



# Interfaces between the aged care and health systems in Australia—movements between aged care and hospital 2016–17

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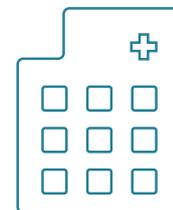
People who use aged care are among the most vulnerable groups in Australia. They may be frail and have complex health needs—particularly those who live in residential aged care. They can also be common users of hospital services, both for ongoing care for chronic conditions and for acute care following an injury or deterioration in their health.

Aged care and hospitals are key parts of the continuum of care that many older people require. However, existing hospital and aged care data are collected separately and do not provide sufficient information about people using both services or the pathways between them. By linking data, we can better understand these interactions and the potential implications for service delivery (AIHW 2012, AIHW 2013, AIHW 2019, Inacio et al. 2019, RCACQS 2019).

This report uses a purpose-built linked dataset that includes Australian Government-funded aged care services (both residential and community-based aged care) and public and private hospital data for Victoria and Queensland. Looking at hospital stays for these 2 jurisdictions, and aged care service use before and after the hospital stay, sheds light on how people move across these systems. This report also describes how these movements vary depending on people's use of aged care, highlights some of the reasons people go to hospital, and briefly explores deaths in hospital.

## Key findings

Across Victoria and Queensland, there were 1.2 million same-day and 655,000 overnight hospital stays for people aged 65 and over in 2016–17.



Of the overnight stays:

**4 in 10 (40%)** had some aged care use before and/or after

**almost 1 in 14 (7.2%)** were preceded by use of permanent residential aged care

**1 in 10 (10%)** used aged care at a higher level after the hospital stay than before it

**more than 4 in 10 (45%)** began in emergency departments

**about 1 in 16 (6.3%)** were for a fall-related injury

**1 in 25 (4.0%)** ended in death.

To increase transparency and support further research into the pathways between aged care and hospital, this report is accompanied by a technical paper that provides a detailed account of the methods. *Interfaces between the aged care and health systems in Australia—movements between aged care and hospital 2016–17: technical document* explains how the data were processed, the definitions developed, and the movements between aged care and hospital identified.

## A system-based view of aged care and hospital services

Aged care and hospital systems aim to provide complementary and coordinated care for older people. The type of care provided through the hospital system is commonly acute clinical care while aged care generally provides assistance in many activities of daily living and some nursing care—however, this varies somewhat depending on the type of aged care.

While access to aged care is not strictly based on age, people using it are generally aged 65 and over (for example, the median age on entry into permanent residential aged care was just under 84 in 2016–17). The aged care system provides care through a range of programs in people’s homes, in the community and in residential aged care facilities. Older people can also be frequent users of hospitals, and many use both hospital and aged care (AIHW 2019c). In 2016–17, 21% of the 7.8 million emergency department (ED) presentations and 42% of the 11 million hospital separations were for people aged 65 and over (AIHW 2017, AIHW 2018).

The 2 states in scope for this project—Victoria and Queensland—account for a similar share of activity in both the aged care and the hospital systems in Australia. Overall, in 2016–17, there were almost 201,000 places in residential aged care and nearly half of these (45%) were in Victoria or Queensland. Similarly, of the 267,000 people who used residential aged care in 2016–17, 44% (or 118,000) were in Victoria or Queensland (PC 2018). Community-based aged care accounts for a large share of aged care use, with home care used by 102,000 people (43% of them in Victoria or Queensland), and home support by 798,000 people (48% of them in Victoria or Queensland in 2016–17) (PC 2018).

In 2016–17, there were almost 62,000 available beds in public hospitals, and 31,000 licensed beds in private hospitals (noting that this does not include free-standing day hospital facilities, and ‘beds’ are not directly comparable across the 2 sectors). Again, almost half (43%) of public hospital beds were in Victoria or Queensland. For private hospitals, half (50%) of licensed beds were in these 2 jurisdictions (AIHW 2019b). Reflecting this capacity, of the 4.6 million hospital separations for older people in 2016–17, 48% (or 2.2 million) were in Victoria or Queensland (AIHW 2018).

Even when the aged care and hospital systems are used by the same person at the same time, the way they function is different: people commonly access aged care for longer periods—for example, potentially living in a residential aged care facility for years—while hospital is visited for hours, days or weeks at a time, but rarely longer. However, the same person may return to hospital repeatedly. This means that considerable overlap between the 2 systems is not only possible, but likely.

Moving between hospital and aged care can be challenging for frail older people. Consistent and timely communication between the 2 systems can facilitate smoother transitions and ensure that the person’s care is well coordinated. This can be done, for example, by using discharge summaries and improving the integration between different systems. The medical care that a person receives outside of the hospital system (such as that provided by general practitioners, specialists, allied health professionals and pharmacists) is also an important part of this coordination of care.

## About this report

The analyses presented here used routinely collected administrative data from several sources.

### What data were used?

- The National Aged Care Data Clearinghouse (NACDC) for aged care program data on:
  - permanent residential aged care
  - respite residential aged care
  - home care, covering Home Care Packages and its precursor programs
  - transition care, covering Transition Care Program and Short-Term Restorative Care
  - home support, covering the Community Home Support Program, and its precursor Home and Community Care
- The National Non-Admitted Patient Emergency Department Care database for ED presentations
- National Hospital Morbidity Database for hospital separations
- National Death Index for date of death.

The NACDC data were nationwide; however, the data for ED presentations and hospital separations included Victoria and Queensland only. The results presented here therefore cover people who used hospitals in Victoria and Queensland in 2016–17. Although the project included people from the age of 50, and hospital stays for people aged 50–64—and these are included in the supplementary tables (Table S2) for context—the results presented here focus on people aged 65 and over on 1 July 2016.

For more information, see *Interfaces between the aged care and health systems in Australia—movements between aged care and hospital 2016–17: technical document*.

The process of bringing these data sources together and creating an analysis data set for examining movements between aged care and hospitals was complex:

- Linkage techniques were used to maximise the robustness of data and to preserve privacy.
- Data for all in-scope aged care programs and hospital episodes were brought together to identify the start and end dates of use.
- A set of rules was used to combine individual hospital episodes into hospital stays with new start and end dates.
- Aged care use and hospital stays were then examined concurrently (taking into account ED presentations and deaths), assigning pre-hospital origins and post-hospital destinations to quantify these movements between aged care and hospital.

The rules used at each step are detailed in *Interfaces between the aged care and health systems in Australia—movements between aged care and hospital 2016–17: technical document*. The process involved assessing data quality, and checking, cleaning and processing records at each step, and these steps are outlined further in the supporting technical document.

## Report terminology

### Aged care

**Home care:** formally known as Home Care Packages Program, this program provides support and care services to older people in their homes. Services are offered at 4 levels of care and can consist of personal care, domestic support, clinical care and allied health services.

**Home support:** formally known as Commonwealth Home Support Program, this program provides entry-level support services such as domestic assistance for older people. Also includes Home and Community Care where relevant; states and territories transitioned from this to the Commonwealth Home Support Program at different times between 2015 and 2018.

**Transition care:** this term groups together Short-Term Restorative Care (early intervention program to delay admission into residential care or home care) and Transition Care Programme (rehabilitation care provided on discharge from hospital to delay admission into residential care). Both provide time-limited care.

**Respite care:** part of residential aged care, this program provides care for dependent people living in the community, giving people—and their carers—a short break from their usual care arrangements.

**Permanent care:** formally known as permanent residential aged care, this program provides round-the-clock personal care and nursing services to people living long-term in a residential aged care facility.

### Hospitals

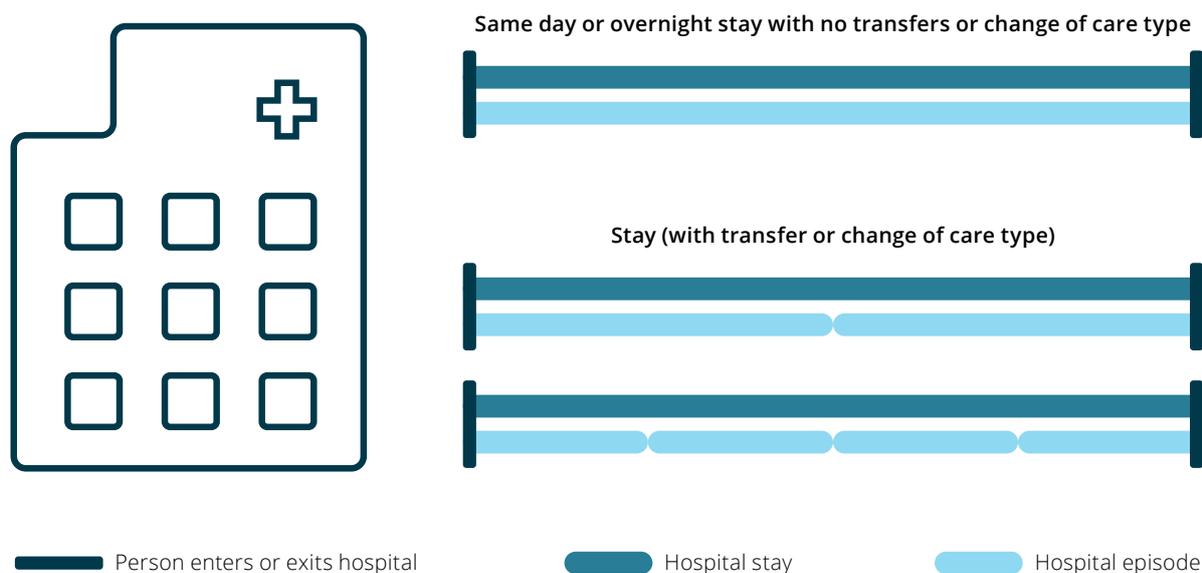
**ED presentation:** this is when the patient arrives at the emergency department and is registered clerically, or triaged.

**Hospital episode:** these are also called hospital separations. They capture activity in the system, meaning that, for example, a change in care type or a transfer between hospitals triggers a new episode—however, from the person's perspective, these may well relate to the same period of hospital use. Hospital episodes can be **same-day** (meaning that the person entered and left hospital on the same day) or **overnight** (meaning that the person spent at least one night in hospital), and a same-day hospital episode can be followed by a related overnight episode.

**Hospital stay:** These are hospital episodes that have been determined to relate to the same broader period of hospital use. The rules for combining hospital episodes into hospital stays are explained in the accompanying document *Interfaces between the aged care and health systems in Australia—movements between aged care and hospital 2016–17: technical document*. Again, hospital stays can be same-day or overnight. Overnight hospital stays can take place across different beds, wards or hospitals.

The most complex step was developing a set of rules for creating hospital stays. For example, an acute episode for surgery may be followed by a sub-acute episode for rehabilitation care, and these may take place either within the same hospital or a different hospital. Using these rules, related hospital episodes were combined into hospital stays. The following diagram illustrates some examples of this (Figure 1).

Figure 1: Conceptual diagram of relationships between hospital episodes and hospital stays



Note: Not all possible relationships are represented in this figure.

Hospital stays were then matched against aged care use to identify those stays that related to a period of aged care use. Again, a set of rules was used to ascertain where an individual came from before a hospital stay (origin) and where they went to after they were discharged (destination).

## Hospital stays for older people

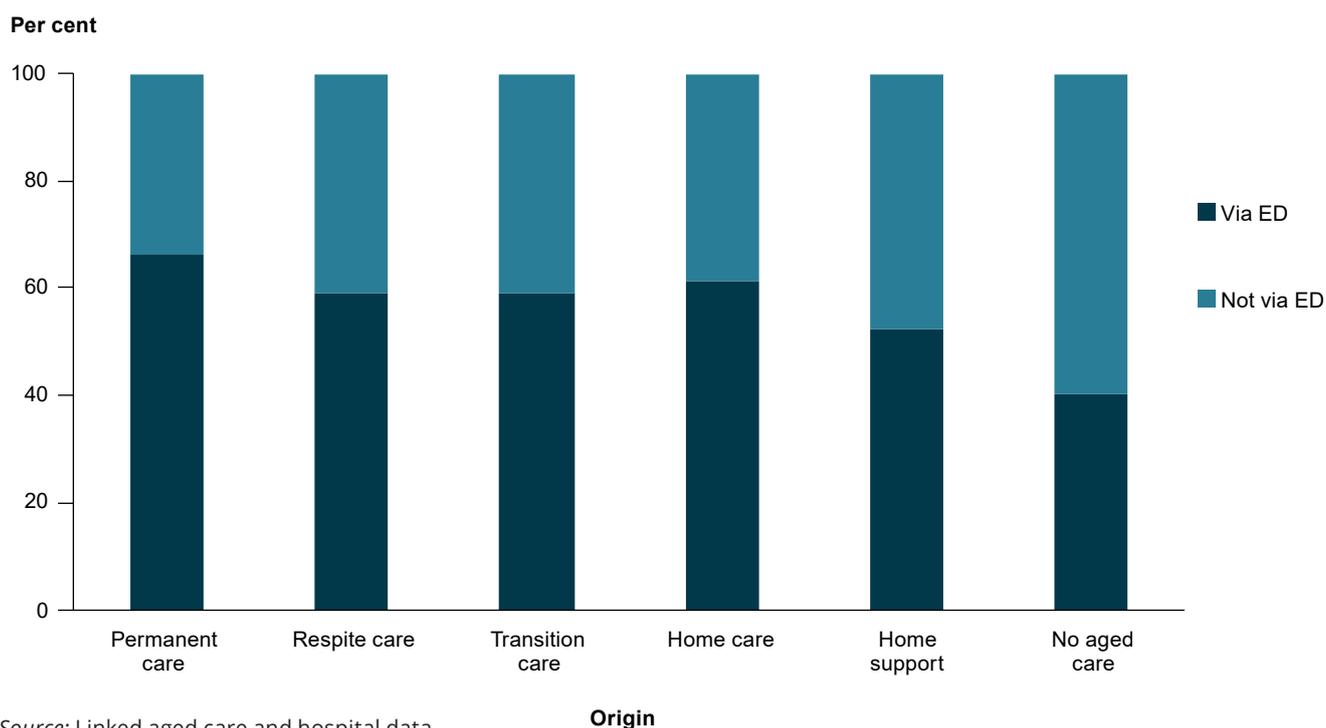
In 2016–17, there were 1.2 million same-day and 655,000 overnight hospital stays for people aged 65 and over in Victoria and Queensland. This only includes hospital stays that were completed in 2016–17 where the originating hospital episode could be identified.

### Some hospital stays begin in an emergency department

Emergency departments (EDs) can be one entry point into the hospital system, with an ED presentation leading to a hospital admission. People may also have an interaction with the ambulance system—data for which are not in scope here—or enter hospital directly as a planned admission. An ED presentation on the same day as a hospital stay began could be taken to indicate a sudden change in a person’s health (rather than, for example, the hospital stay being planned).

For same-day hospital stays, it can be difficult to tell whether the ED presentation came before or after the hospital stay. Just 6.8% of all same-day hospital stays had an ED presentation on the same day, but this rose to 27% for same-day hospital stays where the person had been in permanent residential aged care. However, almost half (45%) of overnight hospital stays had an ED presentation on the same day as the stay began, suggesting that the ED was the point of entry. This proportion was highest among those coming from permanent residential aged care (66%) (Figure 2).

**Figure 2: Overnight hospital stays for people aged 65 and over, by whether entered via ED, by pre-hospital origin, 2016–17 (Victoria and Queensland)**



## Moving between aged care and hospital

Where people came from before a hospital stay (origin), and where they went after it (destination), shows the full movement across the 2 systems. This analysis focuses on hospital stays in Victoria and Queensland, and individual people can be counted more than once.

## Overnight hospital stays commonly involve some aged care use

Overall, of the 1.9 million hospital stays where both the origin and destination were identified, around 1 in 4 (25%) same-day hospital stays, and 2 in 5 (40%) overnight hospital stays for older people had some aged care use before or after the stay.

Home support was the most common aged care-related origin for hospital stays—13% of same-day and 18% of overnight stays were preceded by use of home support, which is also the most widely used aged care program. A lower proportion of hospital stays had home support use both before and after the stay (10% of same-day, and 12% of overnight stays began and ended with use of home support). Around 3.8% of same-day, and 5.1% of overnight stays had earlier use of home care, and 4.1% of same-day, and 7.2% of overnight stays were preceded by permanent residential aged care use (Table 1).

**Table 1: Movements between aged care and hospital for people aged 65 and over, by same-day/overnight stay, 2016–17 (Victoria and Queensland)**

Type of stay/ Origin from	Destination to							Total
	Permanent care	Respite care	Transition care	Home care	Home support	No aged care	Death	
Permanent care	4.1	—	0.0	0.0	0.0	0.0	0.0	4.1
Respite care	0.0	0.2	—	0.0	0.0	0.0	0.0	0.2
Transition care	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2
Home care	0.0	0.0	0.0	3.8	0.0	0.0	0.0	3.8
Home support	0.0	0.0	0.0	0.1	10.0	2.9	0.0	13.0
No aged care	0.0	0.0	0.0	0.1	3.8	74.7	0.0	78.7
<b>Total (per cent)</b>	<b>4.1</b>	<b>0.2</b>	<b>0.2</b>	<b>4.0</b>	<b>13.8</b>	<b>77.6</b>	<b>0.1</b>	<b>100.0</b>
<b>Total (number)</b>	<b>50,956</b>	<b>2,512</b>	<b>2,269</b>	<b>49,267</b>	<b>171,116</b>	<b>960,375</b>	<b>1,613</b>	<b>1,238,108</b>
<b>Overnight</b>								
Permanent care	6.5	0.0	0.0	0.0	0.0	0.0	0.7	7.2
Respite care	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.4
Transition care	0.1	0.0	0.2	0.0	0.1	0.1	0.0	0.5
Home care	0.3	0.3	0.1	4.1	0.0	0.0	0.3	5.1
Home support	0.6	0.4	0.5	0.3	11.5	2.9	1.4	17.7
No aged care	0.5	0.3	0.7	0.2	5.7	60.2	1.5	69.1
<b>Total (per cent)</b>	<b>8.0</b>	<b>1.3</b>	<b>1.6</b>	<b>4.6</b>	<b>17.2</b>	<b>63.3</b>	<b>4.0</b>	<b>100.0</b>
<b>Total (number)</b>	<b>52,432</b>	<b>8,397</b>	<b>10,715</b>	<b>30,076</b>	<b>112,893</b>	<b>414,276</b>	<b>25,871</b>	<b>654,660</b>

Source: Linked aged care and hospital data.

## Hospital stays can be followed by a higher need for support

Home support is often considered the entry-level program to aged care, with progressively more intensive support provided by home, transition, respite and permanent residential aged care—sometimes these changes in care needs are triggered by a change in people’s health or available supports. Looking at both the beginning and end of the hospital stay highlights how commonly older people may need extra support after a hospital stay.

Around 1 in 10 (10%) overnight hospital stays for older people involved higher levels of aged care use after hospital than before it, and the proportion increased regardless of what aged care program had been used before the hospital stay (Table 2). ‘Higher’ was defined here as moving to another program that would commonly provide either more services, or services of a more intensive nature, for example, moving from home care before the hospital stay to transition care, respite or permanent residential aged care after it.

**Table 2: Proportion of overnight hospital stays where destination was higher than origin, by origin and age group, 2016–17 (Victoria and Queensland)**

Origin	Age group				Total
	65–74	75–84	85–94	95 and over	
Permanent care	n.a.	n.a.	n.a.	n.a.	n.a.
Respite care	14.3	15.2	15.7	15.6	15.4
Transition care	10.7	14.2	19.0	51.3	15.2
Home care	7.5	12.6	17.5	21.6	13.5
Home support	5.1	9.4	17.2	25.4	10.4
No aged care	6.3	13.0	20.8	25.8	10.7
<b>Total</b>	<b>6.1</b>	<b>11.4</b>	<b>15.8</b>	<b>16.9</b>	<b>10.5</b>

Source: Linked aged care and hospital data.

### Residential aged care use increases as people get older

Where the person had used aged care before and after a hospital stay, the type of support varied by age—the younger age groups were most likely to have used home support, while older age groups used a variety of aged care around the time of the hospital stay.

Hospital stays for people aged 85 and over, in particular, were more likely to involve permanent residential aged care before and after (Table 3). Across all age groups, women were also more likely have permanent residential aged care use surrounding the hospital stay.

**Table 3: Proportion of hospital stays where origin and destination were permanent residential aged care, by same-day/overnight stay, sex and age group, 2016–17 (Victoria and Queensland)**

Type of stay/Sex	Age group			
	65–74	75–84	85–94	95 and over
<b>Same-day</b>				
Men	1.9	4.2	11.5	31.4
Women	1.5	4.8	20.2	47.2
<b>Total</b>	<b>1.7</b>	<b>4.5</b>	<b>15.6</b>	<b>41.2</b>
<b>Overnight</b>				
Men	1.5	5.1	12.7	24.5
Women	2.0	6.6	18.6	30.1
<b>Total</b>	<b>1.9</b>	<b>5.8</b>	<b>16.1</b>	<b>28.3</b>

Source: Linked aged care and hospital data.

Conversely, men who had a hospital stay were more likely than women to not have used age care before or after the stay, and the difference increased with age (Table 4). These patterns are consistent with the demographics of ageing: women tend to outlive men—the median age at death was 85 for women and 78 for men in 2017 (AIHW 2019a)—and women are more likely to provide support as an informal carer (AIHW 2019d).

**Table 4: Proportion of hospital stays where origin and destination were no aged care, by same-day/overnight stay, sex and age group, 2016–17 (Victoria and Queensland)**

Type of stay/Sex	Age group			
	65–74	75–84	85–94	95 and over
<b>Same-day</b>				
Men	84.0	73.4	56.7	44.7
Women	80.6	64.0	46.3	23.2
<b>Total</b>	<b>82.5</b>	<b>69.2</b>	<b>51.8</b>	<b>31.4</b>
<b>Overnight</b>				
Men	79.1	61.5	40.4	27.5
Women	72.6	50.7	32.4	19.2
<b>Total</b>	<b>76.1</b>	<b>56.2</b>	<b>35.9</b>	<b>21.8</b>

Source: Linked aged care and hospital data.

## Time spent in hospital varies

Overall, hospital stays that originated in aged care were more likely to be somewhat longer than hospital stays without preceding aged care use. The median length of stay for overnight hospital stays was under 1 week for all but those hospital stays that were preceded by transition care (median stay of 10 days, meaning that half of the stays had ended by this time). The median was 6 days when people came from respite care, 5 for people from home care and home support, and 4 days for permanent residential aged care. Where no pre-hospital aged care use was identified, the median overnight stay was 3 days.

This does not take into account the reason for entering hospital, which may further influence the time spent in hospital. In addition, transition care can be provided through the hospital, and entry into the program is limited to older people living in the community who have been hospitalised, are relatively stable, and require rehabilitation to avoid inappropriate entry into permanent residential aged care. Thus, people entering hospital from transition care would have had a prior hospital stay and may have particularly complex medical needs.

## What are the common reasons older people go to hospital?

Overall, the 5 most common reasons for same-day hospital stays for people aged 65 and over were dialysis and other health service use (accounting for 48%), eye-related diseases (9.5%), cancers (8.7%), other signs and symptoms (7.2%) and digestive diseases (6.4%).

These varied slightly depending on whether people were using aged care before the hospital stay. In particular, where people had used permanent residential aged care beforehand, 12% of same-day hospital stays were due to injuries. This was also relatively high where there was pre-hospital use of respite (9.1%) or transition care (6.2%), compared with only around 2.0% where people had either used no aged care beforehand, or only home care or home support.

The 5 most common reasons for admission to overnight stays were circulatory diseases (16%), injuries (10%), respiratory diseases (10%), other signs and symptoms (such as pain that was not associated with another diagnosis; 10%) and cancers (10%)—and these varied depending on the type of aged care being used before the hospital stay (Table 5). For example, injuries were the most common reason for those overnight stays where the pre-hospital origin was transition care, while respiratory diseases were most common where the origin was permanent residential aged care.

**Table 5: Most common principal diagnoses for overnight hospital stays for people aged 65 and over, by pre-hospital origin, 2016–17 (%) (Victoria and Queensland)**

Most common disease groups/ Selected individual conditions	Permanent care	Respite care	Transition care	Home care	Home support	No aged care	Total
Circulatory	13.1	13.2	14.1	14.3	15.7	17.0	16.3
<i>Heart failure</i>	4.5	6.1	5.0	4.7	4.1	2.4	3.0
<i>Atrial fibrillation and flutter</i>	1.1	0.7	1.2	1.4	1.5	2.3	2.1
<i>Acute myocardial infarction</i>	1.4	1.8	1.0	1.3	1.4	1.6	1.5
<i>Chronic ischaemic heart disease</i>	0.1	0.3	0.2	0.4	0.8	1.9	1.5
Injury and poisoning	17.0	17.1	21.2	12.7	11.3	8.7	10.0
<i>Fracture of femur</i>	5.3	3.9	3.8	1.7	1.5	0.9	1.4
<i>Open wound of head</i>	1.1	1.0	0.7	0.7	0.4	0.3	0.4
<i>Superficial injury of head</i>	0.7	0.7	0.4	0.5	0.3	0.2	0.2
Respiratory	18.4	15.3	10.0	13.2	10.5	9.0	10.2
<i>Other COPD</i>	3.6	4.2	2.5	4.8	3.7	2.8	3.1
<i>Pneumonia, organism unspecified</i>	6.7	4.8	3.1	3.6	2.6	2.3	2.8
<i>Unspecified acute lower respiratory infection</i>	1.6	1.2	0.9	1.1	0.8	0.7	0.8
<i>Pneumonitis due to solids and liquids</i>	3.4	1.9	1.3	0.8	0.3	0.1	0.5
Other symptoms and signs	8.1	10.4	11.0	12.3	10.6	10.1	10.2
Cancers	4.5	4.9	4.9	5.4	11.3	10.7	10.0
Digestive	7.3	5.6	6.0	7.1	7.7	10.3	9.4
Musculoskeletal	2.7	3.7	6.1	6.2	8.4	10.5	9.3
Genitourinary	6.7	5.3	4.7	5.9	5.3	6.5	6.2
Nervous system	2.3	3.8	3.3	3.6	3.1	3.9	3.6
Infections	5.3	4.0	3.8	3.8	3.4	2.9	3.2
Other	14.5	16.8	14.9	15.6	12.7	10.4	11.4
<b>Total (per cent)</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Total (number)</b>	<b>47,099</b>	<b>2,590</b>	<b>3,099</b>	<b>33,586</b>	<b>115,833</b>	<b>452,453</b>	<b>654,660</b>

Source: Linked aged care and hospital data.

The disease profile of older people using permanent residential aged care differs considerably from other users of aged care (or those using no aged care), and this could be seen in the relatively lower proportion of hospital stays that were due to circulatory diseases, and the relatively higher proportion that were due to respiratory diseases. The broad group ‘respiratory diseases’ includes acute infections such as pneumonia, as well as ongoing conditions such as chronic obstructive pulmonary disease (COPD). Other COPD was the most common individual diagnosis for overnight hospital stays where no aged care use had been identified (2.8% of stays), while heart failure was the most common for overnight hospital stays that were preceded by home care (4.7%), home support (4.1%), transition care (4.9%) or respite care (6.1%). For overnight hospital stays that were preceded by permanent residential aged care, the most common individual diagnosis was pneumonia, organism unspecified (6.7%).

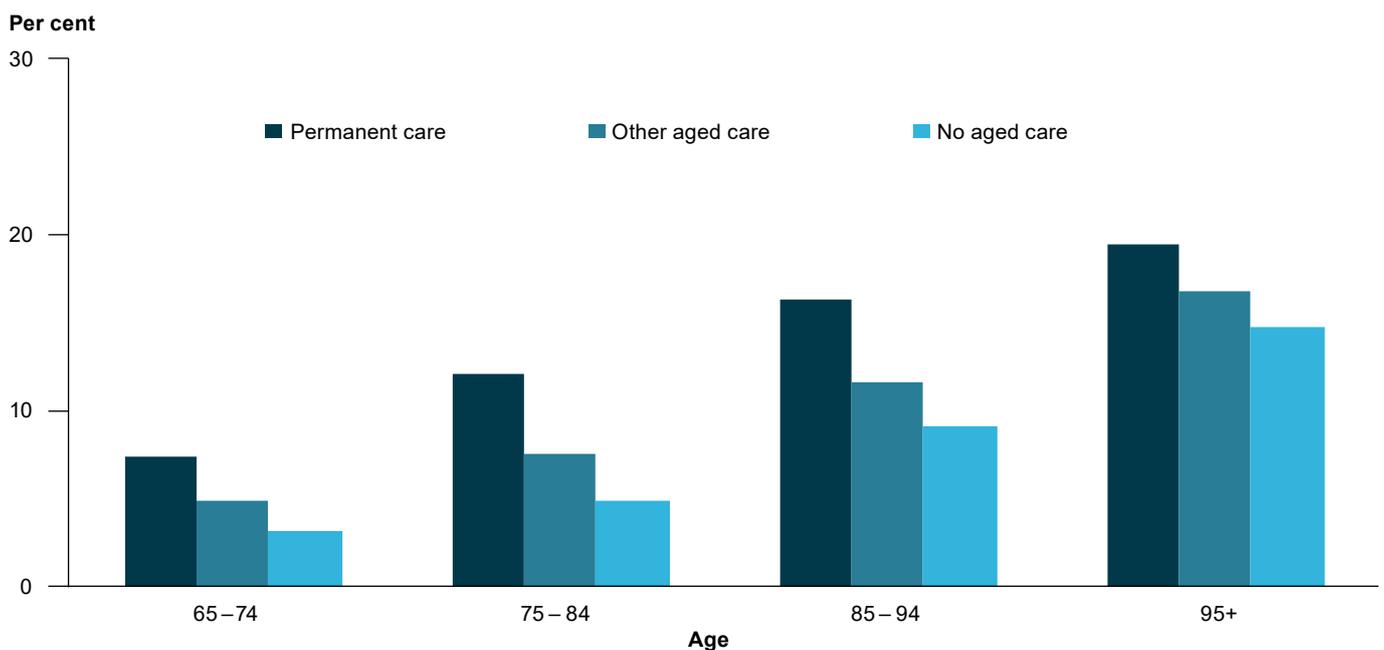
## Fall-related overnight hospital stays increase with age

Falls are a common issue for frail older people, particularly those living in permanent residential aged care (AIHW 2019c). Overall, 10% of overnight stays for people aged 65 and over were caused by injury or poisoning (Table 5), with many of the injuries resulting from falls. In 2016–17, there were 15,000 same-day and 39,900 overnight hospital stays for fall-related injuries for people aged 65 and over. For same-day hospital stays, this represented 1.2% of the total for older people in the 2 jurisdictions, and for overnight stays, 6.1%.

Around half (52%) of overnight hospital stays for fall-related injuries had no prior aged care use identified, and almost 1 in 3 (29%) were preceded by home care or home support, and 1 in 6 (17%) by permanent residential aged care. The proportion of overnight hospital stays for falls that had permanent residential aged care as the origin increased with age: 4.4% for people aged 65–74, rising to 13% for those aged 75–84, 26% for those aged 85–94 and 37% for those aged 95 and over.

As a proportion of all overnight hospital stays for each age group, all origins showed a broadly similar pattern—fall-related injuries accounted for a larger share of hospital stays for the older age groups, regardless of what (if any) aged care had been used before the hospital stay (Figure 3).

**Figure 3: Proportion of overnight hospital stays where main reason for admission was a fall-related injury, by age group and origin, 2016–17 (Victoria and Queensland)**



Source: Linked aged care and hospital data.

The median length of stay for overnight hospital stays for fall-related injuries was 7 days. However, this too varied by origin: where the hospital stay was preceded by transition care, home care or home support, the median was around 2 weeks (16, 13 and 13 days, respectively); preceded by respite care the median was 11 days. Where the hospital stay was preceded by permanent residential aged care, the median length of stay was just 4 days. This may reflect that residential aged care is better equipped to provide appropriate care and support on discharge, whereas someone living at home without a carer may not be discharged as quickly.

Overall, the 55,000 same-day or overnight hospital stays for fall-related injuries represented 46,500 people, meaning that some people had more than 1 stay for a fall in 2016–17. Same-cause readmissions illustrate this: 14% of hospital stays for fall-related injuries were followed by another within 4 weeks. In particular, same-day hospital stays for falls were commonly followed by another same-day stay for the same reason, with 24% involving another same-day stay for fall-related injuries within 4 weeks. Around 10% of overnight stays for falls were followed by another same-cause overnight stay within the month. It is not possible with the available data to determine if these were admissions for the same injury or a subsequent injury.

## Almost half of deaths for older people occur in hospital

Information about the place of death (for example, whether death took place at home, in hospital or elsewhere) is not available from national mortality data—a well-recognised data gap. Using the linked hospital and aged care data, we see that in 2016–17, 57,400 people aged 65 and over died in Victoria or Queensland, and there were 1,600 same-day and 25,900 overnight hospital stays that ended with the person’s death. Thus, almost half (48%) of deaths for older people in these 2 jurisdictions were in hospital (that is, the death was recorded on the same day as the person left hospital and the separation reason from hospital indicated death in hospital).

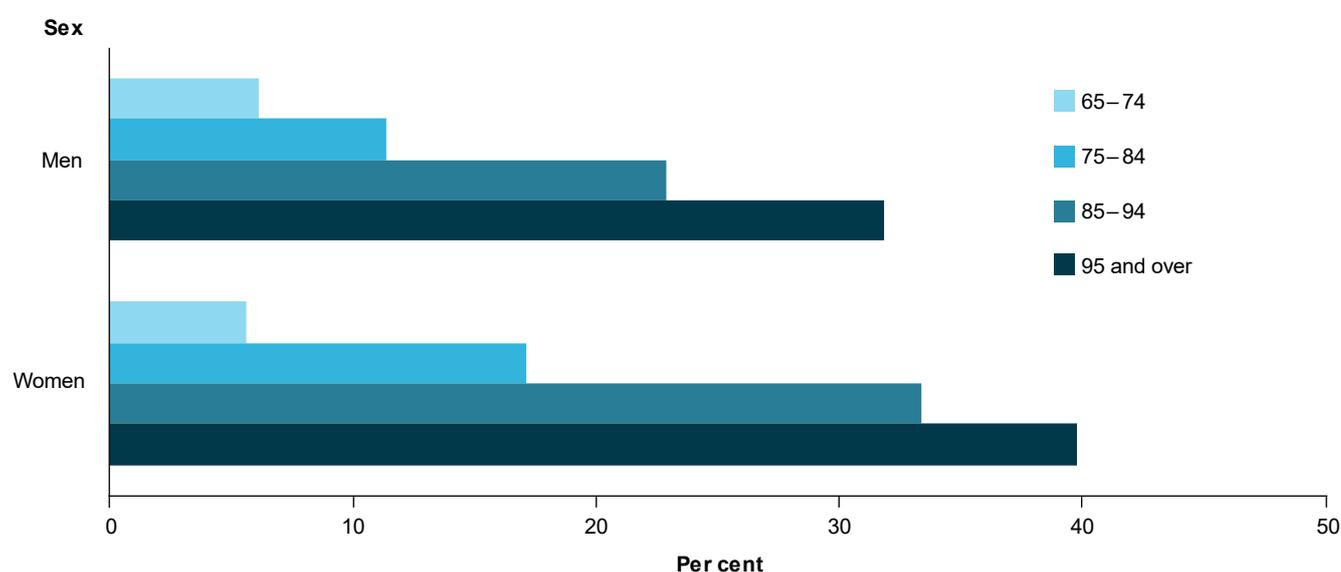
However, this varied considerably by age group: 62% of deaths among those aged 65–74 were in hospital, decreasing to 54% among those aged 75–84 and to 40% among those aged 85–94. Just 25% of deaths among those aged 95 and over were in hospital.

## The proportion of hospital stays that end in death varies depending on origin

Overall, 4.0% of overnight hospital stays for older people ended with the person’s death, although this varied depending on the preceding aged care use: 14% of overnight hospital stays that began with respite care use, 9.6% of those that began with permanent care and just 2.1% of those with no preceding aged care ended with death (see Table 1).

Overall, in almost 1 in 5 (18%) overnight hospital stays that ended in death, the person had used permanent residential aged care beforehand. For each age group, the proportion was higher among women—5.6% of women aged 65–74 who died during an overnight hospital stay had previously used permanent residential aged care, rising to 40% for those aged 95 and over (Figure 4).

**Figure 4: Proportion of overnight hospital stays where origin was permanent care and destination was recorded as death, by sex and age group, 2016–17 (Victoria and Queensland)**



Source: Linked aged care and hospital data.

## Respiratory diseases are associated with hospital deaths for residential aged care users

Of those overnight hospital stays where people were admitted for a respiratory disease from permanent residential aged care, almost 3 in 5 (59%) stays ended with death in hospital. People living in permanent residential aged care are often frail, have multiple health conditions requiring multiple medicines and can be prescribed potentially inappropriate medicines (or inappropriate combinations of medicines). These factors, combined with the shared accommodation setting, may make people vulnerable to infections and further complications (such as influenza and pneumonia).

## What are the opportunities for future work?

This report is part of a broader body of work at the AIHW examining the relationships between the aged care and health systems. Previous publications have looked at how people in aged care use other health services, such as general practitioners, specialists, medicines and hospital. This report took a different approach: rather than looking at people's use of hospitals, we developed a comprehensive methodology for processing, defining and analysing hospital data from the perspective of the movements within hospital, and, ultimately, to and from aged care.

The methodology is presented in detail to increase transparency and to support interpretation of the findings. It is also hoped that making a detailed account of the approach available will be useful to other researchers who are working with complex administrative data.

Future directions include:

- taking a cohort-based approach and using more advanced statistical techniques to examine hospital stays (for example, whether stays differ within people using particular aged care programs, or between those with particular characteristics)
- studying the interactions between hospital stays, GP or specialist use and medicines dispensed (for example, whether hospital stays for fall-related injuries are associated with use of certain medicines beforehand)
- exploring the location of deaths further (for example, whether deaths that did not take place in hospital took place in residential aged care). However, information on how this relates to people's wishes or the provision of palliative care—whether in hospital, at home, or in residential aged care—is limited.

## Where can I go to for more information?

Earlier reports can be downloaded for free from the AIHW website

<https://www.aihw.gov.au/reports-data/health-welfare-services/aged-care/reports>.

The website also includes information on ordering printed copies.

This report is accompanied by online supplementary data tables. A detailed account of the methodology is available in *Interfaces between the aged care and health systems in Australia—movements between aged care and hospital 2016–17: technical document*.

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