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# Respiratory Disease Burden for Older People

# 15

## Key Points

- In 2016, 13.5% of the Irish population were aged 65 years and over
- In 2016, 43% of those hospitalised as inpatients for respiratory disease were aged 65 years and over
- In older age groups, respiratory issues often co-exist with co-morbidities
- Chronic respiratory conditions can result from past lifestyle or environmental factors
- Vaccination is key to protection from a number of acute respiratory infectious diseases

## 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 can have additional significance when they occur in conjunction with existing chronic respiratory conditions such as COPD, interstitial lung disease, and asthma. For some of the acute respiratory infectious diseases, vaccination can play an important preventive role.

Part of the challenge for the health services in Ireland is that the number of people aged 65 years and over is growing by approximately 20,000 per year. In 2016, the Irish population had increased by 3.8% compared with Census 2011<sup>1</sup>. For those aged 65 years and over the increase was 19.1%. In 2016, those aged 65 years and over made-up 13.5% of the population<sup>1</sup>. Health Service use by older people differs significantly from younger healthier populations. A person aged 65 years and over consults a GP on average 7 times per year<sup>2</sup>. In 2016, the mean number of diagnoses for all inpatient hospital discharges was 3.9. However, for those aged 65 years and over it was 5.2<sup>3</sup>.

Sources of information on health in older people in Ireland include those used in other chapters of this report but in addition, there is The Irish Longitudinal

Study on Ageing (TILDA), a longitudinal study of community dwelling people aged 55 years and over. While the primary areas of investigation of TILDA are neuro-cardiovascular stability, locomotion and sensory function, it nevertheless provides valuable information on respiratory disease<sup>4</sup>. Where data is quoted from TILDA in this chapter, it relates to those aged 65 years and over.

## Incidence

As discussed in chapter 12 many of the respiratory infectious diseases are notifiable. The national trend data for these in the decade 2007-2016 are shown in chapter 12. As mentioned in that chapter, for a disease such as influenza, which many people self-manage in the community, notifications reflect trends rather than actual numbers of cases. The notifications for 2016 for those aged 65 years and over are shown in table 15.1. Both influenza vaccination and pneumococcal vaccination are recommended for all older people as well as those with underlying chronic conditions, including chronic respiratory conditions. In the 2014/2015 influenza season, the uptake of influenza vaccine by this age group was 59.8%<sup>5</sup>. In 2013, 36% [95%CI: 30%–42%] of those aged 65 years and older had received pneumococcal vaccination<sup>6</sup>. In the 2016/2017 influenza season, 87% (79) of the notified influenza outbreaks occurred in community hospitals/residential homes where most residents were in the older age group.

## Prevalence

TILDA respondents were asked whether a doctor had ever told them that they had a chronic lung condition. The self-reported prevalence of chronic lung disease was 5.3% in those aged 65-74 years (5.1% of males, 5.6% of females) and 4.9% in those aged 75 years and over (5.6% of males, 4.4% of females). In men, the prevalence of chronic lung disease increased with age, but an increase with age was not seen in women<sup>4</sup>.

**Table 15.1. Respiratory infectious diseases (Notifiable) 2016**

Age	Number 100%	<65 %	≥65 yrs %
*RSV	2690	95.3%	4.7%
**Streptococcus pneumonia (invasive)	381	50.9%	49.1%
Haemophilus Influenza (Invasive)	58	63.8%	36.2%
Influenza	4764	81.1%	18.9%
Tuberculosis	315	82.2%	17.4%
Pertussis	213	96.7%	5.6%
Legionellosis***	10	60%	40%

Source: HPSC 2016 Annual Epidemiological Report. Health Protection Surveillance Centre (HPSC). HPSC (2017)<sup>7</sup>\*RSV not recorded on CIDR prior to 2012 \*\*EARSS pathogens not recorded on CIDR with the exception of *Streptococcus pneumonia* (figures since 1/7/15 refer only to confirmed cases). \*\*\*Most notified cases of Legionellosis have Legionnaires' Disease

Where national data on prevalence is available on specific respiratory diseases, this is discussed in each of the relevant chapters.

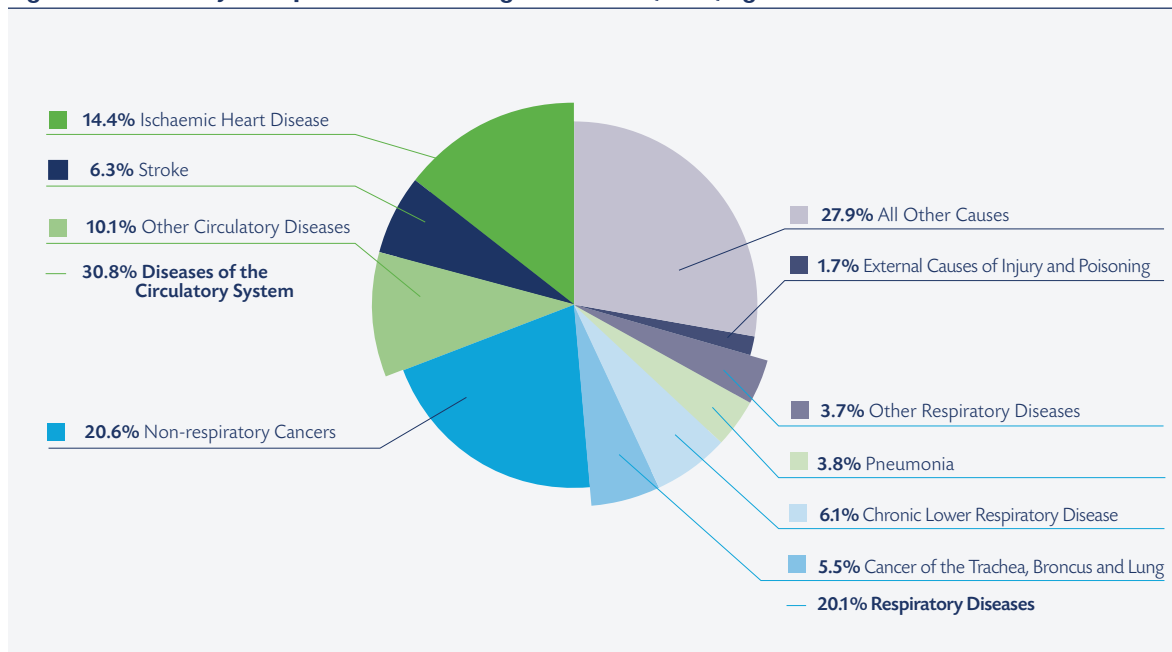
## Mortality

Overall mortality rates can mask variations between age groups, regions and other population subgroups. Causes of death for those aged 65 years and over differ from those in the younger ages. Mortality data other than in this paragraph does not include deaths from respiratory infectious diseases. The estimated excess mortality associated with influenza in those aged 65 years and older in each influenza season is 531 (95%CL: 464, 540), but in 2016/2017 it was 1,156, as mentioned in Chapter 12. That chapter provides additional information on deaths from other respiratory infectious diseases.

Mortality data for 2016 for those aged 65 years and over is shown in figure 15.1. In 2016, respiratory disease accounted for 20.1% of deaths for those aged 65 years and older. Chronic lower respiratory disease (ICD 10: J40-47) accounted for 6.1% of deaths, followed by cancer of the trachea, bronchus and lung at 5.5% and pneumonia at 3.8%

The majority of deaths from respiratory disease are in people aged 65 years and over. Over the past decade over 90% (range 92.4% - 93.4%) of all deaths from respiratory disease (J00-J99) excluding lung cancer occurred in those aged 65 years and over. For those aged 75 years and over the figure was almost 80% (range 78.8%-79.5%). This is shown in greater detail in table 15.2.

**Figure 15.1. Deaths by Principal Causes. Percentage Distribution, 2016, Ages 65 and over**



Source Health in Ireland, Key Trends, 2017, Department of Health, December 2017 Figures 2.4b<sup>8</sup> Note: data for 2016 is provisional

**Table 15.2. Age: Respiratory death, excluding Cancer of Trachea, Bronchus and Lungs**

	Deaths All Ages	Deaths ≥ 65 years % of total	Deaths ≥ 70 years % of total	Deaths ≥ 75 years % of total
2007	3324	93.0	88.7	80.4
2008	3522	93.1	88.3	79.0
2009	3606	93.1	88.2	80.0
2010	3280	92.5	87.1	78.6
2011	3438	93.1	87.8	79.3
2012	3497	93.6	88.0	79.3
2013	3504	93.4	88.2	80.1
2014	3492	93.6	87.9	79.5
2015	3865	93.3	88.2	79.4
2016*	3856	92.3	86.2	76.8

Source: Public Health Information System (PHIS)<sup>9</sup> \*Provisional data for 2016

**Table 15.3. Prevalence of respiratory medication use in the GMS population, 2016**

Age category	GMS population (% of entire Irish population)		Filled at least one Rx for a resp medication		Estimate of prevalence of respiratory medication use (%)			
	Male (%)	Female (%)	Male	Female	Male %	95% CI	Female %	95% CI
≥65yrs	173,505 (58%)	224,773 (66%)	45,272	59,511	26.1%	25.9 to 26.3	26.5%	26.3 to 26.7
≥70yrs	131,889 (69%)	174,516 (74%)	35,512	46,132	26.9%	26.7 to 27.2	26.4%	26.2 to 26.7

Source: Hurley, E (2018). An analysis of medication use for respiratory disease amongst those with GMS eligibility (2015 - 2016) - a focus on Chronic Obstructive Pulmonary Disease (COPD)<sup>11</sup>.

Looking at the major specific respiratory diseases in the decade 2007-2016, over 90% of all deaths from pneumonia occurred in those aged 70 years and older (range 90.4%-94.4%) as did over 85% of deaths from chronic lower respiratory disease (range 84.8%-86.8%) and approximately 60% of those who died from lung cancer (range 57.0%-61.4%).

As mentioned in other chapters, of those who died from pulmonary embolism (PE) in 2015, almost 75% (74.2%) were aged 65 years and over. Almost a quarter (24.2% (32)) were aged 65-74 years, 30.3% (40) were aged 75-84 years and 19.7% (26) aged 85 years and over<sup>10</sup>. Of those who died from Pulmonary Hypertension in 2015, 20.8% (11) were aged 65-74 years, 34.0% (18) were aged 75-84 years and 28.2% (15) aged 85 years and over<sup>10</sup>.

In 2015, of those dying from pneumonitis due to solids and liquids, 48.4% were aged 85 years or over with another 29.0% aged 75-84 years<sup>10</sup>. In 2015, of the 341 deaths due to chronic interstitial pulmonary disease (ICD 10: J84), 22.6% (77) were aged 65-74 years, 45.7% (156) 75-84 years and 23.8% (81) 85 years or over<sup>10</sup>. Of the 144 deaths in 2015 due to acute

lower respiratory infection (unspecified), 73% (105) were aged 85 years or over, 18.1% (26) were aged 75 years-84 years and 4.9% (7) were aged 65-74 years<sup>10</sup>.

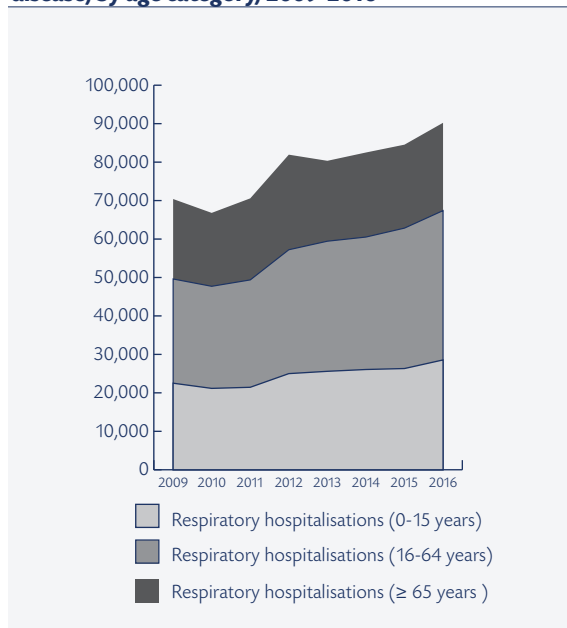
## Impact on Health Services

Most people with respiratory disease regardless of age are managed in primary care. Data on respiratory disease in older people is not available at national level for people with full medical cards, those with GP only cards or those who are private patients. This is also true for those who attend GPs, out of hours services, those who attend Emergency Departments and those who attend hospital Outpatient Departments for their respiratory problems. Inpatient or day case data is only available from HIPE reporting publicly funded hospitals.

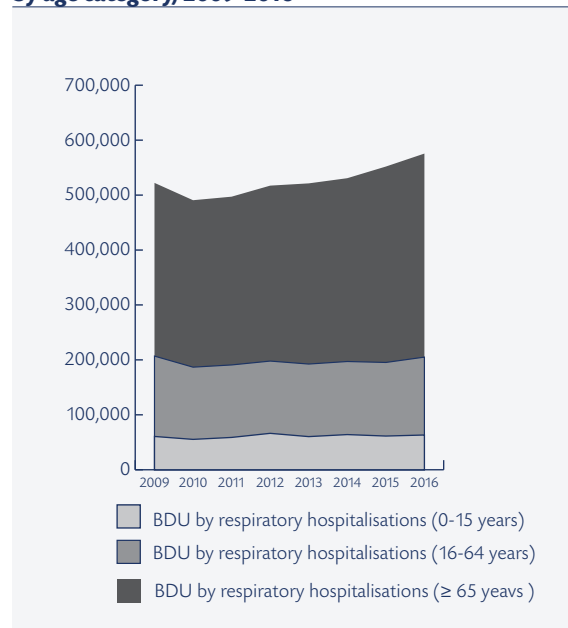
## Respiratory medication use

In terms of respiratory medication use, of those aged 65 years and over who held a full GMS card in 2016 (see table 15.3), over 25% of both males and females filled at least one prescription for a respiratory medication in 2016.<sup>11</sup>

**Figure 15.2. Inpatient hospitalisations by respiratory disease, by age category, 2009-2016**



**Figure 15.3. Inpatient bed days by respiratory disease, by age category, 2009-2016**



Source: HIPE 2009-2016. All hospitals reporting data to HIPE

## Impact on Hospitals

The trend over the years 2009-2016 for both inpatient hospitalisations for respiratory disease and bed-days used by age group is shown in figures 15.2 and 15.3.

In 2016, across all ages, there were 643,850 inpatient hospitalisations that accounted for 3,651,436 inpatient bed days. Of these, 32 % (204,882) were in those aged 65 years and over accounting for 53.2% (1,946, 040) of all inpatient bed days as shown in table 15.4. Of those aged 65 years and over, respiratory disease accounted for 19.1% of inpatient hospitalisations (vs. 16.1% for cardiovascular, 6.8% for non-respiratory cancers), and 19.1% of inpatient bed days (vs. 15.3% for cardiovascular, and 8.0% for non-respiratory cancers) in 2016 as shown in table 15.4 and figure 15.4.

In 2016, the commonest three respiratory causes of inpatient hospitalisations in those aged 65 years and over were COPD (5.8% of all inpatient hospitalisations, 30.5% of all respiratory inpatient hospitalisations in that age group), acute lower respiratory infection (unspecified) (4.4% of all inpatient hospitalisations, 23.0% of all respiratory inpatient hospitalisations in that age group), and pneumonia (3.9% of all inpatient hospitalisations, 20.7% of all respiratory inpatient hospitalisations in that age category), as shown in figure 15.5.

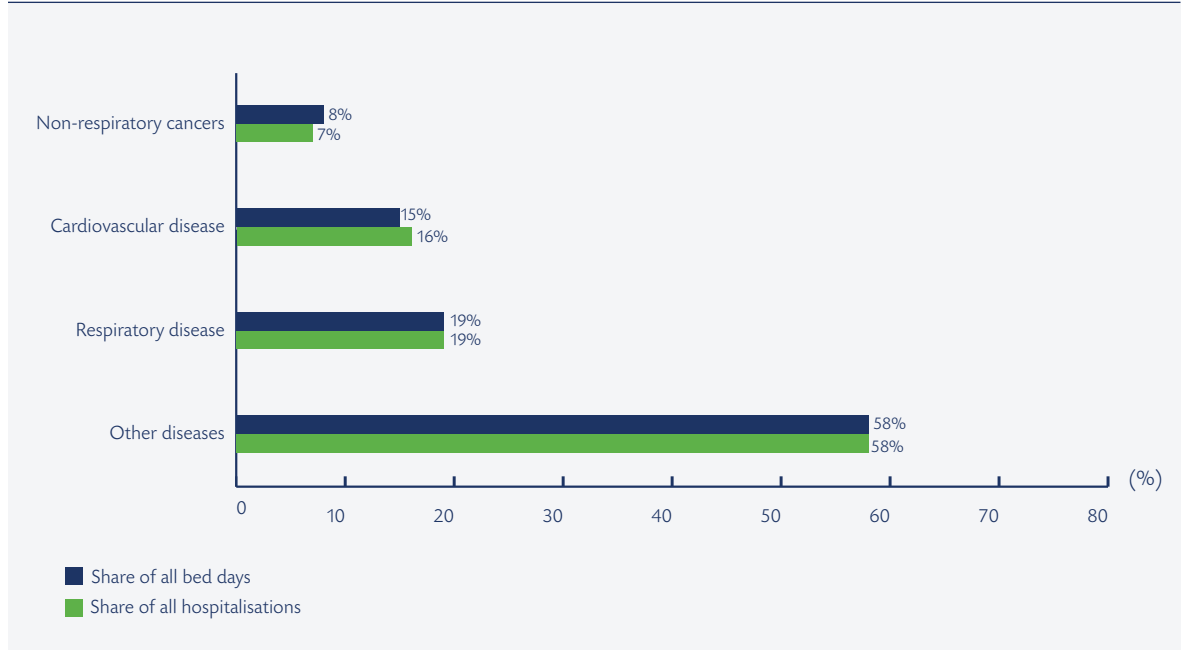
In terms of inpatient bed days used, the commonest were COPD (5.2% of all inpatient bed-days, 27.5% of all respiratory inpatient bed-days), pneumonia (5.0% of all inpatient bed-days, 26.4% of all respiratory

inpatient bed-days) and acute lower respiratory infection (unspecified) (4.0% of all inpatient bed-days, 20.7% of all respiratory inpatient bed-days) amongst those aged 65 years and over, as shown in figure 15.5.

Lung cancer (4.6%) and pneumonitis due to solids and liquids (3.8 %) were the fourth and fifth most common cause of respiratory inpatient hospitalisations in this age group as shown in figure 15.5.

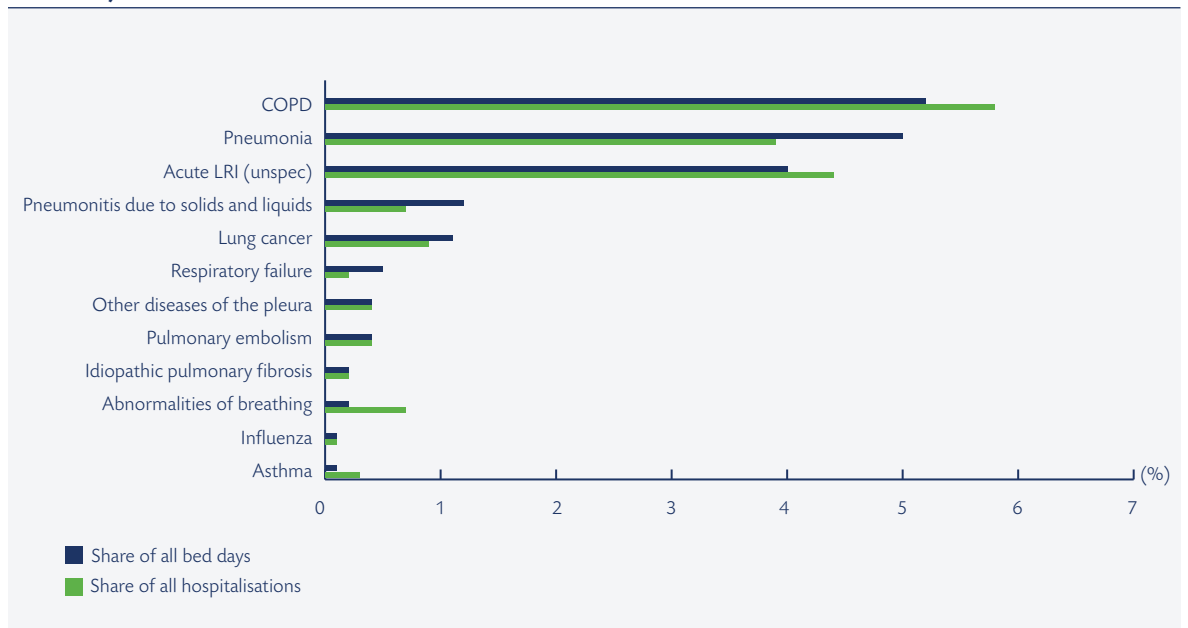
In 2016, those aged 65 years and older accounted for inpatient hospitalisations for each of the above five conditions as follows: COPD (75%); acute lower respiratory infection (unspecified) (56%); pneumonia (62%), lung cancer (67%) and pneumonitis due to solids and liquids (77%). These conditions are discussed in greater detail in their relevant chapters with data not just for 2016 but also trend date over the years 2009-2016. They show a rising trend for all conditions except lung cancer. The trend was most marked for pneumonitis due to solids and liquids.

**Figure 15.4. Percentage of inpatient hospitalisations and bed days by disease group, 2016 (age 65 years and older)**



Source: HIPE 2016. All hospitals reporting data to HIPE

**Figure 15.5. Percentage of inpatient hospitalisations and bed days by respiratory condition, 2016 (age 65 years and older)**



Source HIPE 2016. All hospitals reporting data to HIPE

**Table 15.4. Inpatient hospitalisations and bed days, 2016 (65 years and older)**

	Hospitalisations		Bed days	
	Number	Share of all hospitalisations	Number	Share of all bed days
All causes	204,882		1,946,040	
Respiratory disease	39,143	19.1%	370,920	19.1%
Cardiovascular disease	32,920	16.1%	297,717	15.3%
Non-respiratory cancers	13,867	6.8%	154,822	8.0%
Other diseases	118,952	58.1%	1,122,581	57.7%
<b>Respiratory disease</b>	<b>Number</b>	<b>Share of resp hospitalisations</b>	<b>Number</b>	<b>Share of resp bed days</b>
COPD	11,948	30.5%	101,842	27.5%
Acute lower respiratory infection (unspec)	9,010	23.0%	76,915	20.7%
Pneumonia	8,085	20.7%	97,966	26.4%
Lung cancer	1,783	4.6%	21,289	5.7%
Pneumonitis due to solids and liquids	1,489	3.8%	24,079	6.5%
Abnormalities of breathing	1,470	3.8%	3,779	1.0%
Other diseases of the pleura	784	2.0%	8,701	2.3%
Pulmonary embolism	725	1.9%	7,404	2.0%
Asthma	543	1.4%	2,459	0.7%
Respiratory failure	480	1.2%	8,852	2.4%
Idiopathic pulmonary fibrosis	465	1.2%	4,664	1.3%
Other diseases of URT	334	0.9%	1,118	0.3%
Other diseases of the respiratory system	315	0.8%	1,680	0.5%
Cough	314	0.8%	510	0.1%
Sleep apnoea	314	0.8%	424	0.1%
Acute URTI	306	0.8%	1,147	0.3%
Influenza	279	0.7%	2,604	0.7%
Pulmonary vascular diseases (excl embolism)	142	0.4%	1,268	0.3%
Acute bronchitis	64	0.2%	230	0.1%
Postprocedural respiratory disorders, not elsewhere classified	64	0.2%	690	0.2%
Lung diseases due to external agents (excl pneumonitis due to solids & liquids)	44	0.1%	406	0.1%
Mesothelioma	43	0.1%	594	0.2%
Suppurative and necrotic conditions of LRT	41	0.1%	562	0.2%
Tuberculosis	36	0.1%	953	0.3%
Sarcoidosis	30	0.1%	266	0.1%
Other respiratory diseases principally affecting the interstitium (excl J81 & J84)	17	0.0%	448	0.1%
Acute bronchiolitis	15	0.0%	49	0.0%
Cystic fibrosis	<5	0.0%	21	0.0%

Source: HIPE 2016. All hospitals reporting data to HIPE

In summary, respiratory disease was the cause of 19% of inpatient hospitalisations in those aged 65 years and older hospitalised in 2016, and was the cause of an equal proportion of bed-days. Of those hospitalised for respiratory problems in 2016, 43% were aged 65 years and older. These episodes accounted for 64.4% of inpatients respiratory beds. The majority (84.8%) were admitted as emergencies, most commonly for pneumonia, COPD and acute lower respiratory infection.

### Socio-economic analysis

In the TILDA study, 5.7% of those aged 65-74 years and 5.1% of those aged 75 years and older who had no education or primary education only reported having chronic lung diseases compared with 3.2% and 3.7% respectively of those with 3rd level or higher education<sup>4</sup>. This gradient also held true for lowest to highest wealth quartiles with adults in the lowest wealth quartile twice as likely to report chronic lung disease compared with those in the wealthiest quartile<sup>4</sup>. Data on specific respiratory disease, if available, is included in relevant disease chapters.

### International Comparisons

These have been discussed where available in each of the specific chapters.

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