End of life care in Queensland – admission to acute hospitals near the end of life

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Hospitals play a crucial role in saving the lives of those suffering from serious medical conditions. However, the use of the acute hospital system, in particular critical care services (such as intensive care units) and associated invasive tests and procedures for patients with end-stage chronic conditions may have limited potential benefit for patients' quality of life[1-4]. In Australia, there have been discussions aimed towards improved management of end-of-life care that focuses on providing patients and their families with more control over their medical care. This includes providing the option to limit invasive treatments that may be of limited benefit and increasing the availability of services in a non-admitted setting[3 5]. This paper provides a summary of the use of hospitals, including critical care services, for end-of-life care in Queensland, based on service activity patterns in the last 6 months of life.

While the key priority is that patient choices regarding treatment and location of care are available, there have been economic evaluations of the costs of provision of care in hospital at the end of life. A study from England reported that if a person spends the last moment of their life in a community-based end of life care setting rather than as an admitted patient, potential net saving of approximately £958 per person can be expected[6]. A study conducted using New South Wales data suggested that per person hospital costs for the last year of life by those aged 65 and older are approximately $13,513[7]. This paper also provides an estimate of funding for admitted patient episodes of care for end-of-life care in Queensland public facilities, under the current service delivery model.

Linked Queensland Hospital Admitted Patient Data Collection (QHAPDC) and Queensland Death Registration data for the period from 1 July 2009 to 30 November 2011 were interrogated to further our understanding of hospital use at the end of life. Funding data was obtained from the Queensland Health Decision Support System (DSS). Admissions to Queensland hospitals in the 6 months prior to death were analysed for persons who were 50 years or older at the time of death who died between January 2010 and November 2011[*] from selected chronic conditions[8 9†] . The results showed that approximately 88.2% of patients had at least one hospital admission in the last 6 months of life, with 23.7% having more than 4 distinct hospital admissions (Table 1). The median number of days spent in hospital for the patient cohort who had at least one hospital admission during the period was 21 days[‡] (mean = 28.8 days; 25th percentile = 9 days; 75th percentile = 39 days). The number of hospital admissions and the corresponding number of days in hospital generally decreased with age (Figure 1), which is consistent with the findings in an earlier report where the proportion of patients who died as an admitted patient decreased with increasing age[9]. However, the number of admissions declines more rapidly with age than the number of days, indicating that while older persons are admitted less frequently, their admissions tend to be longer.

[*] While cause of death data for December 2011 was available, the figures appeared incomplete when compared to other periods included in the data and hence were excluded.
[†] This includes the "Minimal" Palliative care populations as described in McNamara et al[8]
[‡] If a patient spent their entire 6 months as an admitted patient, the number of days were censored at 184 days

Some of this result may be explained by an increase in risk of unexpected deaths with increasing age[10].

For those who had at least one hospital admission, almost all (96.6%) had at least one acute care episode, and 86.5% had an emergency admission[11].

Approximately 42.2% of those who were hospitalised had a palliative care episode, and of these patients 93.8% had died of a form of neoplasm. Only 5.3% of persons who utilised palliative care services did not die of neoplasm or have a neoplasm diagnosed in their last 6 months of hospital records, which reiterates the under-utilisation of palliative care services in acute hospitals by non-cancer patients[9 12].

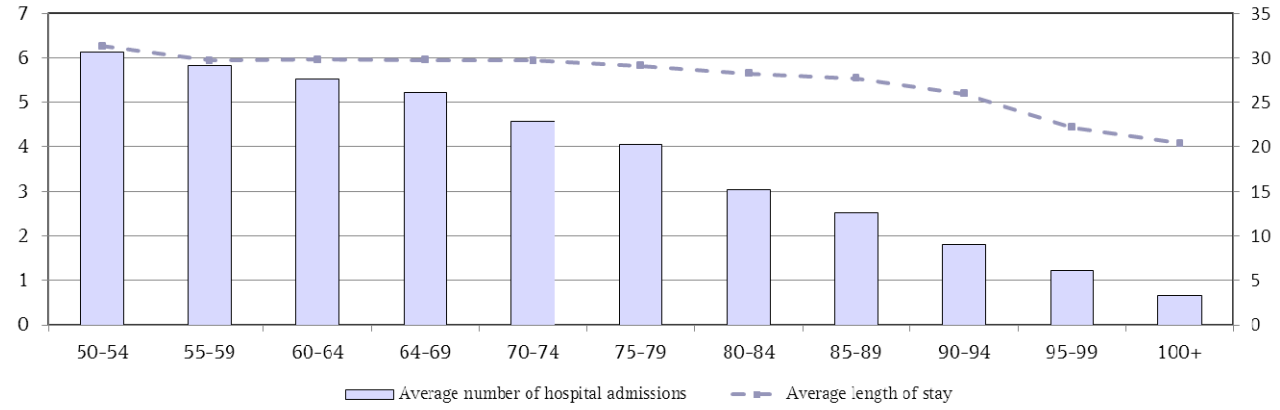
Table 1. Number of admissions# to Queensland hospitals in the last 6 months of life for those who died from selected chronic conditions between January 2010 and November 2011

Admissions	Count	%
0	1,827	11.8
1	3,621	23.3
2	3,018	19.4
3	2,087	13.4
4	1,308	8.4
5+	3,681	23.7

Source: Queensland Death Registrations, Queensland Cause of Death Unit Record File, Queensland Hospital Admitted Patient Data Collection

#If a patient had an episode change or was transferred to another hospital as a continuation of care, this series of episodes was grouped as an "admission".

Figure 1. Average number of admissions# and length of stay* in Queensland hospitals in the last 6 months of life for those who died from selected chronic conditions between January 2010 and November 2011



Source: Queensland Death Registrations, Queensland Cause of Death Unit Record File, Queensland Hospital Admitted Patient Data Collection

#If a patient had an episode change or was transferred to another hospital as a continuation of care, this series of episodes was grouped as an "admission".

*Measured in days, where an overnight stay=1 day.

The patterns in the number of hospital admissions also varied by the type of condition the patient died from. For those people who died of neoplasms, nearly 30% had more than 4 distinct hospital admissions in the last 6 months, mainly to receive ongoing care such as chemotherapy, while a quarter of people who died from heart failure did not have any hospitalisation in the last 6 months of their life (Table 2).

Of the people included in the study, 67.3% were admitted to a public hospital at least once in the last 6 months of their life, and approximately 11% of these people received some form of critical care[§] within public hospitals. 37.9% died within the same episode of care in which they received critical care. For those who did not die within the episode of care in which they received critical care [**], 33% died within 30 days of discharge from that episode of care[††].

Overall, the total funds provided for treatment of these patients as admitted patients in public hospitals in the last 6 months of life equated to approximately $320M, with $15M being funded for critical care. The median funds per person equated to approximately $21,161 (mean =$30,620; 25th percentile = $9,181; 75th percentile = $40,893) and the median funds paid for critical care was $5,107 per person (mean =$12,531 ; 25th percentile = $2,877; 75th percentile = $12,423)[‡‡].

These results suggest that admission to hospital is common for patients with life-limiting illness in Queensland and critical care services are used for a substantial proportion of these patients.

[§] Defined as attracting funding for critical care. Funding for critical care refers to significant resources being provided for treatment, including for admission to intensive care units[13]. Funding was based on Phase 15 of the Activity Based Funding Model.

[**] This includes those people who died outside of hospital, as well as those who died in hospital after being discharged from the episode of care that attracted critical care funding.

[††] Note that this is the discharge from the episode of care, and does not necessarily reflect the days from being transferred out or discharged from a ward that attracted critical care funding e.g. ICU.

[‡‡] The denominator is the number of people admitted to public hospital who attracted critical care funding.

Table 2. Number of hospital admissions in the last 6 months of life by cause of death for those who died from selected chronic conditions between January 2010 and November 2011

Condition		0	1	2	3	4	5+
COPD	Count	265	515	350	249	115	147
	%	16.2	31.4	21.3	15.2	7.0	9.0
Heart Failure	Count	153	182	113	81	35	36
	%	25.5	30.3	18.8	13.5	5.8	6.0
Neoplasms	Count	746	2,516	2,327	1,653	1,107	3,404
	%	6.4	21.4	19.8	14.1	9.4	29.0
Renal Failure	Count	43	102	65	45	17	60
	%	13.0	30.7	19.6	13.6	5.1	18.1
Other	Count	621	218	160	91	49	95
	%	50.3	17.7	13.0	7.4	4.0	7.7

Source: Queensland Death Registrations, Queensland Cause of Death Unit Record File, Queensland Hospital Admitted Patient Data Collection

ICD-10 codes were based on McNamara et al9. Records with underlying cause of death of I13.2 were counted both in renal failure and heart failure

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