with those of other European countries. Despite not employing an IRT "safety net" strategy used in many European screening programmes, Ireland has maintained high diagnostic performance and timely referral to specialist centres. The programme achieved a positive predictive value (PPV) of 34%, exceeding the European Cystic Fibrosis Society (ECFS) benchmark of 30%, while maintaining a sensitivity above the ECFS minimum standard of 95%²⁴. By comparison, an 11-year evaluation of the Swiss newborn screening programme concluded that, although screening performance was generally strong, the programme did not achieve the ECFS target for PPV and proposed modifications to improve efficiency and reduce unnecessary follow-up investigations²⁵. Together, these findings suggest that Ireland's screening pathway achieves a high level of diagnostic accuracy while maintaining compliance with European quality standards.

Early diagnosis through newborn screening allows the introduction of specialist respiratory, nutritional and developmental care during infancy, improving growth, reducing complications and supporting better long-term outcomes. The benefits of early detection have become increasingly important with the availability of highly effective CFTR modulator therapies, which can now be initiated earlier in life for eligible patients. Ongoing evaluation of the screening programme will remain important as Ireland's population becomes increasingly diverse and rare CFTR variants become more relevant to screening performance.

Access

Access to cystic fibrosis care in Ireland is provided through a network of designated specialist paediatric and adult CF centres located in Dublin, Cork, Galway and Limerick. The National Clinical Programme for Cystic Fibrosis recommends that all people with cystic fibrosis receive regular follow-up through specialist centres, where care is delivered by multidisciplinary teams comprising respiratory physicians, specialist nurses, physiotherapists, dietitians, pharmacists, psychologists and social workers²⁶. Shared-care arrangements may be utilised for some paediatric patients living further from specialist centres, while maintaining oversight from the designated CF centre. The organisation of specialist and shared-care services for cystic fibrosis in Ireland is illustrated in Figure 6.5.

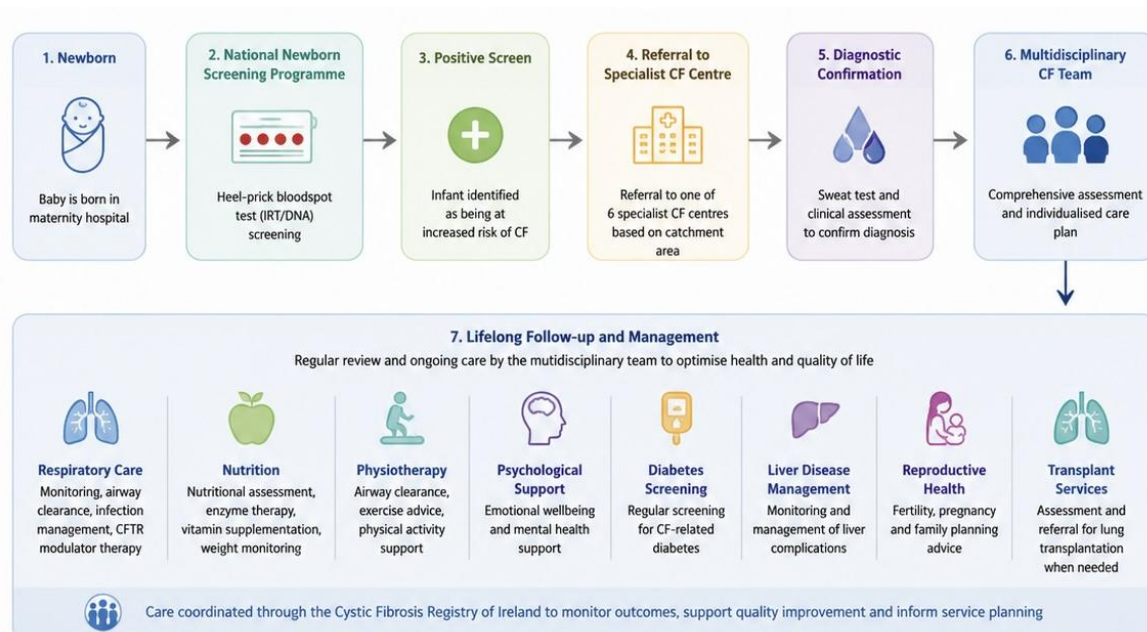
Figure 6.5. Specialist CF Centres and Shared Care Network in Ireland



Source: Adapted from Health Service Executive, Royal College of Physicians of Ireland. *Cystic fibrosis: A model of care for Ireland*. 2019²⁶.

Infants diagnosed through the National Newborn Bloodspot Screening Programme are referred directly to specialist centres for diagnostic confirmation and ongoing care, ensuring access to expert management from the earliest stages of life. The Irish Model of Care emphasises timely access to specialist assessment and treatment, including routine review every three months for clinically stable patients, rapid access to inpatient and day-care services, and dedicated facilities designed to minimise the risk of cross-infection. Specialist centres also provide access to management of extrapulmonary complications, including cystic fibrosis-related diabetes, liver disease, kidney disease and mental health conditions, which are becoming increasingly important as survival improves²⁶. The patient pathway from newborn screening through lifelong multidisciplinary management is outlined in Figure 6.6

Figure 6.6. Cystic Fibrosis Care Pathway in Ireland



Source: Adapted from Health Service Executive, Royal College of Physicians of Ireland. Cystic fibrosis: A model of care for Ireland. 2019²⁶.

National coordination is further supported by the Cystic Fibrosis Registry of Ireland (CFRI), which collects clinical and demographic data on people living with cystic fibrosis and plays an important role in monitoring outcomes, evaluating treatment effectiveness, supporting research, and informing service planning and quality improvement initiatives. It is also a genuine international asset, whose coverage of 94.6% of people attending CF centres is high by European standards and enables epidemiological work that most countries cannot undertake. This strength is not matched by clinical trial infrastructure. Research nurse, data management and trial coordinator posts within CF centres are largely unfunded or supported precariously, which limits Irish participation in the European CF Society Clinical Trials Network and restricts patient access to emerging therapies — most consequentially for those with no modulator option. The registry itself relies largely on project-specific funding: in 2024, core funding accounted for €140,000 of total income of €718,821, and no data collection took place at one hospital during the year because data collectors were unavailable.²

Workforce

The 2019 national Model of Care for Cystic Fibrosis²⁶ set out multidisciplinary staffing ratios for specialist centres (Model of Care Table 1 and Appendix 3²⁶), including recommended whole-time-equivalent (WTE) allocations for CF clinical nurse specialists, physiotherapists, dietitians, pharmacists, psychologists, social workers,

administrative support and data management. Seven years on, these ratios have not been implemented in any Irish CF centre. Patient numbers have grown, complexity has increased, and the range of tasks expected of CF teams has expanded to include modulator monitoring, registry data entry, home intravenous therapy coordination, transition, annual review and increasing management of extrapulmonary disease.

The consequences are measurable. Annual review² — the principal mechanism for detecting the extrapulmonary complications that now dominate adult CF care — is not delivered to all patients. Reduced ambulatory and day-ward capacity displaces activity into inpatient beds. Data entry to the national registry competes with direct clinical care. Sustained under-resourcing of this kind is a recognised driver of burnout and moral distress among CF professionals, with consequent risk to the retention of a small and highly specialised workforce that cannot readily be replaced²⁷.

The impact of this workforce gap is illustrated by staffing and service data from St Vincent's University Hospital CF Centre. The centre provides care for approximately 450 adults with cystic fibrosis, supported by four CF clinical nurse specialists, approximately 70% below the staffing level recommended in the national Model of Care. Psychology provision is 2.0 WTE, compared with a Model of Care requirement of approximately 5.5 WTE. In 2025, annual review was completed for 211 of 429 patients (49%). These centre-level data provide an example of the capacity pressures

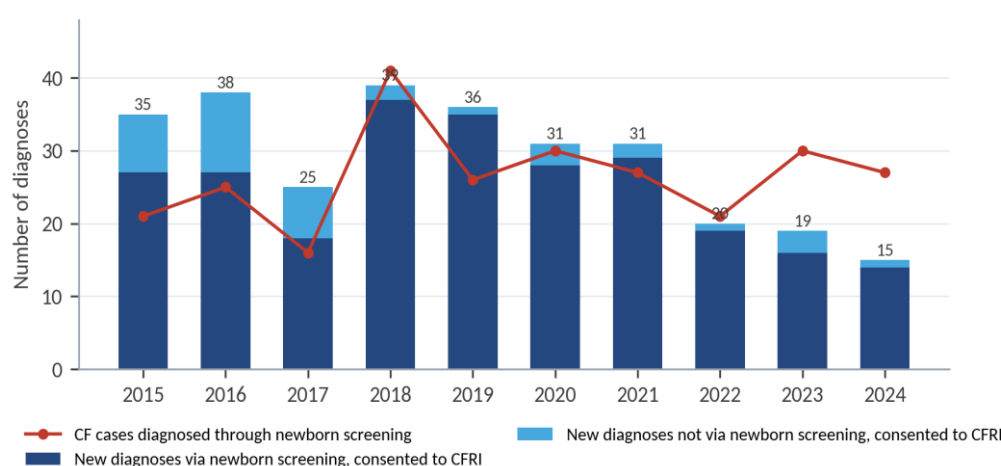
facing specialist CF services and should not be interpreted as representing staffing or annual review coverage nationally.

Diagnosis

As discussed in the Prevention and Early Detection section, Ireland's National Newborn Bloodspot Screening (NBS) Programme facilitates the early identification and diagnosis of cystic fibrosis. Data from the CFRI indicate that 15 newly diagnosed individuals were registered in 2024.

However, this likely underestimates the true number of diagnoses made during the year because there can be a delay between diagnosis and registration in the registry. For example, while only nine newly diagnosed individuals were reported in the 2023 annual report, a total of 19 individuals diagnosed in 2023 had been registered by the time of the 2024 report². Figure 6.7 presents trends in newly diagnosed cases of cystic fibrosis and registrations in the CFRI between 2015 and 2024.

Figure 6.7. Number of new CF diagnoses, 2015–2024²



Source: Adapted from Cystic Fibrosis Registry of Ireland Annual Report 2024².

Although the NBS Programme accounted for 250 (86.5%) of the 289 new diagnoses registered with the CFRI between 2015 and 2024, other clinical presentations continue to contribute to case identification. Among individuals living with cystic fibrosis who were registered with the CFRI in 2024, respiratory symptoms were reported as a contributing factor leading to diagnosis in 31.5% of cases, with a median age at diagnosis of 1.19 years. Other common routes to diagnosis included failure to thrive (19.7%), family history of cystic fibrosis (21.3%), and steatorrhea (17.3%)². Table 6.3 summarises the reported routes to diagnosis and the corresponding median age at diagnosis among individuals living with cystic fibrosis in 2024. As multiple factors may contribute to diagnosis in a single individual, categories are not mutually exclusive.

Table 6.3. Methods and median age of diagnosis of individuals living with CF in 2024²

Method of Diagnosis	% Individuals living in 2024 (n=1,398)	Median age at diagnosis (years)	IQR
All		0.21	(0.05-1.8)
Respiratory symptoms	31.5%	1.19	(0.4-5.1)
Failure to thrive/malnutrition	19.7%	0.47	(0.19-1.5)
Family history	21.3%	0.12	(0.04-0.96)
Steatorrhoea +/- abnormal stools +/- malnutrition	17.3%	0.93	(0.24-3.2)
Newborn screening	21%	0.05	(0.04-0.07)
Meconium ileus:			
treated surgically	7.8%	0.04	(0.02-0.07)
medically managed	4.4%	0.04	(0.02-0.11)
management unknown	1.1%	0.07	(0.04-0.22)
Other	12.8%	0.99	(0.08-6.6)

Source: Cystic Fibrosis Registry of Ireland Annual Report 2024².

The proportion diagnosed through newborn screening varies according to the population and time period considered. The 21% reported in Table 6.4 refers to all individuals living with CF in 2024, including those diagnosed before the introduction of the NBS Programme, whereas the higher proportions reported for more recent periods relate specifically to individuals diagnosed after its introduction.

A significant shift in the route to diagnosis has occurred since the introduction of the National NBS Programme in 2011. Prior to NBS implementation, respiratory symptoms were the most common route to diagnosis, accounting for 41.5% of cases. In contrast, only 10.8% of individuals diagnosed after the introduction of NBS were identified following the onset of respiratory symptoms. Similar reductions were observed in diagnoses associated with failure to thrive, steatorrhoea and malnutrition. Collectively, these findings indicate that a greater proportion of individuals are now being diagnosed before the development of significant clinical manifestations. This shift has been accompanied by a reduction in the median age at diagnosis from 5 months before NBS implementation to 1 month following its introduction². Table 6.4 compares the methods of diagnosis and median age at diagnosis before and after the implementation of newborn screening.

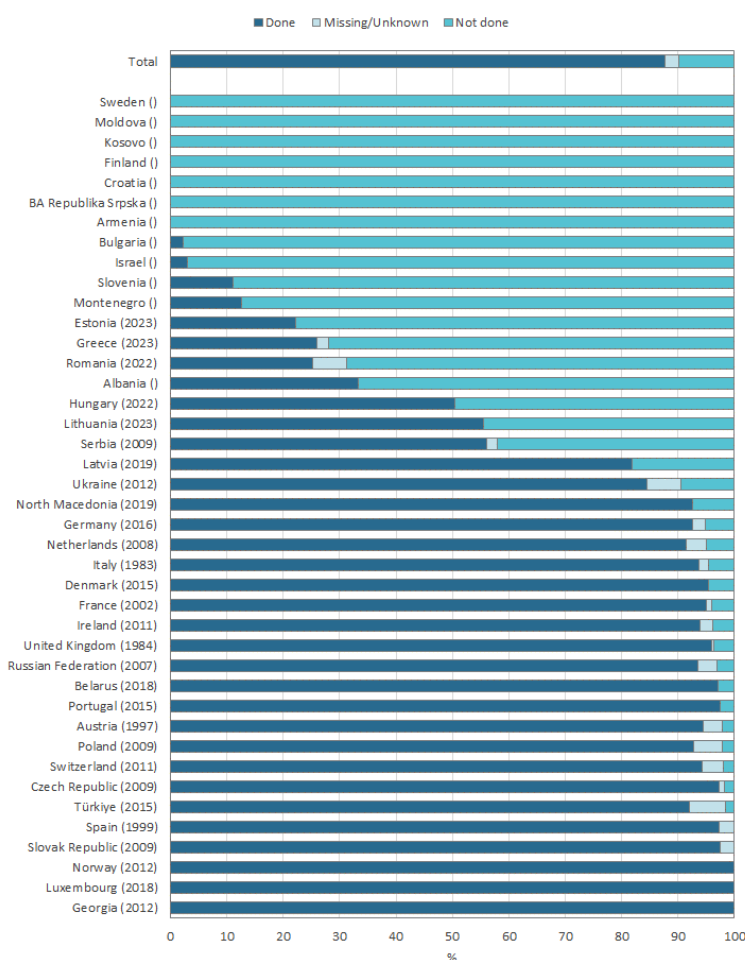
Table 6.4. Comparison of diagnosis methods and median age at diagnosis among individuals with cystic fibrosis diagnosed before and after the introduction of newborn screening in Ireland.²

Method of Diagnosis	Diagnosed pre-NBS			Diagnosed post-NBS		
	% Individuals living in 2024 (n=943)	Median age at diagnosis (years)	IQR	% Individuals living in 2024 (n=455)	Median age at diagnosis (years)	IQR
All		0.41	(0.11-2)		0.06	(0.04-0.26)
Respiratory symptoms	41.5	1.02	(0.38-4)	10.8	7.85	(2.7-19.7)
Failure to thrive/malnutrition	26.8	0.48	(0.21-1.4)	4.8	0.24	(0.06-3.7)
Family history	23.9	0.14	(0.04-0.59)	16	0.07	(0.05-3.9)
Steatorrhoea +/- abnormal stools +/- malnutrition	23.2	0.88	(0.25-3)	5.1	3.85	(0.07-5.1)
Newborn screening	0.3	0.06	(0.05-0.08)	61.8	0.05	(0.04-0.07)
Meconium ileus:						
treated surgically	7.6	0.04	(0.02-0.09)	8.1	0.04	(0.03-0.06)
medically managed	5.8	0.04	(0.02-0.1)	1.5	0.06	(0.05-0.12)
management unknown	1.3	0.1	(0.05-0.28)	0.7	0.04	(0.03-0.06)
Other	12.5	1.22	(0.18-5.4)	13.4	0.12	(0.05-11.3)

Source: Cystic Fibrosis Registry of Ireland Annual Report 2024².

This transition is consistent with wider European trends, where more than 85% of young children registered in the European Cystic Fibrosis Society Patient Registry (ECFSPP) in 2024 had undergone newborn screening (Figure 6.8). Ireland ranks among the countries with the highest levels of screening implementation, reflecting the strong integration of newborn screening into routine cystic fibrosis care and supporting earlier diagnosis and intervention¹⁴.

Figure 6.8. Proportion of children with CF who underwent neonatal screening, by country (year of NBS program start) and overall. Children 5 years old or younger and seen by a clinician in 2024¹⁴.



Source: ECFSPR Annual Data Report 2024¹⁴.

Management

In Ireland, people with CF should undergo regular specialist review at least every three months when clinically stable, with more frequent assessment during periods of illness or disease instability. The core principles for cystic fibrosis care in Ireland are discussed in the Access to Care section and include pulmonary function monitoring, nutritional support, respiratory physiotherapy, treatment of pulmonary exacerbations, and the prevention and management of both pulmonary and extrapulmonary complications²⁶.

In 2024, 1,376 pwCF who had consented to participation in the CFRI had at least one healthcare encounter recorded. From these recordings, key indicators of treatment and disease management among these individuals are available, including respiratory microbiology, nutritional status, pulmonary exacerbations requiring intravenous antibiotic therapy, and hospitalisations².

Registry data also highlight the substantial evolution of cystic fibrosis treatment over recent decades, with increasing emphasis on disease-modifying therapies that target the underlying cause of the condition. While conventional therapies such as antibiotics, bronchodilators, mucolytics, nutritional support and physiotherapy remain essential components of care, the introduction of cystic fibrosis transmembrane conductance regulator (CFTR) modulator therapies has transformed the management of eligible patients. For many eligible pwCF, these highly effective therapies have improved not only clinical outcomes but also expectations around education, employment, travel, relationships and family life. CFTR modulators represent a major therapeutic advance by targeting the underlying genetic defect responsible for cystic fibrosis. As of 2024, four CFTR modulator therapies were licensed in Ireland: ivacaftor (monotherapy), lumacaftor/ivacaftor and tezacaftor/ivacaftor (dual therapies), and elxacaftor/tezacaftor/ivacaftor (ETI) triple therapy. In 2024, 86.6% of the registered CF population received a CFTR modulator therapy, while 95.9% were eligible for treatment based on age and genotype. ETI was the most widely

prescribed regimen, accounting for 75.4% of all registered individuals receiving care². Following the 2024 registry reporting period, a fifth CFTR modulator, ALYFTREK (deutivacaftor/tezacaftor/vanacaftor), received EU marketing authorisation on 30 June 2025 and became available for reimbursement in Ireland under the High Tech Scheme from 1 September 2025^{28,29}. Table 6.5 summarises the utilisation of CFTR modulator therapies in Ireland during 2024, prior to the availability of ALYFTREK.

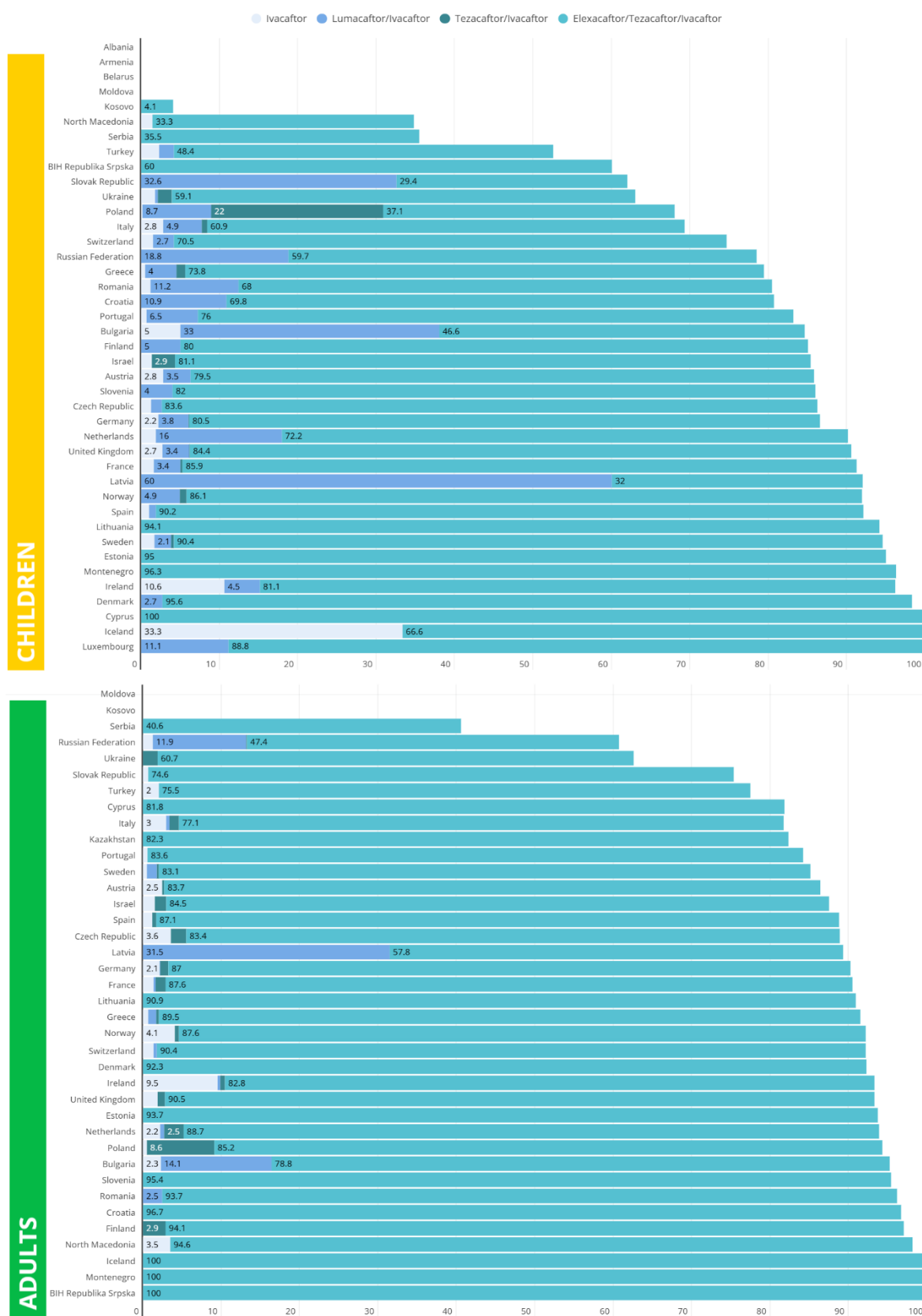
Table 6.5. CFTR modulator therapy in Ireland, 2024².

CFTR modulator therapy		<6 years (N=133)	6-17 years (N=393)	Adult (N=850)	All (N=1376)
Ivacaftor	(% population)	19.5%	10.4%	9.5%	10.8%
	(% of those eligible)	100%	60.3%	42.4%	51.9%
Lumacaftor/ivacaftor	(% population)	46.6%	7.1%	0.5%	6.8%
	(% of those eligible)	92.5%	12.6%	0.9%	12.6%
Tezacaftor/ivacaftor	(% population)		0.3%	0.9%	0.7%
	(% of those eligible)		0.4%	1.7%	1.3%
Elexacaftor/tezacaftor/ivacaftor	(% population)	55.6%	83.0%	74.9%	75.4%
	(% of those eligible)	80.4%	91.1%	80.9%	83.8%
Other			0.3%	0.2%	0.2%
Any CFTR modulator therapy	(% population)	80.5%	93.1%	84.5%	86.6%
	(% of those eligible)	93.9%	97.3%	86.6%	90.3%
Not eligible for CFTR modulator therapy		14.3%	4.3%	2.5%	4.1%

Source: Cystic Fibrosis Registry of Ireland Annual Report 2024².

International comparisons indicate that Ireland has achieved a high level of access to CFTR modulator therapies (Figure 6.9). In 2024, 81.1% of children and 82.8% of adults eligible for at least one modulator were

receiving ETI, and more than 90% in both age groups were receiving a CFTR modulator. These ECFSPR figures count only people seen in 2024 who have never had a transplant and record the last modulator prescribed, so they differ slightly from the CFRI figures in Table 6.5. Compared with other European countries, Ireland ranked among the highest-performing healthcare systems for access to CFTR modulators, with uptake levels comparable to those observed in the United Kingdom, the Netherlands, Germany and the Nordic countries¹⁴. These findings reflect the widespread availability of highly effective modulator therapies within the Irish healthcare system and highlight a substantial shift towards disease-modifying treatment in cystic fibrosis care.

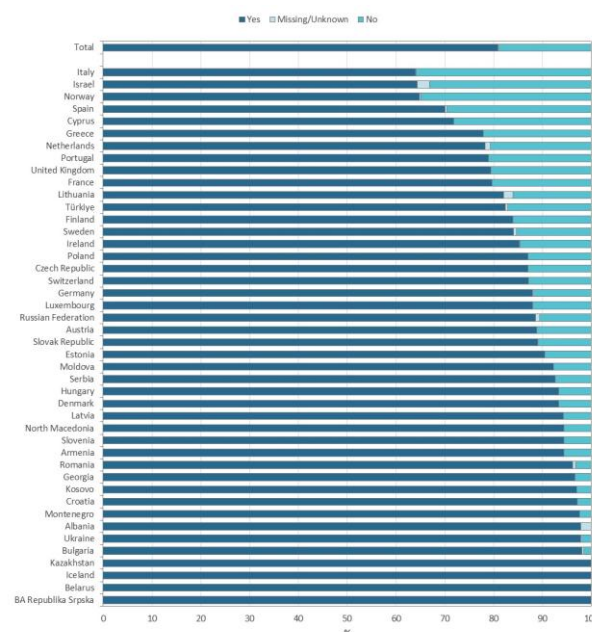
Figure 6.9. Utilisation of CFTR modulator therapies among children and adults with cystic fibrosis across European countries, 2024¹⁴.Source: ECFSR 2024 Annual Data Report¹⁴.

Approximately one in 25 people (4.1%) with cystic fibrosis in Ireland is not eligible for CFTR modulator therapy, principally those carrying two class I (nonsense or frameshift) variants that produce no CFTR protein for a modulator to act upon^{2,30}. A further group, 10.7% of those eligible at their last clinic visit in 2024², is not receiving therapy, whether through intolerance, adverse effects — including hepatic, ocular and neuropsychiatric events — or personal choice^{31,32}. As the wider population improves, this group is left with advancing structural lung disease and chronic infection, and requires continued access to clinicians with expertise in managing severe CF³³.

These individuals depend on the therapies that modulators have displaced: inhaled antibiotics, airway clearance, intensive nutritional support, intravenous therapy and, ultimately, transplantation^{31,34}. They also constitute the population for whom genetic and mRNA-based therapies are being developed, and for whom access to clinical trials is not an optional extra but the principal route to new treatment³⁵. Ireland's capacity to offer trial participation to this group is limited.

In addition to CFTR modulators, many people with cystic fibrosis continue to require complex medication regimens to manage both pulmonary and gastrointestinal manifestations of the disease. In 2024, pancreatic enzyme replacement therapy (PERT), used to treat pancreatic insufficiency, was the most frequently prescribed long-term medication, being used by 86.3% of individuals registered with the CFRI. This represented an increase of approximately 3 percentage points compared with 2014². This high reliance on pancreatic enzyme replacement is consistent with European registry data, where more than 80% of people with cystic fibrosis across most reporting countries are pancreatic insufficient¹⁴ (Figure 6.10).

Figure 6.10. Use of pancreatic enzymes in 2024 for all people with CF who have never had a transplant, by country¹⁴.



Source: ECFSPR 2024 Annual Data Report¹⁴.

Bronchodilators and mucolytic therapies were each prescribed to 67.6% of individuals, while more than half (53.3%) received inhaled steroids, representing the largest increase in the use of any medication class over the past decade. In contrast, the use of inhaled antibiotics declined from 49.7% in 2014 to 34.8% in 2024².

Despite advances in disease-modifying therapies, treatment burden remains a significant concern for people living with cystic fibrosis with medication burden substantially higher among adults than children. In 2024, 39.3% of adults with a recorded healthcare encounter were prescribed three classes of inhaled therapies simultaneously, compared with only 2.7% of children. Furthermore, one-third of adults (33.2%) used a combination of mucolytic and bronchodilator therapies together with either inhaled corticosteroids or inhaled antibiotics, compared with 27.8% of children. Similar differences were observed for non-respiratory medications, with 34.4% of adults prescribed pancreatic enzyme replacement therapy, proton pump inhibitors and macrolides concurrently, compared with 3.8% of children².

Airway microbiology in cystic fibrosis is changing. European registry analysis of more than 15,000 people with CF found that in the year following initiation of elexacaftor/tezacaftor/ivacaftor, 38.7% of those previously positive for *Pseudomonas aeruginosa* and 47.2% of those positive for methicillin-sensitive *Staphylococcus aureus* converted to negative status,

well above the rates seen in preceding years, with similar improvements for *Burkholderia cepacia* complex and *Stenotrophomonas maltophilia*. A substantial minority nonetheless remain persistently infected³⁶. Irish registry data show the same pattern: chronic *Pseudomonas aeruginosa* infection fell from 31.2% of people with CF in 2014 to 5.5% in 2024, and chronic *Staphylococcus aureus* infection from 32.0% to 13.3%. In 2024, 7.8% of Irish adults had chronic *P. aeruginosa* infection, compared with 27.9% of adults in European registry data for 2023.²

These figures require careful interpretation. Many people receiving modulator therapy no longer produce sputum, so apparent culture conversion may in part reflect the difficulty of obtaining a representative lower airway sample rather than true eradication. Surveillance in the modulator era therefore requires induced sputum, throat swabs of known limited sensitivity, or molecular methods, and the interpretation of a negative culture has become considerably less straightforward³⁷. In Ireland, sputum accounted for 26.3% of respiratory culture samples in 2024, compared with 57.5% in 2014, while throat swabs rose from 16.7% to 31.9% of samples.²

Against this background, non-tuberculous mycobacterial (NTM) infection and chronic pulmonary aspergillosis are of increasing relative importance. NTM disease is difficult to diagnose, requires prolonged multi-drug therapy with significant toxicity, and has major implications for transplant candidacy and infection control³⁸. Ireland has no national NTM service, referral pathway, registry or reference framework, and no agreed standards of care.

Intravenous (IV) antibiotics remain an important component of cystic fibrosis management and are primarily used to treat pulmonary exacerbations (PEx), episodes characterised by the development of new respiratory symptoms or the worsening of existing symptoms requiring intensive treatment. In 2024, a total of 314 IV antibiotic courses were administered to 199 individuals, representing a 73.8% reduction compared with 2014 (Table 6.6). Pulmonary exacerbations accounted for 81.2% of all IV antibiotic treatments prescribed during the year. Overall, pulmonary exacerbations accounted for 3,124 cumulative days of IV antibiotic treatment, compared with 4,424 days in 2023. The mean cumulative duration of treatment per individual was 18.0 days (SD $\pm$ 14.0), while the median duration was 14 days (IQR 9–24 days)².

Table 6.6. Number (%) of IV antibiotics in Ireland, 2014–2024².

Reason for IV antibiotics	2014 (N=1,200)		2024 (N=314)	
CF pulmonary exacerbation	1184	98.7%	255	81.2%
Other	16	1.3%	32	10.2%
Eradication therapy	0	0%	27	8.6%

Source: Cystic Fibrosis Registry of Ireland Annual Report 2024².

A total of 174 individuals (12.6%) experienced at least one pulmonary exacerbation requiring IV antibiotic treatment in 2024, including 36 children (6.8%) and 138 adults (16.2%). Among those experiencing an exacerbation, 53 individuals (30.5%) required treatment for two or more episodes during the year. However, the majority of people living with cystic fibrosis did not require IV antibiotic therapy, with 93.2% of children and 83.8% of adults remaining free from IV-treated pulmonary exacerbations throughout 2024. Long-term trends suggest a substantial reduction in severe pulmonary exacerbations requiring IV antibiotic treatment. Since 2009, the proportion of individuals requiring IV antibiotics for pulmonary exacerbations has declined steadily, from 33.7% to 6.8% among children and from 55.4% to 16.2% among adults².

Airway clearance techniques (ACTs) remain a cornerstone of cystic fibrosis management and are routinely used to facilitate the removal of airway secretions, reduce infection risk and preserve lung function. A variety of ACTs are employed in clinical practice, with the choice of technique often influenced by age, disease severity and patient preference. In 2024, Autogenic Drainage (AD) was the most commonly used airway clearance technique among adults in Ireland, while Positive Expiratory Pressure (PEP) therapy was the predominant approach among children².

For individuals with severe CF disease, additional respiratory support may be required. In 2024, approximately 8% of adults living with CF required home oxygen therapy to maintain adequate oxygen saturation. Non-invasive positive pressure ventilation (NIPPV), including continuous positive airway pressure (CPAP) and bilevel positive airway pressure (BiPAP), was also used among a subset of individuals to support ventilation, improve overnight respiratory function and enhance exercise tolerance². Longitudinal trends suggest changing patterns in respiratory support

requirements. Since 2014, the proportion of children requiring home oxygen therapy or NIPPV has declined, whereas NIPPV use among adults has increased. Home oxygen use among adults has remained relatively stable over the same period (Table 6.7).

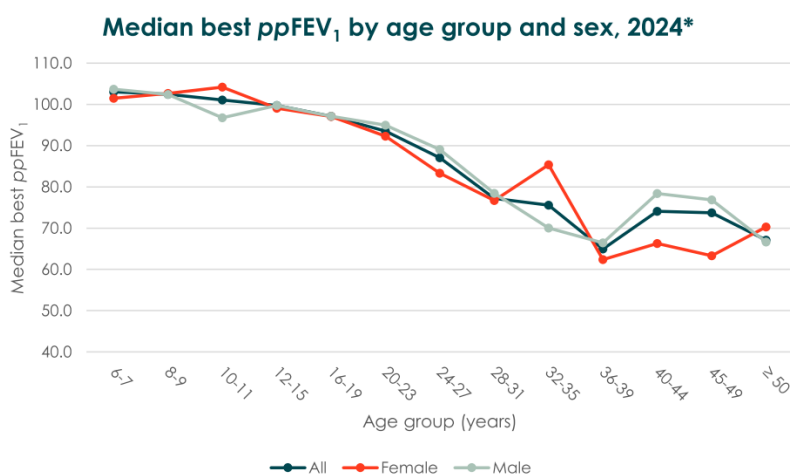
Table 6.7. Home oxygen therapy and non-invasive ventilation use (%) in Ireland, 2014–2024².

Oxygen Therapy	2014 Child (N=568)	2024 Child (N=526)	2014 Adult (N=546)	2024 Adult (N=850)	2014 All (N=1,114)	2024 All (N=1,376)
Home oxygen therapy	2.46%	0.19%	8.06%	8.47%	5.21%	5.31%
Non-invasive positive pressure ventilation	2.46%	0.95%	4.76%	9.06%	3.59%	5.96%

Source: Cystic Fibrosis Registry of Ireland Annual Report 2024².

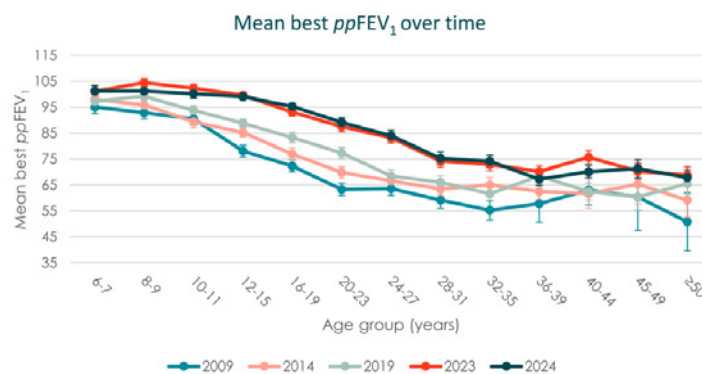
Lung function is an important indicator of respiratory health in people with cystic fibrosis. In 2024, median best ppFEV₁ was highest among children and adolescents and generally declined across older age groups (Figure 6.11)². Median best ppFEV₁ was 100.3% among children aged 6–17 years and 82.0% among adults, slightly above comparable European figures of 98.8% and 79.6%.² Over the past decade, improvements in lung function have been observed across several age groups, with an average increase in mean best ppFEV₁ of 10.9 percentage points in 2024 compared with 2014 (Figure 6.12)².

Figure 6.11. Median best ppFEV₁ by age group and sex, 2024*



Source: Cystic Fibrosis Registry of Ireland Annual Report 2024². * Among individuals aged 6 years and older who have not had a lung transplant

Figure 6.12. Mean best ppFEV₁ over time



Source: Cystic Fibrosis Registry of Ireland Annual Report 2024².

Percent-predicted FEV₁ has been the principal outcome measure in cystic fibrosis for four decades. As lung function in treated populations approaches or reaches the normal range, its usefulness for detecting early or subtle disease progression diminishes³⁴. In Ireland, half of people with CF aged six years and over without a lung

transplant (50.1%) had normal spirometry (ppFEV₁ above 90%) in 2024, compared with 32.7% in 2014.² More sensitive measures — the lung clearance index, low-dose computed tomography and magnetic resonance imaging, sweat chloride as a marker of CFTR function, and validated patient-reported outcome measures — are increasingly required to characterise disease in people whose spirometry is normal but whose structural lung disease is not.³⁹

This has direct implications for national data collection. If services are monitored using measures that no longer discriminate, deterioration will be detected late and the effectiveness of interventions will be difficult to demonstrate.

Nutritional status is a key indicator of health in pwCF, with strong associations between growth, pulmonary function and long-term survival. In children, nutritional outcomes such as height, weight and body mass index (BMI) can be expressed using z-scores, which compare an individual's measurements to those of a reference population without cystic fibrosis. Ensuring adequate growth and maintaining optimal nutritional status are central goals of multidisciplinary cystic fibrosis care.^{23,40}

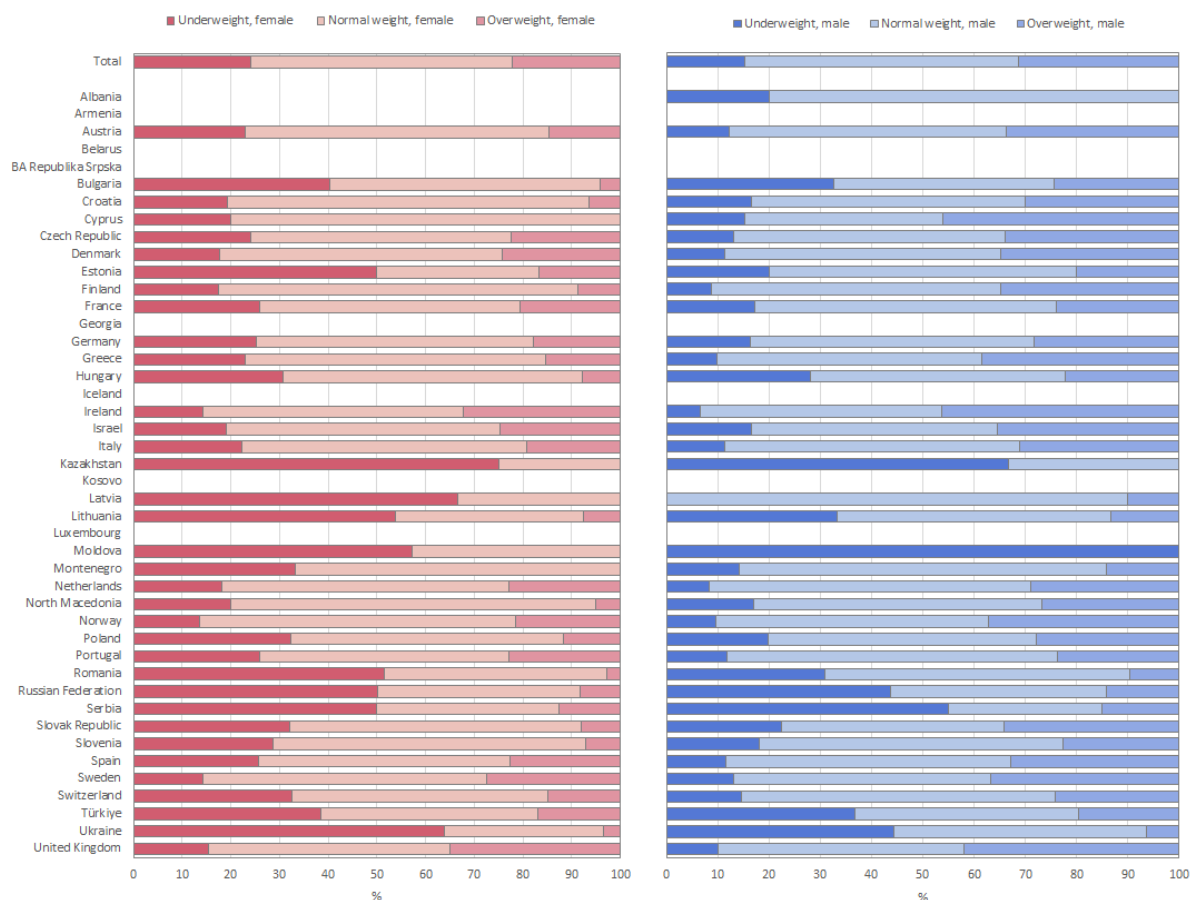
In 2024, analysis of the highest recorded height, weight and BMI measurements demonstrated generally favourable nutritional outcomes among children living with cystic fibrosis in Ireland. Median height z-scores were broadly comparable to those of the non-CF

reference population, with only minor variations observed across age groups. Similarly, median weight and BMI z-scores were above the reference mean while remaining within one standard deviation, indicating overall adequate growth and nutritional maintenance in children under 18 years of age.²

Among adults, the median BMI for individuals aged 20 years and older was 23.93 kg/m² (IQR: 21.5–26.8), exceeding the ECFS recommended minimum BMI target of 20 kg/m².¹⁴ In 2024, 52.5% of adults and 65.6% of children were classified as being within the normal weight range, while underweight prevalence remained low at 2.6% among adults and 0.7% among children. Notably, 45.1% of adult males were classified as overweight, compared with 27.4% of adult females.²

Longitudinal trends suggest a changing nutritional profile in cystic fibrosis, with increasing proportions of both children and adults being classified as overweight since the introduction of CFTR modulator therapies in 2012. At the same time, younger adults and adolescents have shown a reduction in underweight prevalence, reflecting improvements in nutritional status and disease management². Similar patterns are observed internationally, where suboptimal weight remains common in adults with cystic fibrosis, particularly among females, although increasing overweight prevalence is becoming more evident in several countries, including Ireland (Figure 6.13).¹⁴

Figure 6.13. Proportion of adults with suboptimal weight (BMI <20), normal (20 ≤ BMI ≤ 25) and overweight (BMI >25) by sex and by country, aged 18 years or older in 2024 who never had a transplant.¹⁴



Source: ECFSPR 2024 Annual Data Report¹⁴.

Despite these improvements, nutritional support remains an important component of cystic fibrosis care. In 2024, more than 40% of individuals required supplemental feeding to maintain or improve nutritional status, most commonly through oral nutritional supplements. In more severe cases of malnutrition, enteral feeding through nasogastric or gastrostomy tubes was required, with approximately 7.5% of individuals receiving feeding via gastrostomy.²

Lung Transplant

Lung transplantation remains an established treatment option for selected people with CF and severe or end-stage lung disease. In Ireland, lung transplantation is provided through the National Lung Transplant Programme at Mater Misericordiae University Hospital. Since the establishment of the CFRI, 164 registered people with CF have received at least one transplant. In 2024, 91 registered individuals with a history of

transplantation were alive, with a median age of 38.7 years and a median age at transplantation of 26.2 years; 45% were aged 40 years or older. Double-lung transplantation was the most common transplant type among those living with a transplant, accounting for 81.3%, followed by liver (14.3%) and kidney (6.6%) transplantation.²

The pattern of transplantation has changed considerably over the past decade. Twenty lung transplants were recorded among people with CF in 2014, compared with seven in 2019 and none in either 2023 or 2024 (Table 6.8). The CFRI reports a marked decline in lung transplantation compared with the period before the introduction of highly effective CFTR modulator therapies, while kidney and liver transplantation have been more common than lung transplantation since 2022.² For context, the HSE Organ Donation and Transplant Ireland office reported 13 lung transplants nationally across all conditions in 2024.⁴¹

Table 6.8. Summary of people with cystic fibrosis who have received a transplant in the CFRI, 2009–2024

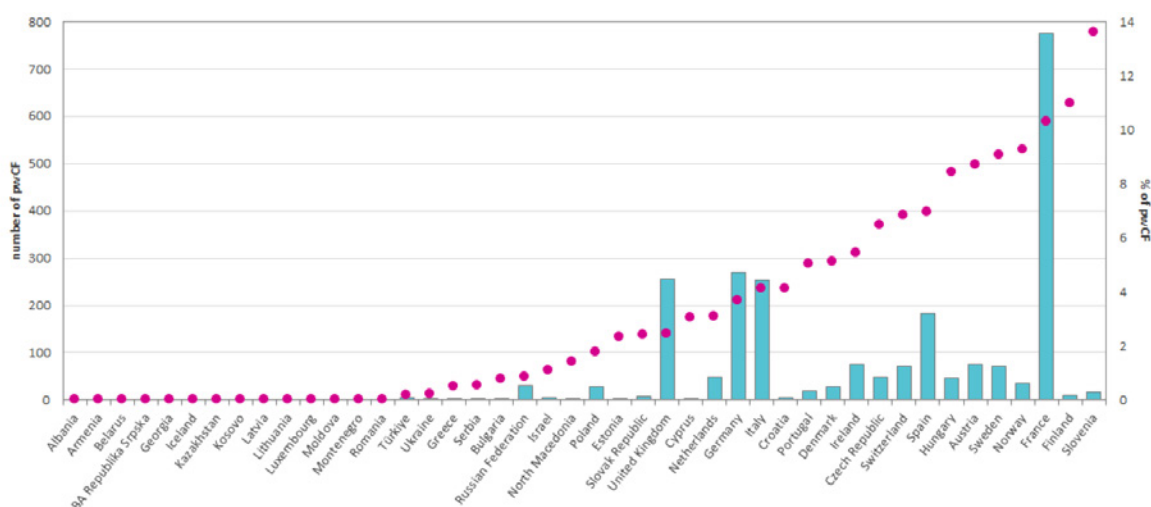
	2009	2014	2019	2023	2024
Cumulative registered individuals who received a transplant	50	109	155	160	164
Living registered transplant recipients	47	91	109	89	91
Median age*, years	31.8	31.4	34.8	37.9	38.7
Median age at transplant*, years	24.7	25.7	26.4	26.2	26.2
Lung transplants during reporting year	<5	20	7	0	0

*Calculated based on individuals with encounter recorded during the year

Source: Adapted from Cystic Fibrosis Registry of Ireland Annual Report 2024.²

The near-elimination of lung transplantation in cystic fibrosis is among the clearest markers of the impact of modulator therapy. Two implications follow. First, a small number of people with CF — principally those ineligible for or intolerant of modulators — will continue to require transplantation, and referral pathways and clinical expertise must be actively maintained for them rather than allowed to atrophy. Second, the transplant burden in CF has shifted rather than disappeared: since 2022, liver and kidney transplantation have been more common than lung transplantation in this population, reflecting the extrapulmonary consequences of longer survival.²

Across Europe, 2,380 people with CF registered with the ECFSPR were living with transplanted lungs in 2024, and 47 lung transplants were performed during the year. The number and proportion of people living with transplanted lungs varied substantially between countries (Figure 6.14).¹⁴

Figure 6.14. Number and proportion of people with cystic fibrosis living with transplanted lungs in Ireland and other European countries, 2024.

Source: ECFSPR 2024 Annual Data Report¹⁴.

People with CF who have undergone transplantation continue to experience a substantial burden of multisystem complications requiring ongoing management. Among 91 registered transplant recipients in 2024, gastro-oesophageal reflux disease (GORD) was the most frequently reported complication, affecting 73.6%, followed by CF-related diabetes (61.5%), osteoporosis (47.3%) and symptomatic sinus disease (31.9%). The prevalence of CF-related diabetes and osteoporosis was notably higher among transplant recipients than in the overall adult CF population (61.5% vs 27.5% and 47.3% vs 17.9%, respectively), highlighting the ongoing multidisciplinary care needs of people with CF following transplantation.²

Age

As survival improves, the clinical profile of CF is shifting from a disease dominated by progressive respiratory failure to one increasingly characterised by multisystem morbidity accumulated over decades. CF-related diabetes, CF liver disease, osteoporosis, chronic kidney disease, hearing loss and sinus disease are increasingly important complications

as the CF population ages.⁴² Irish registry data presented above already reflect this, particularly among transplant recipients.² These developments are also giving rise to questions that would have been difficult to envisage only a few decades ago, including how CF influences the ageing process and how ageing, in turn, affects the course and management of CF. Further research will be needed to address these emerging questions and the concerns of pwCF and their healthcare teams.

Adults with CF carry a substantially elevated risk of gastrointestinal cancers, and the median age at onset of colorectal cancer is some 20–30 years younger than in the general population. Risk is estimated at five to ten times that of the general population, and 25 to 30 times following solid organ transplantation. International consensus guidance recommends colonoscopy from age 40 years, every five years, with a CF-specific intensive bowel preparation, and from age 30 years in transplant recipients.⁴³ Ireland has no agreed CF cancer surveillance pathway and no mechanism by which people with CF can access screening colonoscopy outside the general population programme. Bowel Screen, the national programme, currently begins at age 57 years.⁴⁴ Irish registry data point in the same direction. The CFRI recorded 13 cancers in people with CF between 2006 and 2022, and 12 in 2023 and 2024 alone, most commonly colorectal, breast and testicular cancers. The median age at cancer diagnosis rose from 27 years to 44 years between these periods, and the annual rate of new cancer diagnoses in 2023–2024 (approximately 1 in 233 people with CF) exceeded the rate in the Irish population aged 20–64 years (approximately 1 in 288).²

Second, cardiometabolic risk. The nutritional paradigm in CF has inverted. Registry data for 2024 show 45.1% of adult males and 27.4% of adult females with CF classified as overweight, with underweight prevalence now low.² Combined with restored insulin secretion, longer survival and, in some, reduced physical activity, this raises the prospect of a CF population facing conventional cardiovascular risk for the first time — a population in whom high-fat, high-calorie dietary advice was standard of care for decades.^{45,46} In 2024, 26 people with CF had hypertension, 58% of whom required antihypertensive medication.² Neither cardiovascular risk assessment nor structured weight management currently forms part of routine CF review in Ireland.

Reproductive health, fertility and pregnancy

Improved CFTR function restores cervical mucus characteristics and, with better nutritional and

respiratory status, fertility.³⁵ Registries that have examined the question have consistently recorded a marked increase in pregnancies since 2019; in the United Kingdom the number of women with CF giving birth rose from 58 in 2019 to 103 in 2021.⁴⁷ In Ireland, the CFRI began recording pregnancies in 2023: 20 women with CF were pregnant in each of 2023 and 2024, and in 2024 there were seven live births, with eight pregnancies ongoing at year end.² Pregnancy in CF requires joint respiratory–obstetric management, careful decision-making about modulator continuation in pregnancy and lactation, CF-related diabetes surveillance, nutritional support and genetic counselling for partners.^{31,35}

Reproductive health in CF extends beyond pregnancy to contraception, fertility preservation, assisted reproduction for men with congenital bilateral absence of the vas deferens, and — for the first time in this population — the menopause.^{48,49} None of these currently has a defined national pathway.

These changes have also brought important unanswered questions into focus, including gaps in research on drug safety and maternal and child health, as well as the impact of CF on pregnancy and pregnancy on CF.

Mental health and psychological care

Depression and anxiety are two to three times more common in people with cystic fibrosis and their caregivers than in the general population, and are independently associated with poorer adherence, more frequent exacerbations, greater healthcare utilisation and reduced quality of life. International consensus guidance from the CF Foundation and the European Cystic Fibrosis Society recommends annual screening for depression and anxiety from the age of 12 years, with defined pathways for intervention⁵⁰. In Irish registry data, recorded anxiety among adults with CF rose from 1.3% in 2014 to 10.5% in 2024, and 8.2% of adults had recorded depression. As these are diagnoses recorded in clinical notes rather than the results of systematic screening, they may underestimate true prevalence.²

The psychological landscape has itself changed. Alongside the established burdens of chronic illness and treatment, clinicians now encounter distress associated with adjusting to an unexpectedly long life — revised expectations around career, relationships and parenthood, the loss of a peer community, survivor guilt among those who benefit from modulators when friends did not, and the specific distress of those who remain ineligible.^{51–53} Neuropsychiatric adverse effects

attributed to modulator therapy, including insomnia, low mood and cognitive complaints, are an additional and evolving concern requiring active pharmacovigilance⁵⁴.

6.4 Conclusions

Outcomes for people with cystic fibrosis in Ireland have improved substantially over the past decade. Newborn screening performs to European quality standards, the Cystic Fibrosis Registry of Ireland achieves high coverage by European standards, access to CFTR modulator therapy is among the highest in Europe, and lung transplantation for CF has almost ceased. More than six in ten people with CF are now adults, and predicted median survival exceeds 60 years.

These gains have changed, rather than reduced, the demands on CF services. An ageing population brings accumulating multisystem disease, including CF-related diabetes, liver and kidney disease, osteoporosis, an elevated and earlier risk of colorectal cancer and emerging cardiometabolic risk, alongside growing needs in reproductive health and pregnancy, transition to adult care and mental health. Services, and national data collection built around lung function and inpatient activity, were designed for a different disease and do not yet reflect this shift.

A minority of people with CF are ineligible for, or unable to take, modulator therapy. They continue to experience progressive lung disease and depend on conventional treatments, specialist expertise, a maintained transplant pathway and access to clinical trials. Their needs risk becoming less visible as population-level indicators improve.

The principal constraint on meeting these needs is capacity. The staffing ratios set out in the 2019 Model of Care have not been implemented, and at the national adult centre only around half of patients received an annual review in 2025. Priorities include implementing and auditing Model of Care staffing, with annual review completion reported as a quality indicator; national pathways for CF cancer surveillance, reproductive health and pregnancy, transition to adult care and non-tuberculous mycobacterial infection; routine psychological screening in line with international guidance; sustained transplant referral pathways and investment in clinical trial infrastructure for those without a modulator option; outcome measures beyond FEV1 in national data collection; and social and financial supports, including a cost of disability payment, removal of means testing for disability payments, flexibility to re-access welfare supports after returning to work or education, and fair access to mortgage protection insurance, that enable people with CF to participate fully in society.

As the cystic fibrosis population ages, care needs are becoming more complex, with multisystem disease, comorbidities and a rising treatment burden. Meeting them will require sustained, patient-centred planning through the HSE National Clinical Programme for Cystic Fibrosis. A dedicated clinical lead for cystic fibrosis is critical and the role needs to be retained and protected for the benefit of people with cystic fibrosis.

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Interstitial Lung Disease

07

Key Points

- An estimated 11,016 people are living with interstitial lung diseases (ILDs) in Ireland, with 9,675 years of life lost and €935.9 million in annual societal cost.
- Deaths from chronic interstitial lung disease (ICD-10: J84) rose from 376 in 2016 to 540 in 2023, an increase of 44%. Deaths from sarcoidosis (ICD-10: D86) numbered 20 in both 2016 and 2023.
- Deaths from chronic interstitial lung disease are heavily concentrated in older age: 93.1% occurred in people aged 65 years and over in 2023, and the age profile has remained stable since 2017, so the rise reflects a growing number of deaths rather than a change in who is dying.
- Inpatient hospitalisations for ILD (AR-DRG E74) rose from 786 in 2017 to 1,045 in 2024.
- Lung transplantation activity fell in 2024. Thirteen lung transplants were performed from deceased donors, the lowest annual total in the period 2020–2024 and 24% below the five-year average of 17. These figures cover lung transplantation for all indications, as ILD-specific activity is not separately reported.
- Ireland recorded the highest age- and sex-standardised idiopathic pulmonary fibrosis clinical syndrome (IPF-CS) mortality rate among 24 EU countries studied between 2013 and 2018, at 11.10 deaths per 100,000 person-years against a European mean of 3.90, and the second-highest age-standardised ILD mortality rate in Europe in 2017.
- Major data gaps remain. Ireland has no national ILD registry, and neither incidence nor prevalence data are available at national level.
- A national ILD registry and formal inclusion of ILD in the National Clinical Programme should be priority actions.

7.1 Background

Interstitial lung disease (ILD) represents a clinically significant and growing respiratory health challenge. Global estimates suggest an age-standardised prevalence of approximately 58 cases per 100,000 population.^{1,2} However, the burden of ILD extends beyond prevalence alone, encompassing high morbidity, premature mortality, impaired quality of life, complex diagnostic pathways, and substantial demand on specialist respiratory services.

ILD comprises a heterogeneous group of more than 200 diffuse parenchymal lung disorders.³ Among the ILDs most commonly encountered in clinical practice are idiopathic pulmonary fibrosis (IPF), chronic hypersensitivity pneumonitis (HP), connective tissue disease-related ILD (CTD-ILD), and pulmonary sarcoidosis (Figure 7.1).⁴

IPF is associated with a particularly poor prognosis, with median survival from diagnosis commonly reported at approximately 2–5 years. Reported 5-year survival is typically in the range of 20–40%,³ although outcomes vary by disease severity, rate of progression, and treatment access. Pulmonary fibrosis is a broad term referring to scarring of the lung tissue, whereas IPF is a specific chronic fibrosing interstitial pneumonia of unknown cause.

Sarcoidosis, by contrast, is a multisystem granulomatous disease with marked geographic and demographic variation. It commonly affects younger adults and most often involves the lungs, although almost any organ can be affected. While many cases resolve spontaneously, a substantial proportion follow a chronic or progressive course that can result in significant morbidity and, in severe cases, premature mortality.³

Despite considerable variation in their underlying pathophysiology, clinical presentation and prognosis, ILDs share the potential to progress to irreversible pulmonary fibrosis. A subset of patients with fibrotic ILD develop progressive pulmonary fibrosis (PPF), characterised by continued progression despite appropriate management and associated with declining lung function, high morbidity and increased mortality.^{1,5}

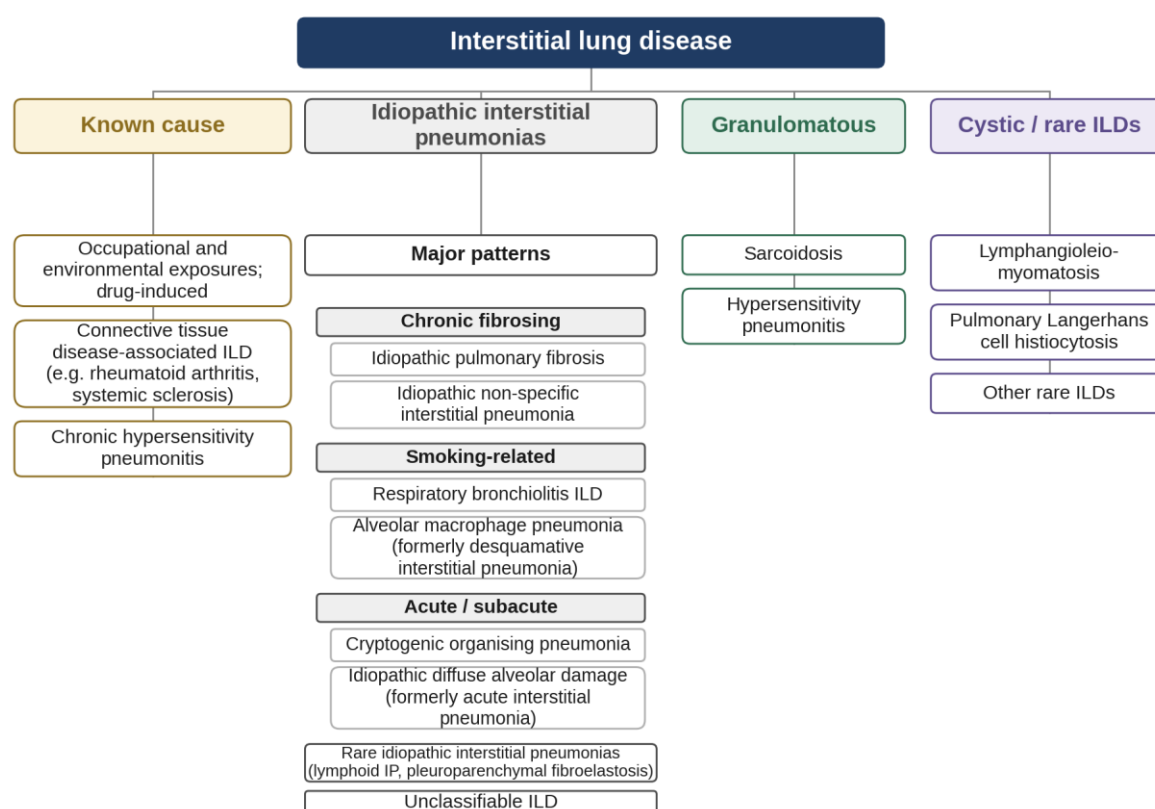
The 2022 ATS/ERS/JRS/ALAT clinical practice guideline defines progressive pulmonary fibrosis (PPF), in a patient with an ILD of known or unknown cause other than idiopathic pulmonary fibrosis as radiological evidence of pulmonary fibrosis together with at least two of three features occurring within the previous year and without an alternative explanation: worsening respiratory symptoms; physiological progression, defined as an absolute decline in forced vital

capacity of 5% or more, or in diffusing capacity for carbon monoxide of 10% or more; and radiological progression, such as increasing traction bronchiectasis, reticulation, honeycombing or volume loss.^{6,7} The distinction matters for treatment, because antifibrotic therapy in non-IPF disease is indicated on the basis of PPF rather than the underlying diagnosis, as set out in the Management section below.

Despite advances in high-resolution imaging, multidisciplinary diagnosis, and antifibrotic therapy, important challenges in ILD care remain. These include delays in diagnosis, inaccurate subtype classification, and variation in the use of evidence-based treatment.⁸ At present, curative treatment is not available for most ILDs, management therefore focuses on slowing progression, alleviating symptoms, and supporting quality of life. For a limited number of clinically selected patients with advanced disease, lung transplantation remains an option.⁸

These challenges underscore the importance of improving epidemiological data, strengthening specialist service capacity, and ensuring timely access to multidisciplinary diagnosis and evidence-based treatment in Ireland. They also highlight the need to establish a national ILD registry to support accurate surveillance, service planning, and research, and to formally incorporate ILD within the National Clinical Programme in order to provide clearer leadership, more consistent care pathways, and better coordinated service development.

Figure 7.1. Interstitial lung disease⁹



Terminology follows the 2025 international classification, which replaces desquamative interstitial pneumonia with alveolar macrophage pneumonia and acute interstitial pneumonia with idiopathic diffuse alveolar damage, and recognises bronchiolocentric interstitial pneumonia as a further major pattern. Fibrotic and non-fibrotic forms occur across most categories; both the underlying diagnosis and the morphological pattern should be recorded.

Source: Prepared for this report, following the 2025 ERS/ATS international multidisciplinary classification of the interstitial pneumonias⁹

7.2 Burden of Disease

Estimates of the relative frequency of ILD subtypes in Ireland are limited, and current understanding relies largely on international data. No single Irish data source covers ILD as a whole, and the figures in this chapter use different case definitions depending on the source. National mortality data are reported for sarcoidosis (ICD-10: D86) and for “other interstitial pulmonary diseases” (ICD-10: J84), which includes idiopathic pulmonary fibrosis (J84.1); the J84 category is referred to in this chapter as chronic interstitial lung disease. Hospitalisation data are reported for the Diagnosis Related Group for interstitial lung disease (AR-DRG E74).¹⁰ Population estimates from the Global Burden of Disease study are presented for ILD as a whole. Figures based on different case definitions are not directly comparable but are included to support building a picture of ILD within the current data gap.

Incidence and Prevalence

Significant gaps remain in the national data available on ILDs in Ireland. There are currently no comprehensive population-level data on ILD prevalence, incidence, or subtype distribution, and no national data on the use of respiratory services and appliances - such as pulmonary rehabilitation or domiciliary oxygen - either for the population as a whole or for those with general medical eligibility. National data are also lacking on the impact of ILD on general practice, emergency department, and out-of-hours services. While these conditions place demands across the hospital system, including inpatient care, outpatient services, pulmonary rehabilitation, and respiratory laboratories, disease-specific national data are not available for many of these service areas. These data limitations mean that the true burden of ILD in Ireland is likely to be only partially captured by currently available service and activity datasets. In the absence of

comprehensive national surveillance, international burden estimates provide an important supplementary perspective.

The International Respiratory Coalition, of which Ireland is a member, has analysed findings from the *Global Burden of Disease 2023* study. For Ireland, this analysis estimates:¹¹

- 11,016 People living with ILDs in Ireland.
- €935.9 million in annual societal cost

Pulmonary Fibrosis

The *Irish Lung Fibrosis Association Strategy 2025–2028* estimates that approximately 5,000 people in Ireland are living with lung fibrosis.¹³ Lung fibrosis is a subset of the wider ILD group, so this figure is not directly comparable with the 11,016 people estimated by the International Respiratory Coalition to be living with ILD of any type.

Sarcoidosis

For sarcoidosis, the most recent population-based estimate available for Ireland reported a prevalence of 28.13 cases per 100,000 population in Ireland for the period 1996–2005.¹⁴ As no more recent national population-based estimate was identified, this figure should be regarded as a historical baseline only, underscoring the need for updated epidemiological surveillance.

Mortality

In 2023, there were 540 deaths due to chronic interstitial lung disease (ICD-10: J84) corresponding to a crude mortality rate of 10.22 per 100,000 population, compared with 376 deaths (7.93 per 100,000) in 2016¹⁵. For sarcoidosis (ICD-10: D86), there were 20 deaths in 2023 (0.38 per 100,000), the same number as in 2016 (0.42 per 100,000) (Table 7.1)¹⁵.

Table 7.1. Deaths from chronic interstitial lung disease (ICD-10: J84) and sarcoidosis (ICD-10: D86), 2016–2023

Year	Total Deaths J84 Chronic ILD	/100,000 population (J84)	Total Deaths D86 Sarcoidosis	/100,000 population (D86)
2016	376	7.93	20	0.42
2017	416	8.65	12	0.25
2018	418	8.56	14	0.29
2019	476	9.60	21	0.42
2020	381	7.57	22	0.44
2021	460	9.06	18	0.35
2022	507	9.78	20	0.39
2023	540	10.22	20	0.38

Source: Health Statistics (PHIS) / CSO¹⁵

Sex

Between 2019 and 2023, deaths from chronic interstitial lung disease (ICD-10: J84) were more common in males, who accounted for 60.8% (1,438) of deaths. A similar pattern was observed for sarcoidosis (ICD-10: D86), with males accounting for 61.4% (62) of deaths.¹⁵

In 2023, males accounted for 61.9% (334) of the 540 deaths from chronic interstitial lung disease and 70.0% (14) of the 20 deaths from sarcoidosis.¹⁵

Age

Deaths from chronic interstitial lung disease are heavily concentrated in older age groups: 72.2% occurred in people aged 75 years and over, and 93.1% in those aged 65 years and over. Deaths from sarcoidosis occur at younger ages and are more evenly distributed, with 35.0% occurring before the age of 65 years, compared with 6.9% of deaths from chronic interstitial lung disease (Table 7.2).¹⁵

Table 7.2. Deaths from chronic interstitial lung disease (ICD-10: J84) and sarcoidosis (ICD-10: D86), by age group, 2023

Age group	Deaths, J84	% of J84 deaths	Deaths, D86	% of D86 deaths
Under 35 years	0	0.0%	0	0.0%
35–39 years	1	0.2%	0	0.0%
40–44 years	1	0.2%	0	0.0%
45–49 years	1	0.2%	0	0.0%
50–54 years	8	1.5%	1	5.0%
55–59 years	9	1.7%	2	10.0%
60–64 years	17	3.1%	4	20.0%
65–69 years	42	7.8%	3	15.0%
70–74 years	71	13.1%	3	15.0%
75–79 years	96	17.8%	2	10.0%
80–84 years	142	26.3%	3	15.0%
85 years and over	152	28.1%	2	10.0%
All ages	540	100.0%	20	100.0%

Source: Health Statistics (PHIS) / CSO¹⁵

The age structure of chronic interstitial lung disease mortality is stable across the period. The share of deaths occurring at 65 years and over ranges only between 92.2% and 94.1%, and the share at 75 years and over between 71.1% and 74.0%. Estimated mean age at death moves from 77.9 to 78.9 years. The 30% increase in deaths since 2017 therefore reflects a growing number of deaths within an unchanged age profile, rather than any shift in the age at which people are dying from these conditions.¹⁵

Growth has been fastest at the oldest ages. Deaths at 85 years and over rose by 45% between 2017 and 2023 and deaths at 65 to 74 years by 35%, while deaths under 50 years fell from 6 to 3. Deaths in the under-50 population never exceeded 7 in any year and represent approximately 1% of the total throughout.¹⁵

2020 is a notable outlier in total mortality and in several of the older age groups, with total deaths falling to 381 before the upward trend resumed.¹⁵ Whether this reflects delayed registration during the COVID-19 pandemic, displacement of deaths to other recorded causes, or a genuine reduction should be established before the series is described as a continuous trend. Sarcoidosis presents a different demographic profile. Estimated mean age at death is approximately 70 years, compared with 79 years for chronic interstitial lung disease.¹⁵

Table 7.3. Deaths from chronic interstitial lung disease (ICD-10: J84) by age group, 2017–2023

Age group	2017	2018	2019	2020	2021	2022	2023	Change
Under 50	6	4	7	5	6	4	3	–50%
50–64	26	28	24	19	30	26	34	+31%
65–74	84	84	98	86	96	102	113	+35%
75–84	195	184	204	176	200	220	238	+22%
85 and over	105	118	143	95	128	155	152	+45%
Total	416	418	476	381	460	507	540	+30%
% aged 65 and over	92.3	92.3	93.5	93.7	92.2	94.1	93.1	—
% aged 75 and over	72.1	72.2	72.9	71.1	71.3	74.0	72.2	—
Mean age at death	77.9	78.7	78.8	78.4	78.3	79.2	78.9	—

Source: Health Statistics (PHIS) / CSO¹⁵. Mean age at death estimated from age-band midpoints, with the open-ended 85-and-over band taken as 89 years.

Table 7.4. Deaths from sarcoidosis (ICD-10: D86) by age group, 2017–2023

Age group	2017	2018	2019	2020	2021	2022	2023
Under 50	1	1	1	1	2	2	0
50–64	6	3	6	5	5	6	7
65–74	4	5	4	5	2	3	6
75–84	1	4	8	9	6	8	5
85 and over	0	1	2	2	3	1	2
Total	12	14	21	22	18	20	20
Mean age at death	62.8	69.3	69.6	71.5	70.1	68.1	70.5

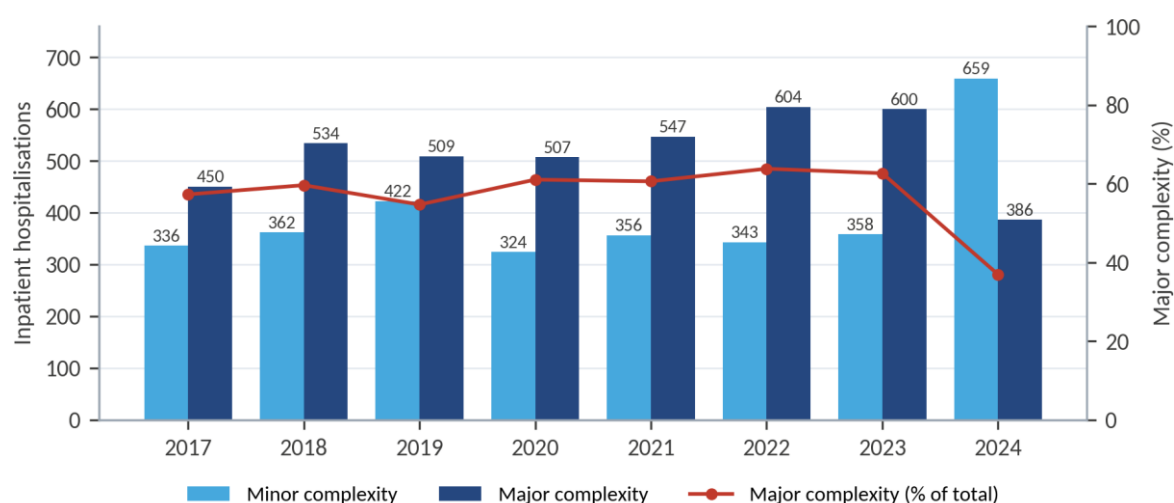
Source: Health Statistics (PHIS) / CSO¹⁵. Annual counts are small, so year-on-year movement should not be interpreted as trend.

Hospitalisations

Data on inpatient hospitalisations for ILD were obtained from the Healthcare Pricing Office Activity in Acute Public Hospitals reports,¹⁰ which cover publicly funded acute hospitals only. Within this dataset, complexity is defined by the Diagnosis Related Group (DRG) complexity level assigned at discharge, which reflects documented complications and comorbidities rather than the underlying clinical severity of ILD.

These data show that:

- In 2024, there were 1,045 inpatient hospitalisations for ILD of which 659 (63.1%) were classified as minor complexity and 386 (36.9%) as major complexity.¹⁶
- Total inpatient hospitalisations for ILD (AR-DRG E74) rose from 786 in 2017 to 1,045 in 2024.¹⁶
- The split between complexity levels changed abruptly in the final year: major complexity accounted for between 54.7% and 63.8% of hospitalisations in every year from 2017 to 2023, but fell to 36.9% in 2024, while minor complexity cases rose from 358 to 659. This discontinuity is more likely to reflect a change in coding or classification than a change in the clinical profile of patients and should be interpreted with caution.¹⁶

Figure 7.2. Inpatient hospitalisations for interstitial lung disease (ILD) by complexity level, 2017–2024

Source: Activity in Acute Public Hospitals 2024, HIPE & NPRS Reports¹⁶. Data refer to AR-DRG E74 (Interstitial Lung Disease)

Regional variation

Data is not available at national level for ILDs other than sarcoidosis.

The only Irish source to examine regional distribution is Nicholson et al., which reported regional differences in both the prevalence of and mortality from sarcoidosis over the period 1996–2005.¹⁴

The study concluded that for 1996–2005, the prevalence of sarcoidosis was 28.13 per 100,000 for Republic of Ireland (ROI) compared with 11.16 per 100,000 for Northern Ireland (NI) ($p = 0.002$). Two significant spatial clusters of disease were detected in the Northwest (Prevalence = 44.9 per 100,000) and also the Midlands region (32.1 per 100,000). Two lower-prevalence spatial clusters were also detected in the South and Southeast of ROI. Temporal clustering was also present throughout ROI and NI for the years 2000 to 2004, while space-time clustering was found in three regions, the West (ROI), the East (ROI) and Northeast (ROI and NI). The case fatality rate for ROI was 0.84%, and for NI was 1.44% ($p = 0.03$).

International Benchmarking

European benchmarking specific to idiopathic pulmonary fibrosis was reported by Gonnelli et al. in 2024, who analysed idiopathic pulmonary fibrosis-clinical syndrome (IPF-CS) across 24 European Union countries using mortality data extracted from the EUROSTAT database (ICD-10 code J84.1) for the period 2013–2018. Ireland recorded the highest age- and sex-

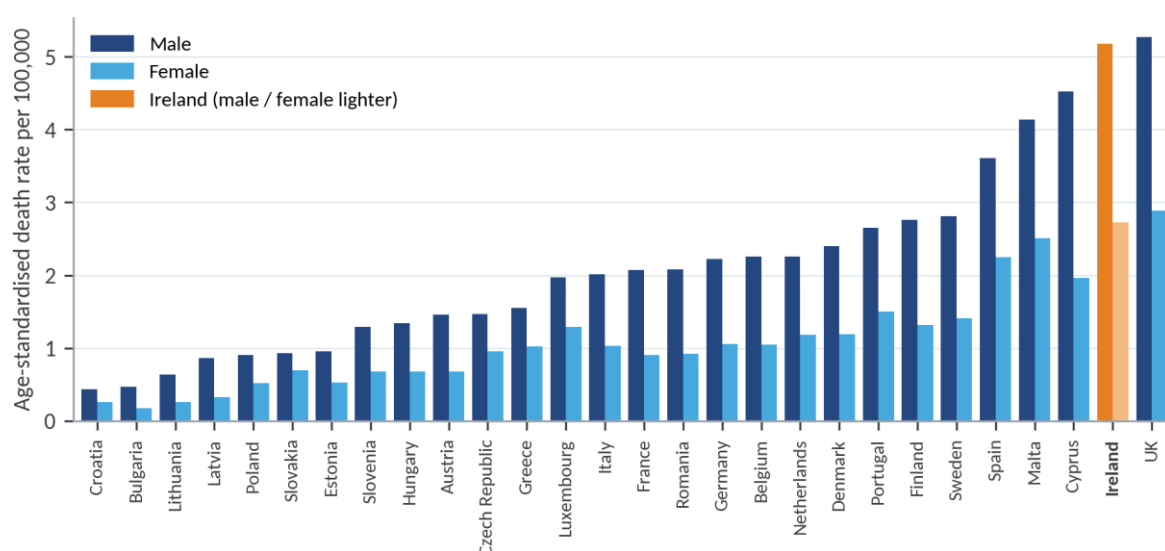
standardised IPF-CS mortality rate in the 24 EU countries studied (2013–2018), at 11.10 deaths per 100,000 person-years, substantially higher than the European mean of 3.90 per 100,000 person-years. Ireland also exceeded other high-burden countries, including the United Kingdom (9.00 per 100,000 person-years) and Finland (5.20 per 100,000 person-years), while mortality rates were considerably lower in countries such as Bulgaria (0.40), Romania (0.60) and Slovakia (1.10 per 100,000 person-years).¹⁷ Caution is needed in interpreting these international comparisons. Differences in recorded mortality between countries are partly real and partly attributable to variation in diagnostic practice, access to specialist assessment and death certification. For systemic conditions such as sarcoidosis and connective tissue disease, cause-of-death coding does not distinguish whether ILD was present or contributed to death, so recorded rates only partly reflect deaths due to ILD.

A broader European comparison was provided by Saliccioli et al., who analysed Global Burden of Disease (GBD) estimates for the UK and the 27 EU countries between 2001 and 2017, enabling standardised comparisons of ILD incidence and mortality across countries.¹⁸ In 2017, Ireland had the second-highest age-standardised ILD mortality rate for both males and females, at 5.18 and 2.73 deaths per 100,000 population, respectively. These rates were only slightly lower than those recorded in the UK, which had the highest mortality rates, at 5.27 per 100,000 for males and 2.89 per 100,000 for females. (Figure 7.3).

Between 2001 and 2017, ILD mortality increased by 43.19% among males and 37.38% among females in Ireland, representing one of the largest increases observed across Europe.¹⁸

The two studies are not in conflict: Gonnelli et al.¹⁷ report Ireland as having the highest rate in among the 24 EU countries studied for idiopathic pulmonary fibrosis-clinical syndrome over 2013–2018, while Saliccioli et al.¹⁸ rank Ireland second to the United Kingdom for all interstitial lung disease in 2017. The difference reflects case definition, time period and data source rather than a discrepancy in the underlying findings.

Figure 7.3. Age-standardised death rates (ASDRs) per 100 000 population for interstitial lung diseases for men and women in the UK and Europe in 2017.

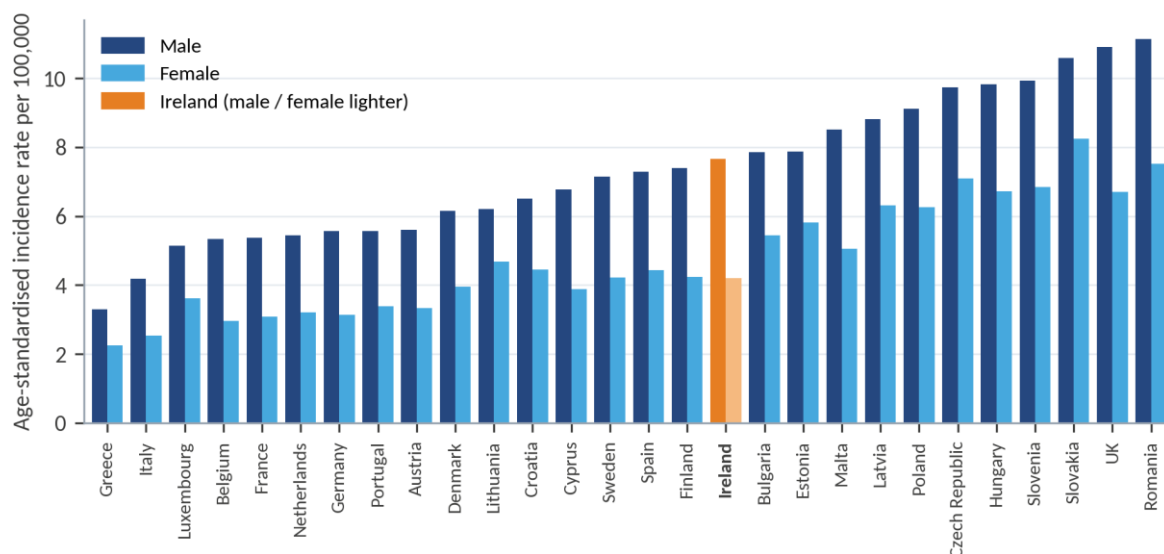


Source: Adapted from Saliccioli et al., *ERJ Open Research*, 2022.¹⁸

Consistent with these findings, Ireland also had the highest mortality-to-incidence ratio (MIR) among the countries included in the study in 2017, at 0.68 for males and 0.65 for females. The MIR represents the ratio of mortality to incidence, with higher values indicating more deaths relative to the number of new cases.¹⁸

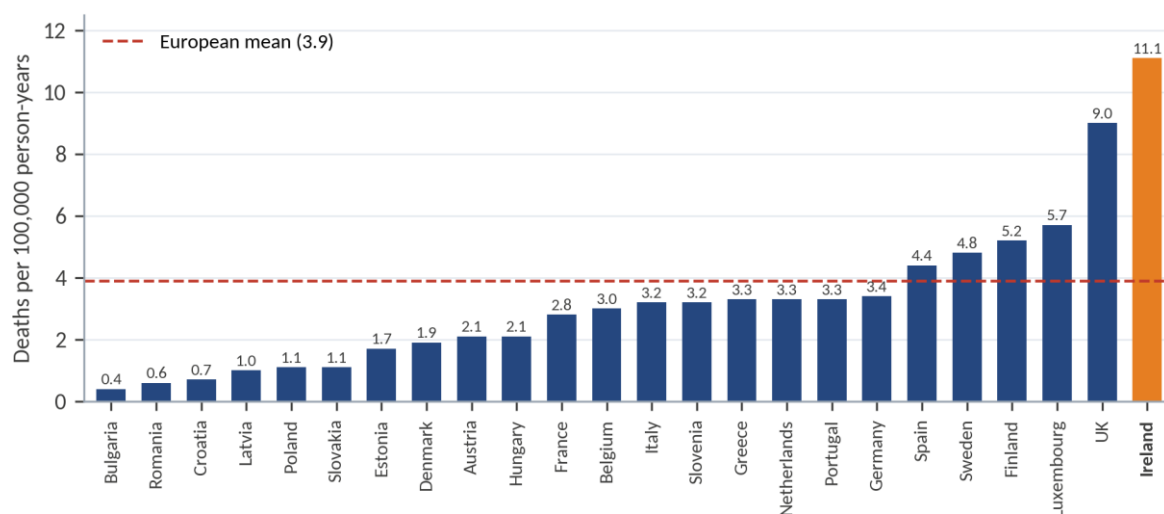
In addition, the age-standardised incidence rate among Irish males was 7.66 per 100,000, above the European median of 7.22 per 100,000; the corresponding rate among Irish females was 4.20 per 100,000, marginally below the European median of 4.34 per 100,000, although substantially lower than the rates reported in Romania and the UK (Figure 7.4). These findings indicate that Ireland experienced a comparatively high burden of ILD; however, the mortality-to-incidence ratio should be interpreted cautiously, as it may be influenced by differences in disease detection and epidemiological estimates between countries.¹⁸

Figure 7.4. Age-standardised incidence rates (ASIRs) per 100 000 population for interstitial lung diseases for men and women in the UK and Europe in 2017.



Source: Adapted from Saliccioli et al., *ERJ Open Research*, 2022.¹⁸

Figure 7.5. Mean age- and sex-standardised mortality rates for idiopathic pulmonary fibrosis clinical syndrome across 24 European Union countries, 2013–2018 (deaths per 100,000 person-years).



Source: Adapted from Gonnelli et al., *ERJ Open Research*, 2024.¹⁷

The UK Interstitial Lung Disease (ILD) Registry was one of the most comprehensive clinical datasets on interstitial lung disease in the world, running continuously for 13 years from 2013 until its closure in June 2026. The British Thoracic Society UK ILD Registry Annual Report 2024¹⁹, published in May 2025, recorded 2,238 new cases submitted in 2024, including 1,105 prospective ILD referrals first seen in 2024. The report also noted participation from 91 hospitals across the UK. Healthcare professional participation in the registry was voluntary and non-funded and only one third of registered trusts submitted cases on a regular basis and these were clustered around ILD specialist services, where registry participation was mandated by NHS England. Among the 2,238 cases entered in 2024, 1,566 were recorded as idiopathic pulmonary fibrosis, 150 as exposure-related ILD, 110 as interstitial pneumonias, 88 as connective tissue related ILD, 78 as sarcoidosis, and 176 as other ILDs and 70 unclassified. These figures reflect registry submissions rather than the total UK ILD population. The BTS UK ILD Registry programme closed with the National Respiratory Audit Programme anticipated to adopt it.¹⁹

The Irish Thoracic Society ILD Registry began in 2016 as a pilot in three centres, subsequently extended to five, and published a single annual report in 2018. Data collection was suspended during the COVID-19 pandemic and has not since resumed, so Ireland no longer has any national ILD surveillance²⁰. Registry findings reported here therefore describe a subset of centres in 2018 and may not reflect current national practice.

When the 2018 Irish registry data are compared with United Kingdom registry data, the proportion of male patients in Ireland was lower (68% compared with 76%), while a family history of idiopathic pulmonary fibrosis was reported considerably more often in Ireland (19% compared with 7%). Differences were also seen in clinical assessment, with 57% of Irish patients completing a six-minute walk test compared with 83% in the British Thoracic Society registry.²¹

7.3 Prevention, Diagnosis and Management

Prevention and early detection are important priorities in interstitial lung disease (ILD), even though not all cases are preventable and many subsets of ILD have an unknown cause. No national policies specifically addressing the primary prevention of ILD have been identified in Ireland as part of this research. Current efforts are largely focused on secondary prevention, including early diagnosis, referral to specialist multidisciplinary services, and treatment to slow disease progression.

Prevention efforts should focus on reducing exposure to known or suspected risk factors such as smoking, occupational and environmental inhalational exposures, and where relevant, reviewing medications associated with ILD.²⁷ Early detection depends on prompt recognition of symptoms such as progressive breathlessness and persistent dry cough, awareness of clinical signs including inspiratory crackles, and timely investigation with pulmonary function testing and high-resolution CT. For people at increased risk, including those with a family history of pulmonary fibrosis or relevant autoimmune or exposure histories, earlier assessment may help identify disease before advanced fibrosis develops.⁶ Current guidance also emphasises the importance of multidisciplinary assessment in confirming diagnosis and distinguishing IPF from other ILDs, as early and accurate diagnosis is critical to appropriate treatment and care. Looking ahead, genetic testing and screening programmes for familial IPF may

provide opportunities for earlier identification of individuals at increased risk in Ireland.²⁸

Access

Access to care for ILD in Ireland is structured around a specialised model aimed at integrating local care with central expertise.²⁹

Eight specialist centres providing care for patients with ILD.²⁹

- Beaumont Hospital Dublin – Irish Familial Pulmonary Fibrosis Centre
- Connolly Hospital Blanchardstown
- Cork University Hospital
- Galway University Hospital
- Mater Misericordiae University Hospital
- St. Vincent's University Hospital Dublin – Lung Centre
- Tallaght University Hospital – National Pulmonary Fibrosis Centre
- University Hospital Limerick

Specialist services typically include multidisciplinary team (MDT) assessment and access to advanced diagnostic investigations. However, the availability and consistency of services vary between centres, contributing to inequalities in access to specialist ILD care.²⁹

Diagnosis

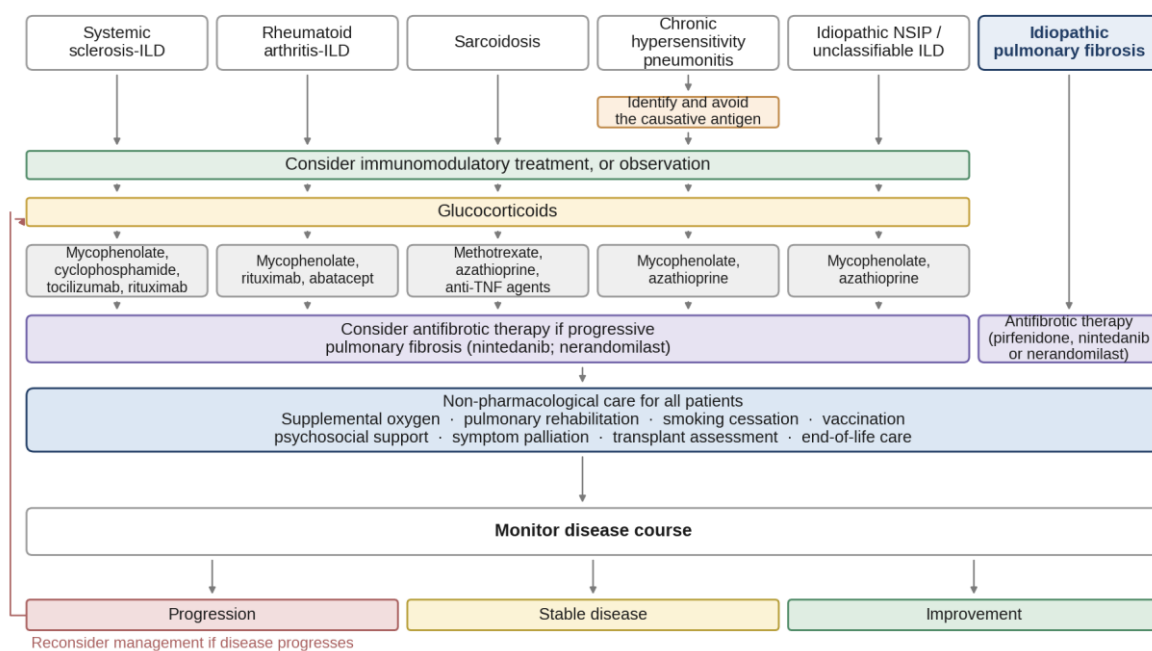
ILD is a diagnosis that requires extensive investigation, and reported prevalence is likely to understate the true burden because the condition is not always recognised.³ Presentation is characteristically insidious. Breathlessness develops slowly and approximately 30% of patients report a non-resolving cough as their first symptom, while some patients are asymptomatic at the point at which imaging is found to be abnormal.³ Fine bibasilar end-inspiratory crackles are characteristic but not universal, and digital clubbing is present in close to half of patients with fibrotic ILD.³ Age at presentation differs markedly between subtypes: sarcoidosis, connective tissue disease-associated ILD, lymphangioleiomyomatosis and pulmonary Langerhans cell histiocytosis most commonly present between 20 and 40 years of age, whereas most patients with idiopathic pulmonary fibrosis are older than 50 years.³ Multidisciplinary discussion involving respiratory physicians, thoracic radiologists and pathologists is the diagnostic gold standard and is recommended.³

According to the 2022 ATS/ERS/JRS/ALAT Clinical Practice Guideline, the diagnosis of ILD, particularly IPF, relies on a multidisciplinary approach that integrates clinical, radiological, and, when indicated, histopathological findings.^{1,6}

Management

The general approach to management across the main disease groups is summarised in Figure 7.6. Management combines treatment of the underlying process, antifibrotic therapy at outset for IPF or where there is progressive fibrosis in non-IPF ILD, and non-pharmacological care that applies to all patients regardless of diagnosis.

Figure 7.6. General approach to the management of interstitial lung disease



Simplified overview of current management. The approach shown reflects general practice in fibrotic and inflammatory ILD and is not a substitute for the relevant clinical guideline. Antifibrotic availability and reimbursement in Ireland are determined separately by the HSE.

Source: Update of the international multidisciplinary classification of the interstitial pneumonias, 2025.⁹

Non-pharmacological interventions are an essential component of IPF management and include pulmonary rehabilitation, oxygen therapy, lung transplantation, palliative care, targeted dietitian input and psychological support.²⁸ Antifibrotic drugs pirfenidone and nintedanib have been extensively validated; however, some patients reported several side effects, predominantly gastrointestinal symptoms (such as diarrhoea, dyspepsia, and vomiting), as well as photosensitivity and skin rashes, particularly associated with pirfenidone. In cases where the side effects are extremely severe and are more threatening than the disease itself, the treatment must be discontinued. Due to their potential adverse effects, these medications require regular monitoring by specialist physicians and respiratory nurse specialists to ensure their safe and effective use.^{28,30} In a real-world study, approximately 21–26% of patients discontinued antifibrotic treatment due to adverse effects.³¹

Nerandomilast, an oral phosphodiesterase-4B inhibitor, is the first antifibrotic agent with a new mechanism of action to reach the market in more than a decade. In the phase 3 FIBRONEER-IPF and FIBRONEER-ILD trials it slowed the rate of decline in forced vital capacity in idiopathic pulmonary fibrosis and in progressive pulmonary fibrosis respectively, both as monotherapy and in combination with existing antifibrotic therapy.^{32,33} Reported tolerability compares favourably with pirfenidone and nintedanib, although diarrhoea remains common when nerandomilast is combined with nintedanib, and co-administration with pirfenidone substantially reduces nerandomilast exposure. Following approval in the United States for idiopathic pulmonary fibrosis in October 2025 and for progressive pulmonary fibrosis in December 2025, the European Commission authorised nerandomilast for both indications in July 2026.

Decisions on pricing and reimbursement in Ireland are a matter for the Health Service Executive and had not concluded at the time of writing.

The expanding range of licensed therapy has direct implications for service planning in Ireland. A wider set of treatment options increases the requirement for specialist multidisciplinary assessment, for prescribing and monitoring capacity within ILD centres, and for equitable access to those centres, at a time when the services described earlier in this chapter are unevenly resourced and no national registry exists to measure whether new therapies are reaching patients.

Virtual Pulmonary Rehabilitation Pilot

Led by the Irish Lung Fibrosis Association (ILFA) and funded by the HSE, this 9-month study launched in 2026 will provide a structured virtual rehabilitation programme.^{34,35} Eligibility includes adults with confirmed progressive pulmonary fibrosis who are considered suitable for pulmonary rehabilitation by a respiratory clinician and who face geographical, transport or socioeconomic barriers to accessing in-person pulmonary rehabilitation.³⁶

Lung Transplant

A lung transplant can help people with ILDs to live longer and improve their quality of life. The National Heart and Lung Transplant Centre is based in the Mater Misericordiae Hospital in Dublin.³⁷ However, lung transplantation is not suitable for all patients and there is stringent criteria. Candidates undergo careful assessment of factors including comorbidities, nutritional and functional status, frailty and psychosocial circumstances, as these may affect eligibility and post-transplant outcomes.³⁸

National data on lung transplantation in Ireland are reported by Organ Donation Transplant Ireland (ODTI) (Table 7.5).

Table 7.5. Organ donation and lung transplant summary, 2020–2024. All lung transplants and not ILD specific.

	2020	2021	2022	2023	2024	5 year total	5 year average
Lung Transplants from Deceased Donations	16	20	18	19	13	86	17

Source: Organ Donation Transplant Ireland, 2024 Annual Report³⁹

- In 2024, 34 patients were assessed for end stage respiratory failure. Of these, 23 patients were listed for lung transplantation. These figures cover lung transplantation for all indications; ILD-specific transplant activity is not separately reported.³⁹
- Among those listed for transplant in 2024, 13 were transplanted (3 single and 10 double), while 24 were on the active list at year end, including patients listed in previous years.³⁹ Overall, 47 patients were active on the lung transplant waiting list at some point during 2024, of whom 3 (6.4%) died while awaiting transplant.⁴⁰
- The median time on the active lung transplant waiting list in 2024 was 120 days.³⁹

International data on lung transplantation activity and waiting lists are reported by the European Directorate for the Quality of Medicines & HealthCare (EDQM) of the Council of Europe in the Newsletter Transplant (Table 7.6).⁴⁰

Table 7.6. International comparison of lung transplantation activity and waiting-list outcomes, 2024

Country	Lung transplants, n	Lung transplants, PMP	Active on waiting list during 2024, n	Died while waiting, n (%)
Ireland	13	2.5	47	3 (6.4%)
United Kingdom	130	1.9	477	43 (9.0%)
France	332	5.1	461	16 (3.5%)
Germany	311	3.7	696	52 (7.5%)
Spain	623	13.1	870	12 (1.4%)

Source: EDQM/Council of Europe, Newsletter Transplant 2025⁴⁰

Remote Monitoring Innovation

In 2024, the National Lung Transplant Centre reported the implementation of remote monitoring of lung transplant recipients for newly transplanted patients or patients who required close follow up. An application, PatientMPower is installed on their smart phone and they are given a spirometer, weighing scales and pulse oximeter which are linked to their mobile device via Bluetooth. This data is checked daily by the clinical nurse specialist (CNS) who monitors the patient's inputs and contacts them if there are any concerns. This is a Sláintecare funded project to allow patients to remain at home and be carefully monitored and so improves patient quality of life by reducing visits. It allows the Transplant team to identify changes in lung function which could signal early rejection or infection, thus facilitating earlier treatment.³⁹

Patient Transplant Support

In 2026, the Mater Hospital launched a National Lung Transplant website to support patients and their families on their transplant journey - <https://www.lungtransplant.ie/>.⁴¹

Patient Advocacy – Irish Lung Fibrosis Association

Patient involvement has become an increasingly important component of ILD care and research in Ireland. A 2025 national stakeholder study, co-developed with the ILFA Patient and Public Involvement (PPI) Research Advisory Group, highlighted the willingness of people living with ILD to actively contribute to improving healthcare services. Most patients expressed a high level of comfort with sharing clinical and patient-reported information for research and healthcare planning, recognising the potential to improve awareness, resource allocation, earlier diagnosis, and access to care. While most participants reported no concerns regarding a national ILD registry, some emphasised the importance of maintaining confidentiality, data security, and ensuring that data are used exclusively for research and service improvement. These findings demonstrate a highly engaged patient community that values partnership in research and healthcare planning, reinforcing the importance of incorporating the patient voice into future ILD service development in Ireland.⁴²

7.4 Conclusions

The central weakness in ILD is that Ireland cannot measure the problem it faces. Neither incidence nor prevalence is known at national level, and the most recent population estimate for sarcoidosis dates from 1996–2005. Without these data, services cannot be planned, access cannot be monitored, and there is no way to tell whether new treatments are reaching the patients who need them. People living with ILD have said clearly that they support a national registry. Specialist care is delivered through eight centres whose resources vary, and treatment options are widening. As new treatments are being developed, each new therapy increases the need for multidisciplinary diagnosis, specialist prescribing and ongoing monitoring. Lung transplantation, the only option for some patients with advanced disease, fell to 13 procedures in 2024 (all indications), and 6.4% of patients on the waiting list died before receiving a transplant.

Two actions would make the greatest difference. The first is to establish a national ILD registry that receives multi-annual funding and is publicly reported. The second is to bring ILD formally within the National Clinical Programme, so that care follows a consistent national pathway rather than depending on where a patient lives.

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Obstructive Sleep Apnoea

08

Key Points

- There is no national data on the prevalence of obstructive sleep apnoea in Ireland, nor on deaths, sex, age or regional distribution. Applying international estimates suggests more than 50,000 people may be affected, but this is a projection rather than an Irish estimate.
- OSA is associated with a substantially increased risk of cardiovascular disease, type 2 diabetes, cognitive dysfunction and all-cause mortality. Untreated OSA also increases the risk of road traffic accidents.
- In 2024, sleep studies were the seventh most common principal procedure among elective inpatients in Ireland, with 1,931 procedures (2.3% of the total).
- Demand is outstripping capacity. In one Dublin tertiary service, sleep disorders account for around 40% of respiratory referrals, and waits for a first sleep clinic appointment reach 18–24 months.
- A digital pathway combining app-based assessment, home sleep testing and virtual review reduced the average time from referral to review to 5.5 months, showing how access could be improved.
- National epidemiological research is needed to establish the true prevalence of OSA in Ireland and to inform service planning.

8.1 Background

Sleep-disordered breathing (SDB) comprises a group of disorders characterised by abnormal respiration during sleep, including primary snoring, obstructive sleep apnoea (OSA), central sleep apnoea, Cheyne–Stokes respiration, and sleep-related hypoventilation. OSA is the most common form and is characterised by recurrent collapse of the upper airway during sleep, resulting in episodes of complete (apnoeas) or partial (hypopnoeas) cessation of airflow. These episodes have two main consequences: recurrent arousals from sleep and oxyhaemoglobin desaturation.³

OSA is recognised as a major public health concern owing to its high prevalence, frequent underdiagnosis, and association with adverse health outcomes. It is associated with a substantially increased risk of cardiovascular disease, type 2 diabetes mellitus, and

cognitive dysfunction.⁴ Studies have also shown that individuals with moderate-to-severe OSA are at a significantly increased risk of all-cause mortality.⁵ In addition, OSA has a substantial impact on quality of life, contributing to excessive daytime sleepiness, impaired daily functioning, and reduced overall well-being.⁴

Risk factors for OSA include male sex, older age, and obesity.⁸ Additional risk factors include upper airway abnormalities (e.g., retrognathia, tonsillar hypertrophy, macroglossia, and nasal obstruction), endocrine disorders such as acromegaly and hypothyroidism, and the postmenopausal state in women.² OSA has been strongly associated with hypertension, type 2 diabetes, congestive heart failure, and nocturnal cardiac arrhythmias.⁸

This chapter deals with Sleep Apnoea (ICD 10: G47.3) which includes sleep apnoea (unspecified, other), central sleep apnoea, obstructive sleep apnoea syndrome (OSAS) and sleep hypoventilation syndrome.

8.2 Burden of Disease

Prevalence

There is no national data currently available on the prevalence of sleep apnoea in the Irish population.

Mortality

National mortality data specifically attributable to sleep apnoea were not available for this report.

Impact on health services

HIPE data specifically extracted for OSA hospitalisations were not available for this report; however, relevant sleep apnoea activity data were available from the Activity in Acute Public Hospitals report.⁶

Of all sleep apnoea day-cases reported through Activity in Acute Public Hospitals in 2024, 10 (8.4%) were classified as major complexity and 109 (91.6%) as minor complexity. Among patients treated as inpatients, 195 (16.6%) were classified as major complexity and 980 (83.4%) as minor complexity. The mean inpatient length of stay was 4.0 days (median 2 days) for major complexity cases and 1.1 days (median 1 day) for minor complexity cases. Length of stay is based on total inpatients (same-day and overnight) and excludes day patients.⁶

Among the top 20 principal procedures performed on elective inpatients, sleep studies ranked seventh, with 1,931 procedures, representing 2.3% of all elective inpatient procedures. For comparison, generalised allied

health interventions ranked first at 11.9%, while abdominal hysterectomy ranked eighth at 2.2%. The mean inpatient length of stay for sleep studies was 1.3 days, with a median stay of 1 day.⁶

Sex

Irish population prevalence data by sex is not available.

Age

National Irish prevalence data by age group is not available.

Regional Variation

National data on regional variation in sleep apnoea are not currently available in Ireland.

Socio-economic analysis

National Irish data is not available.

International Benchmarking

Reliable epidemiological data on the prevalence of OSA in Ireland are currently unavailable. The Irish Sleep Society (ISS) has highlighted this as an important evidence gap and recommended the establishment of population-based studies to better quantify the burden of disease. Based on international estimates suggesting that at least 4% of middle-aged adults are affected by OSA, it has been estimated that more than 50,000 people in Ireland may have the condition. However, this figure represents a projection rather than an estimate derived from Irish epidemiological data.²

In neighbouring England, a population-based study using linked primary care and hospital records estimated the age- and sex-standardised prevalence of diagnosed OSA to be 1.40% in 2019, corresponding to approximately 623,000 adults. The authors concluded that both the incidence and prevalence of diagnosed OSA remained substantially lower than published estimates of symptomatic disease, highlighting persistent underdiagnosis. Similar to Ireland, these findings emphasise the need for improved case identification and robust epidemiological surveillance.⁷ While the English estimate reflects diagnosed OSA, the Irish estimate is based on international epidemiological data. Although not directly comparable, both suggest substantial underdiagnosis of OSA.

8.3 Prevention, Diagnosis and Management

Ireland does not currently have a national screening programme for OSA. Prevention focuses on reducing

modifiable risk factors while promoting the early identification of individuals with symptoms suggestive of OSA or recognised risk factors. Lifestyle measures, including weight reduction, avoiding alcohol and sedative use, maintaining good sleep hygiene, and sleeping in a non-supine position where appropriate, are recommended to reduce the risk and severity of OSA.

The Irish Sleep Society recommends targeted screening of high-risk groups, including commercial drivers, individuals with uncontrolled hypertension, and patients with significant upper airway abnormalities, given the increased risk of road traffic accidents and long-term cardiovascular complications associated with untreated OSA.

The Society has also highlighted the need for national epidemiological research to establish the true prevalence of OSA in Ireland and to inform future healthcare planning.^{1,2}

Access to care for OSA in Ireland is delivered through a network of specialist sleep medicine services, with diagnosis and treatment provided by multidisciplinary teams including respiratory physicians, neurologists, otorhinolaryngologists (ENT specialists), clinical physiologists, nurses and other healthcare professionals with expertise in sleep disorders. The ISS has established national standards for adult sleep medicine services, defining the minimum requirements for staffing, facilities and diagnostic capabilities across Irish sleep centres, while recognising that more complex sleep disorders should be managed in tertiary referral centres.⁹

The patient pathway generally begins in primary care, where individuals presenting with symptoms such as habitual snoring, witnessed apnoeas, excessive daytime sleepiness or other features suggestive of OSA are referred to a specialist sleep service. Diagnosis is based on clinical assessment together with objective sleep testing, either through overnight polysomnography performed in a sleep laboratory or home sleep apnoea testing in appropriately selected patients. Disease severity is commonly classified according to the apnoea–hypopnoea index (AHI), which guides subsequent management decisions.¹⁰

Following diagnosis, treatment is defined according to disease severity and individual patient characteristics. Continuous positive airway pressure (CPAP) remains the first-line treatment for moderate-to-severe OSA and is available through the HSE, alongside lifestyle interventions, mandibular advancement devices for selected patients and referral for upper airway surgery

when clinically indicated. Long-term management includes patient education, optimisation of treatment adherence and regular follow-up within specialist sleep services.¹¹

Despite the establishment of national service standards, access to sleep medicine remains under pressure due to increasing demand.

A recent service evaluation from St. James's Hospital, Dublin, reported that sleep-related disorders accounted for approximately 40% of all respiratory referrals, with waiting times for an initial face-to-face sleep clinic appointment reaching 18–24 months.¹²

In response, the centre implemented a digitally integrated care pathway combining app-based assessment, home sleep apnoea testing and virtual physician review, achieving a mean referral-to-review interval of 5.5 months for patients managed through the redesigned pathway. Although these findings originate from a single tertiary centre, they highlight current challenges in access to care and demonstrate ongoing efforts to improve diagnostic capacity and reduce delays through innovative models of service delivery in Ireland.¹²

Current Challenges

Current challenges in OSA care in Ireland include increasing demand for sleep services and pressure on existing resources. In one Irish tertiary respiratory service, sleep-related cases accounted for approximately 40% of respiratory referrals, with the next available face-to-face sleep clinic appointment 18–24 months away.¹² Clinical experience also indicates that sleep services can expand substantially without corresponding increases in resources, creating challenges in meeting growing demand for assessment and treatment.

Greater use of home sleep studies and integrated community-based pathways may provide opportunities to increase access to diagnosis and reduce pressure on hospital-based services. This is consistent with the broader Enhanced Community Care Programme under Sláintecare,¹³ which aims to shift appropriate specialist care from hospitals towards community settings.

Respiratory physiologists form part of the multidisciplinary workforce involved in the diagnosis and treatment of sleep disorders in Ireland. Further recognition and development of this specialist role may help strengthen future sleep service capacity. The NHS¹⁴ provides an example of a structured approach to professional development in respiratory physiology and

sleep sciences, with education and training pathways spanning practitioner, clinical scientist and higher specialist scientist levels.

8.4 Conclusions

Obstructive sleep apnoea is common, under-diagnosed and largely invisible in Irish health data. There is no national estimate of how many people have the condition, and no national data on deaths, or on how the disease varies by sex, age, region or social circumstances. International figures suggest that more than 50,000 people in Ireland may be affected. Evidence from England, where fewer than 1.5% of adults have a recorded diagnosis, indicates that most people with OSA are never diagnosed.

This matters because untreated OSA is not a benign condition. It increases the risk of cardiovascular disease, type 2 diabetes, cognitive impairment and early death, and it contributes to road traffic accidents. Effective treatment is available, and continuous positive airway pressure is provided through the HSE. The main barrier is getting people diagnosed and into care.

Demand for sleep services is growing faster than capacity. Sleep studies are now one of the most common elective inpatient procedures in Irish hospitals. In one tertiary centre, sleep disorders make up around 40% of respiratory referrals and waits for a first appointment reach 18–24 months. That same centre has shown that a digital pathway using home testing and virtual review can reduce waits substantially.

Several actions would improve outcomes for people with OSA. A national epidemiological study is needed to establish the true burden of the disease. Home sleep testing and community-based pathways should be expanded, in line with the Enhanced Community Care Programme. High-risk groups, including commercial drivers and people with uncontrolled hypertension, should be targeted for earlier detection. And the respiratory physiologist workforce that underpins sleep diagnostics should be recognised and developed.

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Paediatric Respiratory Disease

09

Key Points

- In 2024, 23.7% of all inpatient hospitalisations among children aged 0–14 years were for respiratory diseases.
- The most common reason for admission to a PCCU across the two CHI units combined was a respiratory diagnosis (34%), and the majority of these admissions (92%) were unplanned. In contrast, the majority of admissions (69%) for the second most common primary diagnosis group, cardiovascular, were planned.
- The Ireland Immunisation Uptake Report (Q3 2025) reported a continued decline in routine childhood immunisation, with coverage remaining below the World Health Organization (WHO) target of 95% for all routinely reported childhood vaccines.
- Coverage for the pneumococcal conjugate vaccine (PCV3), which protects against invasive pneumococcal disease and bacterial pneumonia, was 80.9%, the lowest among all vaccines at 24 months.
- Paediatric tuberculosis (TB) notifications have increased in recent years. Notifications among children aged under 15 years increased from eight cases in 2023 to 13 in 2024 and 14 in 2025, the highest levels reported since 2016 (17 cases).
- Mortality from respiratory perinatal and congenital conditions remained low between 2015 and 2023. While deaths from most perinatal respiratory conditions declined over time, mortality associated with congenital malformations of the lung increased, rising from 6 deaths in 2015–2017 to 12 in 2021–2023.
- Improving outdoor and indoor air quality is a fundamental form of preventive child health care by applying the most important interventions. Although progress is being made, there is a continuing need for measures that specifically address children's exposure and susceptibility to air pollution.

9.1 Background

Respiratory illnesses are among the leading causes of morbidity in children worldwide, accounting for a large proportion of outpatient visits and hospital admissions throughout infancy, childhood and adolescence.

In Ireland, this burden is also substantial, with respiratory conditions continuing to account for a significant share of paediatric hospital admissions, emergency presentations and primary care utilisation. Asthma and bronchiolitis account for much of this burden, representing the most common causes of respiratory distress and wheeze in children, particularly in low- and middle-income countries (LMICs).¹ This pattern is also reflected in Ireland, where respiratory diseases continue to account for a considerable number of paediatric hospital admissions and healthcare encounters each year.

9.2 Burden of Disease

Incidence and Prevalence

In 2025, RSV and influenza were the most frequently notified respiratory infections in Ireland. Children aged 0–4 years accounted for half of all RSV notifications (50.0%) and almost half of pertussis (47.4%) and measles (45.1%) notifications (Table 9.1).²

Table 9.1. Respiratory infectious diseases (notifiable): Paediatrics Age Group: 2025

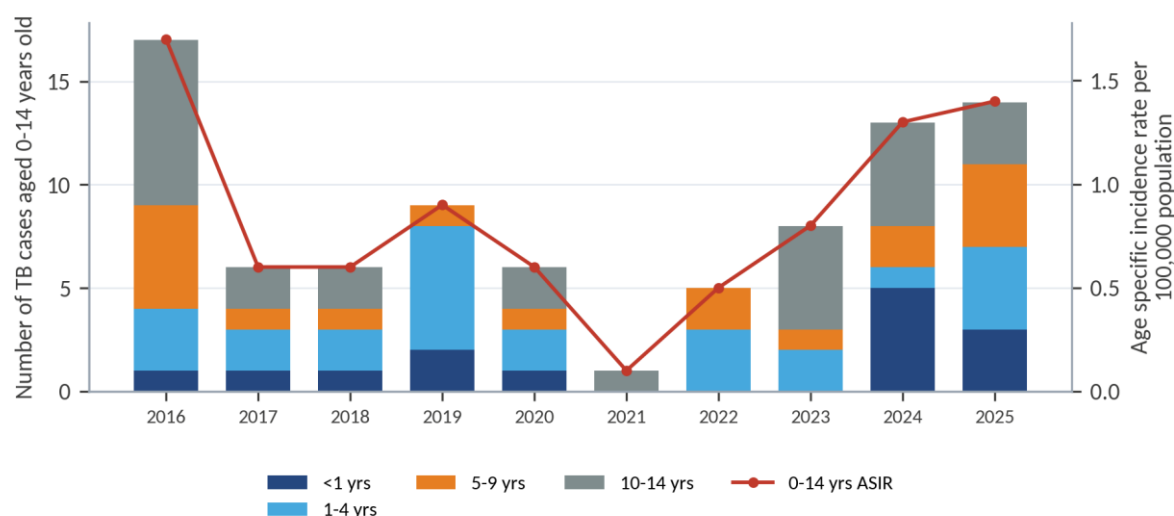
Disease	Total: All Ages	0-4 yrs % of total	5-9 yrs % of total	10-14 yrs % of total
RSV*	7774	3888 (50.0%)	275 (3.5%)	90 (1.2%)
Legionellosis	36	0 (0.0%)	0 (0.0%)	0 (0.0%)
Streptococcus pneumoniae	575	51 (8.9%)	23 (4.0%)	1 (0.2%)
Haemophilus influenzae	67	17 (25.4%)	0 (0.0%)	0 (0.0%)
Influenza	38762	6116 (15.8%)	3227 (8.3%)	1852 (4.8%)
Tuberculosis	283	7 (2.5%)	4 (1.4%)	3 (1.1%)
Pertussis	348	165 (47.4%)	36 (10.3%)	32 (9.2%)
Measles	51	23 (45.1%)	6 (11.8%)	3 (5.9%)
Diphtheria	0	0 (0.0%)	0 (0.0%)	0 (0.0%)
COVID-19**	13590	1467 (10.8%)	234 (1.7%)	187 (1.4%)

Source: Health Protection Surveillance Centre (HPS), Infectious Disease Notifications in Ireland.²

*RSV notifications prior to 21 June 2022 were processed using a fast-tracked notification system referring to notifications rather than individual patients. ** COVID-19 became a notifiable disease on 20 February 2020.

Paediatric tuberculosis (TB) notifications have increased in recent years. Notifications among children aged under 15 years increased from eight cases in 2023 to 13 in 2024 and 14 in 2025, the highest levels reported since 2016 (17 cases) (Figure 9.1). In 2025, three cases were reported among children aged under one year, including one case of congenital TB.

Figure 9.1. Number of paediatric TB notifications and age specific incidence rate (ASIR) by year, Ireland.



Source: HSE Public Health: Health Protection, Striving to End Tuberculosis: A Strategy for Ireland 2024–2030 – Year 2 Implementation Report, 2026.³

Mortality

Mortality from respiratory perinatal and congenital conditions remained low between 2015 and 2023 (Table 9.2). While deaths from most perinatal respiratory conditions declined over time, mortality associated with congenital malformations of the lung increased, rising from six deaths in 2015–2017 to 12 in 2021–2023.

Table 9.2. Deaths from Respiratory Perinatal and Congenital causes 2015–2023

Disease	2015–2017	2018–2020	2021–2023
Respiratory distress of newborn (P22)	17	16	9
Congenital pneumonia (P23)	2	1	0
Neonatal aspiration syndromes (P24)	0	0	0
Interstitial emphysema and related conditions originating in the perinatal period (P25)	2	4	4
Pulmonary haemorrhage originating in the perinatal period (P26)	5	4	3
Chronic respiratory disease originating in the perinatal period (P27)	6	6	3
Other respiratory conditions originating in the perinatal period (P28)	16	11	9
Congenital malformations of trachea and bronchus (Q32)	0	3	1
Congenital malformations of lung (Q33)	6	8	12
Other congenital malformations of respiratory system (Q34)	2	1	0

Source: Health Statistics (PHIS) / CSO.⁴

In terms of deaths, respiratory diseases (ICD-10 J00–J99) in children aged <15 years remained uncommon, with most deaths occurring among children aged 0–4 years (Table 9.3).

Table 9.3. Deaths: Respiratory system (J00–99) Age < 15 years. 2015–2025*

Age Range	2015–2017	2018–2020	2021–2023	2024–2025*
0–4 years	17	10	15	5
5–14 years	15	6	3	4
0–14 years	32	16	18	9

Source: Health Statistics (PHIS) / CSO.⁴

Impact on Health Services

Primary care represents an important component of healthcare utilisation among children in Ireland. The Healthy Ireland Survey 2023 found that 55% of children had attended a GP in the previous 12 months, with an average of 2.4 visits per child, lower than in 2019, when 58% of children attended a GP, with an average of 3.4 visits per child. GP utilisation varied considerably by age, with younger children having the highest levels of attendance (Table 9.4).⁵

Table 9.4. Children's GP visits

Age	Visited GP, 2019	Visited GP, 2023	Mean visits, 2019	Mean visits, 2023
<6	79%	76%	5.1	4.0
6–11 years	51%	48%	2.2	1.8
12–15 years	42%	41%	2.3	1.4
16–17	48%	49%	4.0	2.0

Source: Healthy Ireland Summary Report 2023⁵.

Following the introduction of free GP care for children under six in 2015, a study examining GP attendance from 2013/14 to 2017/18 found that daytime GP attendance increased by approximately 20–21%, while out-of-hours attendance increased by 20.5–29.4%. The scheme also includes structured asthma care through the Asthma Cycle of Care, providing an initial assessment and annual review in general practice.⁶

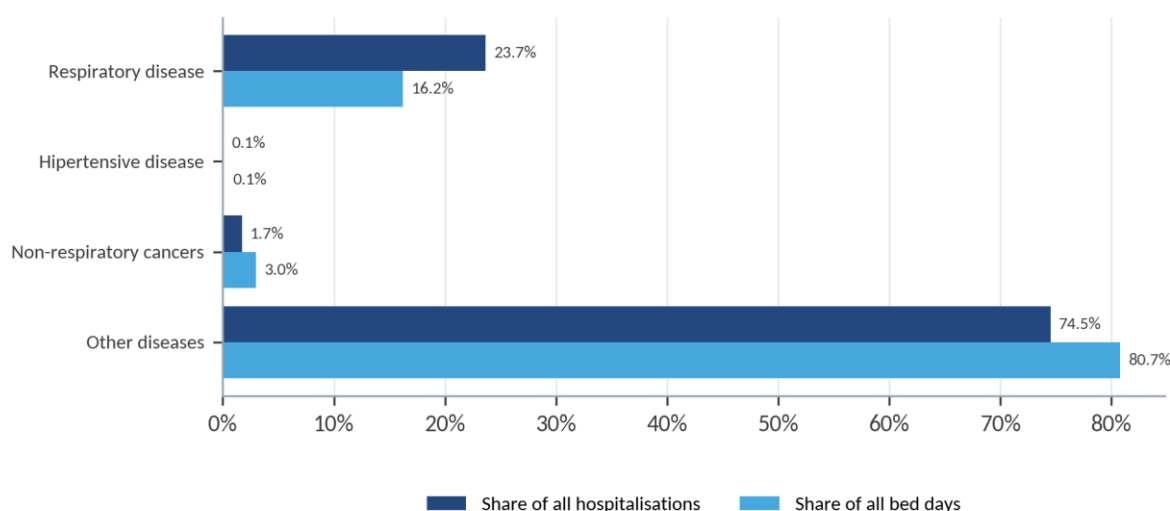
National data specifically quantifying paediatric respiratory-related GP utilisation are limited. However, evidence from out-of-hours primary care provides some insight into the management of respiratory infections among children. A study of over 400,000 out-of-hours GP consultations in Cork and Kerry between 2019 and 2021 found that children aged 0–6 years accounted for 20.6% of all antibiotic prescriptions, while those aged 7–

16 years accounted for a further 12.9%. Among children, respiratory tract infections were the predominant indication for antibiotic treatment (70%).⁷

Hospitalisations

Looking at the inpatient hospitalisation data for 2024 alone, 23.7% of all inpatient hospitalisations among children aged 0–14 years were for respiratory diseases, accounting for 16.2% of all inpatient bed days for this age group (Figure 9.2).⁸

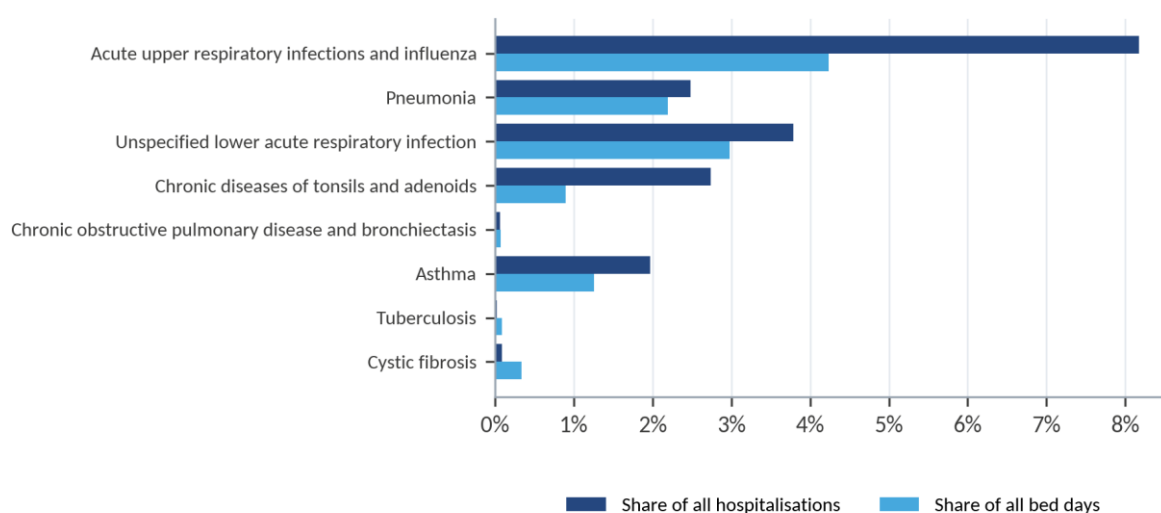
Figure 9.2. Percentage of inpatient hospitalisations by disease group, 2024 (0–14 years)



Source: HIPE 2024.⁸

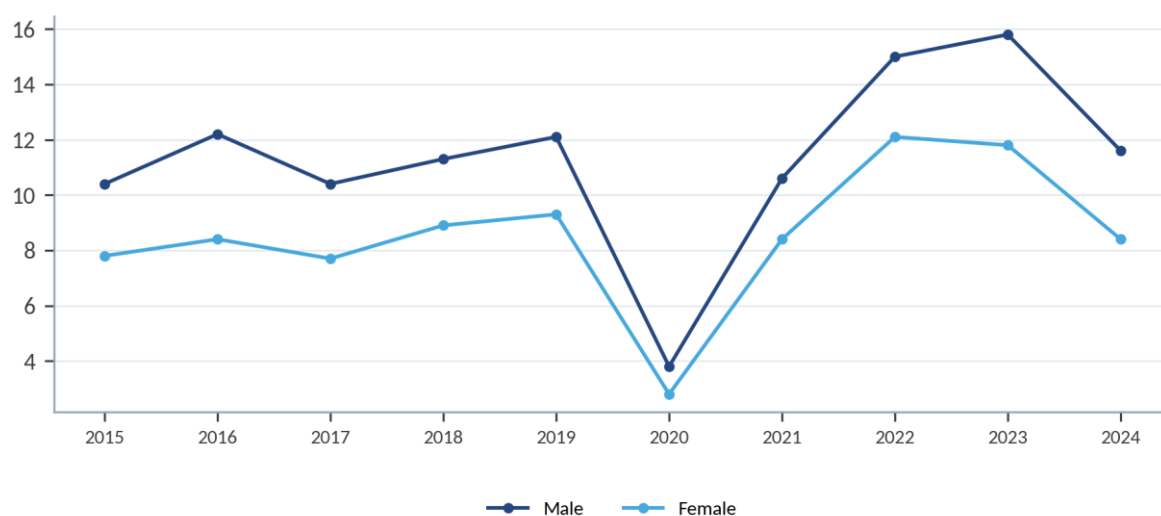
The contribution of individual respiratory conditions to paediatric respiratory hospitalisations is shown in Figure 9.3, with acute upper respiratory infections and influenza accounting for the largest proportion of admissions.⁸

Figure 9.3. Percentage of inpatient hospitalisations by respiratory condition, 2024 (0–14 years)



Source: HIPE 2024.⁸

Hospital admission rates for bronchiolitis among children aged 0–4 years declined markedly in 2020, increased in the subsequent years, and fell again in 2024. Throughout the study period, admission rates were consistently higher among boys than girls (Figure 9.4).

Figure 9.4. Rate of bronchiolitis admissions among children aged 0–4 years, by sex, 2015–2024

Source: Department of Health. Health in Ireland: Key Trends – Child and Adolescent Health (2026). Data source: Healthcare Pricing Office, HIPE. ⁹

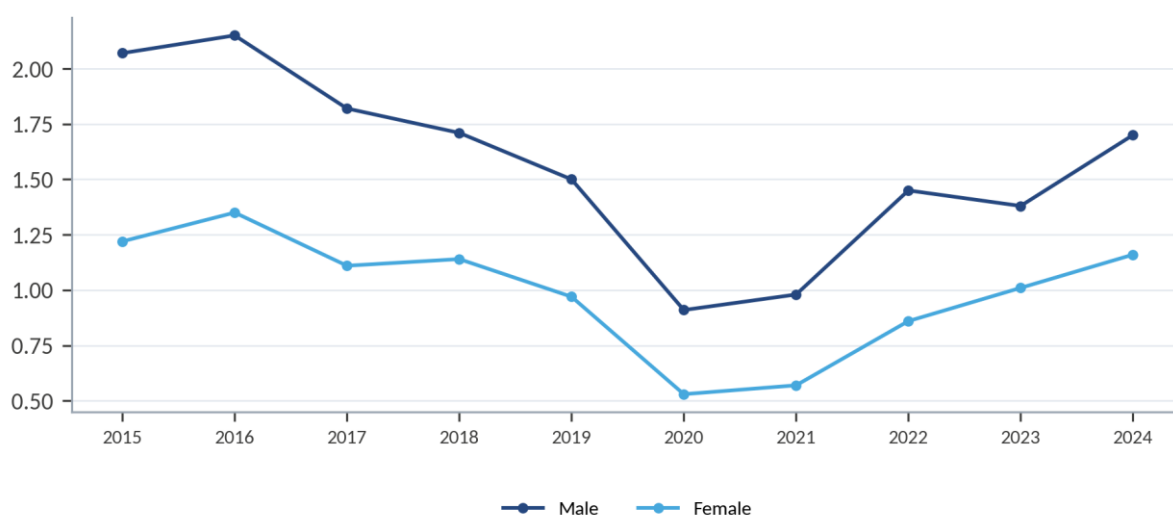
Notes:

(i) Data based on final 'closed' HIPE file for 2015–2024.

(ii) Each HIPE record corresponds to one episode of care. The data includes same-day and overnight inpatient admissions and excludes all day-cases.

(iii) The episodes of admitted patient care relate specifically to cases where the principal diagnosis recorded was the relevant condition.

Asthma admission rates among children aged 0–15 years declined to 2020 before increasing gradually thereafter. Boys consistently had higher admission rates (Figure 9.5).

Figure 9.5. Rate of asthma admissions among children aged 0–15 years, by sex, 2015–2024

Source: Department of Health. Health in Ireland: Key Trends – Child and Adolescent Health (2026). Data source: Healthcare Pricing Office, HIPE. ⁹

Notes:

(i) Data based on final 'closed' HIPE file for 2015–2024.

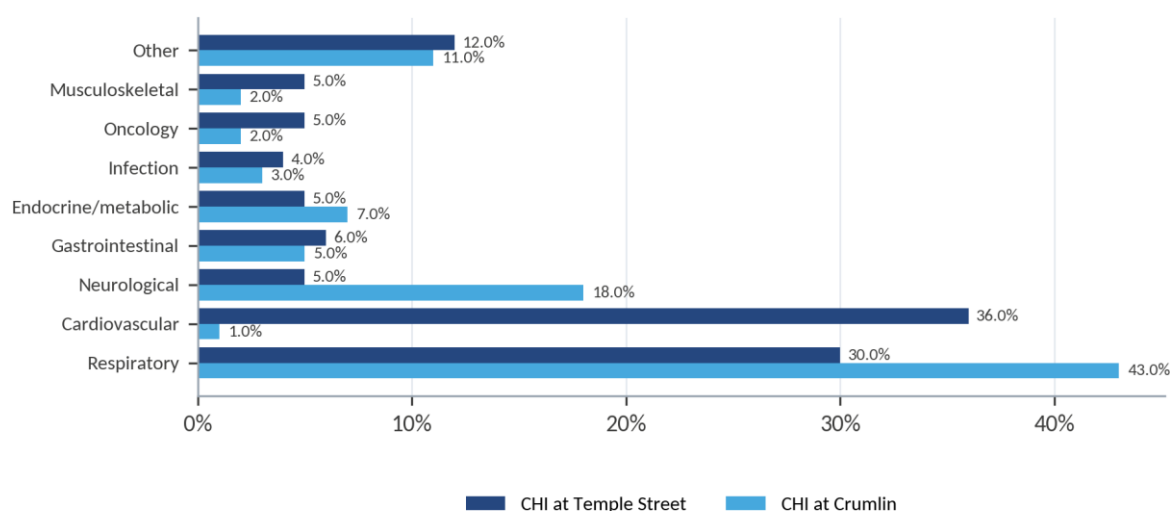
(ii) Each HIPE record corresponds to one episode of care. The data includes same-day and overnight inpatient admissions and excludes all day-cases.

(iii) The episodes of admitted patient care relate specifically to cases where the principal diagnosis recorded was the relevant condition.

The 2023 National Paediatric Critical Care Audit Report, published by the National Office of Clinical Audit (NOCA), provides a national overview of paediatric critical care services in Ireland. The audit includes data from the country's two specialised paediatric critical care units (PCCUs), both located within Children's Health Ireland (CHI), and incorporates information on children requiring critical care in adult intensive care units (ICUs) when managed outside these specialist centres. In 2023, more than 1,700 admissions were recorded across the two PCCUs.¹⁰

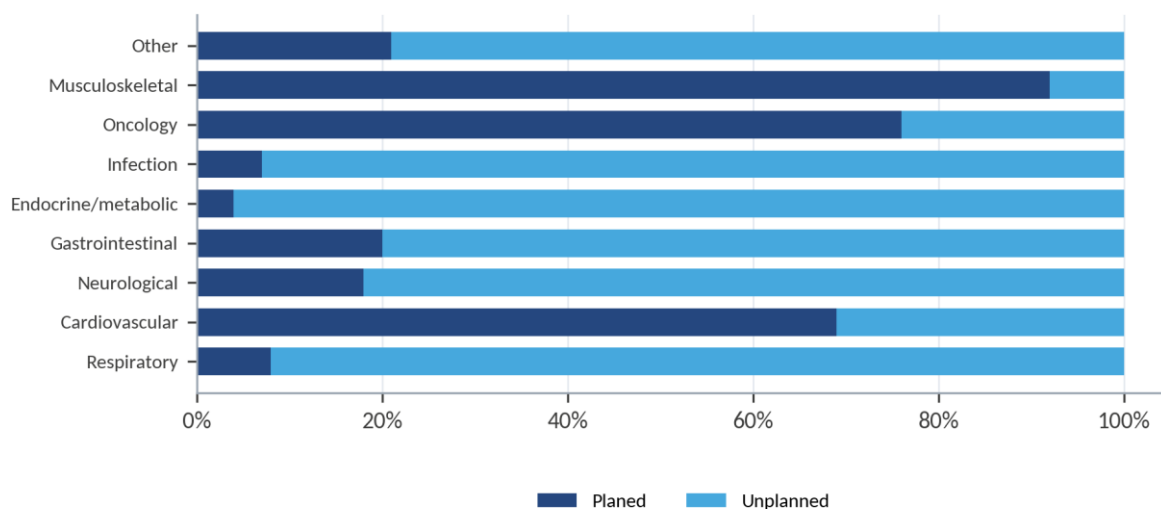
In 2023, respiratory diseases were the leading cause of admission to the PCCU at CHI Temple Street, accounting for 43% (n=227) of admissions, while cardiovascular conditions predominated at CHI Crumlin (36%; n=416), reflecting its role as the national centre for congenital cardiac services (Figure 9.6).¹⁰

Figure 9.6. Admissions to paediatric critical care units in the Republic of Ireland, by primary diagnosis, 2023 (n=1691)



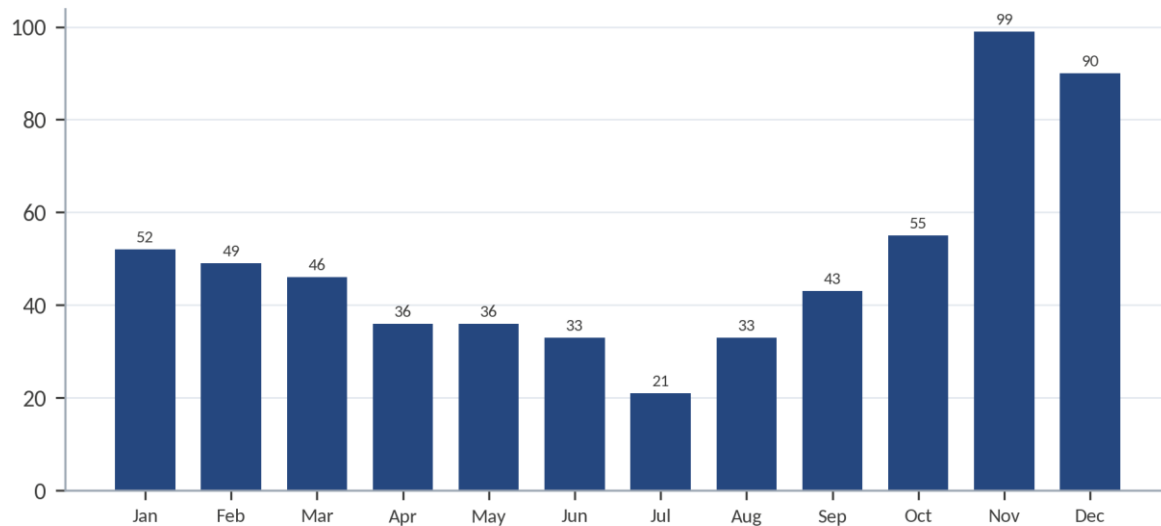
Source: Adapted from National Office of Clinical Audit (NOCA). Irish Paediatric Critical Care Audit: National Report 2023.¹⁰

The most common reason for admission to a PCCU across the two CHI units combined was a respiratory diagnosis (34%), and the majority of these admissions (92%) were unplanned. In contrast, the majority of admissions (69%) for the second most common primary diagnosis group, cardiovascular, were planned (Figure 9.7). This reflects the acute presentation of severe respiratory conditions requiring urgent critical care, in contrast to cardiovascular admissions, which were predominantly elective due to planned surgical and interventional procedures.¹⁰ Among all unplanned respiratory admissions, the mean length of stay was 6.69 days at CHI Crumlin and 5.10 days at CHI Temple Street.¹⁰

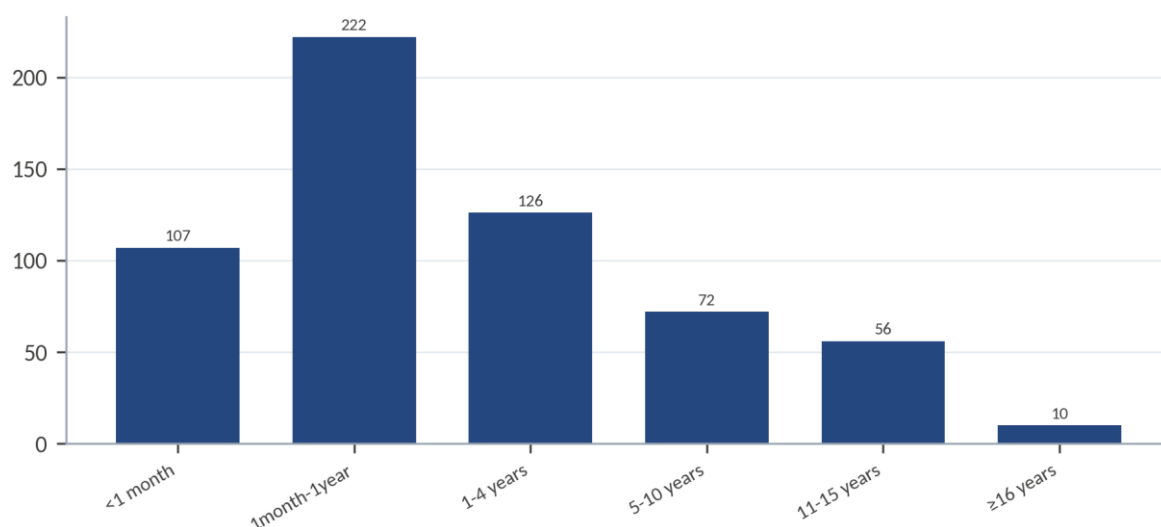
Figure 9.7. Admissions to paediatric critical care units in the Republic of Ireland, by primary diagnosis and elective status, 2023 (n=1691)

Source: Adapted from National Office of Clinical Audit (NOCA). Irish Paediatric Critical Care Audit: National Report 2023.¹⁰

Respiratory admissions showed a marked seasonal pattern, increasing from October to December, with November and December recording the highest number of admissions (Figure 9.8). More than half (56%; n=329) occurred in children aged under one year, highlighting the substantial burden of severe respiratory disease in early childhood (Figure 9.9).

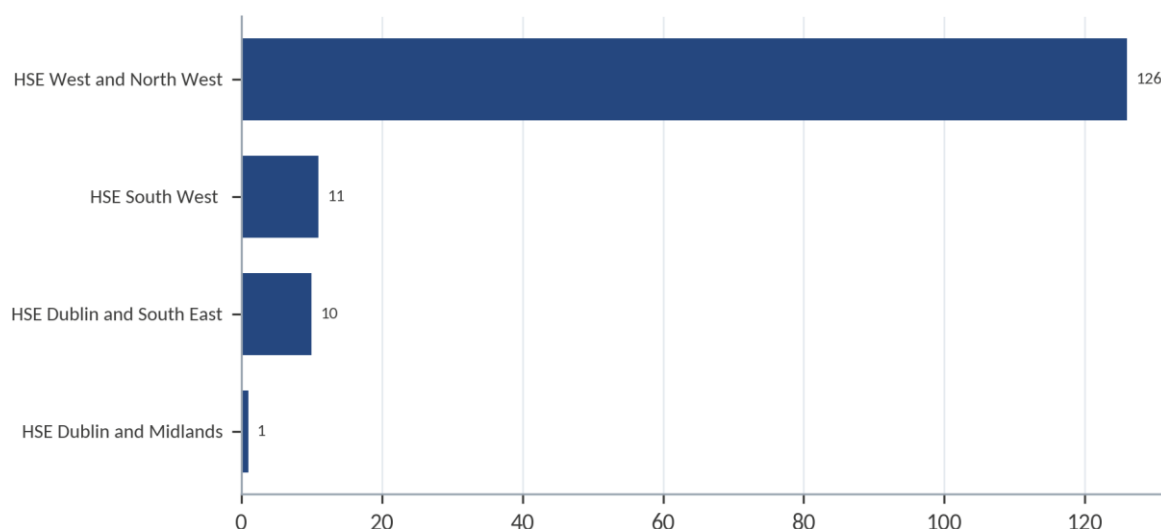
Figure 9.8. Respiratory admissions to paediatric critical care units in the Republic of Ireland, by month, 2023 (n=593).

Source: Adapted from National Office of Clinical Audit (NOCA). Irish Paediatric Critical Care Audit: National Report 2023.¹⁰

Figure 9.9. Respiratory admissions to paediatric critical care units in the Republic of Ireland, by age, 2023 (n=593).

Source: Adapted from National Office of Clinical Audit (NOCA). Irish Paediatric Critical Care Audit: National Report 2023.¹⁰

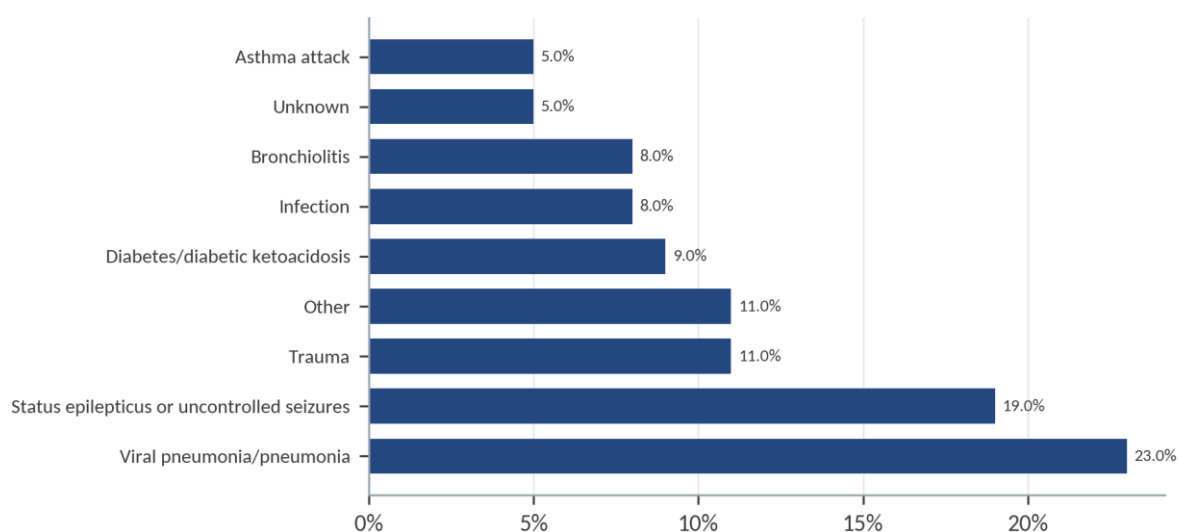
In addition to admissions to specialised PCCUs, there were 148 admissions (<16 years) to critical care in adult ICUs across Ireland in 2023, more than double the number reported in 2022. Most admissions occurred in the HSE West and North West region, with University Hospital Galway recording the highest number of paediatric ICU admissions (n=51) (Figure 9.10).¹⁰

Figure 9.10. Paediatric admissions to adult intensive care units in the Republic of Ireland, by Health Service Executive health region, 2023 (n=148)

Source: Adapted from National Office of Clinical Audit (NOCA). Irish Paediatric Critical Care Audit: National Report 2023.¹⁰

Among these admissions to adult ICUs in 2023, viral pneumonia (non-influenza) (23%; n=34) was the most common primary diagnosis, followed by bronchiolitis (8%; n=12), both commonly associated with respiratory syncytial virus (RSV) (Figure 9.11).¹⁰

Figure 9.11. Paediatric admissions to adult intensive care units in the Republic of Ireland, by Primary Diagnosis, 2023 (n=148)



Source: Adapted from National Office of Clinical Audit (NOCA). Irish Paediatric Critical Care Audit: National Report 2023.¹⁰

International Benchmarking

Between 2021 and 2023, 55,111 children were admitted to paediatric critical care units across the UK and the

Republic of Ireland. The Republic of Ireland accounted for 4,942 admissions (9%), including 1,691 admissions in 2023, representing an increase from 1,634 admissions in 2022 (Table 9.5).¹⁰

Table 9.5. Number of admissions to paediatric critical care units aged under 16 years, by country and year, 2021–2023

Country	2021	2022	2023	2021–2023
ENGLAND	14275	14566	14509	43350
SCOTLAND	1375	1509	1500	4384
NORTHERN IRELAND	443	425	395	1263
WALES	372	397	403	1172
REPUBLIC OF IRELAND	1617	1634	1691	4942
TOTAL	18082	18531	18498	55111

Source: Adapted from National Office of Clinical Audit (NOCA). Irish Paediatric Critical Care Audit: National Report 2023.¹⁰

The number of paediatric critical care bed days delivered in the Republic of Ireland increased by 3% in 2023 compared with 2022, reaching 11,164 bed days. Overall, the Republic of Ireland accounted for 8% of all PCCU bed days delivered across the UK and the Republic of Ireland (Table 9.6).¹⁰

Table 9.6. Number of bed days delivered, by country of admission and year, 2021–2023

Country	2021	2022	2023	2021–2023
ENGLAND	111012	121180	114033	346225
SCOTLAND	10768	10999	10157	31924
NORTHERN IRELAND	3159	3079	2816	9054
WALES	2150	2428	3510	8088
REPUBLIC OF IRELAND	10387	10795	11164	32346
TOTAL	137476	148481	141680	427637

Source: Adapted from National Office of Clinical Audit (NOCA). Irish Paediatric Critical Care Audit: National Report 2023.¹⁰

9.3 Prevention, Diagnosis and Management

Determinants and Risk Factors

Paediatric respiratory health is influenced by a combination of biological, environmental and socioeconomic factors. Younger age and underlying vulnerability may increase susceptibility, while exposure to tobacco smoke, indoor and outdoor air pollution, poor housing conditions and socioeconomic disadvantage can increase the risk and severity of respiratory disease. Seasonal factors also contribute to variations in respiratory morbidity throughout childhood.¹¹

Prevention of paediatric respiratory disease involves reducing exposure to modifiable risk factors and strengthening protection against preventable respiratory infections. Key preventive measures include tobacco control, childhood immunisation and reducing harmful environmental exposures.

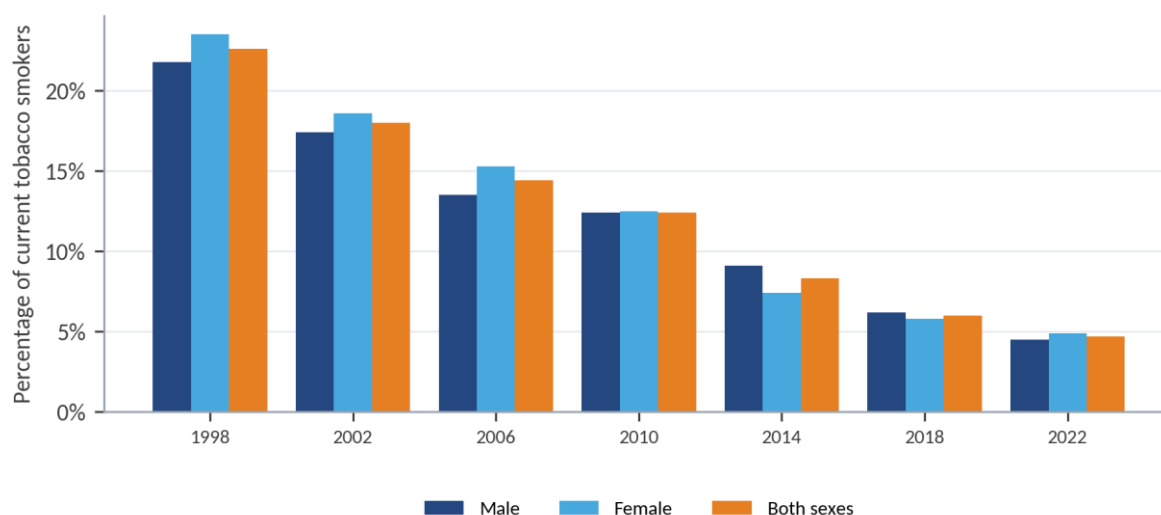
Tobacco and E-cigarettes

In February 2026, the Royal College of Physicians of Ireland (RCPI) Clinical Advisory Group on Smoking and E-Cigarettes launched “Time for a Tobacco Free Future”, calling for further government action to reduce harm related to tobacco in Ireland and achieve a Tobacco-Free Future by 2035, with smoking prevalence below 5%. The recommendations include the introduction of a Tobacco Free Generation, which would progressively restrict the sale of tobacco products based on year of birth. The RCPI identified six priority actions to support this ¹²

Among these actions, the RCPI has called on the Irish Government to legislate for a Tobacco Free Generation. In 2025, the Maldives became the first country in the world to introduce such a law, making it illegal for anyone born on or after 1 January 2007 to purchase, use, or be sold tobacco products.¹²

Current tobacco smoking among adolescents aged 10–17 years declined markedly between 1998 and 2022, falling from 22.5% to 4.7%, with similar trends observed among boys and girls (Figure 9.12).⁹

Figure 9.12. Current tobacco smokers, age-group 10-17 years, 1998–2022



Source: Department of Health. *Health in Ireland: Key Trends – Child and Adolescent Health (2026)*. Data source: *Health Behaviour in School-aged Children (HBSC)*.⁹

Note:

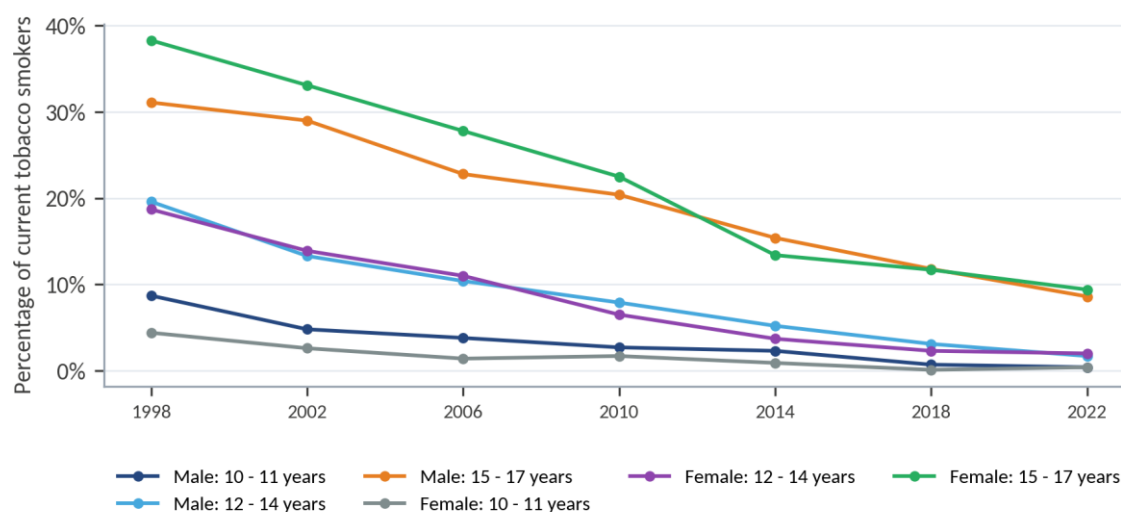
(i) The findings here present the percentage of children who reported smoking tobacco ‘every day’ or ‘at least once a week’.

(ii) The HBSC survey is conducted every four years.

Smoking prevalence declined across all age groups and in both sexes between 1998 and 2022. The highest

prevalence was consistently observed among adolescents aged 15–17 years (Figure 9.13).⁹

Figure 9.13. Current smokers by sex and age-group, 1998–2022



Source: Department of Health. Health in Ireland: Key Trends – Child and Adolescent Health (2026). Data source: Health Behaviour in School-aged Children (HBSC).⁹

Notes:

(i) The findings here present the percentage of children who reported smoking tobacco 'every day' or 'at least once a week'.

(ii) The HBSC survey is conducted every four years.

(iii) For international comparison, HBSC study presents the proportion of young children who reported smoking at least one cigarette in the past 30 days.

More recent data from the Healthy Ireland Survey (2025) provide additional information on daily smoking among young people aged 15–19 years. The proportion reporting daily smoking was 7.7% in 2017, reached a low of 3.2% in 2019, and subsequently increased to

11.2% in 2023. In 2025, 9.3% of young people aged 15–19 years reported smoking daily (Figure 9.14).¹³

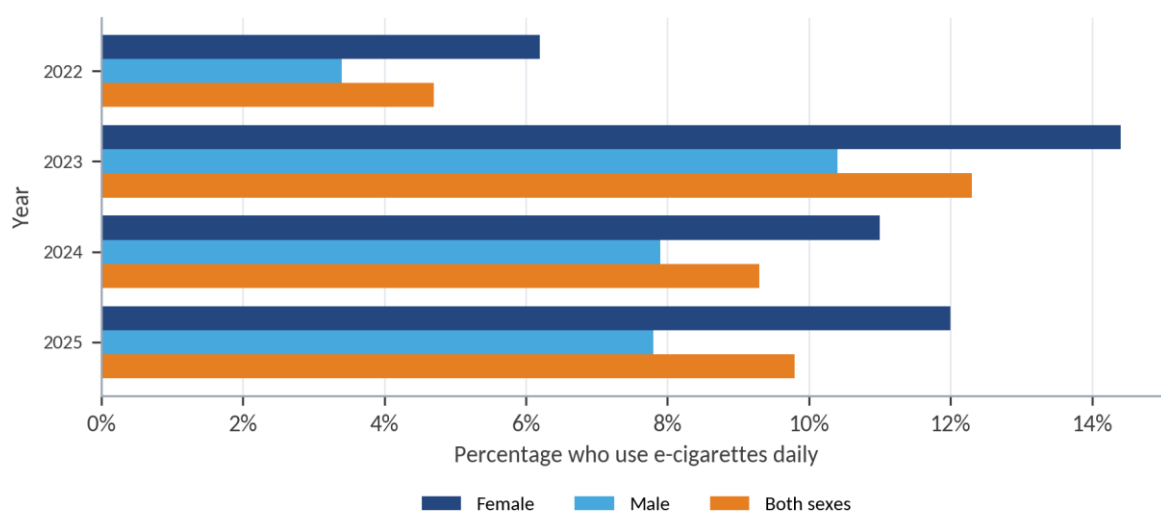
Figure 9.14. Persons who reported as daily smokers in Ireland aged 15-19



Source: Department of Health, Healthy Ireland Survey 2025; accessed via the CSO Children and Young Persons Hub.¹³

E-cigarette use is relatively common among adolescents in Ireland. In 2025, 9.8% of young people aged 15–19 years reported daily e-cigarette use. This proportion increased substantially from 4.7% in 2022 to 12.3% in 2023, before declining to 9.3% in 2024 and remaining at

a similar level in 2025. Daily e-cigarette use was higher among females than males across all years, with 12.0% of females aged 15–19 years reporting daily use in 2025, compared with 7.8% of males (Figure 9.15).¹³

Figure 9.15. Percentage of young people aged 15-19 years who use e-cigarettes daily

Source: Department of Health, Healthy Ireland Survey 2025; accessed via the CSO Children and Young Persons Hub.¹³

Children and young people are particularly vulnerable to the harmful effects of vaping (e-cigarette use). Vaping among this age group has increased significantly in recent years and has become a serious public health concern. Ireland's vaping prevention approach increasingly centres on reducing uptake through legislation, public health messaging and educational support.

Longitudinal data from the Growing Up in Ireland Cohort '98 show how smoking and e-cigarette use develop as adolescents move into adulthood. Ever smoking rose from 7.4% at age 13 to 79.3% at age 25, while current smoking increased from 1.5% at age 13 to 37.4% at age 20 before declining to 25.0% at age 25. Ever e-cigarette use increased from 31.2% at age 17/18 to 71.4% at age 25, with 38.4% currently using e-cigarettes at age 25. Use of one product was common even among young people who had not used the other: 73.6% of those who had never used e-cigarettes at age 17/18 had smoked by age 25, and 61.2% of those who had never smoked at 17/18 had used e-cigarettes by age 25. Current smoking at age 25 was lowest, at 19.1%, among those who had not used e-cigarettes at 17/18. The authors concluded that prevention efforts should not be aimed at a single product. These are unweighted estimates reported in a conference abstract.¹⁴

The HSE Emerging Drug Trends Laboratory has identified high-risk synthetic cannabinoids in vapes, vape juice, and edibles being sold through both shops and the black market across Ireland. Analysis of 76 products in 2026 found that 8 contained potent synthetic cannabinoids, while 28 contained HHC or

related semi-synthetic compounds, with many products mislabelled as CBD. Health officials have raised serious concerns about the impact on young people, linking these substances to cases of psychosis, severe intoxication, and long-term mental health risks.¹⁵

As of June 2026, the Public Health (Tobacco Products and Nicotine Inhaling Products) (Amendment) Bill 2026 is currently before Seanad Éireann. The Bill proposes additional restrictions of vaping and related nicotine products. In plain terms, the Bill would standardise how vapes and refill containers look and are packaged, ban the sale of nicotine consumption products to children, and place stricter limits on how these products can be displayed, advertised, and promoted in shops. It would also give the Minister for Health the power to regulate flavour names, which is aimed at reducing the appeal of products that may be marketed in a way that attracts young people. Finally, the bill would strengthen enforcement and create related offences by updating existing public health tobacco laws.

In October 2025, the Health Service Executive Tobacco Free Ireland Programme launched their Youth Vaping and Nicotine Prevention Campaign. This campaign created tailored messages for young people and complemented the existing vaping campaign for parents and influential adults 'Take a Deep Breath' which aims to arm parents and influential adults with the facts about vaping, to help facilitate meaningful discussions.

Government and society must work together in a proactive way to protect young people from the harms associated with vaping and other nicotine products.

Vaccination

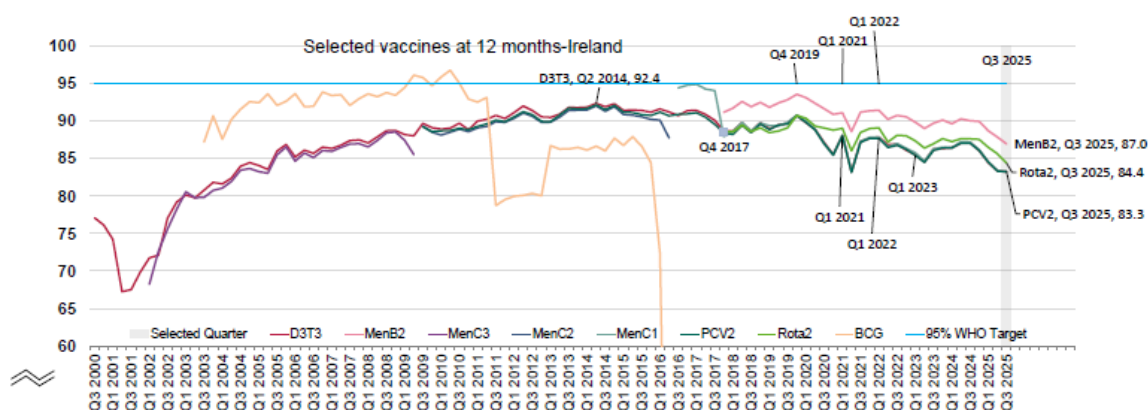
Childhood immunisation is one of the most effective public health interventions for preventing severe respiratory infections and reducing associated hospitalisations. The Irish childhood immunisation programme includes vaccines against pertussis, pneumococcal disease, *Haemophilus influenzae* type b (Hib), measles and other vaccine-preventable infections associated with significant respiratory morbidity.¹⁶

The Ireland Immunisation Uptake Report (Q3 2025) reported a continued decline in routine childhood immunisation, with coverage remaining below the World Health Organization (WHO) target of 95% for all routinely reported childhood vaccines (Figure 9.16, Figure 9.17). Of particular concern, uptake of the third dose of the diphtheria, tetanus and pertussis vaccine

(DT3/P3) at 24 months declined to 89.7%, falling below 90% for the first time since 2004/2005. Coverage for the pneumococcal conjugate vaccine (PCV3), which protects against invasive pneumococcal disease and bacterial pneumonia, was 80.9%, the lowest among all vaccines at 24 months, while first-dose measles, mumps and rubella (MMR1) uptake declined to 86.3% and has remained below 90% for 15 consecutive quarters.¹⁷ Together, these findings indicate declining protection against several major vaccine-preventable respiratory diseases and reinforce the importance of maintaining high childhood immunisation uptake.

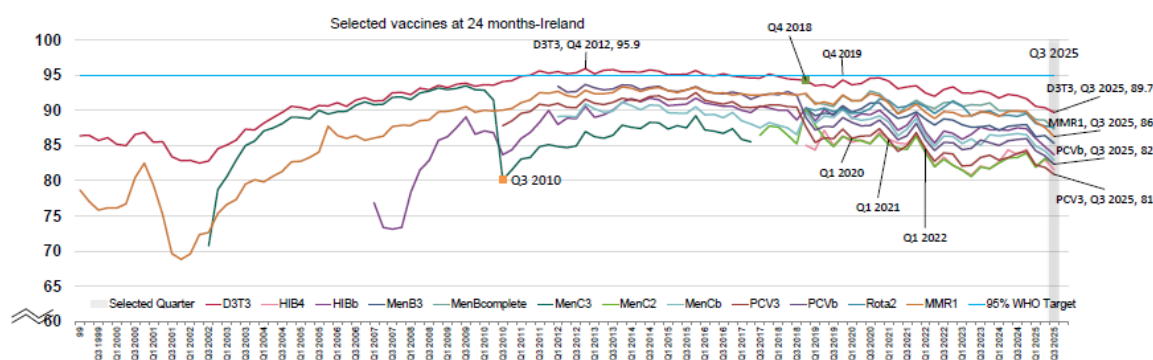
In OECD comparisons, 92% of eligible children in Ireland had received three doses of the diphtheria, tetanus and pertussis vaccine, lower than the OECD average of 93%.¹⁸

Figure 9.16. Uptake rates (%) of selected vaccines at 12 months in Ireland, Q3 2000–Q3 2025



Source: Health Protection Surveillance Centre (HPSC). Ireland Immunisation Uptake Report Q3 2025.¹⁷

Figure 9.17. Uptake rates (%) of selected vaccines at 24 months in Ireland, Q1 1999–Q3 2025.



Source: Health Protection Surveillance Centre (HPSC). Ireland Immunisation Uptake Report Q3 2025.¹⁷

Similarly, the Ireland Childhood Vaccine Uptake Report (2023/2024) showed that vaccine uptake among junior infants (4–5 years) also remained below the WHO target of 95%. National uptake was 89.9% for the 4-in-1 (DTaP-IPV) vaccine and 89.5% for the measles, mumps and rubella (MMR) vaccine. This demonstrates that suboptimal vaccine uptake extends beyond infancy and

leaves children vulnerable to vaccine-preventable diseases, including diphtheria, tetanus, pertussis, polio, measles, mumps and rubella, with pertussis and measles being particularly relevant to paediatric respiratory health.¹⁹

BCG and Tuberculosis

Bacillus Calmette-Guérin (BCG) remains the only licensed vaccine against tuberculosis. It offers most protection against the severe forms of disease seen in early childhood: meta-analyses indicate that BCG is 70 to 80% effective against severe paediatric TB such as TB meningitis, with lower effectiveness against pulmonary disease. In low-incidence settings such as Ireland, BCG has been associated with a 37% reduction in TB infection and a 66% reduction in active disease.²⁰

BCG vaccination was introduced in Ireland in the 1950s and delivered universally to newborn infants. The programme became opt-in in 2013 and ceased entirely in April 2015, when a global manufacturing shortage left no vaccine available for procurement; supply did not resume until 2019. In 2022 the National Immunisation Advisory Committee (NIAC) recommended a move from universal to selective vaccination, and these recommendations were updated in 2026.²⁰ A selective programme is now in operation, with eligible infants referred to HSE regional vaccination teams.²¹

BCG is recommended for infants aged under 12 months born into households with contacts from countries where the annual TB incidence is 40 or more cases per 100,000; for infants born to parents or other regular close contacts with untreated sputum smear-positive pulmonary or laryngeal TB; and for infants in any locally identified high-risk group. It is also recommended for unvaccinated children aged one to five years born in a high-incidence country or living with a person who was, and for unvaccinated children aged under five years moving or travelling to a high-incidence country and planning to stay among the local population. A single intradermal dose is given and booster doses are not recommended. Because BCG is a live vaccine, vaccination is deferred until the result of newborn screening for severe combined immunodeficiency is available.²⁰

The practical consequence of the 2015 cessation is that children born in Ireland over the past decade are largely unvaccinated against tuberculosis. An Irish analysis of notifications in children aged 0–6 years between 2011 and 2021 found no significant change in the overall age-specific incidence rate following cessation, but concluded that a selective programme would have been expected to prevent cases arising in identifiable risk groups, and that timely surveillance of paediatric TB is needed to detect emerging trends in a now largely unvaccinated population.²² The age-specific incidence rate of TB in children aged 0–14 years rose from 0.8 per 100,000 in 2023 to 1.3 per 100,000 in 2024, with an

increase in cases among infants aged under one year and two cases of TB meningitis reported in that age group.²⁰ Sustained delivery of the selective programme, together with monitoring of its reach, will be needed to ensure that a selective policy does not operate in practice as no vaccination.²²

RSV Immunisation

During the 2024/2025 RSV season, Ireland implemented a pilot RSV immunisation programme using nirsevimab, a long-acting monoclonal antibody, for eligible infants. Uptake reached 83%, with 22,444 infants immunised. Among infants born during the programme period, RSV hospitalisations decreased by 78% and ICU admissions by 71% compared with the 2023/2024 season.

The programme was estimated to have averted 1,055 laboratory-confirmed RSV cases, including 437 hospitalisations and 76 ICU admissions.²³ A separate national study also reported a 74% reduction in critical care transport of infants with bronchiolitis following implementation of the programme.²⁴ Together, these findings provide early real-world evidence that preventive immunisation can reduce not only RSV-related illness but also demand on specialist paediatric critical care and retrieval services.

In April 2026, HIQA published their Health Technology Assessment (HTA) of immunisation against RSV in Ireland. For the infant population, HIQA looked at immunising just those born during the RSV season or all babies during their first RSV season and found that all approaches would result in significant reductions in medically attended cases and RSV-related hospitalisations in infants. The HIQA report advised that RSV immunisation has the potential to be cost-effective, particularly in infants, if the HSE can secure substantial price reductions.²⁵ The Department of Health has agreed to implement the National RSV Infant Immunisation Pathfinder Programme for 2026/27 which will offer RSV immunisation to babies born in-season and infants aged 6 months old or younger at the start of the RSV season. The Department of Health is continuing to consider the overall findings of HIQA's Health Technology Assessment, which covers both infants and adults and will inform the development of a potential longer-term RSV immunisation strategy.

Environmental Exposure

The World Health Organisation identifies air pollution as a major environmental health risk and an important cause of childhood respiratory disease. Globally, 93% of all children live in environments with air pollution levels above the WHO guidelines.²⁶ The Environmental

Protection Agency (EPA) in Ireland specifically identifies children and adolescents as a vulnerable population, linking air pollution exposure with outcomes including asthma, reduced lung function and respiratory infections.²⁷

Major pollutants of concern include fine particle matter, nitrogen dioxide, ozone, traffic related pollution, tobacco smoke and household combustion pollutants. Exposure to fine particles in both the ambient environment and in the household causes about seven million premature deaths each year.²⁶ Despite its potential health implications, household air pollution has received comparatively limited attention in Ireland, where the focus has largely been on outdoor air quality.

International Evidence Case Study – USA: A major long-term study from Southern California provides strong evidence that improvements in air quality can positively influence children’s respiratory development. The study, “Association of Improved Air Quality with Lung Development in Children,” by Gauderman et al., was published in the *New England Journal of Medicine* in 2015. Researchers examined 2,120 children from three separate cohorts, measuring their lung function annually between the ages of 11 and 15 years. The cohorts were followed during 1994–1998, 1997–2001, and 2007–2011, allowing researchers to compare lung development as regional air pollution levels declined over time. The findings showed that reductions in nitrogen dioxide (NO₂), fine particulate matter (PM_{2.5}), and PM₁₀ were associated with significantly greater growth in lung function, measured using forced expiratory volume in one second (FEV₁) and forced vital capacity (FVC). Importantly, the proportion of children with clinically low FEV₁ at age 15 decreased from 7.9% in the earliest cohort to 6.3% in the second and 3.6% in the most recent cohort. Improvements were observed in both boys and girls and among children both with and without asthma. **These findings suggest that sustained improvements in ambient air quality during childhood can produce clinically meaningful benefits for lung development.**²⁸

Another relevant study, “Global, national, and urban burdens of paediatric asthma incidence attributable to ambient NO₂ pollution: estimates from global datasets,” by Achakulwisut et al., was published in *The Lancet Planetary Health* in 2019. Unlike the Southern California

study, this was not a longitudinal study in which a group of children was followed over a number of years. Instead, the researchers conducted a global modelling analysis involving children aged 1–18 years across 194 countries and 125 major cities.²⁹

The researchers estimated that approximately 4 million new cases of childhood asthma each year—about 13% of global childhood asthma incidence—could be attributable to exposure to ambient NO₂ pollution, with an uncertainty interval of 1.8–5.2 million cases. Approximately 64% of the estimated NO₂-attributable cases occurred in urban centres, highlighting the potential importance of traffic-related pollution in densely populated areas. The study also found substantial variation between cities: among the 125 cities examined, the estimated proportion of new childhood asthma cases attributable to NO₂ ranged from approximately 6% to 48%, and exceeded 20% in 92 cities.²⁹

UK Case Study - Our near neighbours in the UK recently published a landmark study of more than 3400 children over 5 years that found that air quality improvements following the introduction of London’s Ultra Low Emission Zone (ULEZ) are strongly associated with accelerated lung growth in children. Clean air zones have been implemented in the UK, Europe, and globally. This is the first evidence that they may benefit child development and endorses their place as an important public health policy. Consideration should be given to implementing ambitious clean air zones more widely to protect and promote children’s lifelong health.³⁰

Ireland’s approach to protecting children from air pollution is largely embedded within broader national environmental and public-health policies rather than through a dedicated child-specific framework.

A key example is Ireland’s Clean Air Strategy,³¹ published in 2023, which set the national policy direction for improving air quality and included a commitment to progressively align with the World Health Organization’s health-based air quality guidelines. The Department of Climate, Energy and the Environment conducted a public consultation on updating this strategy which completed in February 2026 with outcome pending. The Environmental Protection Agency’s (EPA) national air-quality monitoring programme (airquality.ie) and Air Quality Index for Health (AQIH), provides real-time information

and specific health advice for vulnerable groups, including children with respiratory conditions.³¹ The EPA published their annual Air Quality in Ireland 2024 report³² most recently in September 2025 which confirmed that around 1700 premature deaths occur in Ireland each year because of poor air quality. EPA monitoring data published in 2025 showed that, while Ireland continues to comply with current EU legal limits, it does not yet meet the stricter WHO guideline levels.

The EU published a revised Ambient Air Quality Directive in 2024,³³ which will be transposed into Irish law by December 2026. Once implemented, this legislation will introduce stricter air-quality standards and place greater emphasis on reducing exposure to pollution.

While important progress is being made, it also highlights the continuing need for measures that specifically address children's exposure and susceptibility to air pollution.

Access to Care

The 2016 National Model of Care for Paediatric Healthcare Services provides the strategic framework for the organisation of paediatric care in Ireland, advocating an integrated network across primary, secondary and tertiary care, with care delivered as close to the child's home as clinically appropriate. The Model supports a hub-and-spoke approach, with local and regional paediatric services linked to tertiary subspecialist services through referral, outreach and shared care.³⁴

Specialist paediatric respiratory services are provided by Children's Health Ireland (CHI) across Crumlin, Temple Street and Tallaght, offering multidisciplinary inpatient and outpatient care for conditions including asthma, cystic fibrosis, congenital lung abnormalities and primary ciliary dyskinesia.³⁵ For critically ill children, including those with severe respiratory illness, access to specialist critical care is coordinated through the National Paediatric Critical Care Network. Specialist retrieval services, including the Irish Paediatric Acute Transport Service (IPATS) and the National Neonatal Transport Programme (NNTP), support the stabilisation and transfer of critically ill infants and children to appropriate tertiary critical care services.³⁶

The new National Children's Hospital main campus in Dublin is due to open in 2027.

Diagnosis

Within the paediatric Model of Care, access to appropriate diagnostic services begins at primary care

level, where the majority of children are seen. The Model emphasises closer links between GPs and local or regional hospitals, GP access to diagnostics and clinical algorithms for common conditions. Children requiring care that cannot be provided locally should be referred or transferred to larger or tertiary centres. Regional paediatric units are intended to provide respiratory expertise supported by appropriate pathology and radiology services, with more complex respiratory conditions managed through specialist multidisciplinary services.³⁴

Diagnostic requirements vary according to the presenting condition and may include clinical assessment, laboratory and microbiological testing, imaging, pulmonary function testing and sleep assessment. The National Model of Care specifically identifies paediatric pulmonary function laboratory capacity, incorporating basic sleep laboratory services, as a requirement for regional centres, alongside multidisciplinary expertise for children with complex respiratory conditions including cystic fibrosis, primary ciliary dyskinesia, neuromuscular disease and sleep-disordered breathing.³⁴

In the acute hospital setting, recognition of respiratory deterioration is supported by the Irish Paediatric Early Warning System (PEWS), which provides a standardised framework for clinical observation and escalation of care. Respiratory rate, respiratory effort and oxygen therapy are included among its six core parameters, supporting early identification of children whose clinical condition is deteriorating. Clinical judgement remains essential and may prompt escalation regardless of the calculated PEWS score.³⁷

Children presenting with severe respiratory compromise may require further assessment and monitoring within high-dependency or critical care services. The national Model of Care for Paediatric Critical Care identifies respiratory support requirements as an important determinant of level of care: children requiring acute non-invasive ventilation or greater support may meet criteria for Level 2 critical care, while regional high-dependency care may manage selected children requiring enhanced respiratory monitoring or support. The model also identifies severe asthma requiring continuous nebulised therapy and/or intravenous bronchodilators, respiratory distress requiring high-flow oxygen, and respiratory distress requiring non-invasive ventilation among conditions that may require regional high-dependency care.³⁶

Treatment and Management

Management of paediatric respiratory disease in Ireland spans primary, secondary and tertiary care, with services intended to be provided as close to the child's home as clinically appropriate and at the appropriate level within the healthcare network. The National Model of Care supports the provision of ambulatory care, where clinically appropriate, in preference to inpatient care. For children with chronic conditions, the model emphasises coordinated multidisciplinary care, including planned follow-up, monitoring of disease markers, preventive care, and support for children and their families in disease self-management.³⁴

For children with complex respiratory conditions, including CF, PCD, neuromuscular disease and sleep-disordered breathing, the National Model of Care identified the need for strengthened multidisciplinary staffing in regional and tertiary services. It also recommended a standardised pathway for children requiring long-term mechanical ventilation to support discharge to the community and continued review of care requirements.³⁴

Prevention has also become an increasingly important component of the management of respiratory disease in infancy as recently demonstrated in the pilot national RSV immunisation programme for the 2024/25 RSV season. This pilot provided early real-world evidence that preventive immunisation can reduce not only RSV-related illness but also demand on specialist paediatric critical care and retrieval services.

Cystic fibrosis is addressed in detail in the dedicated Cystic Fibrosis chapter. Of relevance to paediatric respiratory health, the ENHANCE (Establishing Natural History in an Advanced New CF Care Era) study is a five-year longitudinal real-world study involving children across 13 CF centres in Ireland and the UK. Beginning in 2023, it includes children recruited following diagnosis through newborn screening, children with established CF aged under six years, and a control group. The study aims to characterise the evolving natural history and clinical outcomes of childhood CF in the context of major advances in CF care and treatment and is coordinated through Children's Health Ireland/RCSI in Dublin and collaborating centres in the UK.³⁸

Children with severe respiratory disease may require escalation to high-dependency or paediatric critical care. Regional high-dependency services can provide enhanced monitoring and respiratory support, including high-flow oxygen and non-invasive ventilation, while children requiring advanced respiratory support are managed in specialist paediatric critical care. The Model

of Care emphasises multidisciplinary input, including physiotherapy, to support respiratory management and rehabilitation.³⁶

9.4 Conclusions

Respiratory illness remains the single largest cause of acute hospital activity among children in Ireland. In 2024, respiratory diseases accounted for 23.7% of all inpatient hospitalisations and 16.2% of all inpatient bed-days among children aged 0–14 years. Respiratory diagnoses were also the most common reason for admission to paediatric critical care, representing 34% of admissions across the two Children's Health Ireland units, 92% of which were unplanned, and more than half of these admissions occurred in infants aged under one year. Mortality from respiratory causes in childhood remains low and is largely confined to the perinatal period and to congenital malformations of the lung.

Two trends set out in this chapter warrant particular attention. The first is the sustained decline in childhood immunisation uptake. Coverage is now below the World Health Organization target of 95% for every routinely reported childhood vaccine; uptake of the third dose of the diphtheria, tetanus and pertussis vaccine at 24 months has fallen below 90% for the first time since 2004/2005; pneumococcal conjugate vaccine coverage stands at 80.9%; and first-dose measles, mumps and rubella uptake has remained below 90% for fifteen consecutive quarters. Uptake among junior infants is also below target. Against this background, paediatric tuberculosis notifications have risen in each of the past three years to their highest level since 2016, including a case of congenital tuberculosis in 2025.

The second is the strength of the evidence that prevention works. The pilot nirsevimab programme for the 2024/2025 season achieved 83% uptake and was followed by a 78% reduction in RSV hospitalisations and a 71% reduction in intensive care admissions among infants born during the programme period, alongside a 74% reduction in critical care transport for bronchiolitis. A comparable case can be made for environmental exposure, where international evidence links improvements in air quality to measurable gains in children's lung growth, while Ireland continues to meet European Union limit values without meeting World Health Organization guideline levels.

Constraints in capacity and in data are also evident. In 2023 there were 148 admissions of children aged under 16 years to adult intensive care units, more than double the number recorded in 2022, and national data

quantifying paediatric respiratory activity in primary care are not available.

The following actions are to be considered to improve respiratory paediatric health:

- Restore and sustain childhood immunisation uptake to the World Health Organization target of 95% across all routinely reported vaccines and at all scheduled points.
- Place RSV immunisation on a permanent and fully funded footing beyond the 2026/2027 Pathfinder programme, informed by the Health Information and Quality Authority's health technology assessment and by continued monitoring of hospitalisation, critical care and retrieval outcomes.
- Ensure that paediatric critical care capacity keeps pace with demand, so that children requiring critical care are managed in specialist paediatric units, and report admissions of children to adult intensive care units as an indicator of unmet capacity.
- Enact the Public Health (Tobacco Products and Nicotine Inhaling Products) (Amendment) Bill 2026 and legislate for a Tobacco Free Generation, with continued investment in vaping prevention aimed at children, young people and the adults who influence them.
- Align national air quality standards with World Health Organization guideline values, transpose the revised Ambient Air Quality Directive within the required timeframe, and extend policy attention to household as well as ambient air quality, recognising children explicitly as a susceptible group.
- Develop national data on paediatric respiratory activity in primary care and outpatient settings to complement inpatient data, and report hospital activity consistently as episodes of care rather than as individual children.

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Prevention

10

Key Points

- Much respiratory disease is preventable. Tobacco and nicotine use, vaccination, outdoor and indoor air quality, occupational hazards and housing conditions all shape the risk of respiratory disease, and effective prevention requires coordinated action across government, healthcare and other sectors.
- In 2025, 17% of adults in Ireland were current smokers, a level broadly unchanged since 2019. Ireland did not achieve the Tobacco Free Ireland target of reducing smoking prevalence to below 5% by 2025.
- E-cigarette use is concentrated among young people. In 2025, 11% of people aged 15–24 used e-cigarettes daily and a further 7% occasionally, and 17% of all current e-cigarette users had never smoked.
- The 2024/2025 infant RSV immunisation pilot achieved 83% uptake. Among infants born during the programme period, RSV hospitalisations were 78% lower and intensive-care admissions 71% lower than in the preceding season.
- Poor air quality contributes to an estimated 1,700 premature deaths in Ireland each year. Ireland met EU legal limits in 2024 but did not meet the more protective WHO guideline levels for several pollutants and faces difficulty meeting the stricter EU standards that apply from 2030. Conditions linked to PM_{2.5} alone account for an estimated €15.6 million a year in emergency inpatient care.
- Work-related asthma accounts for approximately 10% of adult-onset asthma. Radon is the second leading cause of lung cancer after smoking, yet public awareness of radon fell from 82% in 2020 to 71% in 2025.
- Ireland spends 2.6% of current health expenditure on prevention, compared with an OECD average of 3.4%.
- Respiratory risks and access to prevention follow a social gradient. Universal measures may fail to reduce inequalities unless they are combined with proportionately greater support for the groups at greatest risk. At least 14% of households reported experiencing energy poverty in 2024, with low-income households, tenants and people in poor health most at risk.

10.1 Background

Respiratory health is shaped long before a person reaches a respiratory clinic. Tobacco and nicotine use, vaccination, outdoor and indoor air quality, occupational hazards, housing conditions and access to preventive services all influence the risk of developing respiratory disease and access to timely preventive care.¹ Effective prevention therefore requires coordinated action across government, healthcare and other sectors, in partnership with communities, rather than relying on individual behaviour alone.²

Ireland has introduced major population-level preventive measures, including smoke-free workplace legislation, standardised tobacco packaging, childhood immunisation programmes and national air-quality monitoring.^{3–5} However, preventable exposure remains substantial. In 2025, 17% of adults were current smokers, a level that has remained broadly unchanged since 2019.⁶ Childhood vaccine coverage remained below the World Health Organization (WHO) target of 95% for several routine vaccines, and the Environmental Protection Agency (EPA) estimates that poor air quality contributes to around 1,700 premature deaths in Ireland each year.^{4,5} These risks are not distributed equally: people experiencing socioeconomic disadvantage, insecure housing, occupational exposure or barriers to healthcare often carry a disproportionate burden.^{2,6} Ireland spends 2.6% of current health expenditure on prevention, compared with an OECD average of 3.4%.⁷

A comprehensive prevention strategy should combine universal measures that protect the whole population with targeted support for groups at increased risk. It should also link primary prevention with early identification and timely intervention where risk or disease is already present.

Tobacco Control and Tobacco Endgame

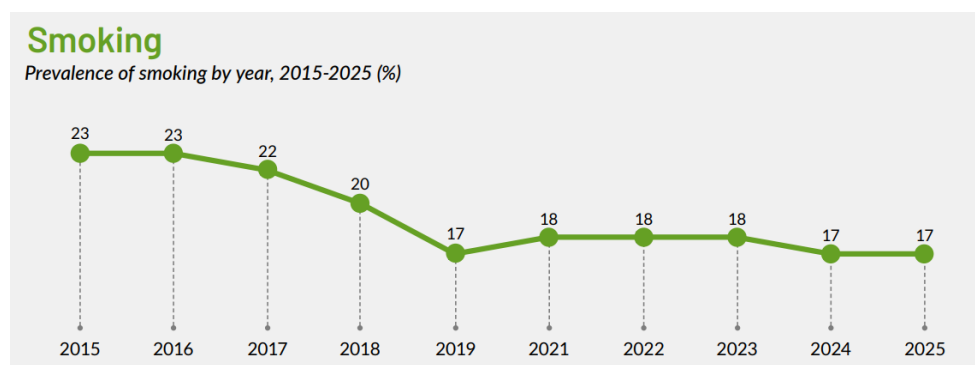
Tobacco use remains a leading preventable cause of respiratory disease and death. It contributes to lung cancer, chronic obstructive pulmonary disease (COPD), respiratory infections and poorer outcomes across many other respiratory conditions.⁸ Exposure to second-hand smoke also damages respiratory health, particularly in pregnancy, infancy and childhood.^{8,9}

Ireland has implemented a progressive and comprehensive package of tobacco-control policies. Smoke-free workplace provisions introduced under the Public Health (Tobacco) Act 2002 came into effect in 2004.³ These were followed by sustained increases in

tobacco taxation, restrictions on advertising and sponsorship, graphic health warnings and standardised packaging under the Public Health (Standardised Packaging of Tobacco) Act 2015.^{3,10} In 2013, the Government adopted Tobacco Free Ireland as its national tobacco-control policy framework, setting out more than 60 recommendations and establishing the goal of reducing smoking prevalence to below 5% by 2025.^{10,11}

Its implementation was subsequently supported by the *Tobacco Free Ireland Action Plan*, published in 2015.¹⁰ Over this period, smoking prevalence declined substantially and stood at 17% in 2025.⁶ Modelling of Irish tobacco-control policies implemented between 1998 and 2016 estimated that they prevented 969 smoking-attributable deaths by 2016, with taxation and smoke-free workplace legislation making particularly important contributions.³

Figure 10.1. Adult smoking prevalence in Ireland compared with the Tobacco Free Ireland target, 2015–2025.



Source: Department of Health, Healthy Ireland Survey 2025⁶.

Despite this progress, Ireland did not achieve the *Tobacco Free Ireland* target of reducing smoking prevalence to below 5% by 2025.⁶ The absence of further decline since 2019 suggests that existing measures, while effective, are insufficient to achieve a tobacco endgame. In its 2026 report, *Time for a Tobacco Free Future*, the Royal College of Physicians of Ireland called for a renewed target of reducing smoking prevalence below 5% by 2035. Its recommendations include introducing a tobacco-free generation, strengthening regulation of tobacco and nicotine products, maintaining price increases and improving access to smoking-cessation support.¹²

In OECD comparisons, daily smoking prevalence among people aged 15 years and over in Ireland, at 14.0%, was similar to the OECD average of 14.8%. This measures daily smoking only and is therefore lower than the Healthy Ireland estimate of current smoking.⁷

Vaping and Emerging Nicotine Products

The nicotine-product market has changed rapidly and now includes e-cigarettes, disposable vapes, nicotine pouches and other novel products. Their appeal can be increased through flavours, colourful packaging, product design and promotion through social media and influencers.¹³ These products create a distinct prevention challenge: they may be used by some adults

as an alternative to smoking, but they also expose children and nicotine-naïve young people to addiction and may normalise nicotine use.^{13,14}

Irish survey data show that e-cigarette use is concentrated among younger age groups. In 2025, 5% of the population used e-cigarettes daily and a further 3% used them occasionally. Among people aged 15–24, 11% reported daily use and 7% occasional use. Half of all current e-cigarette users were former smokers, 33% were current smokers and 17% had never smoked (Figure 10.2)⁶. The particularly high prevalence among younger people, including those who have never smoked, reinforces the need for measures that prevent youth initiation while preserving access to evidence-based smoking-cessation support.¹²

Smoking and e-cigarette use both rise steeply as young people move into adulthood. In the Growing Up in Ireland Cohort '98, ever smoking rose from 7.4% at age 13 to 79.3% at age 25, and ever e-cigarette use from 31.2% at age 17/18 to 71.4% at age 25. Among those who had never used e-cigarettes at 17/18, 73.6% had smoked by age 25, while 61.2% of those who had never smoked at 17/18 had used e-cigarettes by age 25. These findings, reported in a conference abstract, indicate that prevention efforts for young people should address tobacco and nicotine products together rather than a single product.¹⁵

Figure 10.2. Distribution of current e-cigarette users by smoking status, Ireland, 2023–2025.

	Smoker	Occasional smoker	Ex-smoker	Never smoked
2023	24	14	49	13
	-4	+1	-2	+5
2024	20	15	47	18
	-2	-	+3	-1
2025	18	15	50	17
% Change from 2023	-6	+1	+1	+4

Source: Department of Health, Healthy Ireland Survey 2025⁶.

The *Public Health (Tobacco Products and Nicotine Inhaling Products) Act 2023* prohibited the sale of tobacco products and nicotine-inhaling products to people under 18 and introduced additional retail licensing, enforcement and sales controls¹⁶. The *Public Health (Tobacco Products and Nicotine Inhaling Products) (Amendment) Bill 2026* would further regulate the packaging and appearance of vaping products, restrict their display and promotion in retail and online settings, enable regulation of flavour names and prohibit the sale of nicotine-consumption products, including nicotine pouches, to children¹⁷. These proposed measures are not yet in force and remain subject to completion of the legislative process and commencement of the relevant provisions.

Currently 8% of the population currently use e-cigarettes either daily (5%) or occasionally (3%), with a further 15% saying they have tried them in the past but no longer use them. 1% of the population currently use nicotine pouches either daily (1%) or occasionally (<1%), with 6% saying they have tried them in the past but no longer use them.

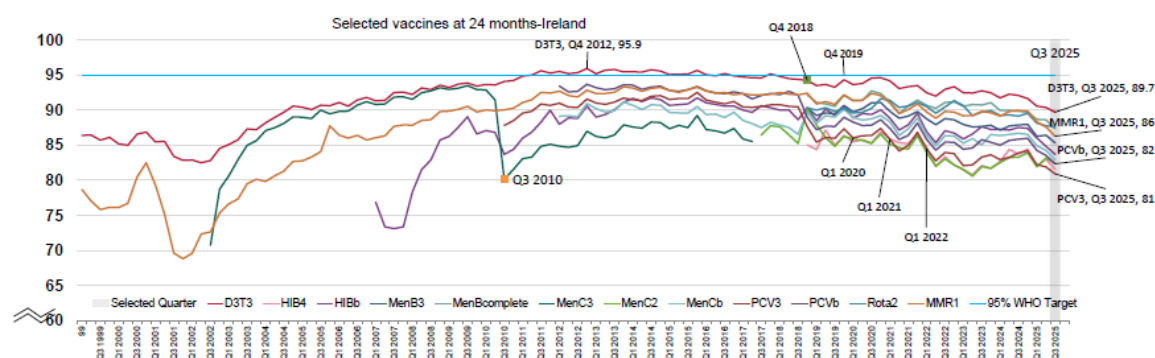
A balanced prevention approach should maintain a clear distinction between smoking cessation in adults and prevention of nicotine initiation among children and young people. Health messaging should not imply that vaping is harmless, but should also avoid suggesting that combustible tobacco and vaping carry identical risks. Regulation should be supported by retailer compliance checks, robust online age verification, surveillance of product use and poisonings, and independent evaluation of unintended effects such as dual use or movement to illicit products.^{14,17}

Schools, parents and youth services need consistent, age-appropriate information addressing nicotine dependence, peer influence, advertising and misinformation. In March 2026, the HSE launched its Youth Vaping and Nicotine Prevention Campaign, providing tailored messages for young people and complementing the existing parent-focused *Take a Deep Breath* campaign.¹⁸ These initiatives provide a useful foundation, but vaping and nicotine prevention should also be embedded within wider, sustained health and wellbeing education rather than being limited to isolated awareness activities.

Vaccination

Vaccination is one of the most effective measures for preventing respiratory infection.¹⁹ Respiratory protection across the life course includes routine childhood vaccines against pertussis, pneumococcal disease, *Haemophilus influenzae* type b and measles, as well as seasonal influenza and COVID-19 vaccination for eligible groups.²⁰ Targeted vaccination is particularly important for people with chronic respiratory disease, older people, healthcare workers, pregnant women and others at increased risk, in accordance with current national recommendations.²¹

Recent Irish data show a concerning decline in childhood coverage. In the third quarter of 2025, uptake at 24 months was 89.7% for the third dose of diphtheria, tetanus and pertussis vaccine, 80.9% for the third pneumococcal conjugate vaccine dose and 86.3% for the first measles, mumps and rubella dose. Each remained below the WHO target of 95%, leaving preventable gaps in population protection (Figure 10.3).⁴

Figure 10.3. Uptake rates (%) of selected vaccines at 24 months in Ireland, Q1 1999–Q3 2025.

Source: Health Protection Surveillance Centre (HPSC). Ireland Immunisation Uptake Report Q3 2025.⁴

The infant respiratory syncytial virus (RSV) immunisation programme demonstrates the potential impact of targeted prevention. During the 2024/2025 pilot, uptake reached 83%, with 22,444 infants immunised. Among infants born during the programme period, RSV hospitalisations were 78% lower and intensive-care admissions 71% lower than in the preceding season. The programme was estimated to have averted 437 hospitalisations and 76 intensive-care admissions.²² For the 2026/2027 season, the programme has been expanded to include babies born during the RSV season and infants aged six months or younger at its beginning, alongside a specialist pathway for infants at particularly high risk. The programme continues to operate on a pathfinder basis while longer-term national policy is considered in light of health technology assessment, programme evaluation, effectiveness and cost-effectiveness evidence.^{23,24}

Older adults are also at increased risk of severe RSV disease, but there is no publicly funded RSV vaccination programme for adults in Ireland. In 2023, NIAC recommended RSV vaccination for all adults aged 65 years and over.²⁵ In October 2025, it updated this advice, recommending vaccination for adults aged 75 years and over, those aged 60–74 years with risk factors for severe RSV disease, including chronic respiratory conditions such as COPD and asthma, and those aged 60 years and over living in long-term care facilities for older adults.²⁶ RSV vaccines are currently available to older adults in Ireland only on a private basis.²⁷ In April 2026, HIQA's health technology assessment found RSV immunisation to be safe and effective, but concluded that a national programme would not be cost-effective at current prices; vaccinating adults aged 80 years and over was estimated to cost the HSE €70.6 million over five years.²⁸ In Northern Ireland, by contrast, RSV vaccine is available free of charge to people aged 75

years and over and to people living in care homes for older adults.²⁹

Improving vaccine uptake requires more than general communication. Evidence supports reminder and recall systems, opportunistic vaccination, accessible community delivery, school-based programmes and advice from trusted healthcare professionals.³⁰ Uptake should be monitored at local and population-group level so that national averages do not obscure communities with low coverage. Particular attention is needed for people facing language, transport, indirect cost, digital or administrative barriers and for communities in which confidence in health services may be lower. Strategies should be informed by local data and developed with affected communities.³¹

Air Quality and Environmental Prevention

Air pollution is a major global health emergency, contributing to nearly 7 million deaths annually being attributed to indoor and outdoor air pollution.⁵⁶ The estimated total cost to the Irish healthcare system from poor air quality is €150 million per annum and up to €2 billion per annum when wider societal impacts, such as lost productivity, are included.^{33,57} Children, older adults and people living with existing respiratory disease are particularly vulnerable.^{5,32}

Ireland met the EU legal air-quality limits in force during 2024, but legal compliance does not mean that exposure is without harm. Monitoring through 115 stations showed that Ireland did not meet the more protective WHO guideline levels for several pollutants. The EPA estimates that poor air quality contributes to around 1,700 premature deaths in Ireland annually. Solid-fuel burning and road traffic are the principal national sources, and pollution affects towns and villages as well as larger cities.⁵

Estimates of the health burden of air pollution depend

on the methods used. The estimate of around 1,700 premature deaths attributable to PM_{2.5} each year, based on 2019 data, is higher than earlier European Environment Agency and Global Burden of Disease estimates, which ranged from 535 to 1,300, because it applies updated dose-response functions reflecting growing evidence that PM_{2.5} is more harmful than previously thought.³³

Poor air quality also imposes substantial costs on the health service. An ESRI analysis for the EPA estimated the annual cost of care for asthma, COPD, ischaemic heart disease and stroke attributable to PM_{2.5} and nitrogen dioxide. Conditions linked to PM_{2.5} accounted for 15,565 emergency inpatient bed days and €15.6 million in emergency inpatient costs, nearly 60,000 GP consultations costing over €3.1 million, and almost €7.6 million in community medicines each year. Conditions linked to nitrogen dioxide accounted for 2,881 bed days and €3.1 million in emergency inpatient costs, 28,941 GP visits costing €1.6 million, and over €4.7 million in community medicines. COPD linked to PM_{2.5} was the most resource-intensive condition across all three types of care, accounting for 1,204 emergency discharges, 9,194 bed days and €8.4 million in emergency inpatient costs a year. These estimates, in 2023 prices, are incomplete: they exclude emergency department and outpatient attendances, private hospital care and other conditions linked to air pollution, such as lung cancer.³³

By international standards, average exposure in Ireland is relatively low: people in Ireland were exposed to 8 micrograms of ambient fine particulate matter (PM_{2.5}) per cubic metre, compared with an OECD average of 11.2 micrograms.⁷

The revised EU Ambient Air Quality Directive introduces stricter standards for 2030.³⁴ EPA projections indicate that Ireland faces difficulty meeting these limits, particularly for PM_{2.5} and nitrogen dioxide. The Clean Air Strategy provides a national framework for reducing air pollution, but implementation will require coordinated measures across energy, housing, transport and local government.^{5,35}

Priority interventions include accelerating the transition from smoky solid fuels and fossil-fuel heating, improving household energy efficiency while maintaining adequate ventilation, reducing traffic emissions, and supporting public and active transport. Local authorities should also assess targeted traffic-management and low-emission measures where local exposure and source data support their use. Information provided through airquality.ie and the Air Quality Index for Health can help people reduce exposure during episodes of

poor air quality, but individual advice cannot substitute for reducing pollution at source.^{5,35}

Evidence from Ireland's bans on smoky coal supports action on solid fuel. Respiratory mortality fell by 17% following the 1990 ban in Dublin, and an analysis of the extension of the bans to smaller towns between 2010 and 2018 found significant reductions in the incidence of chronic lung disease among older people.³³ Public education is also a critical factor, and progress has been made over the last decade to highlight the dangerous effects of ambient air pollution, but indoor air pollution remains a significantly under-recognised burden. Public campaigns focusing on indoor air pollution, whilst also broadening education around ambient air pollution, are critical in any public health policy. An opt-in early air quality warning system would be useful for those with chronic and moderate to severe respiratory conditions.

Indoor air quality also warrants greater attention. Damp and mould, combustion products, chemicals released by household products and inadequate ventilation can worsen respiratory health. Energy-retrofit programmes should incorporate appropriate ventilation and indoor-air-quality safeguards so that improvements in thermal efficiency do not inadvertently increase the accumulation of pollutants or moisture.^{36,37} A more collaborative and coherent governmental approach to policy is needed across all departments to properly ensure indoor air quality policy is adequate to address the population needs but equitable to the same population.

Occupational and Environmental Exposure

Workplace exposures contribute to preventable cases of asthma, COPD, interstitial lung disease, lung cancer and mesothelioma. Important respiratory hazards include asbestos, respirable crystalline silica, diesel exhaust, welding fumes, flour and wood dusts, isocyanates, agricultural dusts and chemicals used in cleaning and manufacturing.³⁸ The Health and Safety Authority estimates that work-related asthma accounts for approximately 10% of adult-onset asthma.³⁹

Prevention should follow the hierarchy of controls: eliminating hazardous substances where possible, substituting safer materials, implementing engineering controls and ventilation, establishing safe working practices, and using suitable respiratory protective equipment when residual risk remains. Respiratory protective equipment should not be treated as a substitute for controlling exposure at source.⁴⁰ Employers are responsible for assessing workplace risks, providing appropriate information and training,

controlling exposure and arranging health surveillance where required under occupational safety and health legislation.⁴¹

Radon is another important preventable exposure and is the second leading cause of lung cancer after tobacco smoking. Smoking substantially increases the risk associated with radon exposure. Ireland's National Radon Control Strategy has provided a framework for testing, remediation and radon prevention in new buildings.⁴² However, household testing remains essential because measurement is the only way to determine whether an individual building has an elevated radon level. Awareness has also declined: an EPA survey found that awareness of radon fell from 82% in 2020 to 71% in 2025, while fewer than half of respondents indicated that they were likely to test their homes⁴³.

Behavioural Interventions

Respiratory prevention depends on environments that make healthier choices practical. Information campaigns are most effective when combined with supportive services and policies: smoking messages with accessible cessation care, vaccine communication with convenient delivery, and air-quality advice with measures that reduce pollution. Behavioural interventions should therefore form part of a broader prevention system rather than place responsibility solely on individuals.²

Healthcare contacts provide repeated opportunities for prevention. The HSE's Making Every Contact Count programme supports healthcare professionals to use routine interactions to deliver brief interventions addressing smoking, alcohol and drug use, physical activity, healthy eating, obesity and mental wellbeing.⁴⁴ In a respiratory context, healthcare contacts can also be used to identify tobacco and nicotine use, offer or arrange cessation support, review vaccination status, ask about occupational and environmental exposures, and recognise persistent breathlessness, cough or recurrent respiratory infection that warrants further assessment.

Maintaining a healthy weight and undertaking regular physical activity support respiratory, cardiovascular and metabolic health. Weight management is particularly important in preventing and managing obesity-related obstructive sleep apnoea, while regular physical activity can improve fitness, symptom control and quality of life among people with chronic respiratory disease.⁴⁵

Prevention measures including vaccination, hand and respiratory hygiene, adequate ventilation, staying at

home while acutely unwell, and appropriate precautions in healthcare and congregate settings, remain important for limiting the transmission of respiratory infections. Recommendations should be proportionate to the infection, setting, level of transmission and vulnerability of the people exposed.⁴⁶

Safe disposal of medicines also supports prevention. From August 2026, every community pharmacy in Ireland offers MediBack, a free service for the safe disposal of unused or expired medicines.⁴⁷ People can return unused, unwanted or expired medicines, including inhalers, free of charge, and the medicines do not need to have been bought from the pharmacy where they are returned. The service is intended to reduce the risk of accidental poisoning, suicide and self-harm by limiting access to unused medicines, to help tackle antimicrobial resistance, and to reduce the environmental impact of medicines entering waste and water systems.⁴⁸ More than 1,900 community pharmacies are participating. Research previously commissioned by the Irish Pharmacy Union found that 27% of unused medicines were thrown in household bins and 6% were flushed down sinks or toilets.⁴⁹

Prevention programmes should be evaluated against measurable outcomes, not only reach or campaign impressions. Useful indicators include smoking and vaping prevalence, quit attempts and sustained cessation, vaccine uptake, pollutant concentrations and exposure, occupational-disease reporting, radon testing and remediation, and the distribution of each measure across population groups.²

Inequalities in Prevention

Respiratory risks and access to prevention follow a social gradient. In Ireland, daily smoking remains more common among people with lower educational attainment and those living in disadvantaged areas.⁵⁰ Socioeconomic disadvantage may also increase exposure to poor housing conditions, including damp, mould, overcrowding, inadequate heating and household air pollution, while workers in less secure employment may have less control over hazardous occupational exposures.^{2,51} Transport, time, language, digital exclusion, health literacy and trust can create additional barriers to vaccination, cessation support and timely assessment. Consequently, a universal offer may fail to reduce inequalities if the people at greatest risk are least able to access or benefit from it.²

Energy poverty is an important part of this picture. It refers to a household's lack of access to the energy services needed for a basic standard of living and

health, and can force households to reduce their energy use to a point where their physical and mental health is compromised. In 2024, at least 14% of households in Ireland self-reported experiencing energy poverty, an improvement from the peak in 2013 and a reduction from the two previous years. Because energy poverty is experienced in multiple forms, it is estimated using several indicators: in 2015, more than 35% of households met at least one of these indicators, around 600,000 households out of approximately 1.7 million. Low-income households and tenants are most at risk, followed by the unemployed, people in poor health, single adults with and without children, rural households and those living in older dwellings, and these characteristics often overlap. The high frequency of disability payments among energy-poor households suggests that poor health deepens their vulnerability. Some households under-consume energy to unsafe levels and are missed by expenditure-based measures, and coping strategies and a reluctance to report hardship may lead to under-reporting among older adults. The ESRI recommends monitoring several indicators, including the inability to afford adequate warmth, and estimates that closing the energy poverty gap for all vulnerable households would cost around €370 million, well below the €550–575 million spent on the universal electricity credit in 2024.⁵² The benefits of addressing energy poverty for respiratory health have been demonstrated in Ireland. The Warmth and Wellbeing Scheme pilot provided free energy-efficiency upgrades to people at risk of energy poverty living with chronic respiratory disease, and its independent evaluation found improvements in respiratory symptoms and their impact on daily activities, and fewer GP consultations, emergency department visits and hospital admissions, particularly for respiratory conditions, as well as fewer prescriptions for medication (see Chapter 2).⁵³

An equity-focused approach combines population-wide protection with proportionately greater support where need and disadvantage are greater.⁵⁴ This includes free and locally accessible preventive services, community outreach, translated and culturally appropriate information, mobile or flexible delivery, and partnership with trusted organisations. Ireland's collaborative TB strategy identifies people experiencing homelessness, migrants from countries with a high incidence of TB and people in prison among the populations requiring targeted approaches to screening, prevention and continuity of care.⁵⁵ These recommendations illustrate the importance of bringing services to populations who may not be reached effectively through conventional

pathways. Geographical inequalities also matter. Rural and disadvantaged communities may experience different combinations of solid-fuel use, radon exposure, limited public transport, occupational risk and distance from healthcare. Prevention data should therefore be linked, where lawful and feasible, across health, environmental and socioeconomic sources and reported at a sufficiently local level to identify inequalities and guide proportionate action.²

The central test of a national respiratory prevention strategy should not only be whether average risk falls, but whether gaps between population groups narrow. Equity objectives and indicators should be specified during programme design, adequately resourced during implementation and reported alongside overall outcomes.²

10.2 Conclusions

Much of the burden of respiratory disease described in this report is preventable. Ireland's experience shows that population-level prevention works: smoke-free workplace legislation, taxation and standardised packaging contributed to a substantial fall in smoking, and the first season of the infant RSV immunisation programme was followed by marked reductions in RSV hospitalisations and intensive-care admissions.

Progress has, however, stalled in several areas. Smoking prevalence has not fallen since 2019 and the Tobacco Free Ireland target was missed, while e-cigarette use among young people, including those who have never smoked, presents a new challenge. Childhood vaccination coverage has fallen below the levels required for population protection. Air quality remains below WHO guideline levels for several pollutants, awareness of radon is declining, and occupational exposures continue to cause preventable disease. Spending on prevention remains below the OECD average.

Priorities include a renewed tobacco endgame, with a new target for reducing smoking prevalence, measures to prevent nicotine initiation among children and young people while preserving access to smoking-cessation support, and consistent enforcement of existing legislation; restoring childhood vaccination uptake through reminder and recall, accessible delivery and monitoring at local level; a decision on RSV vaccination for older adults in line with NIAC recommendations; an accelerated transition away from smoky solid fuels and fossil-fuel heating, reduced traffic emissions and ventilation safeguards in energy-retrofit programmes; control of occupational exposures at source; renewed

promotion of radon testing and remediation; and routine use of healthcare contacts to address smoking, vaccination and exposure.

Prevention should be designed for equity from the outset. Population-wide measures need to be combined with proportionately greater support for people experiencing disadvantage, and prevention indicators should be reported at a sufficiently local level and across population groups. The central test of respiratory prevention in Ireland is not only whether average risk falls, but whether the gaps between population groups narrow. Tackling energy poverty, through targeted income supports and improvements in housing quality and energy efficiency, is part of respiratory prevention.

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Pulmonary Vascular Disease

11

Key Points

Pulmonary embolism

- PE is common and remains a significant preventable cause of in-hospital morbidity and mortality.
- Contemporary and accurate information regarding the epidemiology of PE in Ireland is lacking. This data is crucial to inform practice, guide resource allocation and to enable international benchmarking.
- The management of PE is evolving, with recent refinements in PE risk stratification and the expansion of treatment options. These interventions and associated expertise are not available in all centres, highlighting the need for clear referral pathways and appropriate resourcing.
- Systematic follow up of PE at 3-6 months is recommended, to identify patients with post PE syndrome and to expedite timely investigations.

Pulmonary hypertension

- The incidence of PAH and CTEPH in Ireland is lower than other European centres, indicating that PH is potentially under-recognised in Ireland, and increased awareness is warranted.
- There is no official clinical program for PH in Ireland, or dedicated pulmonary vascular appointments. Furthermore, there is no formal support for services such as the parenteral prostacyclin program, despite providing national coverage for patients.
- Timely access to care remains a significant challenge. There are long waiting lists for diagnostic tests such as right heart catheterisation and there is no established infrastructure to transition patients from paediatric to adult PH services.
- A dedicated national registry is needed to facilitate accurate and timely reporting of PH epidemiology, treatment patterns and clinical outcomes in Ireland.
- PAH is a progressive and incurable disease, and yet there is delayed access to effective new therapies in Ireland. This is exemplified by the novel drug Sotatercept for PAH, which was approved by the National Institute for Health and Care Excellence for use in England and Wales in May 2026, but remains unavailable in the Republic of Ireland.

11.1 Background

Pulmonary vascular diseases encompasses a diverse range of conditions which affect the pulmonary vasculature including pulmonary embolism (PE) and pulmonary hypertension (PH).¹ This chapter is divided into two sections focusing on PE (ICD-10: I26) in section A and PH (ICD-10: I27) in section B.

Patient Voice

'I live in Cork, a good distance from the PH unit in the Mater, and I have a young family so I'm busy. The remote monitoring platform run through patient Mpower and the Mater really helped me get on top of my condition and live my life to the fullest. The PH nurses in the Mater are great and the time they spent explaining my condition, the medications and ways to stay healthy really helped me and my family when I was diagnosed. It's easy for them to check in on me with the remote platform and they're always free for a quick phone call if I need them'.

42-year-old man with PH

11.2 Section A: Pulmonary Embolism

Burden of Disease

PE results in partial or complete blockage of one or more pulmonary arteries in the lungs, typically from a thrombus. This can range in severity from mild and asymptomatic, to severe and life-threatening, depending on the specific clot and patient characteristics.² The following section describes the epidemiology, diagnosis and treatment of PE in Ireland and current challenges. For the purposes of this document, PE is defined using the classification ICD-10: I26.

Incidence

Robust data regarding the incidence of PE are not available at a national level. Estimates for the national incidence of PE are available from a retrospective study analysing Hospital Inpatient Enquiry (HIPE) data. In this study a total of 25,465 PEs were diagnosed in adult patients in acute public hospitals between 2015 and 2022. This translated to a mean annual crude incidence of 85 per 100,000 population. PE rates rose during the COVID-19 pandemic, with an annual incidence of 109.4 per 100,000 population in 2021.³ This data relates to acute public hospitals only and therefore has the

potential to both under- and overestimate these numbers.

As PE is an acute condition which often resolves with adequate treatment the prevalence of PE is not reported.

Sex

In a retrospective study of national trends in VTE in Ireland between 2015 and 2022, 52% of primary VTE events occurred in females.³

HIPE data indicates that a total of 693 deaths were attributed to PE (ICD-10: I26) between 2019 and 2023, and 52.2% of these were female.⁴ Furthermore, women face unique sex-specific risk factors for PE, particularly during pregnancy, the postpartum period, and with the use of oestrogen-containing oral contraception or hormone replacement therapy.²

Age

Data regarding the mean age of PE diagnosis in Ireland is not readily available.

In a retrospective study of VTE in Ireland, the mean age at the time of diagnosis of pregnancy associated VTE was 32.7 years between 2015 and 2022, which encompasses patients with both PE and deep venous thrombosis (DVT).³

Deaths from PE were more common in individuals aged ≥50 years old (Table 11.1).⁴

Determinants and Risk Factors

PE is associated with a broad range of transient and persistent risk factors, which are driven by a combination of venous stasis, endothelial injury, and hypercoagulability. Predisposing factors for VTE include major trauma, major surgery and acute and chronic medical conditions, such as heart failure, myocardial infarction, inflammatory bowel disease, respiratory failure and malignancy. A comprehensive list of all the predisposing factors for VTE is beyond the scope of this piece and can be found in recent guidelines.^{2,5}

Prevention/Early Detection

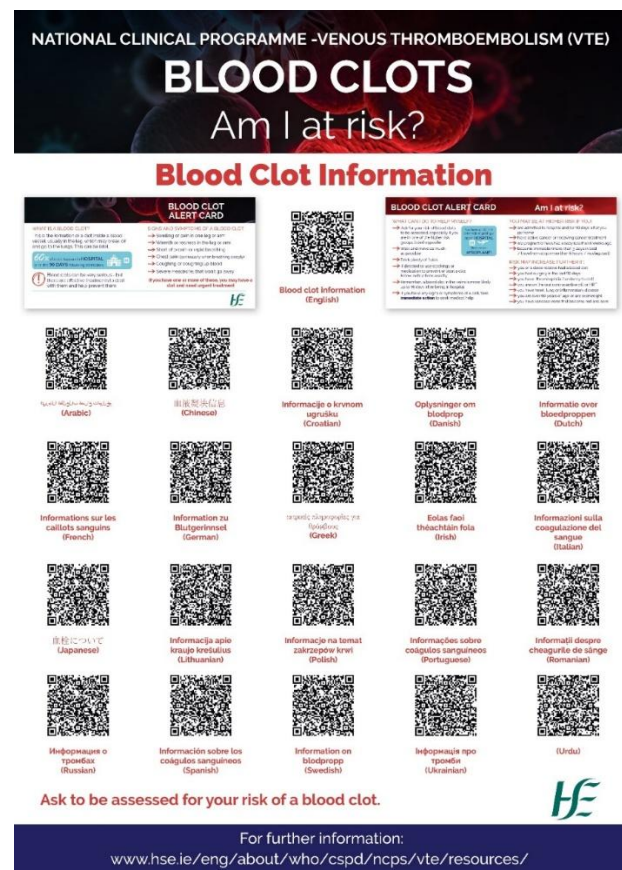
PE remains a significant cause of preventable in-hospital morbidity and mortality. The HSE National Clinical Guideline on VTE (Eve Protocol) highlights the importance of standardised VTE risk assessment, early mobilisation, mechanical prophylaxis, and anticoagulation in eligible patients to reduce hospital-acquired thrombosis and PE-related morbidity and mortality.⁶

The HSE mandates a formal VTE risk assessment for every adult inpatient admitted under medical and surgical services, in order to identify patients with an elevated risk profile and to prompt the consideration of pharmacological or mechanical prophylaxis.^{6,7}

- **Pharmacological Prophylaxis:** The use of anticoagulant injections or tablets to reduce the risk of clot formation.
- **Mechanical Prophylaxis:** The application of compression stockings or intermittent pneumatic compression devices to maintain blood flow in the legs.

Patient education is an important component of both prevention and early detection, and the National Clinical Programme for VTE provides "Blood Clot Alert Cards" in multiple languages (Figure 11.1).⁶

Figure 11.1. NCP-VTE Ireland blood clot information poster



Source: National Clinical Programme for VTE.⁶

Access to care

Acute PE is a potentially life-threatening condition and when suspected, patients are advised to attend their local emergency department for prompt assessment and diagnostic tests.

Chronic PE may result in a condition called chronic thromboembolic pulmonary hypertension (CTEPH)

which is discussed further in 'Section B pulmonary hypertension'.

Diagnosis

Patients with PE can have diverse clinical presentations, as some patients may be entirely asymptomatic, while others can present with a myriad of cardiorespiratory symptoms including dyspnoea, pleuritic chest pain, haemoptysis, palpitations and syncope. The pre-test probability of PE should be assessed using a validated clinical prediction tool such as the Wells score. If the pre-test probability of PE is low or moderate, then d-dimer testing is recommended. However if the pre-test probability of PE is high, then patients should proceed directly to CTPA (Computed Tomography Pulmonary Angiogram).^{2,5}

Early haemodynamic assessment and risk stratification are also important, as patients with haemodynamic instability require urgent consideration of reperfusion therapy and intervention by a multidisciplinary team. PE risk assessment tables are available in both European and American guidelines.^{2,5}

Treatment and Management

In Ireland, the management of PE follows the National Clinical Guideline for VTE which adapts the 2019 ESC guidelines to the Irish healthcare setting. Treatment of PE should be individualised, and incorporate patient characteristics, bleeding risk, and PE risk assessment.⁶

In patients with high-risk PE, defined by haemodynamic instability, systemic thrombolysis is recommended as the first-line therapy in the absence of

contraindications. Intravenous unfractionated heparin should be initiated as soon as possible as per local guidelines. Alternative approaches such as percutaneous catheter-directed therapies should be considered where local expertise exists, and when there are contraindications to systemic reperfusion therapies.⁶

For most other patients with intermediate- or low-risk PE, treatment is based on anticoagulation with low-molecular-weight heparin (LMWH) or a direct oral anticoagulant (DOAC).⁶

Systematic follow-up is recommended at 3–6 months following the PE diagnosis. At this assessment it is important to assess tolerability and compliance with anticoagulation, to review potential predisposing factors for VTE and to clarify the planned duration of anticoagulation. Furthermore, it should be clarified whether the patient is up to date with age appropriate cancer screening and if there are any symptoms or signs of malignancy. Finally, patients should be screened for post PE syndrome, which is a diverse condition encompassing post PE depression, anxiety, deconditioning and pulmonary vascular disease.⁸ Post-PE dyspnoea is highly prevalent and was reported by 65% of patients in a post PE clinic in Ireland.⁹ The importance of multidisciplinary input throughout this care pathway cannot be understated.

Mortality

A total of 693 deaths were attributed to PE (ICD-10: I26) between 2019 and 2023. Table 11.1 provides an overview of deaths from PE between 2016 and 2023 as reported by HIQA data.⁴

Table 11.1. Total deaths from pulmonary embolism (ICD-10: I26) and deaths among individuals aged under 50 years, Ireland, 2016–2023.

Year	Total Deaths I26 (PE)	/100,000 population I26 (PE)	Deaths I26 (PE) age<50yrs	Deaths I26 (PE) age<50yrs (%)
2016	108	2.28	12	11.11%
2017	122	2.54	13	10.66%
2018	118	2.42	15	12.71%
2019	114	2.30	14	12.28%
2020	111	2.21	14	12.61%
2021	158	3.11	18	11.39%
2022	161	3.11	23	14.29%
2023	149	2.82	5	3.36%

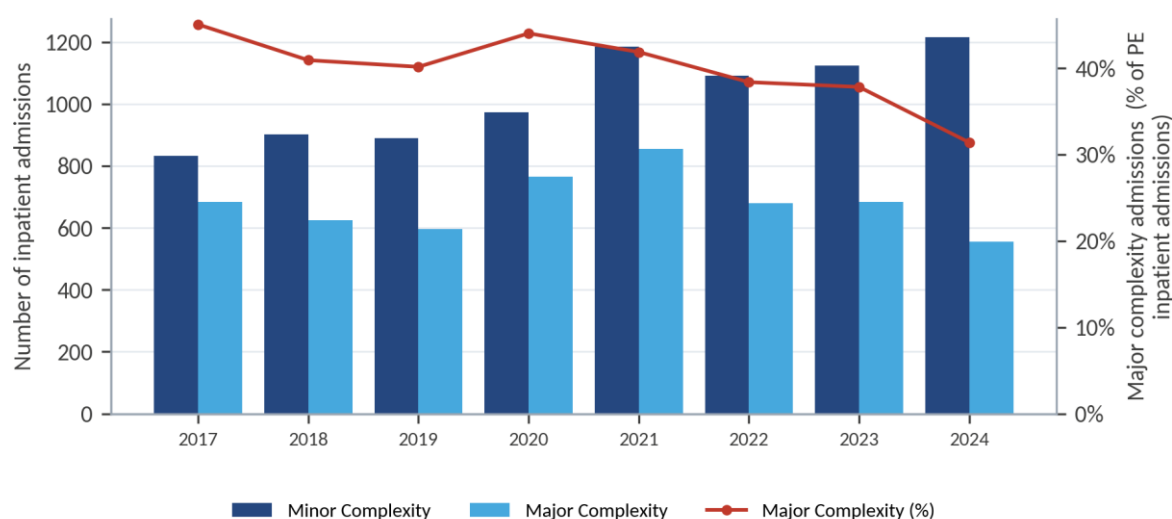
Source: Source: Health Statistics (PHIS) / CSO.⁴

Hospitalisations

The impact of PE on health services was assessed using data from the HIPE Statistics Reporter. Hospitalisation data for pulmonary vascular diseases are not available as a distinct HIPE category. Instead, HIPE reports hospital activity under the ICD-10 category “Pulmonary heart disease and diseases of pulmonary circulation” (I26–I28), which includes pulmonary embolism (I26), other pulmonary heart diseases (I27), and other diseases of pulmonary vessels (I28). The following hospital activity is therefore presented for the combined I26–I28 category.¹⁰

Pulmonary heart disease and diseases of pulmonary circulation’ accounted for 2068 inpatient hospitalisations (2.43% of all respiratory inpatient hospitalisations, 0.30% of all inpatient hospitalisations) and 17,102 inpatient bed days (2.98% of respiratory inpatient bed days, 0.40% of all inpatient bed days) in 2024.¹⁰ In the Activity in Acute Public Hospitals 2024 report, 31.4% of patients with PE were classified as ‘major complexity inpatient’ with a median length of stay (LOS) of 8 days (mean of 12.8 days) in 2024.¹¹ Corresponding data for the period 2017–2024 are presented in Figure 11.2.

Figure 11.2. Pulmonary embolism inpatient admissions by complexity, Ireland, 2017–2024



Source: Based on the Activity in Acute Public Hospitals reports, 2017–2024.

In a retrospective study of the incidence of VTE in Ireland between 2015 and 2022, 9.8% (1,344) of primary PE cases were admitted to the intensive care unit (ICU), with a median LOS in the ICU of 4.5 days (IQR: 4.3 – 4.7).³

HIPE data reported that a total of 693 deaths were attributed to PE (ICD-10: I26) between 2019 and 2023.¹⁰

International Benchmarking

The mean annual crude incidence of PE was reported at 85 cases per 100,000 population in a retrospective study of Irish HIPE data between 2015 and 2022.³ This is in line with other epidemiological studies which report an annual PE incidence range of 39 to 115 cases per 100 000 population.² The incidence rose during the COVID-19 pandemic to 109.4 cases per 100,000 population, which is consistent with trends observed in other countries during the same period.¹²

An international study of PE-related deaths from 123 countries reported 173 PE deaths in Ireland in 2015 and an age-standardized mortality rate (ASMR) of 2.8 per 100,000 population for women and 2.1 per 100,000 for men. Ireland occupied an intermediate position relative to other European countries (Table 11.2).¹³ It was noted that PE mortality was highest among older adults in both low- and high-income states, and overall, there was marked heterogeneity in the reporting of PE-related deaths. This study underscored the need for improved systematic reporting of PE on a global scale.¹³

Table 11.2. Comparison of age-standardized mortality rates (ASMR) and the proportion of total deaths attributable to pulmonary embolism by sex in selected European countries.

Country (Data Year)	ASMR (Women)*	ASMR (Men)*	% of Total Deaths (Women)	% of Total Deaths (Men)
Ireland (2015)	2.8	2.1	0.7%	0.4%
United Kingdom (2016)	3.8	3.9	1.0%	0.8%
Germany (2017)	2.9	3.6	0.8%	0.7%
France (2016)	1.9	2.3	0.8%	0.5%
Italy (2016)	1.0	1.0	0.4%	0.2%

Source: Data extracted from Supplementary Tables S2, S3, and S4. Adapted from Valerio et al. (2021).¹³ ASMR = Age-standardized mortality rate per 100,000 population, standardized to the 2001 WHO standard population.

Current Challenges

PE is a potentially life-threatening condition and a medical emergency. Contemporary and accurate information regarding the epidemiology of PE in Ireland is lacking, highlighting the need for a national database. This data is crucial to inform practice, guide resource allocation and to allow for accurate international benchmarking.

The management of PE is evolving, with recent refinements in PE risk stratification and the expansion of treatment options. To exemplify this, recent guidelines now recommend the consideration of catheter-directed thrombolysis (CAT) for specific PE risk groups.^{5,14} However this intervention is not available in all centres in Ireland and therefore, clear referral pathways and adequate resourcing are needed to facilitate this. Furthermore, multidisciplinary PE response teams (PERTs) are recommended in current guidelines to help navigate complex decisions and to improve the timeliness of PE care, but this is not currently available or practical in every Irish hospital.

Finally, systematic PE follow up in a dedicated multidisciplinary clinic is beneficial to identify patients with post PE syndrome and expedite timely investigation of post-PE complications. This also requires appropriate resourcing within the multidisciplinary team including physiotherapy and psychology support.

11.3 Section B: Pulmonary Hypertension

This section focuses on pulmonary hypertension (PH), which is a general term used to describe hypertension within the pulmonary circulation. Individuals with this condition typically present with symptoms of fatigue, shortness of breath and right sided heart failure. An invasive right heart catheterization (RHC) is required to confirm the diagnosis, by demonstrating a mean pulmonary artery pressure greater than 20mmHg. Patients are then allocated to 1 of 5 clinical groups,

depending on the underlying aetiology, and this guides subsequent treatment decisions and prognostication. A diagnosis of PH is associated with a reduced quality of life, a considerable symptom burden and premature mortality.¹⁵

The National Pulmonary Hypertension Unit (NPHU) is located in the Mater Misericordiae University Hospital in Dublin, with smaller satellite sites in other hospitals. Within the ICD system, PH is primarily categorised under ICD-10: I27, 'Other Pulmonary Heart Diseases'.

Burden of Disease

Incidence

Robust national data for the incidence of PH is not currently available in Ireland. However, a retrospective Irish study documenting referrals to the NPHU provides the best available estimate of disease incidence. Between 2010 and 2020, 415 cases of PH were referred to the NPHU, corresponding to an estimated annual incidence of 7.93 cases per million population (pmp) (95% CI 5.40–10.46). This number likely underestimates the true incidence of PH as it excluded patients who did not have a RHC or those who were seen exclusively in other clinics or centres. Furthermore, certain PH subgroups remain under-recognised in Ireland.¹⁶

Concentrating on specific PH groups, the annual incidence of group 1 pulmonary arterial hypertension (PAH) was 3.11 cases pmp, and the annual incidence of group 4 chronic thromboembolic pulmonary hypertension (CTEPH) was 1.39 cases pmp between 2010 and 2020.¹⁶ The different PH groups are described in further detail in the section pertaining to 'Determinants and Risk Factors'.

The prevalence of PH in Ireland is unknown.

Sex

Individual patient characteristics such as age and sex vary depending on the underlying cause of PH. Patients with group 1 PAH are more likely to be female and

typically present at a younger age. 77% of patients diagnosed with PAH in Ireland between 2010 and 2020 were female.¹⁶ Between 2019 and 2024, hospitalisations for ‘Pulmonary heart disease and diseases of pulmonary circulation’ (ICD-10: I26–I28) were more frequent in females.¹⁰ For example, in 2024, 1,094 (52.9%) of the 2,068 hospitalisations for ‘Pulmonary heart disease and diseases of pulmonary circulation’ were female. Between 2019 and 2023, 57% (n=185) of deaths attributed to PH were female and 43% (n=139) were male.⁴

Age

The mean age of PH diagnosis in Ireland between 2010 and 2020 was 56 years.¹⁶ Between 2017 and 2023, the majority of deaths attributed to PH (ICD-10: I27) occurred in individuals >50 years-old (Table 11.3).⁴

Table 11.3. Total deaths from Pulmonary Hypertension (ICD-10: I27) and deaths among individuals aged under 50 years, Ireland, 2017–2023.

Year	Total Deaths - I27	Deaths - I27 age<50yrs	Deaths - I27 age<50yrs (%)
2017	49	9	18.37%
2018	51	9	17.65%
2019	62	10	16.13%
2020	48	5	10.42%
2021	68	10	14.71%
2022	83	16	19.28%
2023	63	13	20.63%

Source: Health Statistics (PHIS) / CSO.⁴

Determinants and Risk Factors

PH is classified into five clinical groups: Group 1 PAH, Group 2 PH associated with left heart disease, Group 3 PH associated with chronic lung disease and/or hypoxia, Group 4 PH associated with pulmonary artery obstructions including CTEPH, and Group 5 PH with unclear and/or multifactorial mechanisms. The risk factors and determinants of PH are closely linked to the underlying aetiology and vary across clinical groups.¹⁵

1. Group 1 PAH: Idiopathic PAH, heritable PAH (HPAH), drug and toxin exposure, connective tissue disease (CTD), Human immunodeficiency virus infection, congenital heart disease, schistosomiasis, and portal hypertension.
2. Group 2 PH associated with left-sided heart disease: Left ventricular systolic or diastolic dysfunction, valvular heart disease, congenital or acquired inflow/outflow tract obstruction, and cardiomyopathy.
3. Group 3 PH associated with lung diseases and/or hypoxia: Chronic obstructive pulmonary disease, restrictive lung disease, hypoventilation syndromes, hypoxia without lung disease, developmental lung disorders.
4. Group 4 PH associated with pulmonary artery obstructions: CTEPH, pulmonary artery sarcomas, benign or malignant intravascular

tumours, arteritis, congenital or acquired pulmonary artery stenoses, parasites and foreign-body embolism.

5. Group 5 PH with unclear and/or multifactorial mechanisms: Haematological disorders (including sickle cell disease), systemic disorders (including sarcoidosis), metabolic disorders, fibrosing mediastinitis, and renal failure, pulmonary tumour thrombotic microangiopathy.^{15,17}

Prevention and early detection

PH is a diverse condition and there is no universal prevention strategy. Early detection is vital and is associated with improved outcomes, but remains a significant challenge as patients can often present with nonspecific symptoms. If there is any clinical suspicion that patients may have Group 1 PAH, CTEPH or severe PH, then they should be urgently referred to the NPHU and fast-tracked for assessment.¹⁵

Screening strategies exist for specific subgroups within group 1 PAH. The DETECT algorithm can be employed to screen asymptomatic patients with systemic sclerosis for PAH. Patients diagnosed using this screening tool typically have less severe haemodynamic impairment and better outcomes relative to those who develop PAH outside of a screening program.¹⁸ This is particularly relevant to Ireland, as CTD associated PAH accounted

for 49% of patients diagnosed with Group 1 PAH between 2010 and 2020.¹⁶

Individuals with a first-degree relative with HPAH and asymptomatic carriers of a PAH-causing gene mutations such as BMPR2 (bone morphogenetic protein receptor type 2) should be offered genetic counselling regarding the future risk of developing PAH. Annual screening for PAH is advised for healthy carriers of a BMPR2 mutation, though a bespoke service for this does not currently exist, and this is typically performed on an ad hoc basis in the NPHU.¹⁵

Furthermore, systematic follow up of patients following PE is advised to facilitate early investigation of patients with persistent dyspnoea and to identify potential cases of CTEPH in a timely fashion. Dedicated post-PE clinics can enhance the diagnosis of CTEPH and identify patients with milder disease, and a joint haematology-respiratory PE clinic is currently offered in the Mater Misericordiae University Hospital in Dublin.¹⁹

Access to care

Access to specialist PH care in Ireland is centralised through the NPHU at the Mater Misericordiae University Hospital in Dublin, with a number of satellite centres throughout the country. The NPHU is Ireland's national referral and treatment centre and forms part of a network of nine specialist PH centres across Ireland and the United Kingdom. It provides weekly multidisciplinary meetings, consultant and nurse-led specialist clinics, and access to PH-specific therapies and international clinic trials for emerging therapies.^{16,20}

Diagnosis

In Ireland the management of PH is informed by the 2022 ESC/ERS guidelines for the diagnosis and treatment of PH. Patients with PH typically present with progressive exertional dyspnoea, fatigue, heart failure and syncope. When PH is suspected, a number of baseline diagnostic tests are advised including a transthoracic echocardiogram. RHC is the gold standard diagnostic test for PH. Early diagnosis of PH relies on close collaboration between primary care, specialists in secondary care, and PH centres, enabling timely recognition of symptoms and referral, and earlier access to diagnostics and therapeutics.¹⁵

Treatment and Management

The treatment of PH requires multidisciplinary input and a holistic approach to care. Focusing on drug therapy, treatment with PH specific therapies is guided by the

underlying cause of PH and individual patient characteristics. Moreover, patients with CTEPH may also be offered interventional procedures such as balloon pulmonary angioplasty and pulmonary endarterectomy which are not currently available in the Republic of Ireland, and require referral to the Royal Papworth Hospital in the United Kingdom. Supportive management, multidisciplinary involvement and optimisation of comorbidities are also important cornerstones of care and are described in more detail in recent guidelines.¹⁵

Mortality

Despite advances in medical diagnostics and therapeutics, a diagnosis of PH is still associated with considerable morbidity and mortality. Patients with Group 1 PAH had a reported one-, three- and five-year transplant-free survival of 89%, 75% and 65%, between 2010 and 2020¹⁶. This was 93%, 80% and 65% for patients with CTEPH. During the same period, patients with PH associated with lung diseases such as COPD and ILD had the worst outcomes, highlighting a vulnerable population of patients with significant unmet needs.²¹

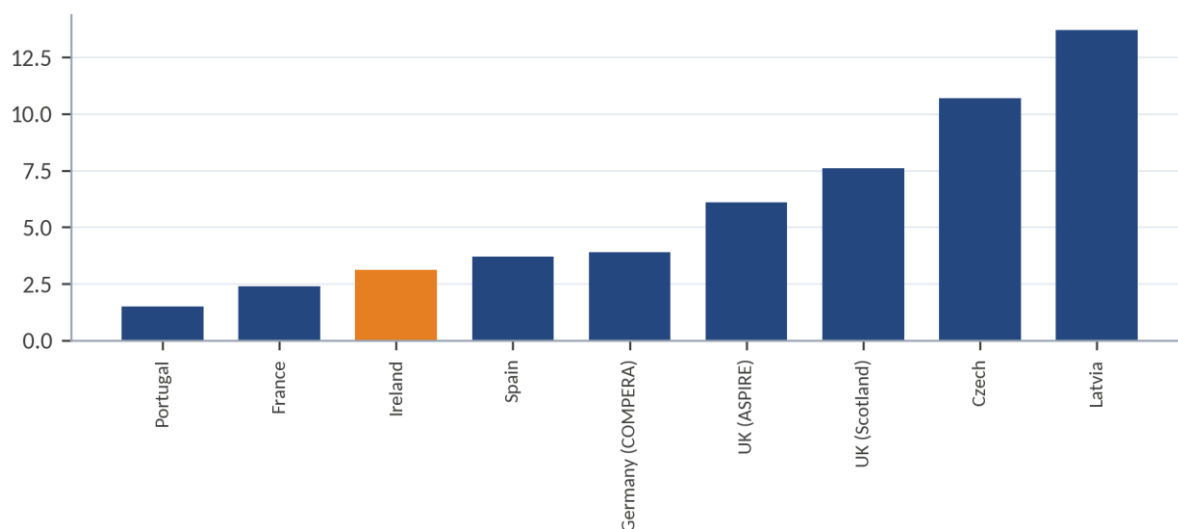
Reported deaths due to PH ranged from 48 to 83 per year between 2017 and 2023, and these are outlined in Table 11.3.⁴

Hospitalisations

Hospital activity data was obtained from the HIPE Statistics Reporter under the ICD-10 category 'pulmonary heart disease and diseases of pulmonary circulation' (I26–I28). As separate hospitalisation data for ICD-10 codes I27 and I28 are not available, the combined HIPE category was used.¹⁰ In 2024 there were 2204 hospitalisations for 'pulmonary heart disease and diseases of pulmonary circulation', with a mean length of stay of 8.2 days.¹¹

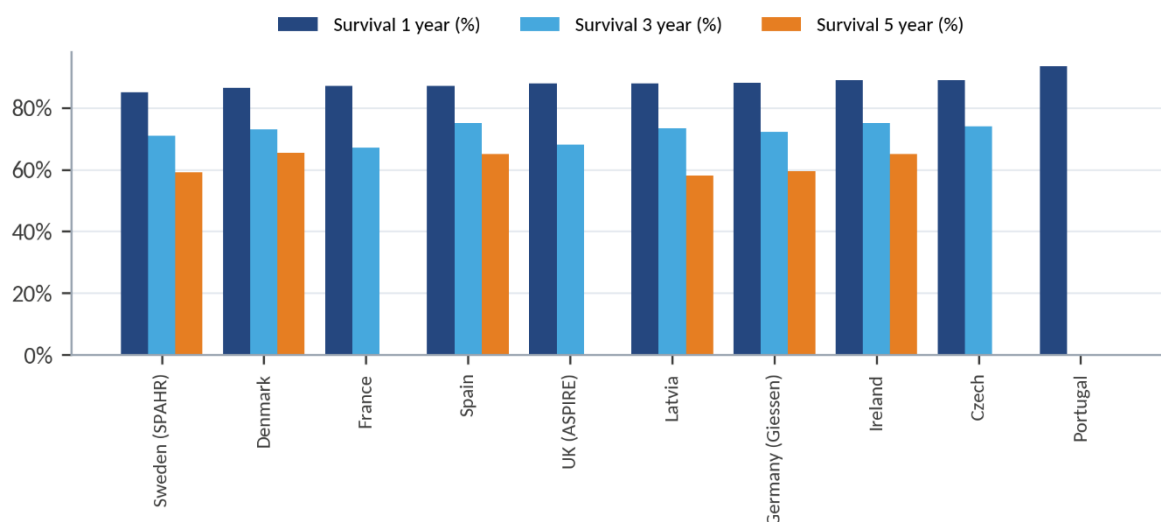
International Benchmarking

Registry data indicates that the incidence of Group 1 PAH in economically developed countries is approximately 6 cases pmp and the incidence of Group 4 CTEPH ranges from 2–6 cases pmp.¹⁵ A retrospective study of patients referred to the NPHU between 2010 and 2020 reported an incidence of PAH of 3.11 cases pmp, and an annual incidence of CTEPH of 1.39 cases pmp.¹⁶ This is low relative to other European PH centres, indicating that PAH and CTEPH may have been under-recognised in Ireland during this period (Figure 11.3).

Figure 11.3. Annual incidence of PAH in Ireland and other European countries, expressed as cases per million population.

Source: Adapted from Cullivan et al., 2022.¹⁶

The transplant-free survival of patients with PAH and CTEPH in Ireland was comparable to other European centres between 2010 and 2020 (Figure 11.4).¹⁶

Figure 11.4. Transplant-free survival among patients with PAH in Ireland and selected European centres.

Source: Adapted from Cullivan et al., 2022.¹⁶

A dedicated national registry and data manager in the NPHU would facilitate more accurate and structured international benchmarking.¹⁶

Current Challenges

There are a number of challenges in the field of PH, which are outlined below.

Firstly, disease awareness remains a substantial barrier to timely diagnosis. This is exemplified by the low incidence of PAH and CTEPH between 2010 and 2020, and the substantial interval reported between the time of symptom onset and subsequent diagnosis. Secondly, timely access to care remains a significant challenge, with long waiting lists for diagnostic tests such as right heart catheterisation and PH clinics.

Furthermore, there is no established infrastructure to transition patients from paediatric to adult PH services, which is a vulnerable stage for young adults with complex care needs.

Thirdly, prompt access to new therapies is a major problem in Ireland. This is underscored by the novel drug Sotatercept for PAH, which was approved by the US Food and Drug Administration in 2024 and subsequently approved by the National Institute for Health and Care Excellence for use in England and Wales in May 2026. However this drug remains unavailable in Ireland. Similarly, while patients with PH-ILD have limited therapeutic options and poor outcomes, inhaled treprostinil is currently unavailable in Ireland.

Finally, while the National PH unit opened in the Mater in 2003, there is still no official clinical program for PH in Ireland or dedicated pulmonary vascular appointments. Therefore, there are no formal funding streams to the unit, including support for services such as the parenteral prostacyclin program, which provides national coverage for patients in Ireland receiving these therapies. A dedicated PH database with the associated support staff, would also facilitate international comparisons and further optimisation of care.

11.4 Conclusions

Pulmonary vascular disease encompasses a broad spectrum of conditions including PE and PH. In both instances, contemporary and accurate information regarding the epidemiology is lacking, highlighting the need for centrally funded, national PE and PH databases. This would inform practice, guide resource allocation and enable international benchmarking.

The management of both PE and PH is nuanced and requires specialist input and multidisciplinary team care. Timely access to diagnostics and care is paramount and has numerous barriers, including substantial waiting lists for RHC to diagnose PH and the lack of appropriate resources to transition patients from paediatric to adult PH services. Finally, Ireland is lagging behind the UK and other countries with regards to access to effective therapies for PAH such as sotatercept, which is unacceptable considering the progressive and life-limiting nature of this disease.

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Respiratory Infectious Diseases

12

Key Points

- Respiratory tract infections accounted for 43.3% of all infection-related admissions to Irish acute hospitals between 2016 and 2021.
- In 2024, pneumonia accounted for 17,965 inpatient admissions, the highest number recorded between 2017 and 2024. These admissions used 178,572 bed days, almost a third (31.1%) of all respiratory inpatient bed days.
- Influenza notifications reached 38,762 in 2025, the highest in the six years reported, and provisional data show 176 influenza deaths in 2024.
- Vaccine-preventable infections have returned. Pertussis notifications rose from 18 in 2023 to 713 in 2024, and measles from 4 to 207, with both remaining elevated in 2025.
- In 2025, 1,554 notified respiratory outbreaks affected 11,745 people, most of them due to COVID-19 and influenza.

12.1 Background

Respiratory infections constitute a major public health concern and are among the leading causes of morbidity and mortality worldwide, affecting both adult and paediatric populations. These infections impose a substantial burden on healthcare systems and may be acquired in either community or hospital settings. Their aetiology is diverse and includes viral, bacterial, fungal, and parasitic pathogens.¹

According to the World Health Organization (WHO), lower respiratory infections were the fifth leading cause of death worldwide in 2021.² In Ireland, analysis of inpatient data from 55 acute hospitals between 2016 and 2021 demonstrated that respiratory tract infections (RTIs) accounted for 43.3% of all infection-related hospital admissions. During the COVID-19 pandemic, RTI-related admissions were associated with increased length of hospital stay and higher mortality rates compared with the pre-pandemic period.³ In addition, pneumonia accounted for approximately 5% of all deaths recorded in Ireland.⁴

In Ireland, several respiratory infectious diseases of public health importance are legally notifiable and are monitored through national surveillance systems

coordinated by the Health Protection Surveillance Centre (HPSC). Notifications are primarily recorded through the Computerised Infectious Disease Reporting system (CIDR), which supports the monitoring of disease incidence, outbreaks, hospitalisations, and mortality associated with respiratory pathogens. In addition, severe acute respiratory infection (SARI) surveillance has been expanded nationally to strengthen preparedness and response capacity for future respiratory epidemics and pandemics.

This chapter focuses on diseases where the impact is mainly on the respiratory system. The structure of this chapter is different to other chapters as each of the diseases is taken as a separate entity.

As acute lower respiratory infections are not uniformly defined, this can hamper an appreciation of their epidemiological importance. In epidemiological data recording, acute lower respiratory infections can include acute bronchitis (ICD 10: J20), acute bronchiolitis (ICD 10: J21), acute lower respiratory infection (unspecified) (ICD 10: J22), influenza (ICD 10: J09, J10, J11) and pneumonia (ICD 10: J12–18). This chapter, unless otherwise specified, will focus on pneumonia (ICD 10: J12–18) and influenza (ICD 10: J09, J10, J11).

In addition, this chapter includes notification and surveillance data from the CIDR system and the HPSC relating to selected respiratory infectious diseases of public health importance in Ireland, including respiratory syncytial virus (RSV), legionellosis, invasive *Streptococcus pneumoniae* disease, invasive *Haemophilus influenzae* disease, influenza, tuberculosis, pertussis, measles, diphtheria, and COVID-19. Tuberculosis and COVID-19 will be addressed in greater detail in separate disease-specific chapters.

12.2 Burden of Disease

Mortality

Pneumonia remains an important contributor to respiratory mortality in Ireland, particularly among older adults. According to the Health in Ireland: Key Trends 2022 report, age-standardised mortality rates for pneumonia declined by 59.2% between 2012 and 2021. In 2021, pneumonia accounted for approximately 3.1% of all deaths recorded in Ireland⁵, compared with 4.9% in 2016.⁴

The 5 year standardised mortality rate (SMR) for pneumonia (J12–18) is shown in the table below. The rate demonstrated a consistent downward trend over the reporting period.⁶

Table 12.1. Pneumonia: ICD-10 J12–18. Deaths, crude mortality rate and five-year age-standardised mortality rate, 2016–2024

Year	Total J12–18	/100,000 population	5yrs*	Age-Standardised Mortality Rate
2016	1100	23.21		
2017	1103	22.93		
2018	1067	21.84		
2019	1031	20.79	2015–19	38.87
2020	770	15.31	2016–20	34.38
2021	713	14.05	2017–21	30.99
2022	856	16.51	2018–22	28.62
2023	867	16.42	2019–23	26.17
2024*	929	17.27	2020–24	23.82

Source: Health Statistics (PHIS) / CSO⁶. *Provisional data for 2024. Five-year age-standardised mortality rates were not available for 2016–2018.

The age-standardised mortality rate (SMR) for influenza (ICD-10: J09–J11) fluctuated over the reporting period, reflecting the variable seasonal burden of influenza.⁶

Table 12.2. Influenza: ICD-10 J09–11. Deaths, crude mortality rate and five-year age-standardised mortality rate, 2016–2024

Year	Total J09–11	/100,000 population	5yrs*	Age-Standardised Mortality Rate
2016	41	0.87		
2017	59	1.23		
2018	151	3.09		
2019	87	1.75	2015–19	2.24
2020	66	1.31	2016–20	2.36
2021	0	0.00	2017–21	2.1
2022	60	1.16	2018–22	2.06
2023	93	1.76	2019–23	1.65
2024*	176	3.27	2020–24	2.11

Source: Health Statistics (PHIS) / CSO⁶. *Provisional data for 2024. Five-year age-standardised mortality rates were not available for 2016–2018.

Incidence and Prevalence

Table 12.3 presents the number of notifications for selected notifiable respiratory infectious diseases in Ireland between 2020 and 2025. Influenza and COVID-19 accounted for the highest number of notifications during the study period. Influenza notifications showed a marked reduction in 2021, followed by an increase from 2022, reaching the highest value in 2025 (38,762 notifications). COVID-19 notifications peaked in 2022, with 919,498 reported cases, before declining considerably in subsequent years. RSV notifications also demonstrated an increasing trend over time, particularly after 2021. Pertussis and measles notifications remained relatively low until 2023, followed by notable increases in 2024. In contrast, legionellosis, tuberculosis, Haemophilus influenzae, and Streptococcus pneumoniae notifications remained comparatively stable throughout the study period.⁷

Table 12.3. Respiratory infectious diseases (notifiable) 2020–2025

Disease	2020	2021	2022	2023	2024	2025
RSV*	1940	4368	7124	7803	4796	7774
Legionellosis	14	7	26	34	29	36
Streptococcus pneumoniae	249	177	375	432	488	575
Haemophilus influenzae	31	18	69	72	82	67
Influenza	7775	39	10392	11751	21297	38762
Tuberculosis	229	203	207	219	288	283
Pertussis	66	5	7	18	713	348
Measles	5	0	2	4	207	51
Diphtheria	0	0	0	0	0	0
COVID-19**	102346	672437	919498	35589	23313	13590

Source: Health Protection Surveillance Centre (HPSC), Infectious Disease Notifications in Ireland.⁷

* RSV notifications prior to 21 June 2022 were processed using a fast-tracked notification system referring to notifications rather than individual patients. ** COVID-19 became a notifiable disease on 20 February 2020.

The majority of respiratory infectious disease notifications reported in Ireland in 2025 were classified as confirmed cases. Influenza recorded the highest number of confirmed notifications (38,737 cases), followed by COVID-19 (13,569 cases) and RSV (7,773 cases). Tuberculosis and pertussis presented a higher proportion of probable and possible classifications compared with the other respiratory infectious diseases. In contrast, notifications of legionellosis, Streptococcus pneumoniae, and RSV were almost entirely classified as confirmed cases. No diphtheria notifications were reported during the reporting period (Table 12.4).⁷

Table 12.4. Distribution of respiratory infectious disease notifications by case classification, Ireland, 2025.

Classification	Confirmed	Probable	Possible	Not Specified	Total
RSV*	7773	1	0	0	7774
Legionellosis	36	0	0	0	36
Streptococcus pneumoniae	575	0	0	0	575
Haemophilus influenzae	66	0	1	0	67
Influenza	38737	7	18	0	38762
Tuberculosis	230	24	29	0	283
Pertussis	259	44	45	0	348
Measles	48	3	0	0	51
Diphtheria	0	0	0	0	0
COVID-19**	13569	12	9	0	13590

Source: Health Protection Surveillance Centre (HPSC), Infectious Disease Notifications in Ireland.⁷

Sex

More females than males died from pneumonia (ICD-10: J12–J18) during the reporting period. In 2024, of the 929 deaths attributed to pneumonia, 47.26% occurred among males and 52.74% among females. Similar patterns were observed across previous years, with females consistently accounting for the majority of deaths.

Despite the higher number of deaths among females, age-standardised mortality rates were consistently higher among males. In 2024, the five-year age-standardised mortality rate was 27.76 per 100,000 population for males, compared with 20.99 per 100,000 population for females. The combined five-year age-standardised mortality rate for both sexes declined from 38.87 per 100,000 population in 2019 to 23.82 per 100,000 population in 2024.

Influenza mortality (ICD-10: J09–J11) was similar between males and females during the reporting period. In 2024, males accounted for 52.27% of influenza deaths, while females accounted for 47.73%. However, age-standardised mortality rates were consistently higher among males. In 2024, the five-year

age-standardised mortality rate was 2.53 per 100,000 population for males, compared with 1.91 per 100,000 population for females.⁶

More males than females were hospitalised with pneumonia between 2019 and 2024. In the most recent year, 52.0% of inpatient discharges occurred among males and 48.0% among females. This pattern was observed consistently throughout the reporting period. In 2024, males accounted for 50.2% of influenza-related inpatient discharges, while females accounted for 49.8%.⁸

Sex distribution varied across respiratory infectious disease notifications in Ireland in 2025. A higher proportion of female notifications was observed for influenza (53.74%), COVID-19 (51.79%), RSV infection (50.45%), and pertussis (51.44%). Conversely, males accounted for the majority of notifications related to tuberculosis (66.08%), legionellosis (66.67%), Haemophilus influenzae infection (55.22%), Streptococcus pneumoniae infection (54.78%), and measles (54.90%). Influenza and COVID-19 represented the highest absolute number of notifications in both sexes throughout the reporting period (Table 12.5).⁷

Table 12.5. Respiratory infectious disease notifications by sex, Ireland, 2025.

Sex	Male	Female	Unknown	Not Specified	Total
RSV*	3848	3922	4	0	7774
Legionellosis	24	12	0	0	36
Streptococcus pneumoniae	315	257	0	3	575
Haemophilus influenzae	37	28	0	2	67
Influenza	17911	20830	21	0	38762
Tuberculosis	187	96	0	0	283
Pertussis	157	179	1	11	348
Measles	28	22	0	1	51
Diphtheria	0	0	0	0	0
COVID-19**	6552	7038	0	0	13590

Source: Health Protection Surveillance Centre (HPSC), Infectious Disease Notifications in Ireland.⁷

Age

The majority (>90%) of deaths from pneumonia (ICD-10: J12–18) occur in those aged 64 years and over (Table 12.6). The proportion of influenza-related deaths occurring among individuals aged under 64 years was higher and more variable than that observed for pneumonia, with peaks recorded in 2018 and 2019 (Table 12.7).⁶

Table 12.6. Pneumonia: ICD-10 J12–18 Years of Potential Life lost (YPLL): 2017–2024

Year	Standardised Mortality Rate All ages	Total Deaths J12–18	Deaths J12–18 age < 64yrs (%)	YPLL 0 - 64 yrs J12–18	YPLL/100,000 population J12–18	Lower 95% CI	Upper 95% CI
2017	39.47	1103	45 (4.08%)	569	14.45	8.77	20.13
2018	36.16	1067	68 (6.37%)	858	20.95	14.37	27.53
2019	33.86	1031	60 (5.82%)	677	16.25	10.24	22.27
2020	24.55	770	58 (7.53%)	653	15.32	10.12	20.52
2021	22.05	713	51 (7.15%)	647	15.51	9.39	21.63
2022	24.79	856	64 (7.48%)	762	17.39	11.22	23.57
2023	23.41	867	71 (8.19%)	912	20.43	14.09	26.78
2024	23.52	929	74 (7.97%)	870	19.44	13.81	25.08

Source: Health Statistics (PHIS) / CSO⁶.

Table 12.7. Influenza: ICD-10 J09–11 Years of Potential Life lost (YPLL): 2017–2024

Year	Standardised Mortality Rate All ages	Total Deaths J09–11	Deaths J09–11 age < 64yrs (%)	YPLL 0 - 64 yrs J09–11	YPLL/100,000 population J09–11	Lower 95% CI	Upper 95% CI
2017	2	59	3 (5.08%)	118	2.41	0	5.49
2018	4.55	151	21 (13.91%)	366	7.95	3.12	12.77
2019	2.38	87	21 (24.14%)	393	9.19	4.09	14.29
2020	1.92	66	8 (12.12%)	183	3.75	0.02	7.48
2021	0	0	0 (0.00%)	0	0	0	0
2022	1.52	60	6 (10.00%)	75	1.54	0	3.56
2023	2.41	93	7 (7.53%)	47	1.18	0.11	2.25
2024	4.45	176	10 (5.68%)	113	2.6	0.4	4.81

Source: Health Statistics (PHIS) / CSO⁶.

Of inpatient hospitalisations for pneumonia in 2024, 1,940 (10.80%) were aged 0-14 years using 13.52% of respiratory inpatient bed days (2.19% of all inpatient bed days) in that age group, 4,751 (26.45%) were aged 15-64 years using 28.24% of respiratory inpatient bed days (2.36% of all inpatient bed days) in that age group and 11,274 (62.76%) were aged 65 years or over using 33.85% of respiratory inpatient bed days (5.63% of all inpatient bed days) in that age group.

Another way of looking at these figures for 2024 is, of those aged 0-14 years hospitalised with a respiratory illness, 10.47% (1,940) had pneumonia, the figure for those aged 15-64 years was 19.10% (4,751), while for those aged 65 years or over it was 27.02% (11,274).

Of inpatient hospitalisations for acute upper respiratory infections and influenza in 2024, 6,397 (47.85%) were aged 0-14 years using 26.13% of respiratory inpatient bed days (4.23% of all inpatient bed days) in that age group, 3,890 (29.10%) were aged 15-64 years using 9.16% of respiratory inpatient bed days (0.77% of all inpatient bed days) in that age group and 3,081 (23.05%) were aged 65 years or over using 6.16% of respiratory inpatient bed days (1.02% of all inpatient bed days) in that age group.

As with pneumonia another way of looking at these figures is to say in 2024, of those aged 0-14 years hospitalised with a respiratory illness, 34.54% (6,397) had acute upper respiratory infections and influenza, the figure for those aged 15-64 years was 15.64% (3,890), while for those aged 65 years or over it was 7.38% (3,081).⁸

In 2025, RSV infection was predominantly reported among children aged 0–4 years, accounting for 50.01% of notifications. Pertussis and measles were also more frequently reported in younger age groups, with 47.41% and 45.10% of notifications occurring among children aged 0–4 years, respectively. In contrast, notifications of COVID-19, *Streptococcus pneumoniae* infection, legionellosis, and *Haemophilus influenzae* infection were predominantly reported among individuals aged 65 years and older, representing 52.74%, 51.13%, 55.56%, and 47.76% of notifications, respectively. Influenza notifications were distributed across all age groups, although the highest proportion was observed among older adults aged ≥65 years (31.02%). Tuberculosis notifications showed a broader distribution across adult age groups, with the highest proportions reported among individuals aged 25–34 years (24.03%) and 35–44 years (21.55%).⁷

Table 12.8. Respiratory infectious disease notifications by age group, Ireland, 2025.

Age group	0-4 yrs	5-9 yrs	10-14 yrs	15-19 yrs	20-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65+ yrs	Unknown	Total
RSV*	3888	275	90	76	65	206	222	261	441	2250	0	7774
Legionellosis	0	0	0	0	1	0	0	4	11	20	0	36
Streptococcus pneumoniae	51	23	1	5	5	20	38	55	83	294	0	575
Haemophilus influenzae	17	0	0	1	1	4	2	4	6	32	0	67
Influenza	6116	3227	1852	1986	1615	3225	3146	2732	2833	12023	7	38762
Tuberculosis	7	4	3	7	18	68	61	49	26	40	0	283
Pertussis	165	36	32	7	11	12	15	27	21	22	0	348
Measles	23	6	3	2	6	8	1	2	0	0	0	51
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0
COVID-19**	1467	234	187	249	279	825	957	979	1244	7167	2	13590

Source: Health Protection Surveillance Centre (HPSC), Infectious Disease Notifications in Ireland. ⁷

Due to the impact of the COVID-19 pandemic response and limited operational capacity at the HPSC, several Annual Epidemiological Reports for communicable diseases from 2019 onwards were not published. Consequently, some disease-specific epidemiological information included in this report was obtained from the most recently available HPSC annual reports.

Respiratory Outbreaks (notified)

In 2025, respiratory infectious disease outbreaks in Ireland affected 11,745 individuals across 1,554 notified outbreaks. COVID-19 accounted for the highest number of affected individuals (5,826 cases), followed by influenza (4,959 cases) and RSV (754 cases). Data were obtained from the Health Protection Surveillance Centre (HPSC) outbreak surveillance dashboard, which provides weekly updated national outbreak notification data. ⁹

Table 12.9. Respiratory infectious disease outbreaks and number of affected individuals, Ireland, 2025.

Disease	Outbreak number	Number affected
COVID-19	814	5826
Influenza	574	4959
Measles	9	31
Pertussis	45	124
RSV	94	754
Tuberculosis	12	30
Streptococcus group A infection (invasive)	6	21
Total	1554	11745

Source: HSE Health Protection Surveillance Centre 2026⁹

Regional Variation

Outbreak-associated cases in 2025 were most frequently reported in HSE Dublin and South East (23.58%) and HSE Dublin and Midlands (21.60%), while the lowest proportion was observed in HSE Midwest (5.99%). Smaller numbers of outbreak-associated cases were reported for measles, pertussis, tuberculosis, and invasive Group A Streptococcus infection. ⁹

Haemophilus influenzae (invasive)

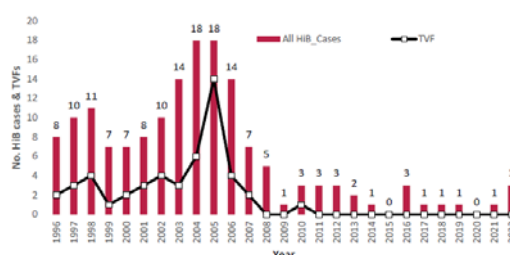
There were 67 cases of invasive Haemophilus influenzae notified in Ireland in 2025, corresponding to a crude incidence rate of 1.23 per 100,000 population. ⁷ Previous surveillance data demonstrated a marked reduction in notifications during the COVID-19 pandemic, particularly between Q2 2020 and Q3 2021, likely reflecting the impact of public health restrictions. During this period, annual notifications declined from 58 cases in 2018 and 63 in 2019 to 31 in 2020 and 18 in 2021, before increasing again to 69 cases in 2022.

The incidence was highest among individuals aged 65 years and over (16.3/100,000 population) and infants aged under 1 year (12.4/100,000 population). The median age of cases reported between 2018 and 2022 was 60 years (range: 3 days to 97 years). Individuals aged 65 years and older accounted for 43.5% of cases, followed by children aged 0–4 years (17.2%; n=41).

Although non-typeable infections remained predominant, a reduction in their proportional contribution has been observed in recent years, while the proportion of type b cases has remained low since 2009. Between 2018 and 2022, 20 deaths were reported, with individuals aged 65 years and older accounting for 45.0% of fatal cases. During the same period, septicaemia and pneumonia represented the most common clinical diagnoses (41.4%; n=99/239).

Since 2008, a booster dose of the *Haemophilus influenzae* type b (Hib) vaccine has been included in the routine childhood immunisation schedule at 13 months of age, in addition to doses administered at 2, 4, and 6 months. No complete vaccine failures have been reported since 2011 (Figure 12.1).¹⁰

Figure 12.1. Number of *H. influenzae* type b cases and total vaccine failures, Ireland, 1996–2022



Source: Health Protection Surveillance Centre (HPSC). Annual Epidemiological Report: *Haemophilus influenzae* in Ireland, 2022. September 2024. Note: Data were extracted from the Computerised Infectious Disease Reporting (CIDR) system on 05 September 2024 and may be subject to ongoing updates.

Measles

There were 51 measles cases notified in Ireland in 2025, corresponding to a crude incidence rate of 0.93 per 100,000 population.⁷ In comparison, 76 cases (1.6/100,000 population) were reported in 2018, compared with 25 cases in 2017.

Among the 76 reported cases, age ranged from seven months to 52 years, with a median age of 19 years and a mean age of 20 years. Nearly two-thirds of notifications occurred among individuals aged 15 years and older.

In 2018, five measles outbreaks involving 67 cases were reported, in addition to two linked case pairs. The highest age-specific incidence was observed among infants aged under one year.

Among the 76 reported measles cases, 72% were unvaccinated, while only 4% had received two doses of the MMR vaccine. Hospitalisation was required in 41% of cases, with a median length of stay of four days. Reported complications included pneumonia, respiratory tract infection, meningitis, seizures, and dehydration.¹¹

Pertussis (whooping cough)

There were 348 pertussis cases notified in Ireland in 2025, corresponding to a crude incidence rate of 6.38 per 100,000 population.⁷

In comparison, 117 cases were reported in 2018, compared with 263 cases in 2017 and 213 cases in 2016. In 2018, the highest age-specific incidence was observed among infants aged under one year, with 32% of notifications occurring in children aged less than six months.

Hospitalisation was reported in 39% of cases, with 65% of hospitalised individuals aged under six months. No deaths were reported.

In Ireland, routine pertussis vaccination includes doses administered at 2, 4, and 6 months of age, with booster doses recommended during childhood, adolescence, pregnancy, and for healthcare workers. In 2018, vaccination status was reported for 67% (n=78/117) of notified cases, of whom 29% were unvaccinated, with most unvaccinated cases occurring among infants aged under six months.

Maternal vaccination with Tdap during pregnancy is recommended to provide passive protection against pertussis in infants prior to primary immunisation. In 2018, maternal antenatal vaccination data were available for 37 infants aged under one year. Overall, 74% of infant pertussis cases had mothers who were unvaccinated during pregnancy, while 14% reported maternal vaccination during the antenatal period.¹²

Streptococcus pneumoniae (invasive)

Invasive *Streptococcus pneumoniae* infection is a notifiable disease in Ireland. These infections are referred to as invasive pneumococcal disease (IPD), which includes meningitis, bloodstream infection with or without pneumonia, and infections involving other normally sterile sites.

There were 575 *Streptococcus pneumoniae* notifications reported in Ireland in 2025, corresponding to a crude incidence rate of 10.53 per 100,000 population.⁷ In 2024, 488 confirmed cases of IPD were reported in Ireland. Among these cases, 38 deaths were recorded, corresponding to a case fatality ratio of 7.8%, while 9 (1.8%) deaths were directly attributed to IPD.

The incidence of IPD increased from 8.4 per 100,000 population in 2023 to 9.5 per 100,000 population in 2024. The highest age-specific incidence rates were observed among individuals aged 85 years and older, followed by those aged 75–84 years and 65–74 years.

Clinical diagnosis data were available for 38.3% (197/488) of confirmed IPD cases reported in 2024. Bacteraemic pneumonia was the most frequently reported clinical presentation (n=141), followed by meningitis (n=22). Data completeness has declined since the COVID-19 pandemic.

Medical risk factor data were available for 31.4% (153/488) of confirmed IPD cases reported in 2024. The

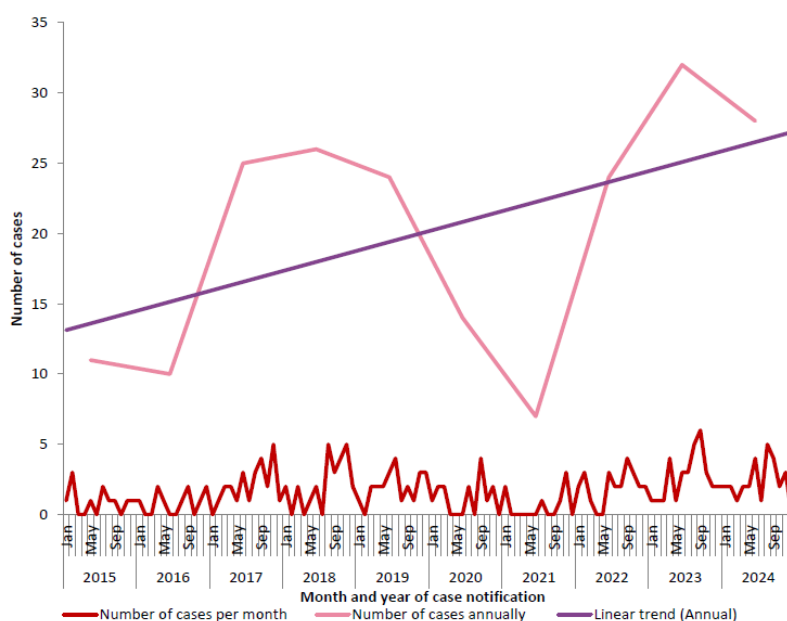
most commonly reported risk factors were chronic lung disease (41.8%), chronic heart disease (31.9%), and immunosuppressive conditions or therapies (25.5%). Individuals aged 65 years and older accounted for 44.7% of reported cases.

A reduction in the incidence of PCV7 vaccine serotypes was observed in 2024. In contrast, incidence due to non-vaccine serotypes increased across multiple age groups, particularly among individuals aged 65 years and older.¹³

Legionellosis

There were 36 cases of legionellosis notified in Ireland in 2025, corresponding to a crude incidence rate of 0.66 per 100,000 population.⁷ In 2024, 28 cases of Legionnaires' disease were reported, with the notification rate remaining relatively stable at 5.4 per million population, compared with 6.2 per million population in 2023. Most notified cases occurred among males (57%), and the median age was 59 years (range: 16–85 years). One death associated with Legionnaires' disease was reported, corresponding to a case fatality rate of 3.6%. The majority of reported cases (96%) were classified as confirmed *Legionella pneumophila* infections. Legionnaires' disease notifications showed an overall increasing trend between 2015 and 2024, despite temporary reductions during the COVID-19 pandemic years (Figure 12.2).¹⁴

Figure 12.2. Number of Legionnaires' disease cases by month and year of notification in Ireland, 2015–2024



Source: Health Protection Surveillance Centre (HPSC). Annual Epidemiological Report: Legionellosis in Ireland, 2024.¹⁴ November 2025.

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See Chapter 13.

Influenza and Other Seasonal Respiratory Viruses

There were 38,762 influenza notifications reported in Ireland in 2025, corresponding to a crude incidence rate of 710.11 per 100,000 population.⁷ The 2018/2019 influenza season was associated with a substantial healthcare burden in Ireland, including elevated influenza-like illness consultation rates, high numbers of hospitalisations and ICU admissions, and increased mortality among adults aged 65 years and older. Influenza-like illness consultation rates exceeded the baseline threshold of 17.5 per 100,000 population for eight consecutive weeks during early 2019, without surpassing the medium activity threshold of 62.3 per 100,000 population. The highest age-specific notification rates for influenza, including hospitalised cases, were observed among children aged under five years and adults aged 65 years and older. Influenza A(H1N1)pdm09 and influenza A(H3N2) co-circulated during the 2018/2019 season, while influenza B circulation remained limited. Influenza A(H1N1) pdm09 predominated during the early phase of the season, with influenza A(H3N2) becoming more frequent towards the later weeks. During the 2018/2019 season, respiratory syncytial virus (RSV) activity remained high, with 1,476 RSV-positive specimens reported from non-sentinel sources. RSV detections peaked in early December.¹⁵

Impact on hospitals

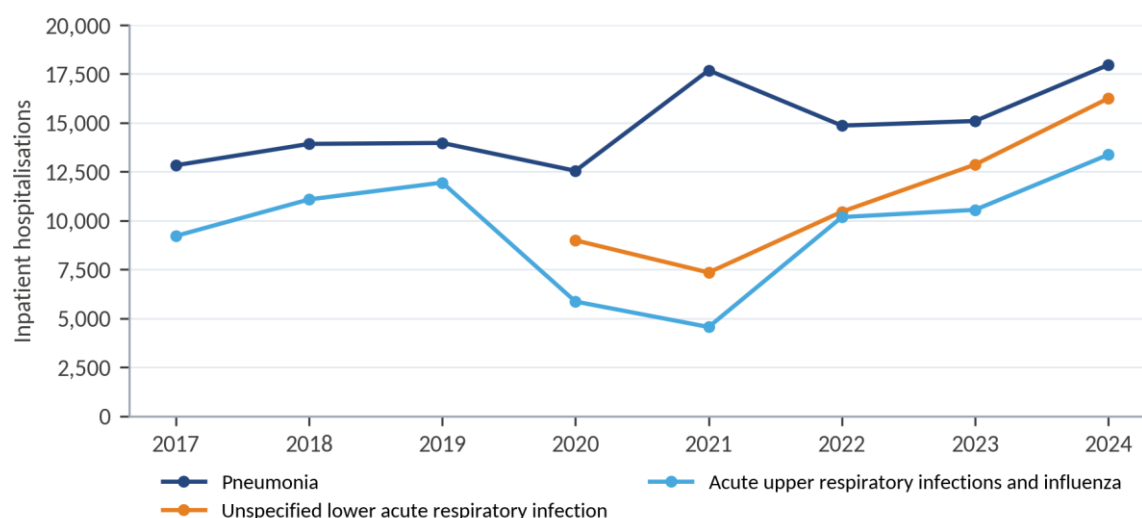
Figure 12.3 shows trends in inpatient hospitalisations with a primary diagnosis of pneumonia, unspecified lower acute respiratory infection, and acute upper respiratory infections and influenza between 2017 and 2024. Pneumonia admission rates remained relatively stable between 2017 and 2020, followed by a marked

increase in 2021, when pneumonia accounted for 2.95% of all inpatient discharges and a hospitalisation rate of 349 per 100,000 population. After a temporary decline in 2022 and 2023, the number of hospitalisations increased again in 2024, reaching the highest value recorded during the study period (17,965 hospitalisations; 334 per 100,000 population). In 2024, pneumonia accounted for 18,110 hospitalisations (day-cases and inpatients). Of these, 17,965 (99.2%) were inpatients who occupied 178,572 (4.23% of all inpatient bed days, 31.08% of all respiratory inpatient bed days).

Admissions related to unspecified lower acute respiratory infection increased substantially between 2020 and 2024. Following a decline in 2021 (7,344 hospitalisations; 145 per 100,000 population), rates increased progressively over subsequent years, reaching the highest level in 2024, when these infections accounted for 2.32% of all inpatient discharges and a hospitalisation rate of 302 per 100,000 population. In total, unspecified lower acute respiratory infections accounted for 16,789 admissions in 2024, of which 16,251 (96.8%) were inpatient admissions. These cases accounted for 93,443 bed days, representing 2.21% of all inpatient bed days and 16.26% of all respiratory inpatient bed days.

Hospitalisations with a primary diagnosis of acute upper respiratory infections and influenza declined markedly during 2020 and 2021, reaching the lowest rate in 2021 (90 per 100,000 population). Rates subsequently increased from 2022 onwards, with 2024 recording the highest number of hospitalisations during the study period (13,368 hospitalisations; 248 per 100,000 population), accounting for 1.91% of all inpatient discharges. In 2024, acute upper respiratory infections and influenza accounted for 13,669 hospitalisations. Of these, 13,368 (97.8%) were inpatients who occupied 47,857 (1.13% of all inpatient bed days, 8.33% of all respiratory inpatient bed days).⁸

Figure 12.3. Inpatient hospitalisations with a primary diagnosis of pneumonia, unspecified lower acute respiratory infection, and acute upper respiratory infections and influenza, Ireland, 2017–2024



Source: HIPE 2017–2024⁸. Data for unspecified lower acute respiratory infection are not available for 2017–2019.

Determinants and Risk Factors

Respiratory infections can be caused by several viruses, including influenza (A and B), RSV, human parainfluenza virus, rhinovirus, adenovirus and human coronavirus (e.g. SARS and MERS-CoV), and are commonly transmitted through contact, respiratory droplets, and airborne spread. Those at increased risk of complications from respiratory infections comprise people with chronic respiratory disease, cardiovascular disease, chronic kidney disease, diabetes, asplenia or splenic dysfunction, frail older adults with multiple comorbidities, and those who are unvaccinated or partially vaccinated, who are at greater risk of infection and severe illness.¹⁶

12.3 Prevention, Diagnosis and Management

Preventive and infection prevention and control (IPC) measures are essential to reduce the spread of respiratory viral infections within healthcare settings in Ireland. Current national guidance emphasises the importance of maintaining and strengthening IPC practices, particularly during periods of increased transmission of respiratory viral infections and peaks in hospital admissions. Recommended measures include hand and respiratory hygiene, vaccination and booster vaccination programmes, appropriate ventilation, environmental cleaning, use of personal protective equipment (PPE), testing of symptomatic individuals, implementation of transmission-based precautions,

patient isolation, and cohorting of patients with the same confirmed respiratory viral infection where necessary.¹⁷

Access to Care

Access to care for ARI in Ireland is provided through both community-based and hospital healthcare services. Uncomplicated acute respiratory infections are commonly managed in the community and may not require medical attention. However, early recognition of individuals with, or at risk of, severe disease is considered essential, with access to assessment by healthcare professionals including general practitioners (GPs), Out-of-Hours Services, and Emergency Departments regarded as critical components of care delivery in Ireland.¹⁸

Diagnosis

Diagnosis of acute respiratory infections (ARI) in Ireland is based on clinical presentation and established case definitions. According to national guidance, ARI includes both influenza-like illness and other acute viral respiratory infections, with case definitions based on sudden onset of symptoms, respiratory manifestations such as cough, sore throat, shortness of breath or coryza, and clinical judgement suggestive of infectious aetiology.

Rapid differential diagnosis is important in individuals presenting with respiratory infections, as several viral and bacterial pathogens may produce similar symptoms. National guidance also highlights that co-infections may occur; therefore, a positive test result for

one pathogen does not necessarily exclude the presence of other infectious agents or the need for further microbiological investigation.¹⁸

During periods of increased respiratory virus circulation, the co-circulation of COVID-19, influenza, and other respiratory viruses may present an additional diagnostic challenge, as these infections can be difficult to distinguish on the basis of clinical symptoms alone. National guidance therefore highlights the importance of laboratory confirmation for definitive diagnosis.¹⁹

Management

Although several infectious agents are associated with ARI, the following section focuses on treatment considerations for COVID-19, influenza, and RSV, which are among the principal respiratory viral infections addressed in current national guidance.

For RSV, early recognition of individuals with, or at risk of, severe disease is important, with assessment available through healthcare professionals such as GPs, Out-of-Hours Services, and Emergency Departments. Ribavirin may be considered for a small number of patients with severe illness, under specialist supervision. Symptomatic individuals are advised to avoid contact with others from symptom onset until they have recovered and no longer have a fever.

For seasonal influenza, early identification of individuals with, or at risk of, severe disease is also emphasised. National guidance highlights the importance of diagnosing and managing co-infections, including other respiratory viral infections and secondary bacterial infections associated with febrile illness. Symptomatic cases not treated with antivirals should stay away from others for at least 5 days, or until symptoms have resolved if longer. For cases treated with antivirals, this period is reduced to at least 3 days, or until symptoms have resolved if longer. For COVID-19, early recognition of individuals with, or at risk of, severe disease and access to healthcare assessment are also highlighted. Diagnosis and treatment of co-infections, including other respiratory viral and secondary bacterial infections, are considered important. Symptomatic individuals should remain at home after symptom onset and may return to normal activities after clinical improvement and being fever-free for at least 24 hours, with specific recommendations varying by age group and clinical presentation.¹⁸

12.4 Conclusions

Respiratory infections place a large and recurring burden on the Irish health system. They account for

more than four in ten infection-related hospital admissions, and pneumonia alone occupied almost a third of all respiratory inpatient bed days in 2024. Admissions for pneumonia, unspecified lower respiratory infection and acute upper respiratory infection all reached their highest levels in 2024, adding to winter pressure on acute hospitals.

There is real progress to recognise. Age-standardised mortality from pneumonia has fallen steadily, and complete Hib vaccine failures have not been reported since 2011. However, the burden falls most heavily on the youngest and oldest members of the population. Young children account for most notifications of RSV, pertussis and measles, while older adults account for most invasive pneumococcal disease, legionellosis and COVID-19 notifications, as well as the great majority of pneumonia deaths.

The resurgence of pertussis and measles since 2023 is a clear warning. Both are preventable by vaccination, and most recent measles cases occurred in unvaccinated people. Sustaining high uptake of childhood vaccines, maternal pertussis vaccination and seasonal vaccination for older and at-risk adults remains the most effective protection against these infections.

Surveillance also needs strengthening. Several national annual epidemiological reports have not been published since 2019, and some of the detail in this chapter relies on data that is now several years old. Timely, routinely published surveillance data are essential to detect outbreaks, target vaccination programmes and plan hospital capacity for each respiratory season.

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Tuberculosis

13

Key Points

- Ireland remains a low-incidence country for TB, with fewer than 10 cases per 100,000 population annually. In 2025, 285 cases were notified, corresponding to a rate of 5.22 per 100,000.
- Current TB incidence remains above the trajectory required to achieve the WHO End TB Strategy target of an 80% reduction in incidence by 2030.
- The highest age-specific TB notification rate in 2025 was among people aged 25–34 years (11.0 per 100,000), while mortality was predominantly observed among people aged over 50 years. TB-related hospitalisations and five-year age-standardised mortality rates were also higher among males than females.
- In 2024, TB accounted for 216 hospitalisations and 4,002 bed days. Most hospitalisations occurred among people aged 15 – 64 years, while those aged ≥65 years had the longest average length of stay (26 days).
- The Selective BCG Vaccination Programme is being rolled out in phases across Ireland. It aims to protect infants under 12 months who are at higher risk of exposure to tuberculosis (TB), in line with NIAC recommendations and the National TB Strategy. Regional services are putting local arrangements in place, and eligible babies born on or after 1 June 2026 are the first to be offered vaccination through the programme.
- Two years into the National TB Strategy published in 2024, implementation has been uneven. Of the fifteen actions prioritised for year one, two are assessed as delivered, six as partially progressed and seven as not yet begun. The National TB Lead post remains vacant, and a national model of care, standardised national contact tracing and programmatic management of TB infection have yet to be established.

13.1 Background

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* and transmitted through the air when people with TB disease expel bacteria, for example through coughing. TB most commonly affects the lungs (pulmonary TB) but can also affect other sites

(extrapulmonary TB)¹. It remains a significant public health challenge globally and in Ireland. About one third of the world's population carries a latent TB infection, and around 10% of these people will develop active TB in their lifetime.²

Ireland is classified as a low-incidence country for TB, with fewer than 10 cases per 100,000 population annually². However, recent trends indicate that progress towards the WHO End TB Strategy target has not been sustained, with current notification levels remaining above the trajectory required to achieve an 80% reduction in TB incidence by 2030 compared with 2015 levels.³

In 2024, the HSE published “Striving to End Tuberculosis – A Strategy for Ireland 2024–2030”, Ireland's first National TB Strategy, setting out a collaborative approach towards TB elimination. The strategy outlines priorities to address the social determinants of TB, improve prevention, detection and care, strengthen the multidisciplinary TB workforce, and improve TB advocacy, knowledge and awareness³. Implementation of the strategy has included the development of updated National Tuberculosis Guidelines for Ireland.⁴

According to the World Health Organization (WHO), the burden of TB is influenced by a combination of individual risk factors and broader socioeconomic and environmental determinants. Globally, five major risk factors account for a substantial proportion of new TB cases: undernutrition, HIV infection, alcohol use disorders, smoking and diabetes. Wider determinants include poverty, inadequate social protection, poor living conditions and indoor air pollution. Climate change may further influence TB through food insecurity and undernutrition, population displacement and migration, and disruption of health systems.⁵

Migrants represent an important population in the epidemiology of TB in Ireland. Analysis of national surveillance data identified 3,364 TB cases between 2011 and 2021, of which 48% occurred among migrants. TB incidence remained substantially higher among migrants, declining from 25.2 to 15.2 per 100,000 over this period, compared with a decline from 5.6 to 1.2 per 100,000 among Irish-born people. Notably, between 2017 and 2021, the declining trend was no longer statistically significant among migrants. Migrants with TB were also more likely than Irish-born patients to have extrapulmonary disease, HIV infection, drug-resistant TB and to reside in congregate accommodation.⁶

For the purposes of this report, respiratory tuberculosis was identified using ICD-10 codes A15 (respiratory

tuberculosis, bacteriologically and histologically confirmed) and A16 (respiratory tuberculosis, not confirmed bacteriologically or histologically), where specified. Other national datasets report tuberculosis under broader categories, and definitions may vary according to the data source. The specific classification used is indicated alongside the relevant data, where available.

13.2 Burden of Disease

Incidence and Prevalence

The number of tuberculosis (TB) cases notified over the past decade (2016–2025) is shown in Table 13.1.⁷

In 2025, 285 TB cases were notified, with a crude rate of 5.22 per 100,000 population, remaining broadly stable compared with 2024. TB notification rates in 2024–2025 were comparable to levels observed prior to 2019 (Figure 13.1).⁷

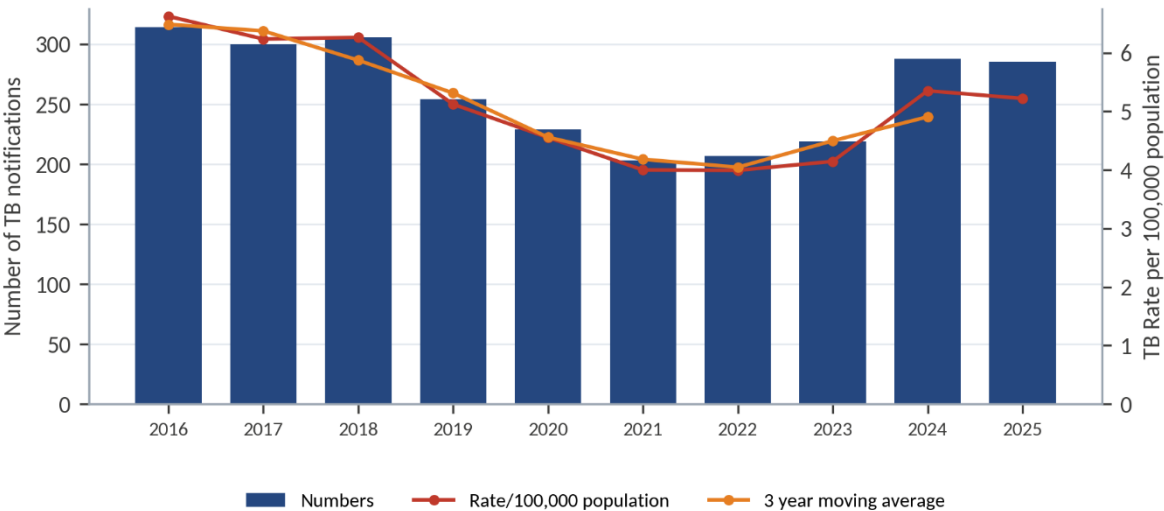
Table 13.1. TB notifications Number and Rate/100,000 2016–2025

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Numbers	314	300	306	254	229	203	207	219	288	285
Rate/100,000 population	6.63	6.24	6.26	5.12	4.55	4.00	3.99	4.15	5.35	5.22

Source: TB notification counts from the Health Protection Surveillance Centre (HPSC), Tuberculosis in Ireland: provisional trends in surveillance data, 2026; annual population estimates from the Central Statistics Office (CSO). Rates calculated by the report authors.

The lower rates observed during the peak of the COVID-19 pandemic likely reflect reduced access to diagnostic services.

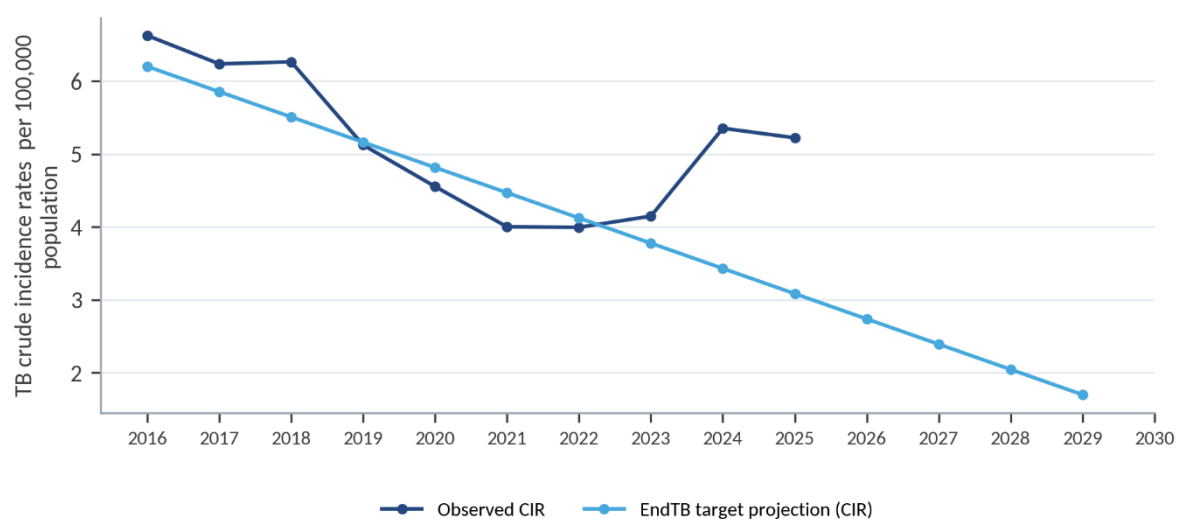
Figure 13.1. Notified cases of TB in Ireland with crude rate and 3 year moving average 2016–2025



Source: Health Protection Surveillance Centre (HPSC), HSE, Tuberculosis in Ireland: provisional trends in surveillance data, 2026.⁷

An 80% reduction in TB incidence by 2030, relative to 2015 levels, is required to achieve the End TB target. Current TB incidence remains above the End TB target projection (Figure 13.2). If this increase since 2024 is sustained, Ireland may no longer meet the definition of a low-TB-incidence country, which is defined as having a crude incidence rate (CIR) of ≤ 10 cases per 100,000 population.

Figure 13.2. TB target projection in Ireland, 2016–2030.



Source: Health Protection Surveillance Centre (HPSC), HSE, Tuberculosis in Ireland: provisional trends in surveillance data, 2026.⁷

Notifications among children have also risen since COVID-19 ceased to be a Public Health Emergency of International Concern in May 2023. Fourteen cases were notified in children aged under 15 years in 2025, following 13 cases in 2024. These are the highest annual totals since 2016, when 17 cases were notified. Three of the 2025 cases occurred in infants aged under one year, including one case of congenital TB.⁴

Five cases with at least rifampicin resistance were notified in 2025, all of which were classified as multidrug-resistant or pre-extensively drug-resistant TB. This represents a decrease on 2024, although the small annual numbers involved mean that year-on-year changes should be interpreted with caution.⁴

Mortality

In 2023, 219 tuberculosis cases were notified and 9 deaths from respiratory tuberculosis (ICD-10 A15–A16) were recorded. In 2024, 288 cases were notified and 12 deaths from tuberculosis (not restricted to respiratory tuberculosis) were recorded.⁸

Table 13.2. Tuberculosis deaths and mortality rates in Ireland, 2016–2024.

Year	Total Deaths A15–16	/100000	Age-Standardised 5year* (IC 95%)
2016	11	0.23	
2017	11	0.23	
2018	18	0.37	
2019	6	0.12	0.47 (0.23–0.72)
2020	16	0.32	0.46 (0.23–0.7)
2021	11	0.22	0.46 (0.22–0.69)
2022	7	0.14	0.42 (0.2–0.64)
2023	9	0.17	0.35 (0.15–0.55)
2024*	12	0.22	0.38 (0.18–0.58)

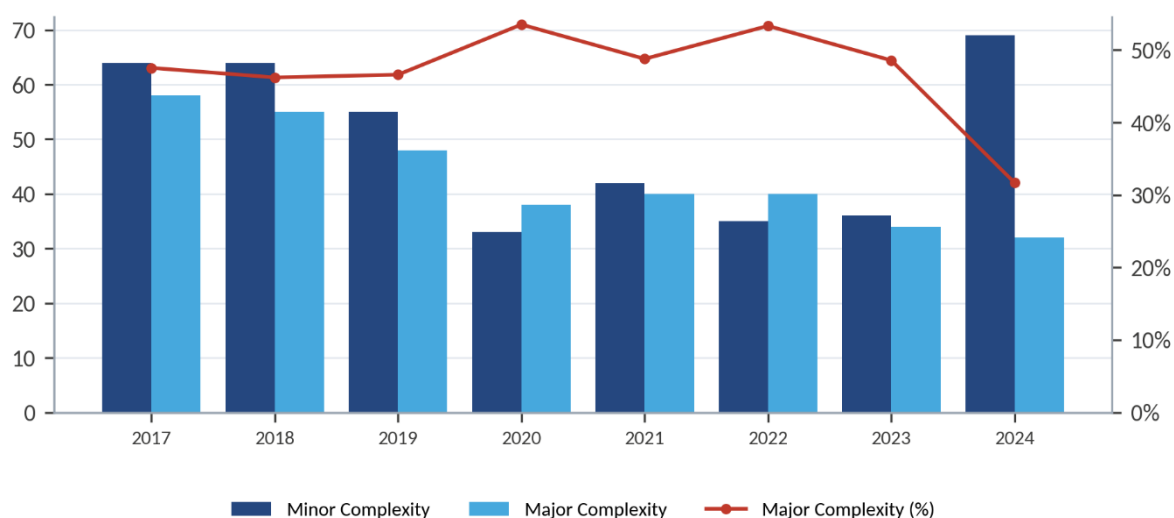
Source: Health Statistics (PHIS) / CSO⁸. *Provisional data for 2024: Tuberculosis not defined as respiratory only.

Hospitalisations

In 2024, there were 216 hospitalisations among people with TB, accounting for 4,002 bed days (0.7% of respiratory bed days and 0.09% of all hospital bed days). Of these hospitalisations, 81.0% (n=175) were among people aged 15–64 years.⁹

Of the 101 inpatient discharges assigned to respiratory tuberculosis AR-DRGs in 2024, 32 (31.7%) were classified as major complexity (E76A) and 69 (68.3%) as minor complexity (E76B). The proportion classified as major complexity decreased from 48.6% in 2023 to 31.7% in 2024, its lowest level since 2017 (Figure 13.3).¹⁰

Figure 13.3. TB inpatient discharges assigned to respiratory tuberculosis AR-DRGs, by complexity, 2017–2024.



Source: Source: Based on the Activity in Acute Public Hospitals reports, 2017–2024. ¹⁰

Sex

During the five-year period from 2019 to 2023, respiratory tuberculosis (ICD-10: A15–A16) resulted in 49 deaths, with males accounting for 28 (57.1%) and females for 21 (42.9%). Five-year age-standardised mortality rates were consistently higher among males than females (Table 13.3).⁸

TB-related inpatient hospitalisations were consistently higher among males than females across the reported period. In 2024, there were 216 inpatient discharges, with males accounting for 64.8% and females for 35.2%.⁹

Table 13.3. Respiratory tuberculosis deaths and five-year age-standardised mortality rates by sex in Ireland, 2019–2024.*

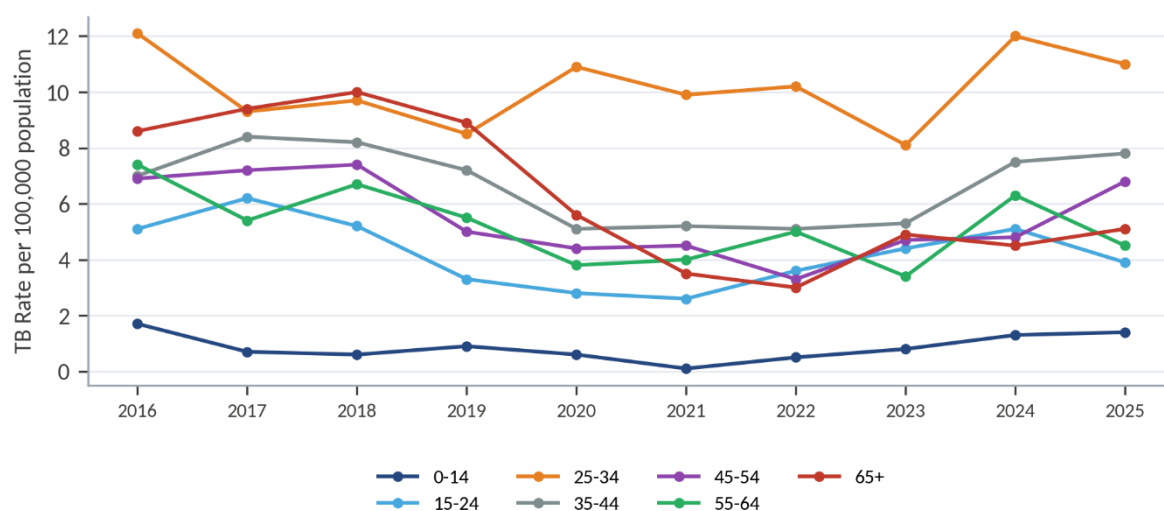
Year	Total TB deaths (Male) A15–16	Total TB deaths (Female) A15–16	5 yrs – A15–16	Five-year age- standardised mortality rate* - Male (IC 95%)	Five-year age- standardised mortality rate* - Female (IC 95%)
2019	4	2	2015–19	0.65 (0.19–1.11)	0.45 (0.14–0.76)
2020	8	8	2016–20	0.44 (0.11–0.77)	0.38 (0.1–0.67)
2021	4	7	2017–21	0.48 (0.1–0.85)	0.32 (0.06–0.58)
2022	5	2	2018–22	0.46 (0.1–0.83)	0.31 (0.06–0.56)
2023	7	2	2019–23	0.46 (0.09–0.82)	0.31 (0.06–0.55)
2024*	6	6	2020–24	0.42 (0.09–0.75)	0.29 (0.06–0.52)

Source: Health Statistics (PHIS) / CSO. *Provisional data for 2024: Tuberculosis not defined as respiratory only.

Age

The trends in age-specific TB notification rates between 2016 and 2025 are shown in Figure 13.4. Since 2020, the highest age-specific notification rate has consistently been observed among those aged 25–34 years, reaching 11.0 per 100,000 population in 2025.⁷

Figure 13.4. Age-specific TB notification rates per 100,000 population, 2016–2025.



Source: Health Protection Surveillance Centre (HPSC), HSE, Tuberculosis in Ireland: provisional trends in surveillance data, 2026.⁷

Tuberculosis mortality in Ireland was predominantly observed in older adults, with more than 70% of respiratory tuberculosis deaths occurring among people aged over 50 years in each year between 2018 and 2023; the equivalent figure for 2017 was 63.6%. In 2023, 8 of 9 deaths (88.9%) occurred in this age group (Table 13.4).⁸

In 2024, most TB inpatient hospitalisations (81.0%, n=175) occurred among people aged 15–64 years. However, patients aged 65 years and older had the longest average length of stay (26 days), compared with 17.7 days among those aged 15–64 years and 14.9 days among children aged 0–14 years.⁹

Table 13.4. Tuberculosis (ICD-10: A15–A16) Years of Potential Life Lost (YPLL): 2017–2024*

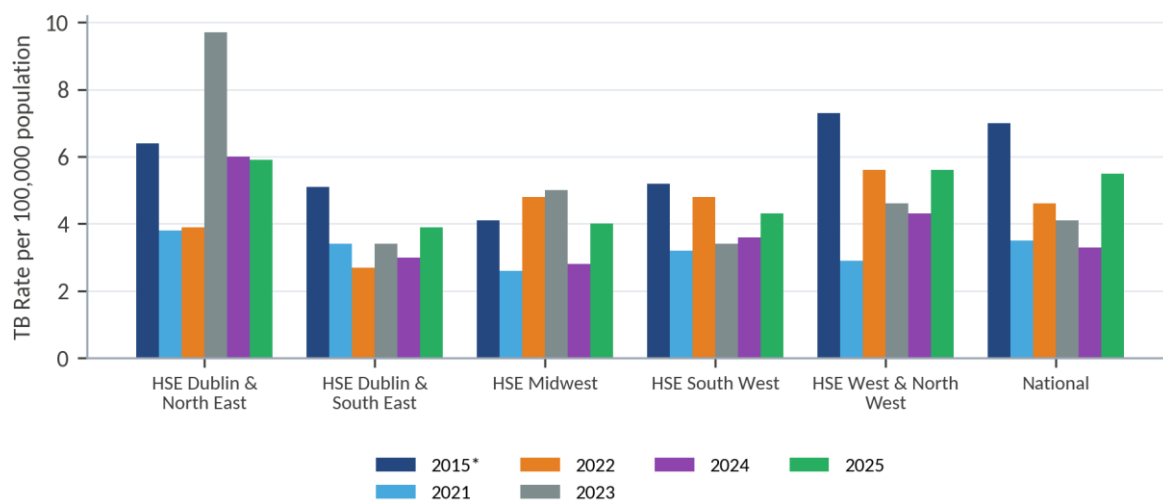
Year	Standardised Mortality Rate All ages	Total Deaths A15–16	Deaths aged >50 years, n (%)	YPLL 0 - 64 yrs A15–16	YPLL/100,000 population A15–16	Lower 95% CI	Upper 95% CI
2017	0.46	11	7 (63.64%)	72	1.85	0.06	3.64
2018	0.77	18	16 (88.89%)	37	0.82	0	2.02
2019	0.21	6	6 (100.00%)	0	0	0	0
2020	0.51	16	15 (93.75%)	32	0.7	0	1.75
2021	0.36	11	8 (72.73%)	49	1.21	0	2.45
2022	0.24	7	5 (71.43%)	23	0.51	0	1.24
2023	0.37	9	8 (88.89%)	9	0.19	0	0.57
2024*	0.28	12	12 (100.00%)	14	0.31	0	0.72

Source: Health Statistics (PHIS) / CSO⁸. *Provisional data for 2024: Tuberculosis not defined as respiratory only.

Regional Variation

Regional variation in TB notification rates is shown in Figure 13.5. HSE Dublin & North East had the highest notification rate in both 2024 and 2025, at 7.3 and 7.0 per 100,000 population, respectively. In 2025, this was above the national rate of 5.22 per 100,000 population.⁷

Figure 13.5. TB Notification Rate by Health Service Executive (HSE) area and year



Source: Health Protection Surveillance Centre (HPSC), HSE, Tuberculosis in Ireland: provisional trends in surveillance data, 2026.⁷

Socio-economic Analysis

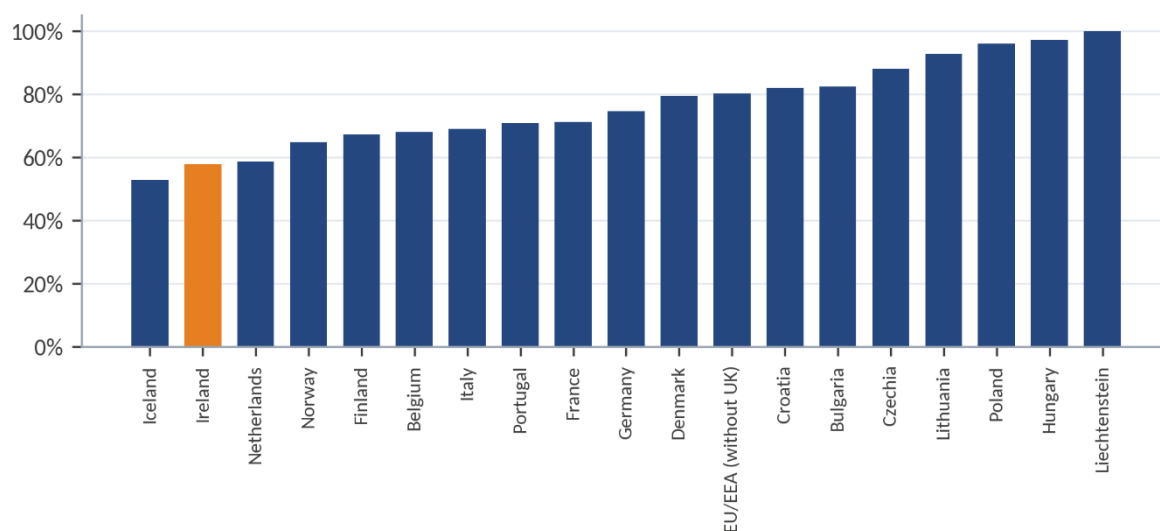
Country of birth remains the most marked axis of variation in TB notification in Ireland. Country of birth is not itself a risk factor for TB. It acts as a marker both for prior exposure in higher-incidence settings and for the socio-economic circumstances people may encounter after arrival, including congregate accommodation, insecure housing and barriers to timely healthcare. 65% of cases notified in 2025 were in people born outside Ireland. The crude incidence rate in this group was 20.3 per 100,000 population, compared with 1.7 per 100,000 in the Irish-born population.⁴

International Benchmarking

International comparisons for 2022 were based on data from the European Centre for Disease Prevention and Control (ECDC) Surveillance Atlas of Infectious Diseases. ECDC figures are compiled on a different basis from the national surveillance data presented above and are not directly comparable: for 2022 ECDC reports a crude notification rate of 4.27 per 100,000 population where Table 13.1 gives 3.99.

In 2022, pulmonary TB accounted for 57.9% of TB cases in Ireland, the second-lowest proportion among the selected countries and below the EU/EEA average of 80.2% (Figure 13.6).¹¹

Figure 13.6. Percentage of Pulmonary Tuberculosis in 2022, by country.

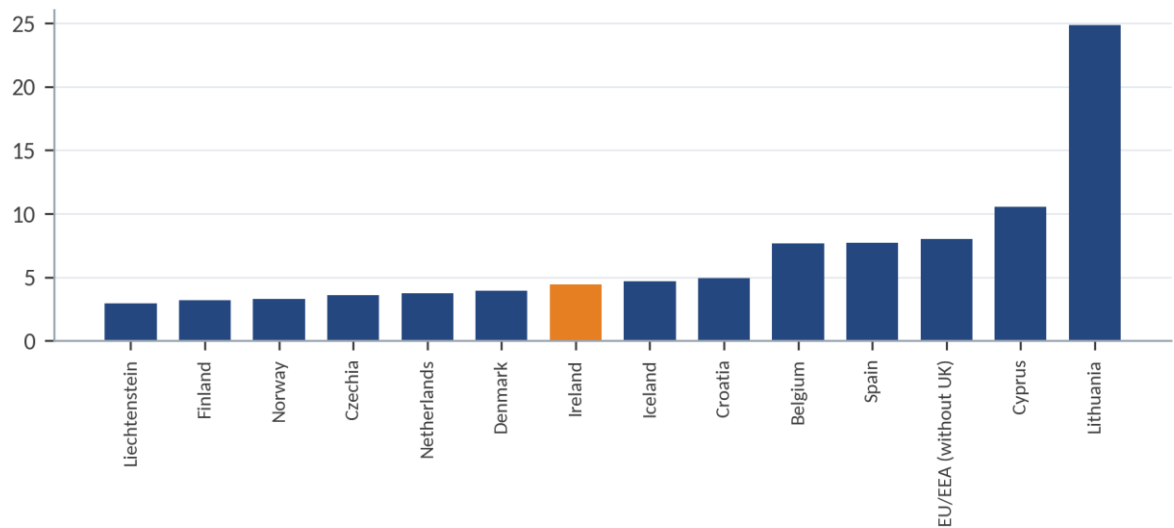


Source: European Centre for Disease Prevention and Control (ECDC), Surveillance Atlas of Infectious Diseases.¹¹

In 2022, 125 pulmonary TB cases were reported in Ireland, compared with 29,010 across the EU/EEA. Among the selected countries, the number of cases ranged from 9 in Iceland to 1,073 in Portugal.¹¹

Ireland had an age-standardised TB notification rate of 4.45 per 100,000 population in 2022, substantially below the EU/EEA rate of 8.01 per 100,000 (Figure 13.7).¹¹

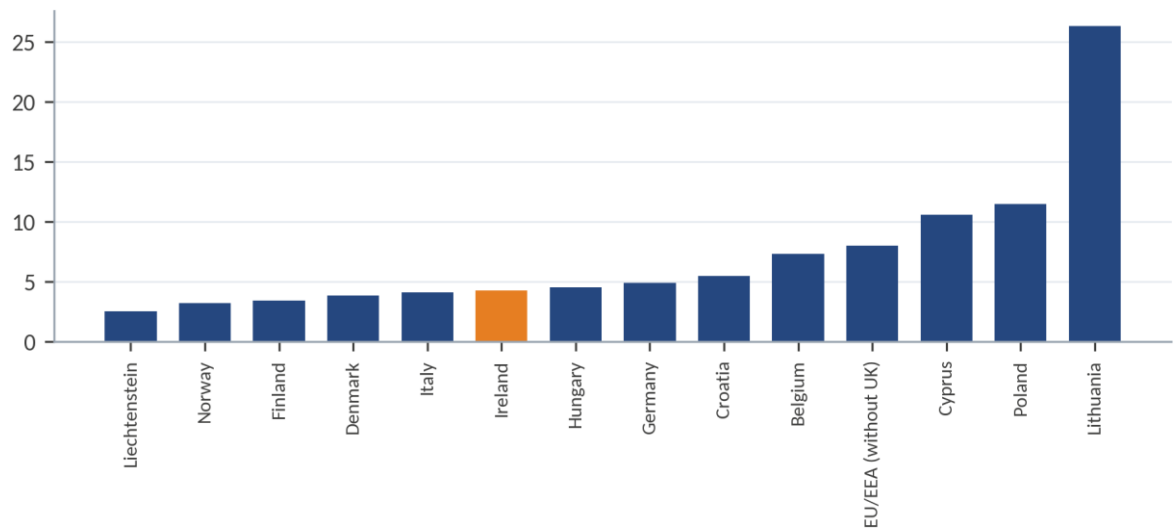
Figure 13.7. Age-standardised TB notification rates per 100,000 population in Ireland and selected European countries, 2022.



Source: European Centre for Disease Prevention and Control (ECDC), Surveillance Atlas of Infectious Diseases.¹¹

The crude TB notification rate in Ireland was also below the EU/EEA rate in 2022, at 4.27 compared with 7.99 per 100,000 population (Figure 13.8).¹¹

Figure 13.8. Tuberculosis Notifications Rate per 100,000 in 2022, by country.



Source: European Centre for Disease Prevention and Control (ECDC), Surveillance Atlas of Infectious Diseases.¹¹

Economic Burden

Beyond mortality and healthcare utilisation, TB also contributes to a broader health and societal burden. In

2023, Global Burden of Disease estimates reported by the International Respiratory Coalition indicated that TB resulted in 439 years of healthy life lost in Ireland, with

a cost to society for the whole population of €42.5 million in 2023.¹²

13.3 Prevention, Diagnosis and Management

Prevention and Early Detection

Ireland's Striving to End Tuberculosis: A Strategy for Ireland 2024–2030 identifies surveillance, selective Bacillus Calmette-Guérin (BCG) vaccination, contact tracing and the programmatic management of latent tuberculosis infection (LTBI) as key TB prevention activities. As a low-incidence country, Ireland places particular emphasis on at-risk and vulnerable populations, including recent migrants, and on the identification and management of LTBI, as reactivation accounts for a substantial proportion of TB cases in low-incidence settings.³

Contact tracing is a core component of TB prevention in Ireland and aims to identify potential sources of infection, secondary TB cases and contacts who may benefit from TB preventive treatment (TPT). Following notification of a TB case, contact investigation is guided by a Public Health Risk Assessment (PHRA) and a risk-stratified “stone-in-the-pond” approach, prioritising contacts according to the infectiousness of the index case, extent of exposure and individual vulnerability.²

Standardising contact tracing nationally is a strategic action that has not yet been delivered. The HSE Outbreak, Case, Incident Management and Surveillance (OCIMS) system is intended to provide a single national approach to TB contact tracing and case management and is assessed as partially progressed; a standardised national approach will not be in place until OCIMS is fully delivered.⁴

Universal neonatal BCG vaccination was implemented in most of Ireland until 2015, when vaccine supply was interrupted. A transition towards selective vaccination of high-risk groups had already been recommended, and a 2015 Health Technology Assessment concluded that selective BCG vaccination was more effective and less costly than universal vaccination. Current national immunisation guidance focuses BCG vaccination on selected high-risk groups.^{2,13}

Evidence from Ireland supports the role of BCG vaccination in TB prevention and the importance of appropriately targeting children at increased risk. A study in southern Ireland examining TB incidence between 2003 and 2016 reported substantially higher incidence in an unvaccinated region (132 per 100,000)

than in regions implementing neonatal (56 per 100,000) or childhood BCG vaccination (44 per 100,000), although regional population differences and the observational study design should be considered when interpreting these findings.¹⁴ More recent evidence following the cessation of universal BCG vaccination in 2015 found no significant increase in TB incidence among children aged 0–6 years up to 2021. However, the previously declining incidence trend was no longer observed. Among 19 TB cases born after vaccination ceased, at least eight would have been eligible for BCG under the proposed selective vaccination programme, highlighting the importance of effectively identifying and reaching children at increased risk.¹⁵

The selective BCG programme set out in the National TB Strategy is being taken forward by a Task and Finish Group of the National Health Protection Office, led by the National Immunisation Office. Phase One, which targets higher-risk infants aged 12 months or under, is expected to be implemented during 2026. The action remains assessed as partially progressed pending full operation.⁴

Targeted prevention initiatives in Ireland also focus on populations at increased risk of TB. Safetynet's Mobile Health and Screening Unit provides mobile health screening, including chest X-ray screening, for vulnerable populations such as people experiencing homelessness, refugees and asylum seekers. TB prevention initiatives have also been implemented in prison settings, including screening for latent TB infection and peer-led health education.³

National surveillance data further highlight the importance of targeted TB prevention among migrant populations in Ireland. Between 2011 and 2021, migrants accounted for 48% of notified TB cases, and 68.5% of migrant cases originated from countries classified as having very high TB incidence. Ireland does not currently operate a systematic TB screening programme, with thoracic TB screening primarily offered to international protection applicants and new-entrant healthcare professionals from high-incidence countries. However, 42% of TB cases among migrants were extrapulmonary, suggesting that approaches focused primarily on pulmonary disease may not identify the full burden of TB in this population and supporting targeted TBI screening among high-risk migrant groups.⁶

National infection prevention and control (IPC) guidance provides recommendations for healthcare professionals and services to prevent TB transmission in healthcare and relevant community settings. Key measures include

early identification of suspected infectious TB, airborne precautions and appropriate isolation of patients with suspected or confirmed infectious pulmonary or laryngeal TB. Specific measures are also recommended for congregate settings, including prisons and homeless hostels.²

Programmatic management of TB infection remains an aspiration rather than a service. A feasibility study of programmatic TBI management and its surveillance has been held pending the TBI dataset within OCIMS going live, and no funded inter-stakeholder implementation plan for TBI management among new-entrant migrants has yet been agreed. Given that reactivation accounts for a substantial share of TB disease in low-incidence settings, this is a material gap in Ireland's prevention architecture.⁴

Diagnosis

Early diagnosis is a key priority of Ireland's national TB strategy, with the aim of reducing both delays in seeking healthcare after symptom onset and delays between first presentation and diagnosis. National guidance requires healthcare settings to have systems for the prompt identification of suspected infectious TB at first contact, including in primary care, emergency departments and medical assessment units.²

Evidence from the west of Ireland has identified delays across the pathway from symptom onset to treatment. A retrospective study of 85 patients with active TB attending Galway University Hospital between 2014 and 2018 found a median interval of 76 days from symptom onset to first hospital presentation and a further 11 days from hospital presentation to initiation of TB treatment. Overall, the median time from symptom onset to treatment initiation was 110 days, highlighting delays both before and after presentation to hospital services.¹⁶

The diversity of TB presentation also creates diagnostic challenges in Ireland. At St James's Hospital, 218 patients successfully completed TB treatment between 2021 and 2024, with disease affecting more than 20 anatomical sites. Pulmonary TB accounted for 55–65% of cases annually, while extrapulmonary presentations accounted for up to 40%, including pleural, lymph node and skeletal TB.¹⁷

Following identification of suspected or confirmed TB, statutory notification links clinical diagnosis with the public health response. TB is a statutorily notifiable disease in Ireland, and clinicians and clinical laboratory directors are required to notify suspected and confirmed TB cases to the regional Medical Officer of

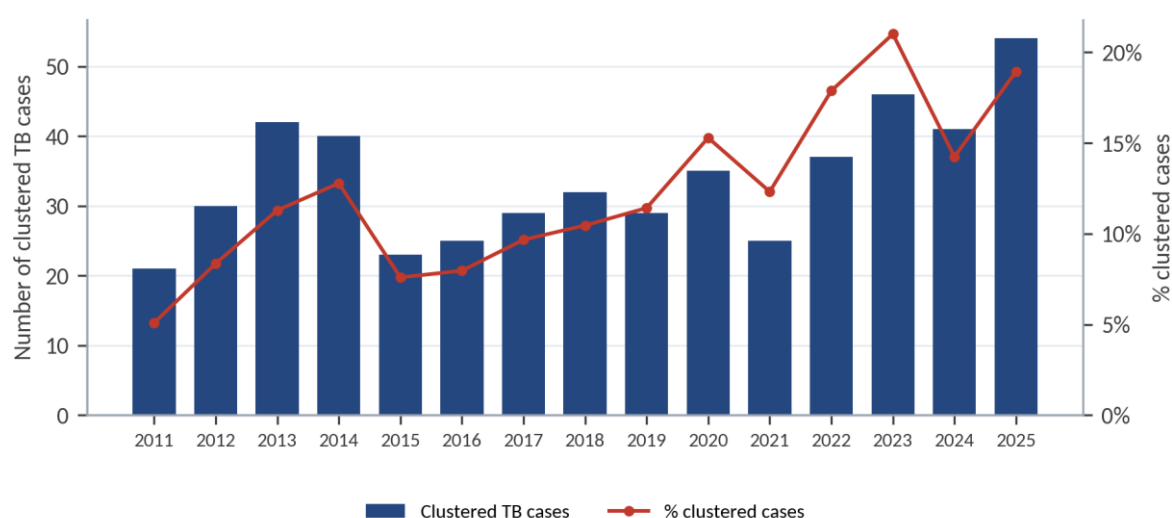
Health, enabling prompt public health action and contact investigation. Possible, probable and confirmed cases are subsequently reported to the Health Protection Surveillance Centre (HPSC) through the Computerised Infectious Disease Reporting (CIDR) system, using the European Commission case definition for surveillance.²

Work is also under way to ensure that all positive microbiology and histology results are notified directly to TB teams comprising both public health and clinical specialists in TB. This action is assessed as partially progressed, on the basis of arrangements communicated by St James's Hospital and planned follow-up between the Chair of the National Tuberculosis Advisory Committee and the HPSC.⁴

Laboratory diagnostic capacity for TB in Ireland includes rapid molecular testing, smear microscopy and culture. In the 2024 national laboratory diagnostic survey, 32 laboratories responded (82% response rate), of which nine (28%) reported testing for TB. All nine TB-testing laboratories used WHO-recommended rapid diagnostic tests and performed smear microscopy, while eight performed culture and one performed phenotypic drug susceptibility testing.¹⁸

Ireland is also strengthening access to rapid and genomic diagnostics. Universal rapid diagnostics for TB are now recommended as first-line tests in updated national guidance, although their universal availability remains an implementation action rather than a fully delivered national programme. Whole-genome sequencing (WGS) is more established: WGS cluster identifiers for cases from 2011 onwards have been retrospectively integrated into the national CIDR surveillance system, and Ireland continues to use WGS for domestic outbreak investigation and to participate in European cluster surveillance through ECDC EpiPulse. The 2026 implementation report rates Ireland's participation in European and international WGS surveillance as fully implemented, with sequences uploaded once or twice annually.⁴

The Irish Mycobacteria Reference Laboratory (IMRL) has sequenced all *M. tuberculosis* complex isolates recovered in Ireland since 2019, with more than 2,600 isolates included in its sequencing database. Between 2011 and 2025, 119 WGS clusters were identified, accounting for 12% of TB cases over the period. In 2025, 54 notified cases were linked to 33 WGS clusters, including nine clusters newly detected that year (Figure 13.9).⁷

Figure 13.9. Number and proportion of TB cases associated with WGS clusters in Ireland, 2011–2025.

Source: Health Protection Surveillance Centre (HPSC), Tuberculosis in Ireland: provisional trends in surveillance data.⁷

Beyond the diagnosis of active TB disease, diagnosis of TB infection (TBI) in Ireland is based on immunological testing using either the tuberculin skin test (TST) or interferon-gamma release assay (IGRA), with test selection determined by clinical context, availability, cost and feasibility. In people at increased risk, sequential testing may be used to increase sensitivity. For severely immunocompromised adults, including people with HIV with CD4 counts below 200 cells/mm³ and solid-organ or allogeneic stem-cell transplant recipients, concurrent TST and IGRA are recommended.²

Diagnosis in children requires a different approach because pulmonary TB in young children is frequently paucibacillary and symptoms may be subtle. Irish guidance recommends clinical assessment and chest X-ray, with further imaging and microbiological sampling according to presentation and exposure risk; specialist paediatric infectious disease support is available through Children's Health Ireland (CHI). Three respiratory samples are recommended when investigating pulmonary TB, and all children under 12 months with suspected TB disease should undergo lumbar puncture as part of the diagnostic work-up, even in the absence of signs or symptoms of meningitis.² Irish surveillance data also demonstrate the importance of active case finding in this population. Among 46 TB cases aged 0–6 years notified between 2011 and 2021, 58% were identified through contact tracing rather than passive presentation, while 43.5% were associated with reported outbreaks, predominantly involving household or extended-family settings.¹⁵

Treatment and Management

In Ireland, most people with TB disease are clinically managed through respiratory or infectious disease services. National guidance emphasises a multidisciplinary and person-centred approach to treatment, with clinical teams developing an individual health and social care plan that considers medical, social, cultural and financial factors that may affect treatment completion.²

Treatment completion is a central component of TB management, with Ireland working towards the End TB Strategy target of ≥90% treatment success. National guidance recommends DOT or VOT, particularly during the early stages of treatment, with priority given to people with drug-resistant TB and those with medical or social circumstances that may make treatment adherence challenging. Multidisciplinary interventions, including patient education, interpretation services, social and psychological support and active follow-up of patients who disengage from care, are recommended to support treatment completion.²

National treatment outcome reporting has weakened over time. The completeness of outcome data submitted to national surveillance has declined since the early 2000s and was further affected by the reallocation of public health resources during the acute phase of the COVID-19 response, so figures for recent years are based on incomplete submissions and should be interpreted with caution. Departments of Public Health are working to improve the systems and processes needed to collect these data. Restoring complete outcome reporting is a prerequisite for

demonstrating progress against the $\geq 90\%$ treatment success target.⁴

Despite the emphasis placed on adherence support in national guidance, neither a national DOT programme nor a national VOT programme has been established, and no progress against either action was recorded in the second year of strategy implementation. Provision therefore continues to depend on local arrangements.⁴

The retrospective study at Galway University Hospital provides insight into treatment delivery and outcomes in clinical practice. Among 85 patients with active TB treated between 2014 and 2018, 33% completed their entire treatment course as outpatients, while 26% experienced at least one treatment interruption. Among patients who had sufficient follow-up time to complete treatment, 90% were recorded as successfully treated.¹⁶

Management of drug-resistant TB requires specialist input. Where rifampicin resistance is detected, national guidance recommends seeking specialist advice, including through the national advisory service for multidrug-resistant TB at St James's Hospital. For MDR/RR-TB, shorter all-oral regimens are now prioritised where appropriate, including the six-month BPaLM regimen; treatment selection is informed by drug-susceptibility testing, previous treatment exposure, tolerability and potential drug interactions.²

Security of supply of TB medicines is a continuing concern. Shortages, including of rifampicin, have persisted through the first two years of the National TB Strategy, although newer agents in development offer a medium-term prospect of improvement. Ensuring adequate national access to paediatric formulations of TB drugs remains part of the same strategic action.⁴

For patients requiring hospitalisation with infectious pulmonary TB, airborne isolation precautions are maintained while infectiousness remains a concern. National guidance recommends single-room care for patients remaining in hospital until they have completed two weeks of standard treatment for drug-susceptible TB, with clinical and laboratory response also considered. Before discharge, arrangements for continued treatment supervision and administration should be agreed with the patient and relevant carers or services.²

The multidisciplinary workforce delivering TB care was strengthened during the second year of the TB Strategy, with a particular focus on health protection nursing. A Health Protection Nursing TB Nurse Network has been established, an Irish TB Nurse Competency Framework has been published, and an accompanying self-

assessment tool and resource pack have been developed to support nurses in planning their professional development.⁴

Access to Care

Access to TB care in Ireland requires coordination across public health, clinical and community services, with particular attention to populations who may experience barriers to accessing conventional healthcare. The National TB Guidelines recognise that people with TB are frequently from underserved populations and emphasise that diagnostic and therapeutic interventions alone are insufficient, requiring a multisectoral, whole-system approach. National guidance identifies specific barriers among vulnerable populations, including lack of timely access to clinical assessment, language, literacy and cultural barriers, transient accommodation and other challenges associated with congregate settings.²

Targeted services have been developed to improve access among populations who may otherwise have difficulty engaging with mainstream healthcare. Safetynet's Mobile Health and Screening Unit (MHSU) provides mobile health screening and medical assessments, including screening for TB, to underserved populations such as people experiencing homelessness, refugees and newly arrived asylum seekers, providing an important route into further assessment and local healthcare services. In congregate accommodation settings, the public health response is supported by services including HSE Social Inclusion Migrant Health in-reach teams, local GP services, accommodation providers and homeless services.³

Several strategic actions intended to extend TB care to underserved populations have not yet begun. No test-and-treat programme for TB and TB infection among underserved populations has been established, and targeted pre-employment screening for those entering high-risk occupations has not been progressed. Peer-delivered patient support, which the strategy identifies as a component of TB care, is currently limited to a Red Cross peer-support programme in the prison setting rather than a national model.⁴

Equitable access to TB care also requires addressing language and cultural barriers. National TB guidance recommends that patient information is provided in plain language and is culturally appropriate, with translated materials available where needed. Access to professional interpretation services should also be arranged to ensure that patients and families understand the information provided and can participate in care decisions.²

Flexible models of care may further help overcome practical barriers to accessing and completing TB treatment. At St James' Hospital, video-observed therapy (VOT) was used for a patient experiencing homelessness who was unable to engage with directly observed therapy (DOT) due to work and travel demands. The patient completed six months of treatment with 100% compliance while receiving additional support with housing and employment. This case provides an example of how flexible, person-centred care can accommodate individual social and practical circumstances.³

13.4 Conclusions

TB notification in Ireland has returned to pre-pandemic levels and is no longer falling. The number of cases notified in 2025 was more than double the number consistent with the trajectory required to meet the End TB Strategy target for 2030, and the gap between the observed and the required trend continues to widen. If current levels are sustained, Ireland's standing as a low-incidence country, defined as a crude incidence rate at or below 10 per 100,000 population, cannot be taken for granted.

The burden is not evenly distributed. Incidence among people born outside Ireland is more than ten times that in the Irish-born population, paediatric notifications are at their highest level since 2016, and a substantial minority of disease is extrapulmonary and therefore less likely to be detected by approaches built around pulmonary screening. Diagnostic delay also remains long: Irish data describe a median of 110 days from symptom onset to treatment initiation, most of which accrues before the person reaches hospital.

Implementation of the National TB Strategy has been constrained less by disagreement about what should be done than by the absence of the structures and resources needed to do it. The National TB Lead post remains vacant and has been advertised as part of a wider brief rather than as the standalone post recommended in successive reports; the cohort review process, the workforce skills-mix assessment and the national model of service and care delivery all depend on that post being filled. Standardised national contact tracing, national DOT and VOT provision, and programmatic management of TB infection have each yet to be established.

Data limitations compound these constraints. The completeness of treatment outcome reporting has declined, so Ireland cannot currently demonstrate whether it is meeting the $\geq 90\%$ treatment success

target. Surveillance is not linked to an area-based measure of deprivation, which limits the ability to direct case-finding towards the communities in which transmission is concentrated.

The foundations for a stronger national response are in place. Ireland has a published national strategy, an updated set of National Tuberculosis Guidelines, and a genomic surveillance capability among the more developed in Europe: all *M. tuberculosis* complex isolates have been sequenced since 2019, cluster identifiers from 2011 onwards are now integrated into national surveillance, and Ireland contributes routinely to ECDC EpiPulse cluster investigation.

The selective BCG programme offers the clearest near-term opportunity. Phase One, targeting higher-risk infants aged 12 months or under, is expected to be implemented during 2026 and, once operational, will begin to close a gap that has been open since universal neonatal vaccination ceased in 2015 — a period over which paediatric notifications have risen.

Workforce development provides a second opportunity. The TB Nurse Competency Framework, the Health Protection Nursing TB Nurse Network and the associated self-assessment tool and resource pack give Ireland, for the first time, an explicit description of the competencies required to deliver TB care and a basis on which specialist career pathways can be built.

Realising these opportunities depends on resolving the enabling conditions. Appointing a National TB Lead, agreeing a national model of service and care delivery, and completing the OCIMS rollout would together unlock a cluster of interdependent actions that cannot otherwise progress.

- Appoint a National TB Lead as a dedicated post, and agree a national model of service and care delivery for TB to be implemented across the Regional Health Areas.
- Complete the rollout of the OCIMS system, including the TB infection dataset, and use it to standardise contact tracing nationally.
- Implement Phase One of the selective BCG programme during 2026, and report uptake against eligibility so that coverage among higher-risk infants can be monitored.
- Establish programmatic management of TB infection, beginning with new-entrant migrants from high-incidence countries and with underserved populations, and extend screening beyond pulmonary disease.

- Restore complete treatment outcome reporting to national surveillance and report annually against the $\geq 90\%$ treatment success target.
- Establish national DOT and VOT provision so that adherence support does not depend on local arrangements.
- Link TB surveillance to an area-based measure of deprivation so that case-finding can be directed to the populations at greatest risk.
- Secure continuity of supply of first-line TB medicines, including rifampicin, and maintain access to paediatric formulations and to shorter all-oral regimens.
- Fund the enabling actions identified in the National TB Strategy.

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Respiratory Disease Burden for Older People

14

Key Points

- The number of people aged 65 years and over in Ireland increased by 36.7% between 2016 and 2025, more than twice the rate of growth in the population as a whole.
- In 2024 the age-standardised death rate from respiratory disease was 780.7 per 100,000 among people aged 65 years and over, more than forty times the rate of 17.2 among those aged under 65 years. Respiratory disease accounted for 20.7% of the all-cause death rate in this age group.
- More than nine in ten deaths from chronic lower respiratory disease, pneumonia and chronic interstitial lung disease occur among people aged 65 years and over.
- People aged 65 years and over accounted for 53.4% of respiratory inpatient admissions in 2025 but 73.3% of respiratory inpatient bed days, because length of stay rises steeply with age, reaching 11.2 days among those aged 85 years and over.
- Respiratory disease accounted for 18.8% of all inpatient admissions and 18.4% of all inpatient bed days among people aged 85 years and over in 2025.
- More than three quarters of inpatient admissions for COPD and bronchiectasis, and almost two thirds of those for lung cancer and pneumonia, were among people aged 65 years and over in 2024.
- People aged 65 years and over accounted for more than half of notifications of COVID-19, invasive *Streptococcus pneumoniae* infection and legionellosis in 2025.
- Vaccination is key to protecting older people from acute respiratory infection. Influenza vaccine uptake among people aged 65 years and over is well above the OECD average, but RSV vaccination, recommended for this age group, is not yet a funded programme.

14.1 Background

Acute respiratory diseases such as influenza and pneumonia can have a significant impact on the health of all age groups, but in older people they have additional significance when they occur alongside chronic respiratory conditions such as COPD, interstitial lung disease and asthma. For several acute respiratory infections, vaccination plays an important preventive role. Part of the challenge for the health services is the growth of the older population. Between 2016 and 2025 the population of Ireland grew by 15.2%, while the number of people aged 65 years and over increased by 36.7%.¹ Because respiratory bed demand is concentrated in the oldest age groups, and because those groups are growing faster than the population as a whole, the bed days required by respiratory disease will rise more quickly than the number of respiratory admissions.²

In older people respiratory disease commonly coexists with cardiovascular disease, renal disease and cognitive impairment. Because only one underlying cause is assigned to each death, and hospital statistics relate to the principal diagnosis only, routine data understate the contribution of respiratory disease to ill health and death in older age groups.³ This chapter draws together data on older people presented in the overview and disease-specific chapters of this report. Sources of information on the health of older people in Ireland also include The Irish Longitudinal Study on Ageing (TILDA), a nationally representative longitudinal study of community-dwelling adults, whose COVID-19 study is drawn on in this chapter.²³ No national data on the prevalence of chronic respiratory disease among older people as a category, or on respiratory prescribing by age, were identified for this edition.

14.2 Burden of Disease

Incidence and Prevalence

Many respiratory infectious diseases are notifiable, and national trends are presented in the chapter on respiratory infectious diseases. For diseases such as influenza, which many people manage in the community, notifications reflect trends rather than actual numbers of cases. People aged 65 years and over accounted for more than half of notifications of COVID-19, invasive *Streptococcus pneumoniae* infection and legionellosis in 2025, and for almost a third of influenza notifications (Table 14.1).⁴

Table 14.1. Respiratory infectious disease notifications among people aged 65 years and over, 2025

Disease	Proportion of notifications aged 65 years and over
Legionellosis	55.6%
COVID-19	52.7%
<i>Streptococcus pneumoniae</i> (invasive)	51.1%
<i>Haemophilus influenzae</i> (invasive)	47.8%
Influenza	31.0%

Source: Health Protection Surveillance Centre, *Infectious Disease Notifications in Ireland*.⁴

For invasive pneumococcal disease, the highest age-specific incidence rates in 2024 were among people aged 85 years and over, followed by those aged 75–84 and 65–74 years, and people aged 65 years and over accounted for 44.7% of cases. While the incidence of disease caused by serotypes in the earlier seven-valent conjugate vaccine fell, incidence due to non-vaccine serotypes increased, particularly among people aged 65 years and over.⁵ For invasive *Haemophilus influenzae* infection between 2018 and 2022, incidence was highest among people aged 65 years and over (16.3 per 100,000), who accounted for 43.5% of cases and 45.0% of deaths.⁶

Lung cancer is predominantly diagnosed in older people. The median age at diagnosis in 2021–2023 was 72 years, and between 2019 and 2023, 49.5% of cases were diagnosed at ages 70–84 and a further 8.7% at 85 years or over. Incidence rises from 121.8 per 100,000 at ages 55–69 to 315.7 at ages 70–84.⁷

National prevalence data for chronic respiratory disease in older people are not available. Internationally, the prevalence and incidence of bronchiectasis increase with age, so the number of people affected in Ireland would be expected to rise over the coming decade

irrespective of any change in age-specific incidence.⁸ Where national prevalence estimates are available for specific respiratory diseases, these are discussed in the relevant chapters.

Mortality

Overall mortality rates can mask variations between age groups. In 2024 the age-standardised death rate from respiratory disease was 780.7 per 100,000 among people aged 65 years and over and 17.2 among those aged under 65 years. Respiratory disease accounted for 20.7% of the all-cause death rate among people aged 65 years and over, compared with 20.1% reported for 2016 in the last edition of this report, so its relative position has barely changed.^{3,9}

The composition of the burden also differs by age. Among people aged under 65 years the largest single respiratory cause of death is lung cancer. Among people aged 65 years and over the position reverses: diseases of the respiratory system account for 516.9 deaths per 100,000, against 201.4 for cancer of the larynx, trachea, bronchus and lung, with chronic lower respiratory disease at 232.5 and pneumonia at 113.2 (Table 14.2).³

Table 14.2. Age-standardised death rates per 100,000 population by age group, principal respiratory causes, 2024

Cause of death	Aged under 65 years	Aged 65 years and over
Respiratory disease (report definition)	17.2	780.7
Diseases of the respiratory system	6.9	516.9
Cancer of the larynx, trachea, bronchus and lung	9.7	201.4
Chronic lower respiratory disease	–	232.5
Pneumonia	1.8	113.2

Source: *Health in Ireland: Key Trends 2025*; CSO MORT02.^{1,3} Data for 2024 are provisional. – not reported in the source chapters.

The majority of deaths from the main chronic and infectious respiratory diseases occur in older people (Table 14.3). Most deaths from chronic lower respiratory disease (93.8%) occurred among people aged 65 years and over.¹⁰ In 2023, 93.1% of deaths from chronic interstitial lung disease occurred at 65 years and over and 72.2% at 75 years and over; between 2017 and 2023 deaths at 85 years and over rose by 45%.¹¹ More than 90% of deaths from pneumonia occur among people aged 65 years and over.¹² Asthma deaths are also concentrated in older people, with deaths before the age of 65 accounting for between 3.1% and 17.4% of asthma deaths each year between 2017 and 2024.¹³

Lung cancer deaths occur at a somewhat younger age, with approximately one fifth each year occurring among people aged under 65 years. Registry data show that 52.2% of lung cancer deaths occur at ages 70–84 and a further 12.6% at 85 years or over, and among people aged 85 years and over the lung cancer mortality rate (312.0 per 100,000) now exceeds the incidence rate (305.0 per 100,000).⁷

Table 14.3. Proportion of deaths occurring among older people, selected respiratory causes

Cause of death (ICD-10)	Proportion of deaths in older age groups	Period
Chronic lower respiratory disease (J40–J47)	93.8% aged 65 years and over	Most recent available
Chronic interstitial lung disease (J84)	93.1% aged 65 and over; 72.2% aged 75 and over	2023
Pneumonia (J12–J18)	More than 90% aged 65 years and over	2017–2024
Asthma (J45–J46)	82.6%–96.9% aged 65 years and over	2017–2024
Cancer of the trachea, bronchus and lung (C33–C34)	77.4%–80.6% aged 65 years and over	2017–2024

Source: Health Statistics (PHIS) / CSO, as presented in the chapters on COPD, interstitial lung disease, respiratory infectious diseases, asthma and lung cancer.^{10,11,12,13,14} Proportions aged 65 years and over for asthma and lung cancer are derived from the published proportions of deaths under 65 years.

COVID-19 pandemic

Older people carried the greatest burden of serious infection and death from COVID-19. By 2021, 93% of COVID-19 deaths in Ireland had occurred among people aged over 70 years.²³ In the TILDA COVID-19 study, carried out among 3,964 adults aged 60 years and over between July and November 2020 (a response rate of 71%), 21% of participants had clinically meaningful levels of depressive symptoms, 29% reported high levels of stress and 37% reported low satisfaction with life.²³

Participants' own accounts, gathered through open-ended questions, showed a wide range of experiences. One in five (20%) described social isolation or loneliness, most commonly separation from children, grandchildren and wider family, and this was more frequent among those with few social supports. Many found the public health advice that people aged over 70 years should 'cocoon' confusing or disrespectful, with some arguing that frailty and underlying health, rather than age, should determine such advice. Participants with chronic illnesses described fear of infection, while support from family and friends made the experience more manageable. At the same time, 17% described coping well or demonstrating resilience, and 55% expressed hope and optimism for the future.²³

Impact on Health Services

Most people with respiratory disease, regardless of age, are managed in primary care. Data on respiratory disease in older people are not available at national level for people with full medical cards, those with GP

visit cards or those who are private patients. National prescribing data are available only for the General Medical Services (GMS) scheme, which covered roughly a quarter of the population in 2023 and is weighted towards older people and those on lower incomes, but these data are not published by age.¹⁵ The scale of what is not captured is considerable: 52.2% of people aged 70 to 79 held private health insurance in 2024.¹⁶ Inpatient and day-case data are available only from publicly funded hospitals reporting to the Hospital Inpatient Enquiry (HIPE) system, and count episodes of care rather than individual patients.

Hospitalisations

Hospital activity for respiratory disease follows a U-shaped distribution by age. In 2025 respiratory disease accounted for 14.4% of all inpatient admissions among people aged 65–74 years, 16.4% at 75–84 years and 18.8% among those aged 85 years and over (Table 14.4).²

Bed days tell a different story from admissions, and it is the more important one for hospital capacity. People aged 65 years and over accounted for 53.4% of respiratory inpatient admissions in 2025 but 73.3% of respiratory inpatient bed days. The reason is length of stay, which rises from 7.98 days at ages 65–74 to 9.39 days at 75–84 and 11.21 days among those aged 85 years and over. Respiratory disease accounts for 18.4% of all inpatient bed days used by people aged 85 years and over and 16.6% of those used by people aged 75–84.²

Table 14.4. Respiratory disease as a share of inpatient activity, and respiratory length of stay, by age group, 2025

Age group	Share of all inpatient admissions	Share of all inpatient bed days	Mean length of stay (days)
Under 15 years	21.1%	13.5%	2.15
65–74 years	14.4%	–	7.98
75–84 years	16.4%	16.6%	9.39
85 years and over	18.8%	18.4%	11.21
All ages	11.5%	13.3%	6.82

Source: Department of Health, DHA90–DHA92, derived from HIPE.² Data for 2025 are provisional. – not reported in Chapter 1.

In 2024 there were 260,693 inpatient discharges among people aged 65 years and over.¹⁷ Of these, 12,462 (4.8%) were for COPD and bronchiectasis, using 104,681 inpatient bed days (4.3% of all bed days in this age group).¹⁰ Pneumonia accounted for 11,274 inpatient admissions among people aged 65 years and over, 27.0% of respiratory inpatient admissions in this age group.¹²

Older people account for the majority of inpatient admissions for several major respiratory conditions (Table 14.5). People aged 65 years and over accounted for 76.9% of admissions for COPD and bronchiectasis, using 82.0% of the bed days for this grouping, and for 66.9% of admissions for lung cancer and 62.8% of admissions for pneumonia.^{10,14,12} Although older people accounted for a smaller share of asthma admissions (16.1%), they used 27.5% of asthma inpatient bed days.¹³ Among people hospitalised with tuberculosis, those aged 65 years and over had the longest average length of stay, at 26 days, compared with 17.7 days among those aged 15–64 years.¹⁸

Table 14.5. Inpatient admissions among people aged 65 years and over, selected respiratory conditions, 2024.

Condition	Proportion of inpatient admissions aged 65 years and over	Proportion of inpatient bed days aged 65 years and over
COPD and bronchiectasis	76.9%	82.0%
Lung cancer	66.9%	–
Pneumonia	62.8%	–
Acute upper respiratory infections and influenza	23.1%	–
Asthma	16.1%	27.5%
Cystic fibrosis	1.6%	–

Source: HIPE Statistics Reporter, Healthcare Pricing Office, as presented in the disease-specific chapters.¹⁷ – not reported in the source chapters.

International Benchmarking

Ireland performs well on influenza vaccination among older people: uptake among people aged 65 years and over reached 75.4% in 2021, against an OECD average of 52.4%.¹⁹

Other OECD indicators bear directly on the care of older people with respiratory disease. There were 545 avoidable hospital admissions per 100,000 population (age-sex standardised) in Ireland, more than the OECD average of 473. Ireland has 3.5 long-term care workers per 100 people aged 65 years and over, lower than the OECD average of 5.0, and 2.9 hospital beds per 1,000 population, less than the OECD average of 4.2. This is despite health spending of US\$7,813 per capita, more than the OECD average of US\$5,967 (USD PPP). Further international comparisons are discussed, where available, in the disease-specific chapters.²⁴

14.3 Prevention, Diagnosis and Management

Vaccination

Influenza and pneumococcal vaccination are recommended for older people as well as for those with underlying chronic conditions, including chronic respiratory disease.²⁰ RSV vaccination is recommended by the National Immunisation Advisory Committee for adults aged 65 years and over but has not been introduced as a funded programme, and is available only on a private basis; a Health Information and Quality Authority health technology assessment of RSV immunisation for the 2026–2027 season and beyond is under way. [reference required] The rise in invasive pneumococcal disease caused by non-vaccine serotypes

among people aged 65 years and over underlines the importance of keeping adult pneumococcal vaccination policy under review.⁵

Infection prevention and control

Frail older adults with multiple comorbidities are among those at increased risk of complications from respiratory infection.²¹ In 2025, 1,554 outbreaks of respiratory infection were notified in Ireland, affecting 11,745 people, with COVID-19, influenza and RSV accounting for most of those affected.²² Infection prevention and control measures, vaccination of residents and staff, and early testing and treatment remain essential in settings where older people live and receive care.

Diagnosis and management

Chronic respiratory conditions in older people often result from past smoking, occupational exposure or other environmental factors, and are frequently accompanied by other long-term conditions. Accurate diagnosis, including objective testing such as spirometry, access to pulmonary rehabilitation and integrated care between general practice, community services and hospitals are discussed in the disease-specific chapters. The substantial and growing share of respiratory bed days used by the oldest age groups means that community-based alternatives to admission, and timely discharge, are of particular importance for this population.

14.4 Conclusions

Respiratory disease is predominantly a disease of older people. People aged 65 years and over account for the great majority of deaths from chronic lower respiratory disease, pneumonia and interstitial lung disease, more than half of respiratory inpatient admissions and almost three quarters of respiratory inpatient bed days. Among people aged 85 years and over, almost one admission in five is for a respiratory condition.

The older population is growing much faster than the population, and length of stay for respiratory

admissions rises steeply with age. The demand for hospital beds from respiratory disease will therefore increase faster than the number of admissions unless more care can be delivered in the community and older people are protected from preventable infection.

The COVID-19 pandemic showed both the vulnerability of older people to respiratory infection and the harm that prolonged isolation can cause. Older people's own accounts highlight the importance of public health advice that is clear, respectful and based on risk rather than age alone, and of maintaining social contact and support for those living with chronic respiratory disease.

National data on respiratory disease in older people remain limited. There are no national data on the prevalence of chronic respiratory disease or on respiratory prescribing by age, and routine mortality and hospital statistics understate the contribution of respiratory disease where it coexists with other conditions. Priorities include age-specific reporting of prescribing and prevalence data, full implementation of adult vaccination recommendations including RSV, and planning of respiratory services that reflects the ageing of the population.

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Appendix



A.1 ICD-10 Codes

The ‘core’ disease classification of ICD-10-AM is the three character code, which is the mandatory level of coding for international reporting to the World Health Organization (WHO) for general international comparisons. This core set of codes has been expanded to four- and five-character codes so that important specific disease entities can be identified, while also maintaining the ability to present data in broad groups to enable useful and understandable information to be obtained. Its structure is designed principally to facilitate epidemiological analysis.

Respiratory disease is defined throughout this report as diseases of the respiratory system (J00–J99), COVID-19 (U07), and cancer of the larynx, trachea, bronchus and lung (C32–C34). COVID-19 is coded outside the respiratory chapter of ICD-10 but is included because it is a respiratory infection whose emergence from 2020 displaced death certification from pneumonia and other respiratory causes. Provisional mortality data for 2024 report cancer of the larynx, trachea, bronchus and lung together (C32–C34); earlier years report cancer of the trachea, bronchus and lung only (C33–C34).

Table A.1. ICD-10 codes used for mortality data (Public Health Information System (PHIS) and Central Statistics Office) in the body of the report.

Description	ICD-10 Codes
All causes of death	A00–Y89
Malignant neoplasms (all)	C00–C97
Diseases of the circulatory system	I00–I99
Respiratory disease (report definition): diseases of the respiratory system, COVID-19, and cancer of the larynx, trachea, bronchus and lung	J00–J99, U07, C32–C34
Diseases of the respiratory system	J00–J99
Influenza	J09–J11
Pneumonia	J12–J18
Chronic lower respiratory disease	J40–J47
Chronic obstructive pulmonary disease	J40–J44
Asthma	J45–J46
Bronchiectasis	J47
Other interstitial pulmonary diseases (chronic interstitial lung disease)	J84
Idiopathic pulmonary fibrosis	J84.1
COVID-19	U07
Cancer of the larynx, trachea, bronchus and lung	C32–C34
Cancer of the trachea, bronchus and lung	C33–C34
Mesothelioma	C45
Sarcoidosis	D86
Cystic fibrosis	E84
Respiratory tuberculosis	A15–A16
Pulmonary embolism	I26
Other pulmonary heart diseases (including pulmonary hypertension)	I27
Respiratory conditions originating in the perinatal period	P22–P28
Congenital malformations of the respiratory system	Q32–Q34

Note: Mortality data are reported under the Eurostat shortlist heading ‘Chronic Lower Respiratory Disease’ (J40–J47), which includes asthma (J45–J46). Separate figures for COPD (J40–J44) and bronchiectasis (J47) are available only to 2023.

Table A.2. ICD-10 codes used for hospitalisation data (Hospital Inpatient Enquiry (HIPE)) for respiratory conditions in the body of the report

Classification of respiratory condition	ICD-10 Code
Diseases of the respiratory system	J00–J99
Diseases of the circulatory system	I00–I99
Neoplasms	C00–D48
COVID-19 (outside the respiratory chapter; recorded in the residual group)	U07
Chronic obstructive pulmonary disease and bronchiectasis (reported together)	J40–J44, J47
Other chronic obstructive pulmonary disease	J44
Asthma	J45–J46
Influenza	J09–J11
Influenza due to other identified influenza virus	J10
Pneumonia	J12–J18
Pneumonia, organism unspecified	J18
Acute bronchitis	J20
Acute bronchiolitis	J21
Unspecified acute lower respiratory infection	J22
Idiopathic pulmonary fibrosis	J84.1
Pulmonary heart disease and diseases of pulmonary circulation	I26–I28
Cystic fibrosis	E84
Sleep apnoea (unspecified and other sleep apnoea, central sleep apnoea, obstructive sleep apnoea syndrome and sleep hypoventilation syndrome)	G47.3
Respiratory tuberculosis	A15–A16
Abnormalities of breathing	R06

Note: National hospital activity data report COPD and bronchiectasis only in combination (J40–J44, J47), and pulmonary embolism, other pulmonary heart diseases and other diseases of pulmonary vessels only in combination (I26–I28). Hospital activity relates to publicly funded hospitals reporting to HIPE and counts discharges (episodes of care), not individual patients.

Table A.3. Australian Refined Diagnosis Related Group (AR-DRG version 10.0) condition groupings within Major Diagnostic Category 4 (Diseases and Disorders of the Respiratory System), as presented in Chapter 1

Condition group	Condition group
Respiratory infections and inflammations	Interstitial lung disease
Chronic obstructive airways disease	Pleural effusion
Other respiratory system disorders	Pneumothorax
Non-invasive ventilation	Whooping cough and acute bronchiolitis
Respiratory neoplasms	Pulmonary oedema and respiratory failure
Bronchoscopy	Ventilator support
Respiratory signs and symptoms	Bronchiectasis
Pulmonary embolism	Cystic fibrosis
Major chest interventions	Sleep apnoea
Major chest trauma	Respiratory tuberculosis
Bronchitis and asthma	Lung or heart-lung transplant
Other respiratory system interventions	Respiratory problems arising in the neonatal period

Source: Activity in Acute Public Hospitals in Ireland, Annual Report 2025, Healthcare Pricing Office. The fifty AR-DRG groups within MDC 4 have been combined into clinical groupings by aggregating complexity levels. AR-DRGs are derived from diagnosis related groups rather than from the ICD-10 classification, and figures from the two classifications should not be combined.

A.2 Abbreviations

AATD: Alpha-1 Antitrypsin Deficiency

APACHE: Acute Physiology and Chronic Health Evaluation

AR-DRG: Australian Refined Diagnosis Related Group

ARI: Acute Respiratory Infection

BCG: Bacille Calmette-Guérin vaccine

BMI: Body Mass Index

BTS: British Thoracic Society

CDMP: Chronic Disease Management Programme

CF: Cystic Fibrosis

CFI: Cystic Fibrosis Ireland

CFRI: Cystic Fibrosis Registry of Ireland

CFTR: Cystic Fibrosis Transmembrane Conductance Regulator

CHI: Children's Health Ireland

CI: Confidence Interval

CIDR: Computerised Infectious Disease Reporting

COPD: Chronic Obstructive Pulmonary Disease

CPAP: Continuous Positive Airway Pressure

CSO: Central Statistics Office

CT: Computed Tomography

CTEPH: Chronic Thromboembolic Pulmonary Hypertension

DALY: Disability-Adjusted Life-Year

DRG: Diagnosis Related Group

DVT: Deep Venous Thrombosis

ECC: Enhanced Community Care

ECDC: European Centre for Disease Prevention and Control

ECFS: European Cystic Fibrosis Society

ECFSPR: European Cystic Fibrosis Society Patient Registry

ED: Emergency Department

EEA: European Environment Agency

EHDS: European Health Data Space

ELF: European Lung Foundation

EMBARC: European Bronchiectasis Registry

EPA: Environmental Protection Agency

ERS: European Respiratory Society

EU: European Union

FeNO: Fractional Exhaled Nitric Oxide

FEV1: Forced Expiratory Volume in one second

FVC: Forced Vital Capacity

GBD: Global Burden of Disease

GINA: Global Initiative for Asthma

GMS: General Medical Services

GOLD: Global Initiative for Chronic Obstructive Lung Disease

GP: General Practitioner

HIPE: Hospital Inpatient Enquiry

HIQA: Health Information and Quality Authority

HPO: Healthcare Pricing Office

HPSC: Health Protection Surveillance Centre

HSA: Health and Safety Authority

HSE: Health Service Executive

ICD: International Classification of Diseases

ICGP: Irish College of General Practitioners

ICS: Inhaled Corticosteroids

ICU: Intensive Care Unit

ILD: Interstitial Lung Disease

ILFA: Irish Lung Fibrosis Association

IPD: Invasive Pneumococcal Disease

IPF: Idiopathic Pulmonary Fibrosis

ITS: Irish Thoracic Society

IV: Intravenous

LOS: Length of Stay

LTBI: Latent Tuberculosis Infection

MART: Maintenance and Reliever Therapy

MDC: Major Diagnostic Category

MDT: Multidisciplinary Team

NCCP: National Cancer Control Programme

NCPR: National Clinical Programme Respiratory

NIAC: National Immunisation Advisory Committee

NICE: National Institute for Health and Care Excellence

NOCA: National Office of Clinical Audit

NPHU: National Pulmonary Hypertension Unit

NSCLC: Non-Small Cell Lung Cancer

ODTI: Organ Donation Transplant Ireland

OECD: Organisation for Economic Co-operation and Development

OSA: Obstructive Sleep Apnoea

PAH: Pulmonary Arterial Hypertension

PCRS: Primary Care Reimbursement Service

PE: Pulmonary Embolism

PH: Pulmonary Hypertension

PHIS: Public Health Information System

PM2.5: Particulate Matter with a diameter of 2.5 micrometres or less

PR: Pulmonary Rehabilitation

RCPI: Royal College of Physicians of Ireland

RSV: Respiratory Syncytial Virus

SABA: Short-Acting Beta2-Agonist

SCLC: Small Cell Lung Cancer

SIGN: Scottish Intercollegiate Guidelines Network

TB: Tuberculosis

WHO: World Health Organization

YLL: Years of Life Lost

YPLL: Years of Potential Life Lost

A.3 Glossary

Aetiology: The underlying origin or cause(s) of a disease or disorder.

Age-standardised rate: The rate for a disease or condition calculated by applying the country's age-specific rates to a standard population. Age standardisation adjusts rates to the level they would be if the age distribution of the population were the same across time, groups or countries, so that comparisons are like with like.

Alveoli: Tiny sacs in the lungs at the furthest end of the airways, where exchange of oxygen and carbon dioxide between air and blood takes place.

Apnoea: Absence of breathing. In sleep apnoea, brief periods of apnoea occur during sleep, caused either by an obstruction in the upper airway or by a failure of respiratory drive.

Bed days: The total number of days spent in hospital by inpatients discharged during a given period.

CFTR modulator: A medicine that improves the function of the defective cystic fibrosis transmembrane conductance regulator protein. Highly effective modulators are effective only for people carrying eligible CFTR variants.

Cohort study: A longitudinal study in which a population group sharing a common characteristic is followed over time to measure a particular outcome.

Co-morbidity: Conditions that exist alongside another condition, either independently or connectedly.

DALY (disability-adjusted life-year): The sum of the years of life lost due to premature mortality and the years lived with disability for a health condition. DALYs are used to measure the total disease burden on society.

Day-case: A patient admitted to hospital for a planned procedure or treatment and discharged on the same day.

Diagnosis related group (DRG): A system for classifying hospital episodes into groups with similar clinical characteristics and resource use. Ireland uses Australian Refined DRGs (AR-DRGs), which are grouped into Major Diagnostic Categories.

Discharge: A completed episode of hospital care, as recorded by HIPE. A person admitted more than once in a year is counted once for each discharge, so discharge figures count episodes of care rather than individual patients.

Dyspnoea: The subjective sensation of difficulty in breathing.

Emergency admission: An unplanned admission to hospital, most often through an emergency department or medical assessment unit.

Eosinophils, eosinophilia: A type of white blood cell involved in allergy and some cases of asthma; eosinophilia is the presence of an abnormally large number of eosinophils in the blood or body tissues.

Herd immunity: The effect whereby vaccination of a significant proportion of a population protects non-vaccinated individuals, because they are less likely to come into contact with an infected person.

Idiopathic: A disease that occurs without a known cause.

Incidence: The number or rate of new cases of a disease occurring in a population over a specified period, such as 12 months.

Inpatient: A patient admitted to hospital who occupies a bed overnight or longer.

Length of stay: The number of days between admission to and discharge from hospital.

Longitudinal study: A study that tracks the progress of individuals over time.

Median: The value lying at the midpoint of a distribution of observed values, such that there is an equal probability of falling above or below it.

Net survival: The probability of surviving cancer after adjusting for the risk of dying from other causes.

Newborn bloodspot screening: Testing of a small blood sample taken from a baby's heel shortly after birth to identify conditions, including cystic fibrosis, before symptoms develop.

Obstructive disease: A lung disease in which airflow is limited due to damage to the airways or excessive secretions; asthma and chronic obstructive pulmonary disease (COPD) are obstructive lung diseases.

Oedema: An abnormal accumulation of fluid in tissue.

Particulate matter: A mixture of solid and liquid particles present as pollution in the air, resulting from processes such as combustion or friction; sub-classified by size in micrometres, e.g. PM10 and

PM2.5. PM2.5 particles are small enough to pass through the lung barrier and enter the bloodstream.

Pertussis: Also known as whooping cough; an infectious disease caused by the bacterium *Bordetella pertussis*. Vaccination against the disease is available.

Phenotypes: Observable characteristics produced by the interaction of genetics and environment.

Prevalence: The number of cases of existing disease in a population at a given time, or over a period such as the past 12 months, usually expressed as a percentage of the population.

Restrictive disease: A respiratory disease in which the lungs cannot expand normally, due either to disease of the lungs themselves (e.g. interstitial lung diseases) or of the chest wall (e.g. chest deformity or neuromuscular diseases).

Spirometry: A lung function test measuring how much air a person can breathe out and how quickly, used to diagnose and monitor conditions such as asthma and COPD.

Standardised mortality ratio: The ratio of observed deaths to the number of deaths expected, given the characteristics of the population. A ratio below 1 indicates fewer deaths than expected.

Thrombosis: Clotting of blood within a blood vessel, potentially causing tissue death.

Virtual ward: An alternative to hospital admission in which patients requiring hospital-level care receive monitoring and treatment in their own home, supported by technology.

Years of potential life lost (YPLL): A measure of premature mortality that gives greater weight to deaths occurring at younger ages.

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