The AROC Annual Report: the state of rehabilitation in Australia 2006

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Abstract

This is the second comprehensive annual report that describes patients discharged from subacute inpatient rehabilitation programs provided by facilities that are members of the Australasian Rehabilitation Outcomes Centre (AROC).

The inaugural annual report was published in April 2007 and described the 2005 data. (*Aust Health Rev* 2007: 31 Suppl 1: s31-s53.)

Aust Health Rev 2008: 32(1): 85–110

THIS IS THE SECOND comprehensive annual report that describes patients discharged from subacute inpatient rehabilitation programs provided by facilities that are members of the Australasian Rehabilitation Outcomes Centre (AROC).[1] The inaugural annual report was published in April 2007 and described the 2005 data.*

A rehabilitation medicine service aims to provide people with loss of function or ability due to injury or disease with the highest possible level of independence (physically, psychologically, socially and economically). This is achieved through a combined and co-ordinated use of medical, nursing and allied health professional skills. It involves individual assessment, treatment, regular review, discharge planning, community integration and follow up of people referred to that service.

Rehabilitation will continue to play an increasingly important role in the provision of a continuum of care to an increasingly ageing, but well educated, community. By definition, rehabilitation is about functional independence, about people being able to return to their home and look after themselves, rather than becoming a burden on an increasingly stretched social services and health care system.

Rehabilitation in Australia in 2006

The figure in Box 1 describes the 2006 data by AROC impairment group, and also breaks the episodes into those that took place in the public sector and those that took place in the private sector. It is clear that the orthopaedic impairment group is by far the largest category of impairment in both public and private sectors. However, proportionally, the private sector provided 68% of all orthopaedic rehabilitation episodes. The stroke impairment category was the second largest category, with the public sector providing the majority of stroke rehabilitation episodes (65%). The proportion of episodes provided by the public and private sectors is also included in the tables describing each impairment category.

In Box 2, the funding sources for the 2006 data are described. Some 33% of episodes were funded by the public health system, 16% by the Department of Veterans' Affairs and 47% by the private health sector. Of those funded by the private health system, the pattern follows that of the market share of the major health funds, with Medibank Private funding the greatest percentage of the privately funded episodes. General, non-health insurers funded the remaining 4% of the episodes.

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*Details on rehabilitation medicine and related definitions, the Australasian Rehabilitation Outcomes Centre (AROC) and the AROC data set are available in the inaugural report.[1]
See also the Australasian Rehabilitation Outcomes Centre website: chsd.uow.edu.au/aroc

**1 Proportion of episodes by AROC impairment group and sector, 2006**
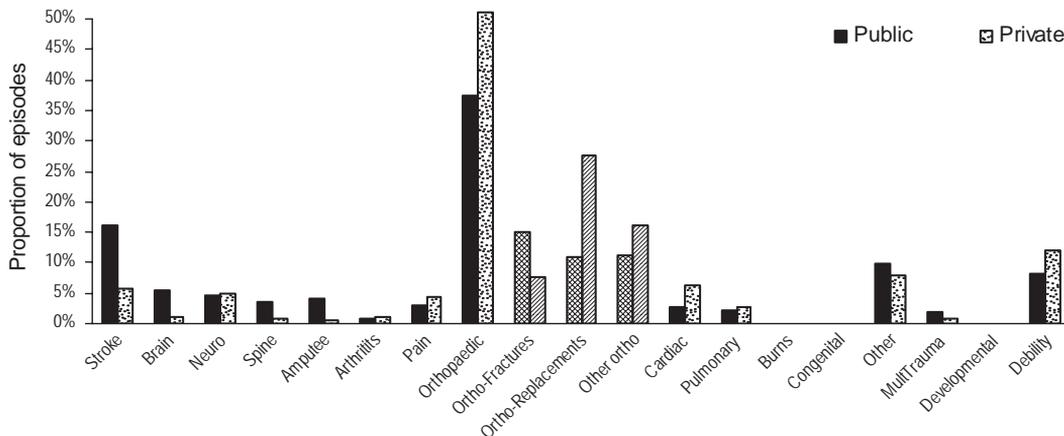
Outcomes by impairment

For each impairment category we present a series of figures and commentary to highlight the key points. The first figure describes the number of episodes by quarter over the last 7 years. These figures give an indication of volume growth, and of any seasonality trends. We then present a table which details the key 2006 data for the impairment by version 1 of the Australian National Sub-

acute and Non-acute Patient (AN-SNAP) class. The third figure in each series graphically presents the 2006 discharge destination data in more detail, providing a visual representation of discharge destination patterns by AN-SNAP class (see Changes in Rehabilitation section for comment on variability in discharge destination data collection over time). The fourth figure in the series provides a graphical representation of 2006

2 Funding sources for rehabilitation in Australia, 2006
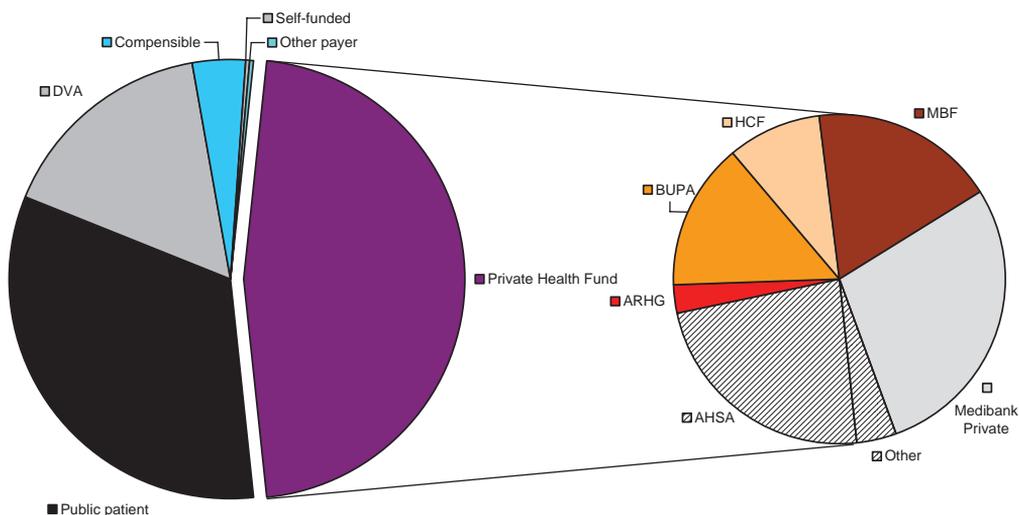
length of stay (LOS) and functional independence measure (FIM^{TM}— the FIM instrument, Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities Inc, State University of New York, Buffalo, NY, USA) improvement by AN-SNAP class. The final figure in each series then presents the change in rehabilitation outcomes between 2005 and 2006. This figure attempts to represent the combination of elements that tell the story of rehabilitation outcomes. The vertical scale represents the average value for 2005 for each element described. The horizontal axis describes the difference between the 2005 average and the 2006 average. On the left of the graphic the actual 2005 data are presented.

The total number of episodes in each category was often more than the sum of the number of episodes in each AN-SNAP class within the category. This was due to some episodes not having enough information included to allow the allocation of an AN-SNAP class, although the data provided do allow categorisation of the episode.

Stroke

Stroke rehabilitation is clearly seasonal, as can be seen in Box 3, A. This phenomenon has previously been identified and discussed.[2-4] Summary data about stroke patients are presented in Box 3, B. In 2006 the average age of stroke rehabilitation patients was 72.5 years. The average admission FIM was 77.3, although this varied by AN-SNAP class from 53.2 to 104.1. The average length of stay (ALOS) for stroke rehabilitation patients was 28.0 days overall, with the most functionally able class requiring 18.5 days on average, and the least functionally able class requiring 42.6 days on average. FIM improvement achieved was greater for the least functionally able classes (206, 207 & 208), and to some extent this is expected given that the lower the admission FIM, the greater the opportunity for improvement. However, FIM efficiency was greatest for the moderately disabled class 206. As tends to be the trend in all impairment categories, the likelihood of a patient being able to be discharged to the community decreases

with increasing level of functional disability on presentation. This trend is clearly shown for stroke in Box 3, C.

Key changes since 2005

The key differences between the 2005 data and the 2006 data are presented in Box 3, D. There was a 6.6% increase in the number of stroke episodes in 2006, although the proportions falling into each AN-SNAP class were largely maintained. The overall ALOS in this category increased by 1.1 days, driven by the 2.5 day increase in ALOS of class 204, and the 1.1 day increase in ALOS of class 208.

Brain dysfunction

A degree of seasonality appears to be becoming evident in this category, with episode volumes peaking in the fourth quarter of each year. The reason for this is unknown. The key difference with the brain dysfunction cohort of rehabilitation patients is that they are substantially younger than the general rehabilitation patient (average age 52.7 years versus 73.3 years), and that they are predominantly male (63.2%). The majority of brain dysfunction rehabilitation is carried out in the public sector, with the ALOS of patients ranging from an average of 18 days for class 209 (least impaired group) to 43.3 days for class 212 (most impaired group). Once again, the FIM improvement achieved was far greater for the least functionally able classes (211 & 212), although FIM efficiency was greatest for the moderately disabled classes (210 and 211). As with most disabling conditions the likelihood of a patient being able to be discharged to the community decreases with increasing level of functional disability on presentation. This information is shown in Box 4, A, B and C.

Key changes since 2005

The key differences between the 2005 data and the 2006 data are presented in Box 4, D. The average age of patients increased slightly from 50.8 years to 52.7 years. In 2006 a greater proportion of patients were found in classes

3 Stroke

**A** Change in number of stroke episodes over time (2000-2006)

Number of episodes by quarter - Stroke
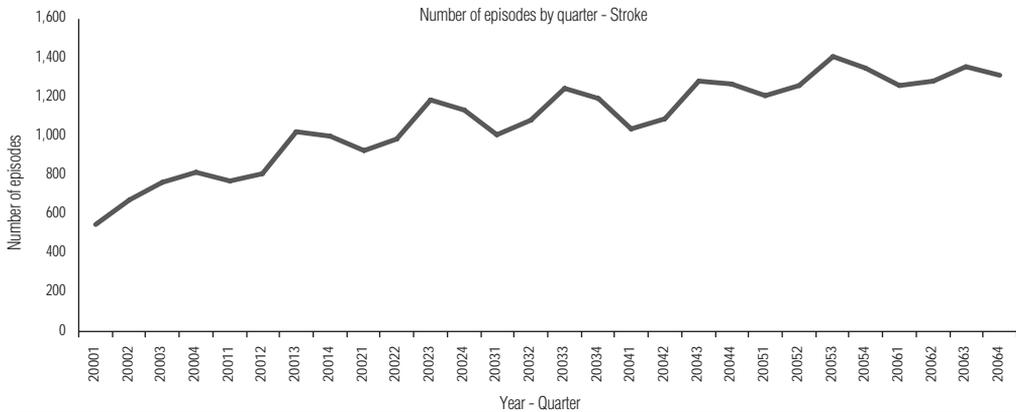
B Summary of stroke episodes in 2006

AN-SNAP class:	204	205	206	207	208	All stroke
Number of episodes	1,554	129	1,244	1,100	843	5,205
Proportion of episodes	31.9%	2.6%	25.5%	22.6%	17.3%	100.0%
Sector (%)						
Private	42.1	18.6	44.1	35.4	16.4	35.3
Public	57.9	81.4	55.9	64.6	83.6	64.7
Gender (%)						
Female	42.7	47.3	49.2	54.9	38.0	46.7
Male	57.3	52.7	50.8	45.1	62.0	53.3
Age (Mean+95%CI)	71.0 (70.2–71.7)	69.0 (66.5–71.5)	75.3 (74.5–76.0)	82.8 (82.5–83.1)	61.2 (60.5–62.0)	72.5 (72.1–72.9)
Admission FIM (Mean+95%CI)	104.1 (103.7–104.6)	87.6 (86.0–89.2)	82.0 (81.5–82.4)	53.2 (52.3–54.1)	53.5 (52.4–54.5)	77.3 (76.5–78.0)
LOS (Mean+95%CI)	18.5 (17.8–19.1)	24.5 (22.0–27.1)	25.0 (24.2–25.8)	33.8 (32.6–35.1)	42.6 (40.9–44.3)	28.0 (27.4–28.5)
Discharge destination (%)						
Discharged to community	87.0	78.3	86.6	69.0	73.7	78.3
Remaining in hospital system	13.0	21.7	13.4	31.0	26.3	21.7
FIM improvement (Mean+95%CI)	11.1 (10.6–11.5)	15.1 (12.9–17.4)	21.6 (20.8–22.3)	21.5 (20.2–22.7)	29.8 (28.3–31.3)	19.2 (18.7–19.7)
FIM efficiency (FIM imp./LOS)	0.6	0.6	0.9	0.6	0.7	0.7

C Stroke discharge destination, and LOS & FIM change by AN-SNAP class

Discharge destination - Stroke

Key:
- Remaining in hospital system
- Unknown residence
- Other supported residence
- Private residence – ?? support
- Private residence – with support
- Private residence – no support

LOS and FIM change by AN-SNAP class

Mean LOS
Mean FIM improvement
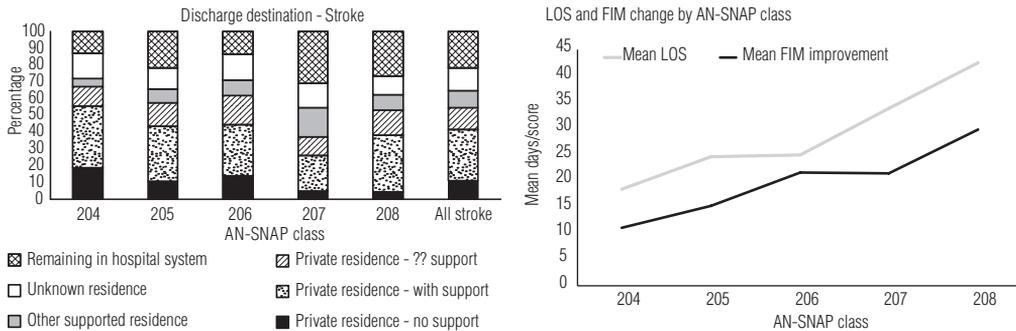
D Change in Outcome Measures in Stroke - 2005 to 2006

Difference from 2005 data – All stroke

	2005
Age (years)	72.8
Length of stay (days)	26.9
FIM admission score	77.4
FIM discharge score	96.9
FIM change (adm to disch)	19.5
FIM efficiency (per week)	4.9

Lower than 2005 data / Higher than 2005 data
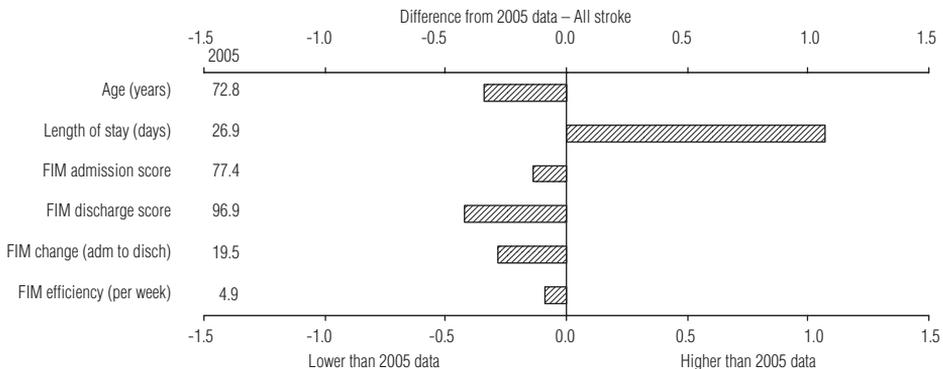
4 Brain dysfunction

A Change in number of brain dysfunction episodes over time (2000-2006)

Number of episodes by quarter - Brain dysfunction
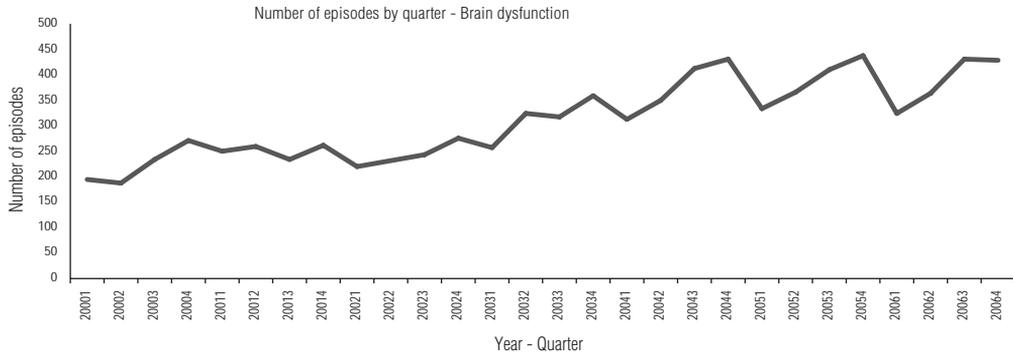
B Summary of brain dysfunction episodes in 2006

AN-SNAP class:	209	210	211	212	All Brain dysfunction
Number of episodes	495	460	280	156	1,546
Proportion of episodes	35.6%	33.1%	20.1%	11.2%	100.0%
Sector (%)					
Private	20.8	46.1	13.2	14.7	25.7
Public	79.2	53.9	86.8	85.3	74.3
Gender (%)					
Female	28.7	45.0	37.9	44.9	36.8
Male	71.3	55.0	62.1	55.1	63.2
Age (Mean+95%CI)	48.2 (46.5–50.0)	74.0 (73.0–75.0)	36.4 (35.0–37.8)	48.2 (45.1–51.3)	52.7 (51.6–53.8)
Admission FIM (Mean+95%CI)	107.7 (106.8–108.5)	79.2 (77.7–80.6)	76.1 (74.2–78.1)	35.7 (33.7–37.6)	82.5 (81.0–83.9)
LOS (Mean+95%CI)	18.0 (16.8–19.2)	22.9 (21.4–24.4)	31.8 (29.1–34.5)	43.3 (38.2–48.5)	26.4 (25.2–27.5)
Discharge destination (%)					
Discharged to community	85.5	82.4	81.1	51.3	74.8
Remaining in hospital system	14.5	17.6	18.9	48.7	25.2
FIM improvement (Mean+95%CI)	8.3 (7.3–9.4)	19.6 (18.1–21.1)	29.2 (26.9–31.5)	32.4 (26.6–38.3)	18.9 (17.8–20.0)
FIM efficiency (FIM imp./LOS)	0.5	0.9	0.9	0.7	0.7

C Brain dysfunction discharge destination, and LOS & FIM change by AN-SNAP class

Discharge destination - Brain dysfunction

LOS and FIM change by AN-SNAP class
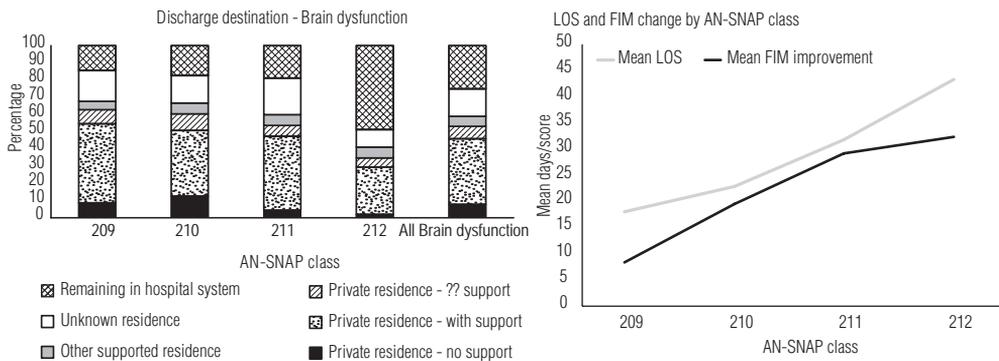
D Change in Outcome Measures in Brain Dysfunction - 2005 to 2006

Difference from 2005 data – All Brain dysfunction
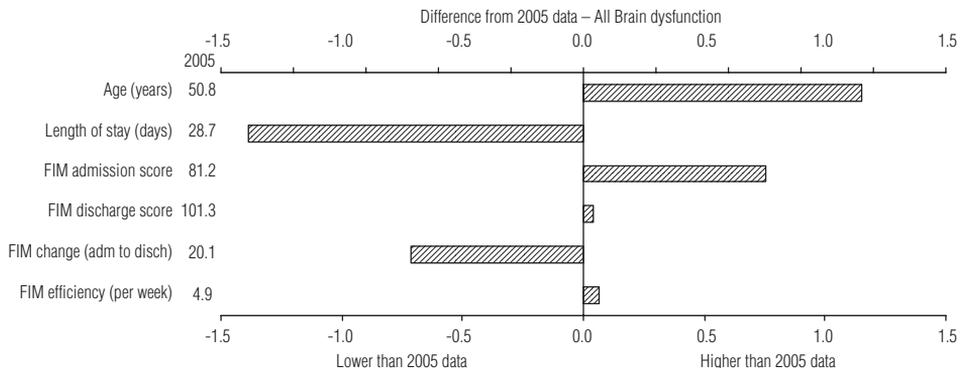
209 (32% versus 28% in 2005) and 210 (29.8% versus 24.4% in 2005). The overall ALOS decreased by 2.3 days from 28.7 days to 26.4 days, however, the average FIM improvement achieved also dropped, from 20.1 to 18.9. Another difference is that a greater proportion of patients were being treated in the public sector in 2006, especially in classes 209 and 212.

Neurological conditions

This impairment group contains patients undergoing rehabilitation for multiple sclerosis, parkinsonism, polyneuropathy, Guillian-Barre, cerebral palsy, and neuromuscular disorders. These patients tended to be younger than the average rehabilitation patient (average age 66.8 years), with the majority of episodes being provided in the private sector, except for the most impaired class (215), where the public sector provided 57.6% of episodes. As with stroke, the most impaired class achieved the highest FIM improvement, but it was the moderately impaired group that achieved the greatest FIM efficiency. This impairment category also followed the trend for patients presenting with the greatest disability having a lesser chance of being discharged back to the community. Details for neurological conditions can be seen in Box 5, A, B and C.

Key changes since 2005

The key differences between the 2005 data and the 2006 data are presented in Box 5, D. There was a 25.8% increase in the number of episodes in 2006, although the episodes split by AN-SNAP class in a similar proportion to 2005. The proportion of females in this category increased, with the largest increase being in class 213 (56.7% against 50.4% in 2005) and class 215 (48.5% against 40.4% in 2005). The ALOS of class 213 increased by 1.5 days, driving the FIM efficiency down. However, in class 215 the FIM improvement increased by 3.1, driving an increase in FIM efficiency for that class. Overall the ALOS of this category decreased slightly and the FIM efficiency improved.

Spinal cord dysfunction

There are three AN-SNAP classes within this impairment category. The least impaired class (216) contained a small number of episodes, with some 95% of episodes split between classes 217 and 218. The public sector provided care for the vast majority of the most impaired class, and the majority of episodes within class 217. Interestingly, the gender split was even for the two lesser impaired classes, but 70.6% of episodes in the most impaired class were male. Once again, the average age of patients in this impairment category was younger than the general rehabilitation patient (55.9 years). The ALOS of patients increased significantly across the classes, with the most impaired class staying an average 46.6 days. FIM improvement and FIM efficiency followed the same pattern as in the previous impairments. However, the FIM efficiency achieved for spinal cord dysfunction patients was, on average, lower than that achieved in other impairment categories. This mirrors the usual slower recovery of these patients and the involvement of bladder and bowel function. This impairment group followed the general trend for discharge destination. Discharge destination outcomes achieved for the least and moderately impaired classes were very good, but only one in two patients in the most impaired category were likely to be discharged to the community. Box 6, A, B and C provide more details about spinal cord dysfunction.

Key changes since 2005

The key differences between the 2005 data and the 2006 data are presented in Box 6, D. There was an increase of 15.9% in the number of episodes in this category in 2006, with a 5% swing to the more disabled class (218). While the public sector continued to provide care for the majority of patients, the percentage of episodes provided in the private sector rose to 26.3% from 23.2% in 2005. While the ALOS of class 216 increased (13.8 days versus 10.9 days in 2005), the number of episodes in this class was quite small (54). The ALOS of classes 217 and 218 decreased, class 217 dropping 1.6 days to 20.1 days and class 218 dropping 1.9 days to 46.6

5 Neurological conditions

**A** Change in number of neurological conditions episodes over time (2000-2006)

Number of episodes by quarter - Neurological conditions
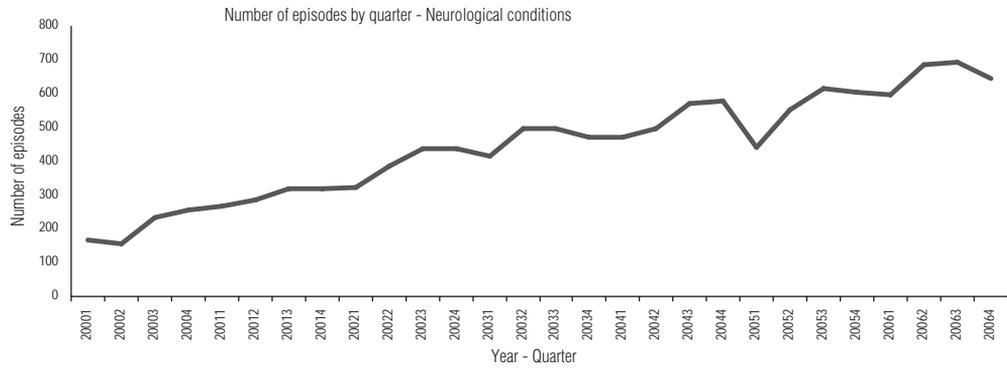
B Summary of neurological conditions episodes in 2006

AN-SNAP class:	213	214	215	All Neurological
Number of episodes	524	1,588	375	2,621
Proportion of episodes	21.1%	63.9%	15.1%	100.0%
Sector (%)				
Private	65.3	67.9	42.4	62.2
Public	34.7	32.1	57.6	37.8
Gender (%)				
Female	56.7	53.3	48.5	53.1
Male	43.3	46.7	51.5	46.9
Age (Mean+95%CI)	61.6 (60.0–63.2)	69.6 (68.9–70.4)	65.4 (63.7–67.1)	66.8 (66.2–67.5)
Admission FIM (Mean+95%CI)	112.8 (112.3–113.3)	89.2 (88.6–89.7)	54.8 (53.6–56.1)	88.6 (87.8–89.4)
LOS (Mean+95%CI)	14.8 (13.9–15.8)	18.9 (18.3–19.5)	28.7 (26.6–30.9)	19.5 (18.9–20.0)
Discharge destination (%)				
Discharged to community	89.5	89.9	74.9	85.4
Remaining in hospital system	10.5	10.1	25.1	14.6
FIM improvement (Mean+95%CI)	6.0 (5.5–6.6)	15.8 (15.2–16.4)	19.8 (17.7–21.9)	14.3 (13.7–14.8)
FIM efficiency (FIM imp./LOS)	0.4	0.8	0.7	0.7

C Neurological conditions discharge destination, and LOS & FIM change by AN-SNAP class

Discharge destination - Neurological conditions

LOS and FIM change by AN-SNAP class

- ⊠ Remaining in hospital system
- ☐ Unknown residence
- ▨ Other supported residence
- ▨ Private residence - ?? support
- ⊠ Private residence - with support
- ■ Private residence - no support
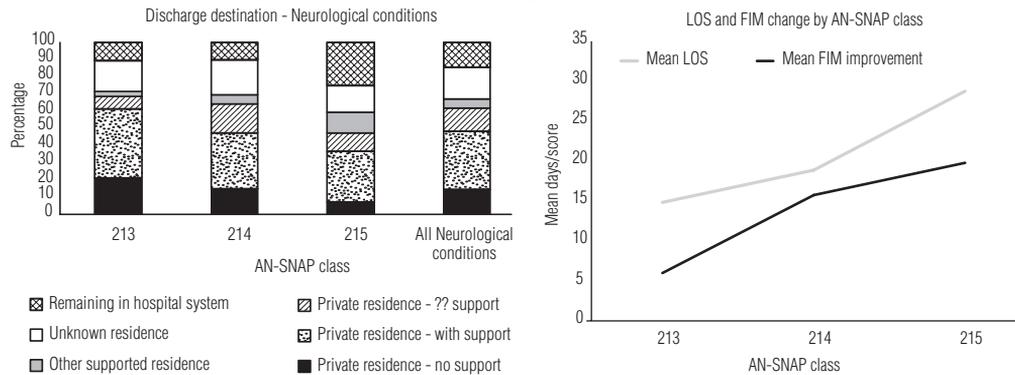
D Change in Outcome Measures in Neurological Conditions - 2005 to 2006

Difference from 2005 data – All Neurological conditions

	2005
Age (years)	67.0
Length of stay (days)	19.9
FIM admission score	87.5
FIM discharge score	101.1
FIM change (adm to disch)	13.6
FIM efficiency (per week)	4.9

Lower than 2005 data   Higher than 2005 data
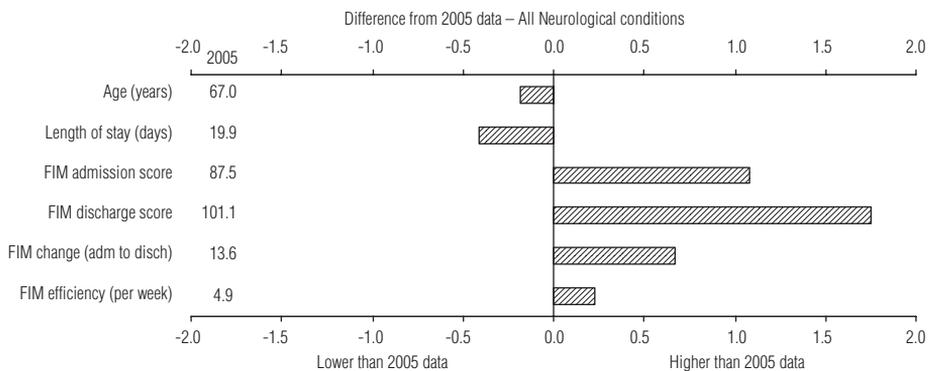
6 Spinal cord dysfunction

A Change in number of spinal cord dysfunction episodes over time (2000-2006)

Number of episodes by quarter - Spinal cord dysfunction
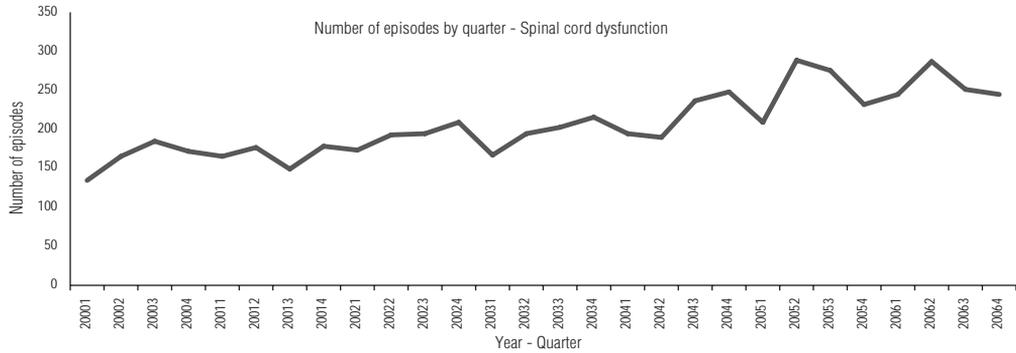
**B** Summary of spinal cord dysfunction conditions episodes in 2006

AN-SNAP class:	216	217	218	All Spinal cord dysfunction
Number of episodes	54	420	473	1,026
Proportion of episodes	5.7%	44.4%	49.9%	100.0%
Sector (%)				
Private	38.9	43.3	12.1	26.3
Public	61.1	56.7	87.9	73.7
Gender (%)				
Female	33.3	47.4	29.4	35.4
Male	66.7	52.6	70.6	64.6
Age (Mean+95%CI)	54.0 (48.9–59.2)	60.7 (58.8–62.7)	53.3 (51.5–55.1)	55.9 (54.6–57.1)
Admission FIM (Mean+95%CI)	119.2 (118.2–120.2)	97.5 (96.5–98.5)	62.7 (61.6–63.7)	80.5 (79.0–82.0)
LOS (Mean+95%CI)	13.8 (10.8–16.8)	20.1 (18.3–21.9)	46.6 (43.5–49.7)	33.1 (31.2–35.1)
Discharge destination (%)				
Discharged to community	90.7	81.2	51.4	65.4
Remaining in hospital system	9.3	18.8	48.6	34.6
FIM improvement (Mean+95%CI)	2.0 (1.0–3.0)	12.9 (11.8–14.0)	20.6 (18.5–22.7)	15.9 (14.7–17.1)
FIM efficiency (FIM imp./LOS)	0.1	0.6	0.4	0.5

C Spinal cord dysfunction discharge destination, and LOS & FIM change by AN-SNAP class

Discharge destination - Spinal cord dysfunction

LOS and FIM change by AN-SNAP class

- ⊠ Remaining in hospital system
- ☐ Unknown residence
- ▨ Other supported residence
- ▨ Private residence - ?? support
- ▨ Private residence – with support
- ■ Private residence – no support
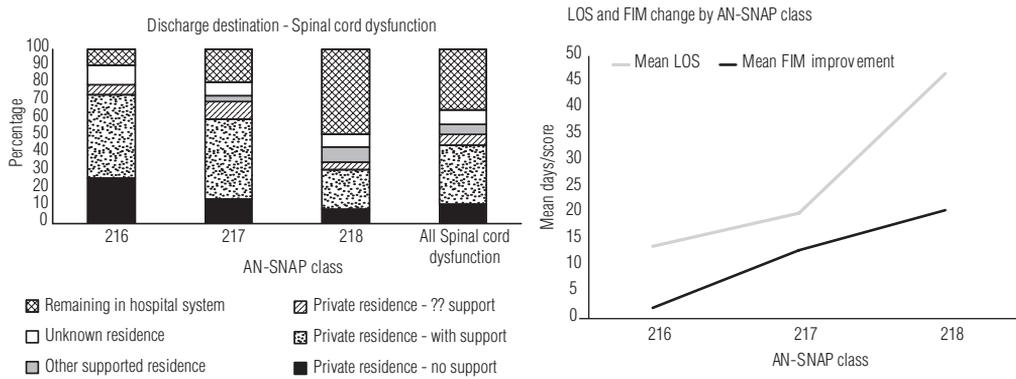
D Change in Outcome Measures in Spinal cord dysfunction - 2005 to 2006

Difference from 2005 data – All Spinal cord dysfunction - 2005 to 2006

	2005
Age (years)	55.6
Length of stay (days)	33.2
FIM admission score	83.0
FIM discharge score	98.5
FIM change (adm to disch)	15.5
FIM efficiency (per week)	3.5

Lower than 2005 data   Higher than 2005 data
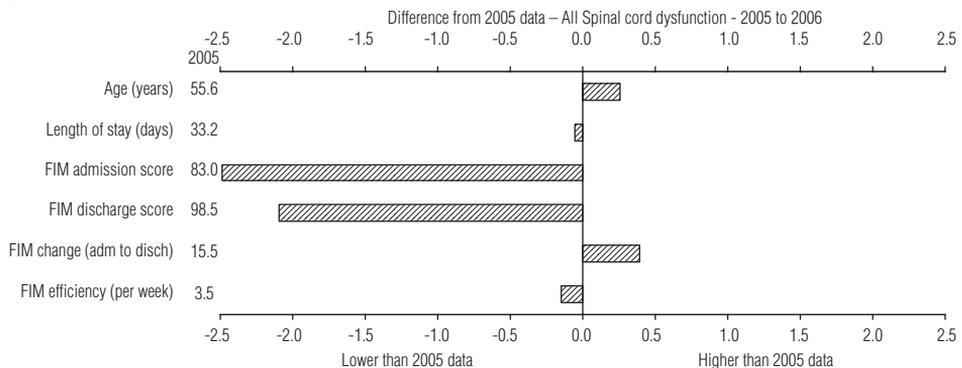
days. However, in class 217 the average FIM improvement also dropped (12.9 against 13.7 in 2005).

Amputation of limb

Amputation of limb episodes are described in Box 7, A, B and C. The vast majority of episodes in this category were provided in the public sector. Patients were predominantly male, but interestingly the percentage of females increased with impairment class, that is, in the most impaired class there was a greater percentage of females than in the least impaired class. While FIM improvement followed the identified trend (greater improvement in the most impaired class), in this impairment category the FIM efficiency was also greatest in the most impaired class. As with spinal cord patients, the FIM efficiency achieved was on average lower than that achieved in other impairment categories, meaning that it takes longer to achieve functional gain for patients with this type of impairment. Once again, this impairment category followed the general trend for discharge destination with the most impaired class having the least chance of being discharged to the community.

Key changes since 2005

The key differences between the 2005 data and the 2006 data are presented in Box 7, D. In 2006 an even greater percentage of amputee episodes took place in the public sector (83.9%, up from 81.9% in 2005). Interestingly this was achieved through an increase in public sector episodes in the two least impaired classes (219 & 220) and a decrease in public episodes in the most impaired class 221. The percentage of females also decreased significantly in 2006, with 27% of episodes involving female patients, against 32.7% in 2005.

Arthritis

While there are four AN-SNAP classes for the arthritis impairment, there were only three episodes in the most impaired class, and no further comment will be made about this class. The majority of arthritis episodes fell within the least

impaired category. The private sector provided the care for the majority of the two least impaired classes, while the public sector provided the majority of care for those episodes classified into the most impaired classes. Patients in this impairment group were most likely to be female, with an average age of 71.2 years, and an ALOS of 16 days. FIM efficiency was quite high for this impairment group across all classes, with FIM improvement being greater for the more impaired classes. Discharge destination followed the identified trend. Refer to Box 8, A, B and C for more detailed information about arthritis episodes in 2006.

Key changes since 2005

The key differences between the 2005 data and the 2006 data are presented in Box 8, D. There was a 5% drop in the number of episodes in 2006, although the episodes split by AN-SNAP class in a similar proportion to 2005. However the number of episodes provided by the private sector decreased in each class, with the overall drop being from 77.8% of episodes in 2005 to 65.3% of episodes in 2006. The overall ALOS and ALOS by AN-SNAP class increased, with the overall ALOS increasing by 2 days to 16 days. At the same time, FIM improvement decreased in all classes but by a greater amount in the least impaired classes. Taken together, the increase in ALOS and the decrease in FIM improvement drove a significant decrease in the FIM efficiency, both overall and in each class.

Orthopaedic conditions

The data for patients with orthopaedic conditions has been separated into fractures, joint replacements and other. Given that the resource needs and outcomes of patients with fractures and joint replacements are distinct,[5,6] their outcomes are shown separately. Also presented are the data for the entire orthopaedic conditions cohort. While the "other" category comprised almost one third of total episodes in this category, it is not presented in detail as these episodes are the subject of a current review. Information about all orthopaedic episodes in 2006 is presented in Box 9, A–

7 Amputation of limb

**A** Change in number of amputation of limb episodes over time (2000-2006)

Number of episodes by quarter - Amputation of limb
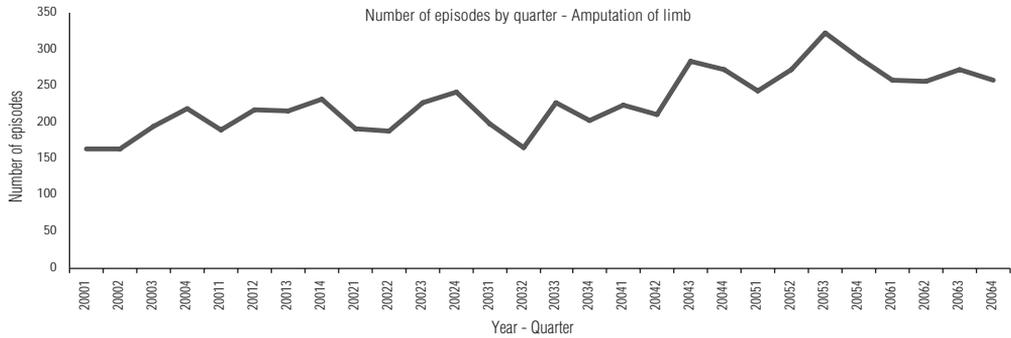
B Summary of amputation of limb episodes in 2006

AN-SNAP class:	219	220	221	All Amputation of limb
Number of episodes	388	361	238	1,044
Proportion of episodes	39.3%	36.6%	24.1%	100.0%
Sector (%)				
Private	10.3	16.1	25.2	16.1
Public	89.7	83.9	74.8	83.9
Gender (%)				
Female	21.1	27.1	37.8	27.0
Male	78.9	72.9	62.2	73.0
Age (Mean+95%CI)	62.3 (60.9–63.7)	70.8 (69.6–72.0)	73.4 (71.5–75.3)	68.2 (67.3–69.1)
Admission FIM (Mean+95%CI)	107.5 (106.8–108.2)	88.0 (87.2–88.8)	62.4 (60.8–63.9)	89.5 (88.2–90.7)
LOS (Mean+95%CI)	25.7 (23.8–27.6)	36.1 (33.8–38.5)	37.1 (34.1–40.1)	32.2 (30.9–33.6)
Discharge destination (%)				
Discharged to community	85.1	77.6	66.0	75.7
Remaining in hospital system	14.9	22.4	34.0	24.3
FIM improvement (Mean+95%CI)	5.4 (4.4–6.3)	15.7 (14.4–16.9)	17.6 (15.3–19.9)	12.1 (11.2–13.0)
FIM efficiency (FIM imp./LOS)	0.2	0.4	0.5	0.4

**C** Amputation of limb discharge destination, and LOS & FIM change by AN-SNAP class
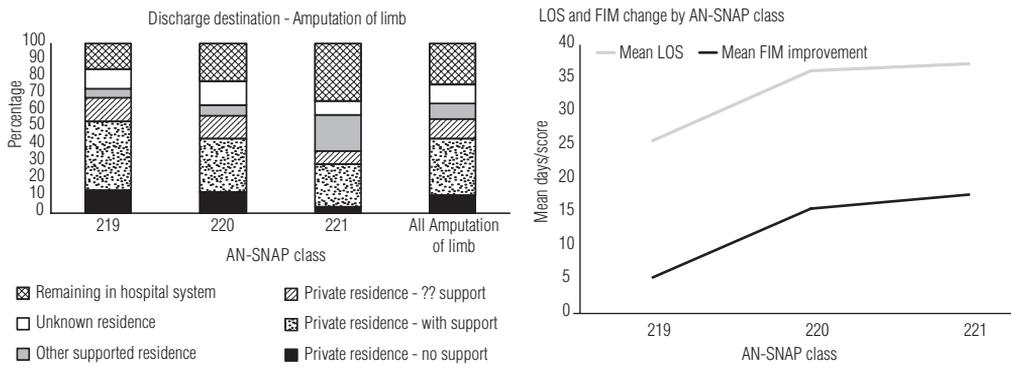
**D** Change in Outcome Measures in Amputation - 2005 to 2006
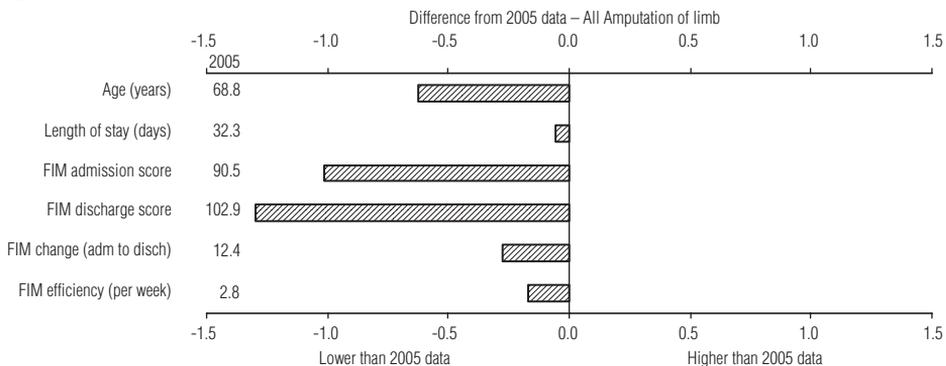
8 Arthritis

## A Change in number of arthritis episodes over time (2000-2006)

Number of episodes by quarter - Arthritis
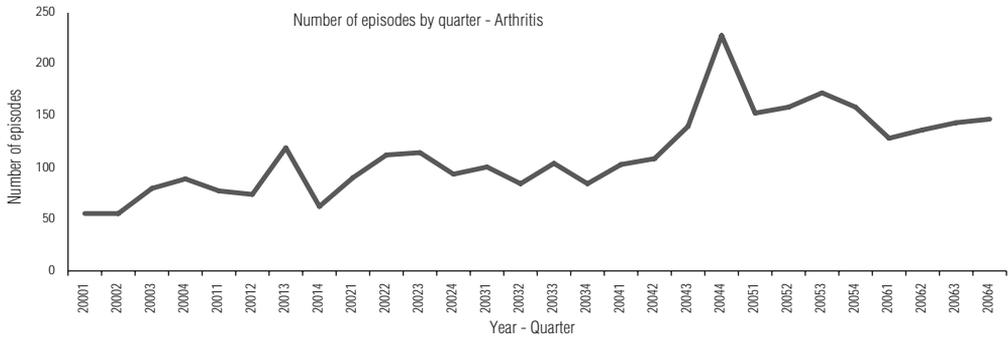
B Summary of arthritis episodes in 2006

AN-SNAP class:	229	230	231	232	All Arthritis
Number of episodes	350	118	69	3	556
Proportion of episodes	64.8%	21.9%	12.8%		99.4%
Sector (%)					
Private	70.6	65.3	42.0	n/a	65.3
Public	29.4	34.7	58.0	n/a	34.7
Gender (%)					
Female	69.7	64.4	63.8	n/a	68.3
Male	30.3	35.6	36.2	n/a	31.7
Age (Mean+95%CI)	68.3 (66.8–69.8)	76.6 (74.2–78.9)	78.9 (76.1–81.8)	n/a	71.2 (70.0–72.4)
Admission FIM (Mean+95%CI)	109.0 (108.3–109.6)	92.9 (91.9–93.9)	71.7 (69.1–74.4)	n/a	00.3 (99.0–101.5)
LOS (Mean+95%CI)	13.3 (12.2–14.3)	18.2 (16.4–20.0)	24.6 (21.2–28.0)	n/a	16.0 (15.0–16.9)
Discharge destination (%)					
Discharged to community	93.4	94.1	79.7	n/a	90.6
Remaining in hospital system	6.6	5.9	20.3	n/a	9.4
FIM improvement (Mean+95%CI)	7.2 (6.5–7.9)	15.4 (14.1–16.8)	17.7 (14.5–20.8)	n/a	10.3 (9.6–11.1)
FIM efficiency (FIM imp./LOS)	0.5	0.8	0.7	n/a	0.6

## C Arthritis discharge destination, and LOS & FIM change by AN-SNAP class

Discharge destination - Arthritis

LOS and FIM change by AN-SNAP class
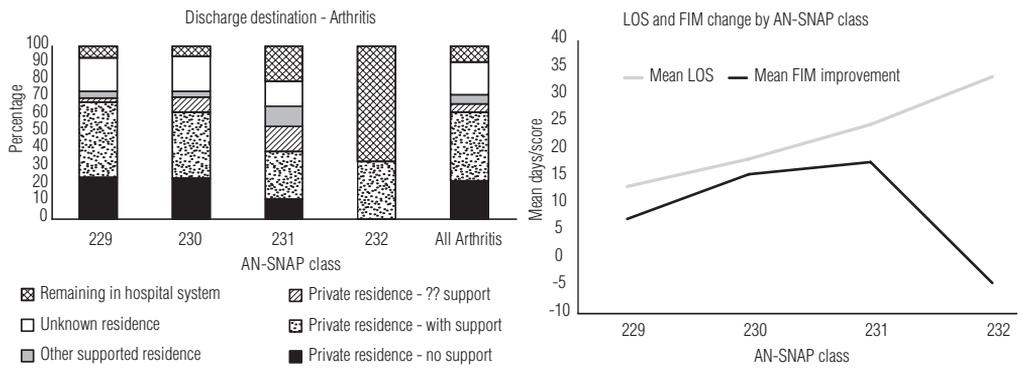
D Change in Outcome Measures in Arthritis - 2005 to 2006

Difference from 2005 data – All Arthritis
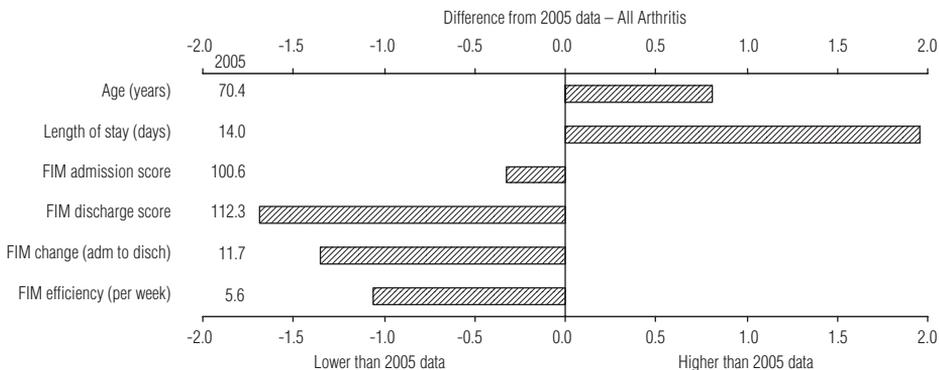
9 Orthopaedic conditions

A Change in number of orthopaedic conditions episodes over time (2000-2006)

Number of episodes by quarter - All orthopaedic conditions
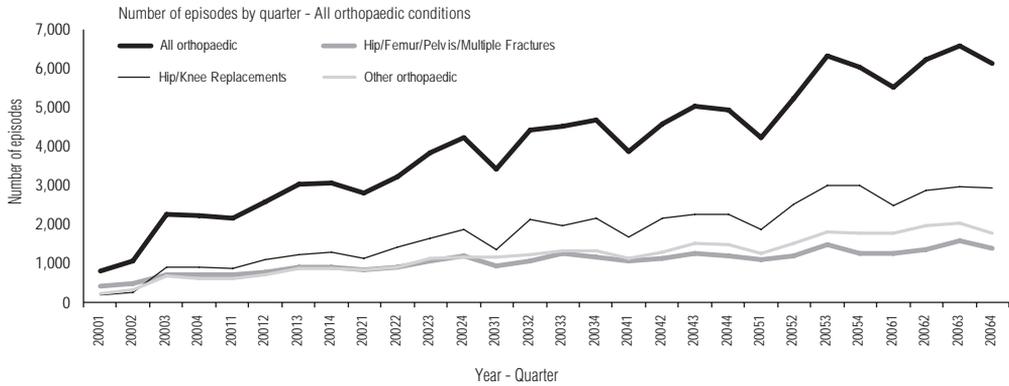
B Summary of orthopaedic conditions episodes in 2006

	Fractures	Replacements	Other	All orthopaedic conditions
Number of episodes	5,609	11,291	7,551	24,451
Proportion of episodes	22.9%	46.2%	30.9%	100.0%
Sector (%)				
Private	43.5	79.5	68.6	67.8
Public	56.5	20.5	31.4	32.2
Gender (%)				
Female	73.0	65.0	69.0	68.1
Male	27.0	35.0	31.0	31.9
Age (Mean+95%CI)	79.2 (78.9–79.6)	71.9 (71.7–72.1)	74.1 (73.8–74.5)	74.3 (74.1–74.4)
Admission FIM (Mean+95%CI)	81.1 (80.5–81.6)	98.4 (98.1–98.6)	90.8 (90.4–91.2)	91.8 (91.6–92.0)
LOS (Mean+95%CI)	22.7 (22.4–23.1)	13.5 (13.3–13.6)	18.2 (17.8–18.5)	17.2 (17.0–17.4)
Discharge destination (%)				
Discharged to community	83.3	83.4	85.3	83.9
Remaining in hospital system	16.7	16.6	14.7	16.1
FIM improvement (Mean+95%CI)	18.2 (17.9–18.6)	15.1 (14.9–15.2)	16.1 (15.8–16.3)	16.1 (16.0–16.3)
FIM efficiency (FIM imp./LOS)	0.8	1.1	0.9	0.9

C Orthopaedic conditions discharge destination, and LOS & FIM change by AN-SNAP class
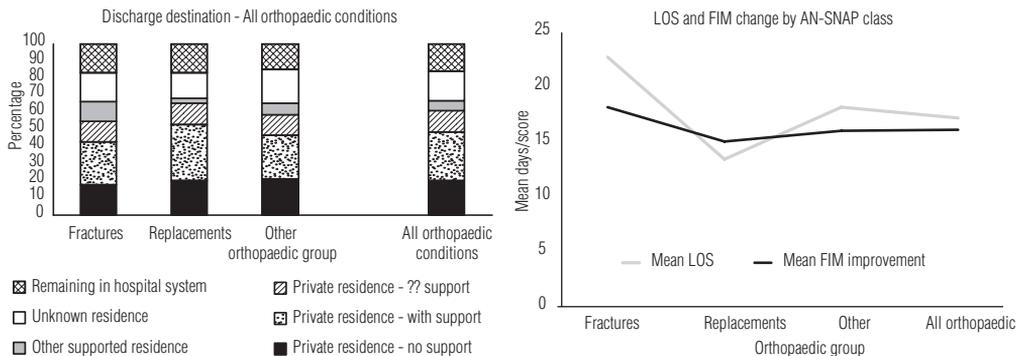
D Change in Outcome Measures in Orthopaedic Conditions - 2005 to 2006
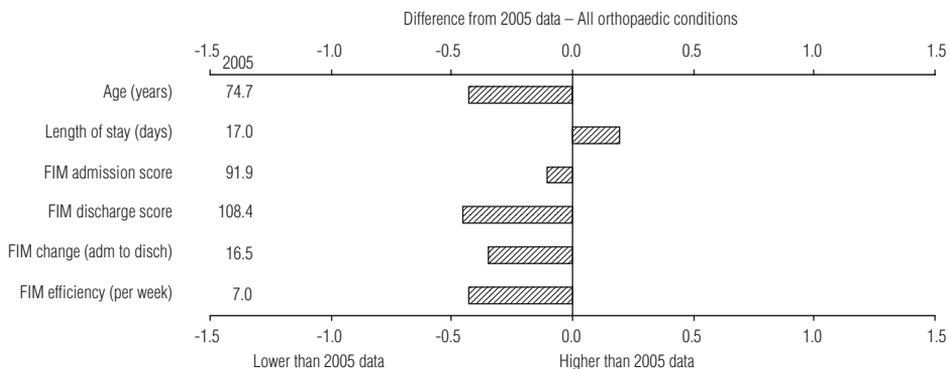
D, while information specific to episodes with fractures is presented in Box 10, A-D and information specific to episodes with joint replacements is presented in Box 11, A-D.

Orthopaedic: fractures

There appeared to be a degree of seasonality in this category, with episode volumes peaking in the third quarter (winter months) of each year. The reason for this is unknown. While the private sector provided almost 70% of all orthopaedic impairment rehabilitation, it can be seen that the private sector provided only 43% of the orthopaedic fracture rehabilitation. Two categories contained the vast majority of fracture episodes, class 226, the most impaired category, and class 224. Patients with a fracture requiring rehabilitation were three times more likely to be female than male, and had an average age of more than 79 years. As may be expected the average age and the ALOS of the patient increased with the degree of impairment. Once again this impairment category followed the general trend for discharge destination, with the most impaired class having the least chance of being discharged to the community. FIM efficiency in this group was greater for the more impaired classes, and quite low for the most functionally able group.

Key changes since 2005

The key differences between the 2005 data and the 2006 data are presented in Box 10, D. There was an increase of about 15% in orthopaedic fracture episodes in 2006, although the episodes split by AN-SNAP class in a similar proportion to 2005. Interestingly, the proportion of episodes provided by the private sector dropped from 46.9% to 43.5% in 2006, with this pattern consistent across the AN-SNAP classes. While the overall ALOS of fractures remained steady in 2006 at 22.7 days, the ALOS within the least impaired class 223 increased by 3 days to 17.2 days (with no increase in average FIM admission score), the ALOS of class 224 decreased by 1 day and the ALOS of the most impaired class 226 also increased, by 0.7 of a day. However, the FIM improvement of the classes with the least change

in ALOS (225 & 226) decreased (by 1.2 and 1.9 points respectively). Taken together, this drove a decrease in overall FIM efficiency, and in the FIM efficiency in all classes except class 224.

### Orthopaedic: joint replacements

The vast majority of episodes in this category were provided by the private sector, although the public sector did increase its proportion to just over 30% in the most impaired category. More than three quarters of the episodes in this category fell into the two least impaired categories, perhaps reflecting the largely elective nature of joint replacement surgery and the clinical recognition that pre-surgical fitness aids efficient recovery. The average age of patients in the least impaired category was 10 years younger than patients in the most impaired category. Patients were twice as likely to be female, with the proportion of females increasing as impairment increased. Again, FIM efficiency in this group was significantly greater for the more impaired classes, and quite low for the most functionally able group. Discharge destination again followed the identified trend.

Key changes since 2005

The key differences between the 2005 data and the 2006 data are presented in Box 11, D. There was a 24.2% increase in episodes in the two least impaired classes. The proportion of episodes in class 223 increased from about 23% to about 30%. While the volume of episodes in class 224 increased, proportionally this class dropped from 53% to 51% of episodes. The private sector continued to provide the majority of joint replacement episodes, but the proportion provided by the public sector rose from 17.5% in 2005 to 20.5% in 2006, largely driven by the increasing proportion of episodes in class 224 provided by the public sector (14.4% in 2005 against 23.2% in 2006). Overall ALOS increased slightly (0.4 of a day), even though the ALOS in the largest class (224) remained steady. The overall increase has been driven by the increase in ALOS for each of the other classes — class 223 up 1 day, and class 225 and class 226 both up 0.9 of

10 Orthopaedic fractures

**A** Change in number of fractures episodes over time (2000-2006)

Number of episodes by quarter - Orthopaedic fractures
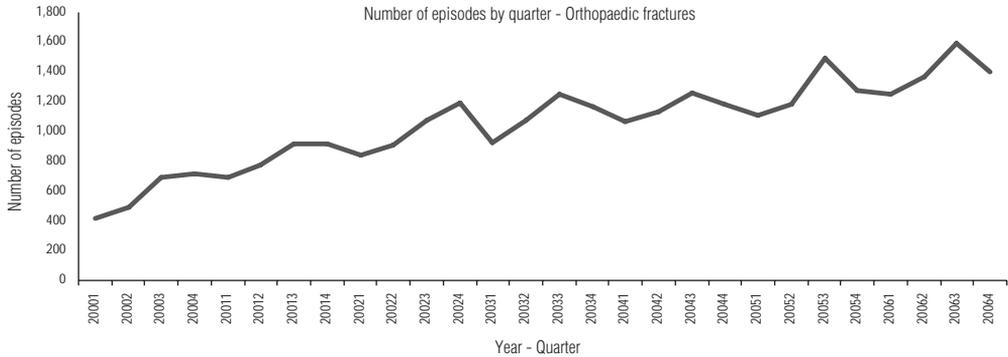
B Summary of fractures episodes in 2006

AN-SNAP class:	223	224	225	226	All Orthopaedic fractures
Number of episodes	346	1,897	834	2,438	5,609
Proportion of episodes	6.3%	34.4%	15.1%	44.2%	100.0%
Sector (%)					
Private	47.4	48.3	47.8	38.2	43.5
Public	52.6	51.7	52.2	61.8	56.5
Gender (%)					
Female	64.5	73.6	75.8	73.0	73.0
Male	35.5	26.4	24.2	27.0	27.0
Age (Mean+95%CI)	73.3 (71.6–74.9)	77.1 (76.5–77.8)	79.3 (78.4–80.2)	81.8 (81.3–82.3)	79.2 (78.9–79.6)
Admission FIM (Mean+95%CI)	110.9 (110.3–111.4)	96.1 (95.8–96.4)	84.4 (84.0–84.8)	64.4 (63.8–65.0)	81.1 (80.5–81.6)
LOS (Mean+95%CI)	17.2 (15.8–18.7)	18.4 (17.9–18.9)	22.0 (21.2–22.8)	27.2 (26.5–27.8)	22.7 (22.4–23.1)
Discharge destination (%)					
Discharged to community	79.5	91.7	87.6	77.7	83.3
Remaining in hospital system	20.5	8.3	12.4	22.3	16.7
FIM improvement (Mean+95%CI)	5.5 (4.9–6.1)	14.7 (14.3–15.0)	19.7 (19.0–20.5)	22.2 (21.5–22.8)	18.2 (17.9–18.6)
FIM efficiency (FIM imp./LOS)	0.3	0.8	0.9	0.8	0.8

**C** Fractures discharge destination, and LOS & FIM change by AN-SNAP class

Discharge destination - Orthopaedic fractures

- ⊠ Remaining in hospital system
- ☐ Unknown residence
- ▧ Other supported residence
- ▨ Private residence - ?? support
- ⊠ Private residence - with support
- ■ Private residence - no support

LOS and FIM change by AN-SNAP class

Mean LOS   Mean FIM improvement
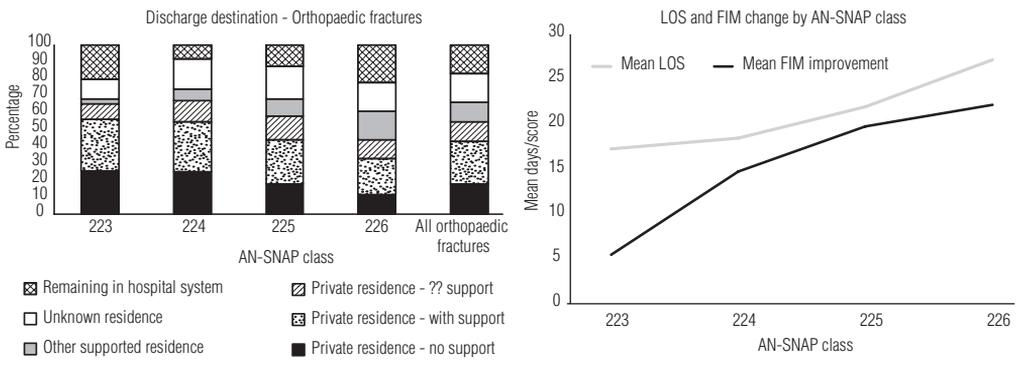
D Change in Outcome Measures in Orthopaedic Fractures - 2005 to 2006

Difference from 2005 data – All Orthopaedic fractures

	2005
Age (years)	78.4
Length of stay (days)	22.8
FIM admission score	80.4
FIM discharge score	99.9
FIM change (adm to disch)	19.5
FIM efficiency (per week)	6.3

Lower than 2005 data   Higher than 2005 data
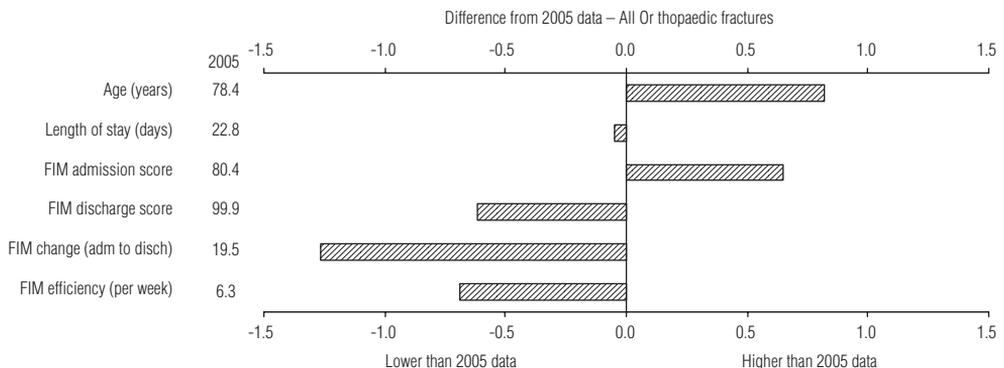
11 Orthopaedic: joint replacements

A Change in number of joint replacements episodes over time (2000-2006)

Number of episodes by quarter - Orthopaedic replacements
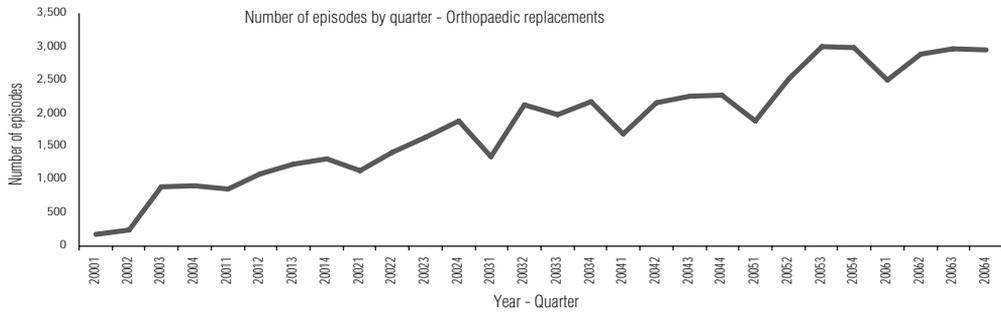
B Summary of joint replacements episodes in 2006

AN-SNAP class:	223	224	225	226	All Orthopaedic replacements
Number of episodes	3,387	5,777	999	936	11,291
Proportion of episodes	30.5%	52.0%	9.0%	8.4%	100.0%
Sector (%)					
Private	89.2	76.8	73.2	66.3	79.5
Public	10.8	23.2	26.8	33.7	20.5
Gender (%)					
Female	58.3	68.0	69.1	68.1	65.0
Male	41.7	32.0	30.9	31.9	35.0
Age (Mean+95%CI)	68.0 (67.7–68.4)	72.5 (72.2–72.8)	76.1 (75.4–76.7)	78.5 (77.9–79.1)	71.9 (71.7–72.1)
Admission FIM (Mean+95%CI)	111.6 (111.4–111.7)	99.6 (99.5–99.8)	86.0 (85.6–86.3)	72.5 (71.8–73.3)	98.4 (98.1–98.6)
LOS (Mean+95%CI)	11.7 (11.4–12.0)	12.8 (12.6–12.9)	15.6 (15.0–16.1)	19.6 (18.8–20.5)	13.5 (13.3–13.6)
Discharge destination (%)					
Discharged to community	60.3	96.8	94.1	84.2	83.4
Remaining in hospital system	39.7	3.2	5.9	15.8	16.6
FIM improvement (Mean+95%CI)	6.6 (6.4–6.8)	15.2 (15.0–15.3)	23.1 (22.5–23.6)	26.3 (25.4–27.2)	15.1 (14.9–15.2)
FIM efficiency (FIM imp./LOS)	0.6	1.2	1.5	1.3	1.1

C Joint replacements discharge destination, and LOS & FIM change by AN-SNAP class

Discharge destination - Orthopaedic replacements

- Remaining in hospital system
- Unknown residence
- Other supported residence
- Private residence - ?? support
- Private residence - with support
- Private residence - no support

LOS and FIM change by AN-SNAP class
— Mean LOS — Mean FIM improvement
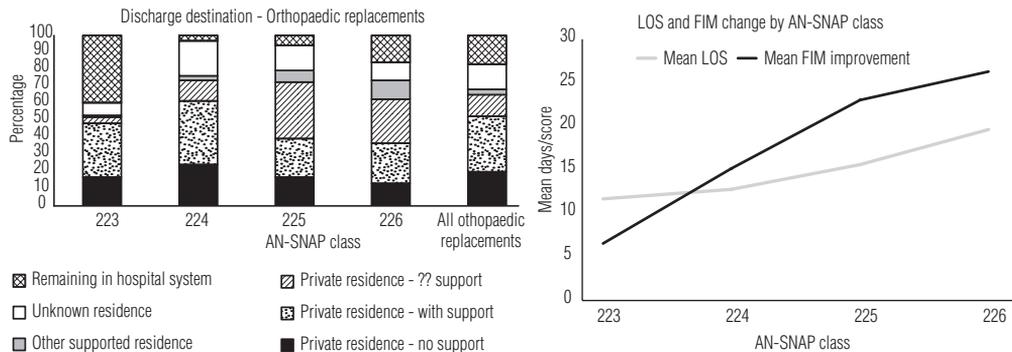
D Change in Outcome Measures in Orthopaedic Joint Replacements - 2005 to 2006

Difference from 2005 data – All Orthopaedic replacements

	2005
Age (years)	72.5
Length of stay (days)	13.1
FIM admission score	98.4
FIM discharge score	113.5
FIM change (adm to disch)	15.1
FIM efficiency (per week)	8.4

Lower than 2005 data   Higher than 2005 data
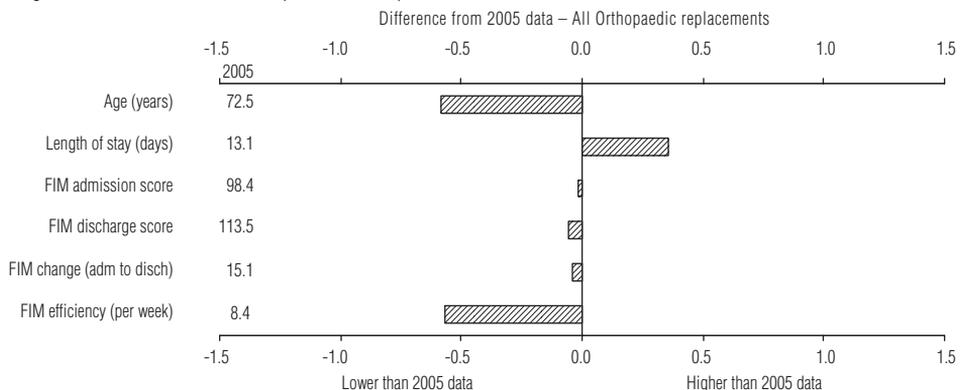
a day. As well as ALOS increasing in the two most impaired classes, FIM improvement decreased, driving a drop in FIM efficiency. FIM improvement in class 224 increased slightly, which with a steady ALOS drove an increase in FIM efficiency.

Pulmonary

The pulmonary category showed clear seasonality, with the volume of episodes significantly peaking in the third (winter) quarter of each year, perhaps reflecting the increased incidence of pulmonary medical conditions, especially in older people, during the winter months of the year (Box 12, A). Box 12, B shows that more than three quarters of the episodes in the least impaired category were provided by the private sector, but in the two most impaired classes the private sector provided only 45% of episodes (noting that the volume in that category was very low). While details were provided for the most impaired category, there were only 25 episodes in this class, and the average admission FIM of these 25 episodes indicated that the patients in this category were very impaired.

Across the whole category, the average age of patients was remarkably similar, with the least impaired category demonstrating a very slightly lower average age. As would be expected, ALOS increased with impairment as did the FIM improvement achieved during the episode. Once again, discharge destination followed the identified trend and FIM efficiency values were least in the least impaired class (Box 12, C).

Key changes since 2005

The key differences between the 2005 data and the 2006 data are presented in Box 12, D. The overall ALOS of this category decreased by 1.2 days (16.3 days in 2005 versus 15.1 days in 2006), driven largely by the decrease in ALOS in classes 230 and 231 (1.3 days and 2.9 days, respectively). However average FIM improvement also decreased in these classes, and therefore the FIM efficiency measure did not change significantly for either class.

Debility

The debility category comprises four classes. The most impaired class had only a small number of episodes, and described a different picture than the other three classes. This class comprised more males than females, and while the ALOS was slightly higher than that of the next class, FIM improvement and FIM efficiency for this class was lower. In the other classes there were more females than males, the average age increasing with increasing impairment, as did ALOS, FIM improvement and FIM efficiency. Pleasingly, the percentage of patients discharged to the community from this category was very high, although the identified trend was still evident; that is, patients in the most impaired class had the highest chance of remaining in the hospital system after discharge from rehabilitation (see Box 13, A–C).

The debility category has grown to become the third largest of the impairment categories, perhaps reflecting not only the ageing population but the growing desire of that population to maintain as much independence as possible for as long as possible.

Key changes since 2005

The key differences between the 2005 data and the 2006 data are presented in Box 13, D. There was an 11.4% growth in episodes in this category since 2005, although the proportions across AN-SNAP classes remained similar. The proportions of episodes provided by the public and private sectors remained almost constant, although the private sector saw an increase of 3.7% in episodes in class 229 in 2006, while in classes 230, 231 and 232 the public sector proportion of episodes increased slightly. While the average age of patients increased slightly (0.4 years) since 2005, it is in ALOS that the most significant changes were seen. The ALOS of the least impaired class, 229, increased by 1.2 days, but the ALOS of the most disabled class, 232, dropped by 2 days. Overall ALOS rose by 0.5 days.

12 Pulmonary

**A** Change in number of pulmonary episodes over time (2000-2006)

Number of episodes by quarter - Pulmonary
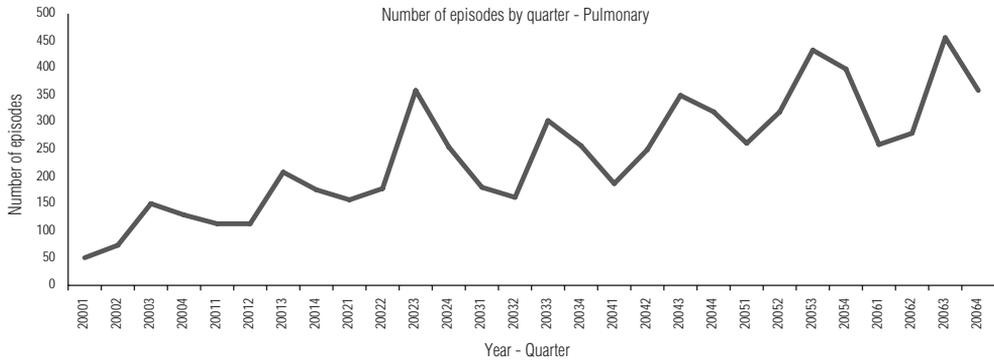
B Summary of pulmonary episodes in 2006

AN-SNAP class:	229	230	231	232	All Pulmonary
Number of episodes	569	486	266	25	1,353
Proportion of episodes	42.3%	36.1%	19.8%	1.9%	100.0%
Sector (%)					
Private	76.6	70.6	46.2	20.0	67.4
Public	23.4	29.4	53.8	80.0	32.6
Gender (%)					
Female	55.9	57.3	55.3	32.0	55.8
Male	44.1	42.7	44.7	68.0	44.2
Age (Mean+95%CI)	78.4 (77.7–79.2)	79.6 (78.6–80.6)	80.6 (79.3–81.9)	79.1 (75.3–82.9)	79.3 (78.8–79.9)
Admission FIM (Mean+95%CI)	107.8 (107.2–108.4)	90.8 (90.2–91.4)	70.5 (69.2–71.9)	40.8 (37.1–44.4)	93.2 (92.2–94.1)
LOS (Mean+95%CI)	13.4 (12.7–14.1)	14.9 (14.2–15.6)	18.6 (17.1–20.1)	24.4 (15.2–33.6)	15.1 (14.6–15.7)
Discharge destination (%)					
Discharged to community	91.6	85.8	76.3	64.0	86.0
Remaining in hospital system	8.4	14.2	23.7	36.0	14.0
FIM improvement (Mean+95%CI)	7.9 (7.1–8.7)	14.0 (12.8–15.1)	18.4 (16.4–20.4)	14.7 (4.6–24.8)	12.3 (11.5–13.0)
FIM efficiency (FIM imp./LOS)	0.6	0.9	1.0	0.6	0.8

**C** Pulmonary discharge destination, and LOS & FIM change by AN-SNAP class

Discharge destination - Pulmonary

Remaining in hospital system
Unknown residence
Other supported residence
Private residence - ?? support
Private residence - with support
Private residence - no support

LOS and FIM change by AN-SNAP class

Mean LOS — Mean FIM improvement
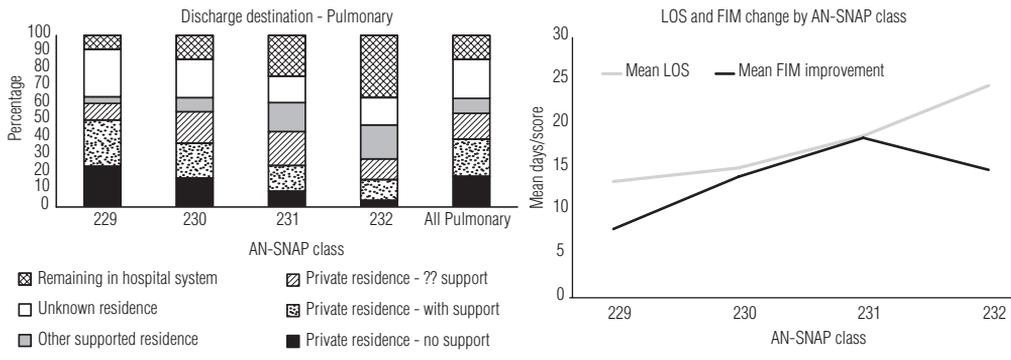
D Change in Outcome Measures in Pulmonary - 2005 to 2006

Difference from 2005 data – All Pulmonary

	2005
Age (years)	79.1
Length of stay (days)	16.3
FIM admission score	92.8
FIM discharge score	105.4
FIM change (adm to disch)	12.6
FIM efficiency (per week)	5.6

Lower than 2005 data   Higher than 2005 data
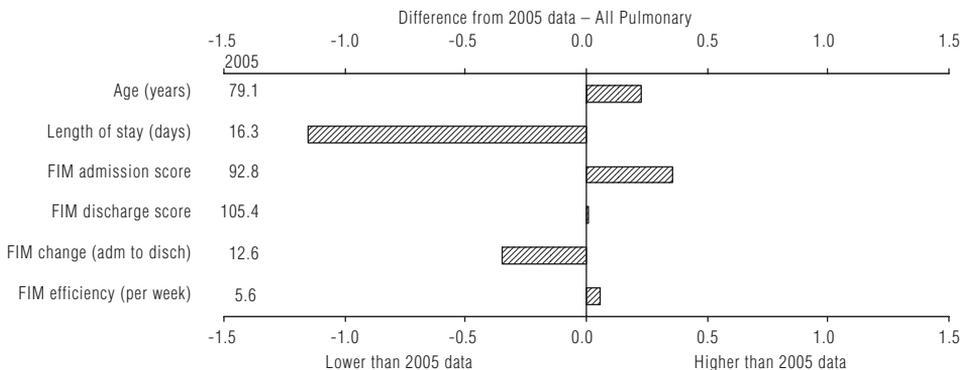
13 Debility

A Change in number of debility episodes over time (2000-2005)

Number of episodes by quarter - Debility
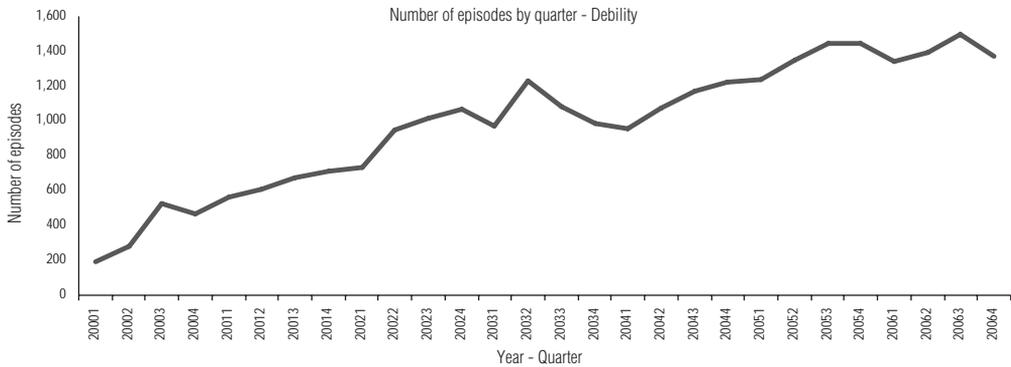
B Summary of debility episodes in 2005

AN-SNAP class:	229	230	231	232	All Debility
Number of episodes	1,811	1,981	1,573	148	5,596
Proportion of episodes	32.8%	35.9%	28.5%	2.7%	100.0%
Sector (%)					
Private	79.5	72.5	56.3	35.1	69.2
Public	20.5	27.5	43.7	64.9	30.8
Gender (%)					
Female	60.8	63.1	58.6	45.3	60.5
Male	39.2	36.9	41.4	54.7	39.5
Age (Mean+95%CI)	76.4 (75.8–77.0)	80.6 (80.2–81.1)	80.9 (80.3–81.5)	80.9 (79.3–82.6)	79.2 (78.9–79.5)
Admission FIM (Mean+95%CI)	106.0 (105.7–106.4)	89.7 (89.4–90.0)	67.9 (67.3–68.5)	40.0 (38.1–41.8)	87.2 (86.7–87.8)
LOS (Mean+95%CI)	14.7 (14.2–15.2)	17.5 (17.0–17.9)	21.8 (21.1–22.5)	22.1 (19.3–24.9)	18.0 (17.6–18.3)
Discharge destination (%)					
Discharged to community	83.5	88.1	74.7	55.4	81.3
Remaining in hospital system	16.5	11.9	25.3	44.6	18.7
FIM improvement (Mean+95%CI)	8.3 (7.9–8.7)	15.4 (14.9–15.9)	17.3 (16.4–18.1)	14.4 (10.9–18.0)	13.6 (13.3–14.0)
FIM efficiency (FIM imp./LOS)	0.6	0.9	0.8	0.7	0.8

C Debility discharge destination, and LOS & FIM change by AN-SNAP class
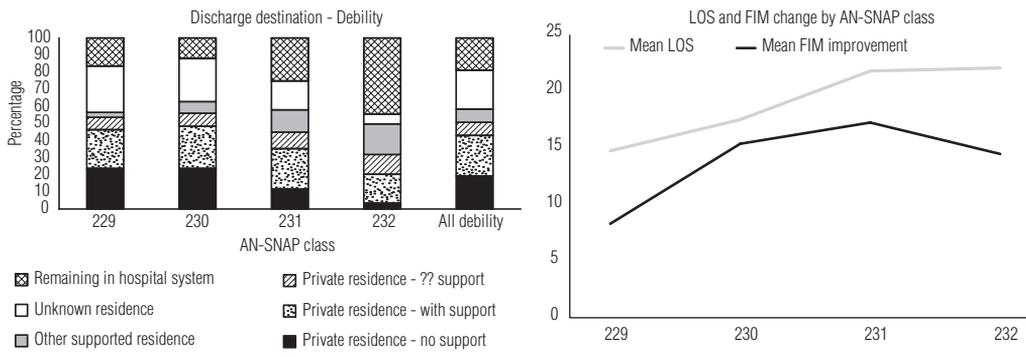
D Change in Outcome Measures in Debility - 2005 to 2006
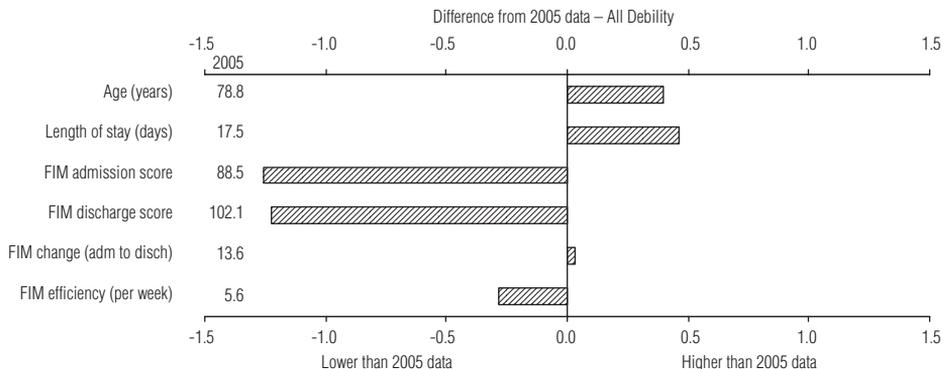
Pain, cardiac, major multiple trauma, burns, congenital deformities, and developmental disabilities

The six impairments included here have only a single AN-SNAP class and are displayed together due to low volumes (Box 14, A–F). The major things that stand out across these categories are that the average age of patients in the major multiple trauma (MMT), burns, and congenital deformity categories was much lower than in other impairment categories, with patients in these categories requiring a higher ALOS to achieve functional improvement goals. Even after that LOS, the FIM improvement achieved and the FIM efficiency in the burns and congenital deformity categories was quite low by comparison to other impairments. However, more than

three quarters of these patients were discharged to the community, which was a good outcome in itself. While the private sector provided the majority of episodes in the pain, cardiac, and developmental disability categories, it was the public sector that provided the majority of care for patients in the burns, and congenital deformity categories, albeit that these two categories had low volumes. The cardiac category displayed some seasonality, with episodes peaking in the third quarter of each year.

Other disabling impairments

In many ways this category provides a similar picture to that of the debility category. There are four classes of impairment and the most impaired class comprises only a small number of episodes

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14 Other impairments

**A** Change in number of impairments episodes over time (2000-2006)

Number of episodes by quarter - Other impairments
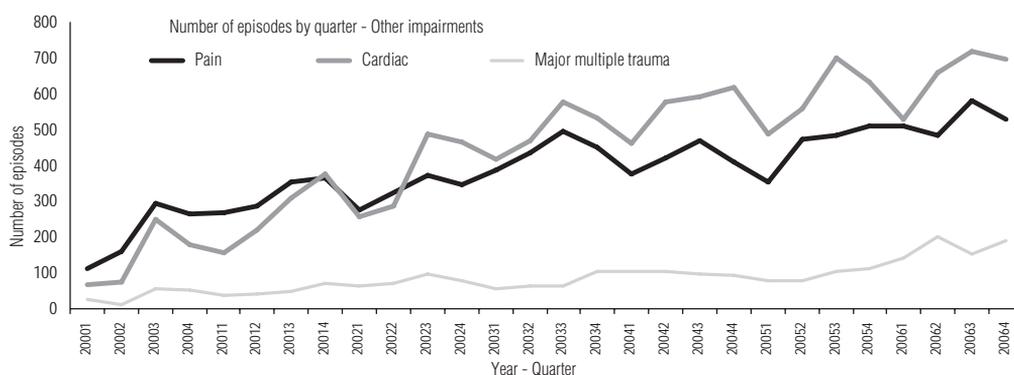
B Summary of impairments episodes in 2006

	Pain	Cardiac	MMT	Burns	Congenital deformity	Developmental disability
Number of episodes	2,100	2,598	684	24	14	18
Proportion of total episodes in 2006	3.9%	4.9%	1.3%	0.04%	0.03%	0.03%
Sector (%)						
Private	69.5	78.6	44.7	16.7	28.6	66.7
Public	30.5	21.4	55.3	83.3	71.4	33.3
Gender (%)						
Female	70.2	51.2	33.7	41.7	57.1	83.3
Male	29.8	48.8	66.3	58.3	42.9	16.7
Age (Mean+95%CI)	72.0 (71.3–72.8)	78.7 (78.3–79.1)	43.5 (41.9–45.2)	53.8 (43.5–64.2)	45.1 (36.4–53.9)	73.2 (66.2–80.2)
Admission FIM (Mean+95%CI)	96.7 (95.9–97.6)	96.9 (96.2–97.5)	81.0 (79.1–82.8)	91.9 (84.2–99.5)	81.0 (63.1–98.9)	85.6 (73.4–97.7)
LOS (Mean+95%CI)	17.0 (16.4–17.6)	14.1 (13.7–14.5)	31.5 (29.7–33.4)	24.8 (17.0–32.7)	26.4 (14.1–38.8)	21.1 (14.3–27.8)
Discharge destination (%)						
Discharged to community	81.3	88.7	83.8	91.7	42.9	88.9
Remaining in hospital system	18.7	11.3	16.2	8.3	57.1	11.1
FIM improvement (Mean+95%CI)	11.9 (11.4–12.4)	12.8 (12.3–13.3)	29.1 (27.4–30.9)	15.3 (9.5–21.0)	13.0 (8.2–17.8)	13.7 (9.0–18.3)
FIM efficiency (FIM imp./LOS)	0.7	0.9	0.9	0.6	0.5	0.6

C Other impairments discharge destination, and LOS & FIM change by AN-SNAP class

Discharge destination - Other impairments

LOS and FIM change by AN-SNAP class   ▲ Mean LOS   ■ Mean FIM improvement

Legend:
- ⊠ Remaining in hospital system
- ☐ Unknown residence
- ▨ Other supported residence
- ▨ Private residence - ?? support
- ⊠ Private residence - with support
- ■ Private residence - no support
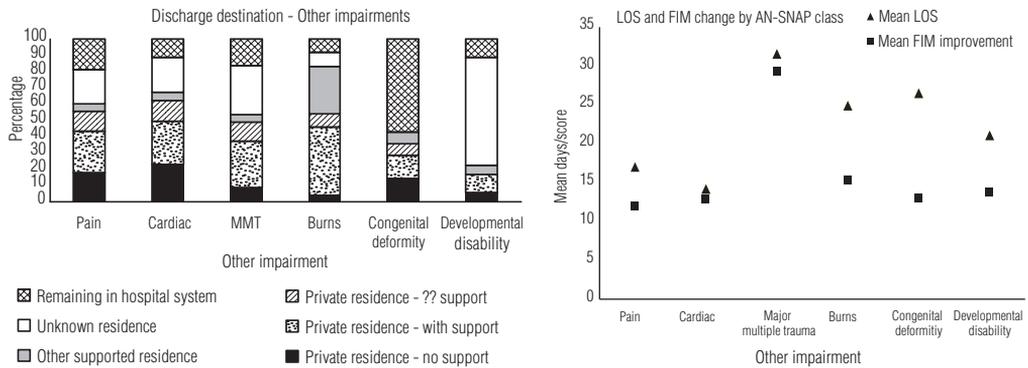
D Change in Outcome Measures in Pain - 2005 to 2006

Difference from 2005 data – Pain

	2005
Age (years)	72.0
Length of stay (days)	15.5
FIM admission score	97.3
FIM discharge score	109.4
FIM change (adm to disch)	12.1
FIM efficiency (per week)	5.6

Lower than 2005 data   Higher than 2005 data
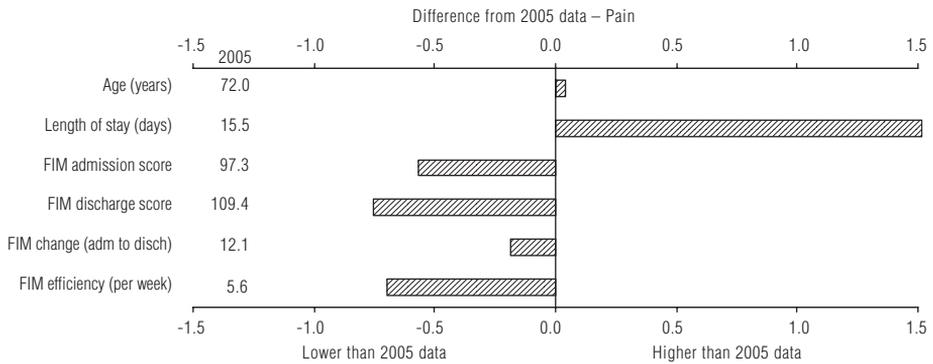
E Change in Outcome Measures in Cardiac - 2005 to 2006

Difference from 2005 data – Cardiac

	2005
Age (years)	78.9
Length of stay (days)	14.1
FIM admission score	96.1
FIM discharge score	109.8
FIM change (adm to disch)	13.7
FIM efficiency (per week)	7.0

Lower than 2005 data   Higher than 2005 data
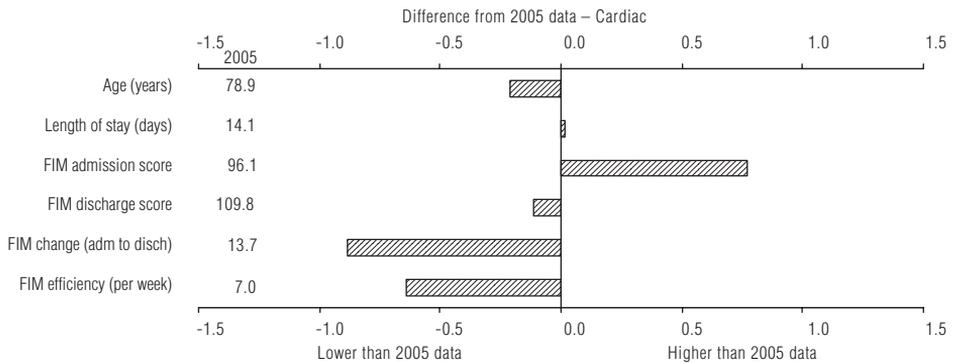
F Change in Outcome Measures in Major Multiple Trauma - 2005 to 2006

Difference from 2005 data – Major multiple trauma

	2005
Age (years)	46.8
Length of stay (days)	30.4
FIM admission score	79.6
FIM discharge score	106.2
FIM change (adm to disch)	26.6
FIM efficiency (per week)	6.3

Lower than 2005 data   Higher than 2005 data
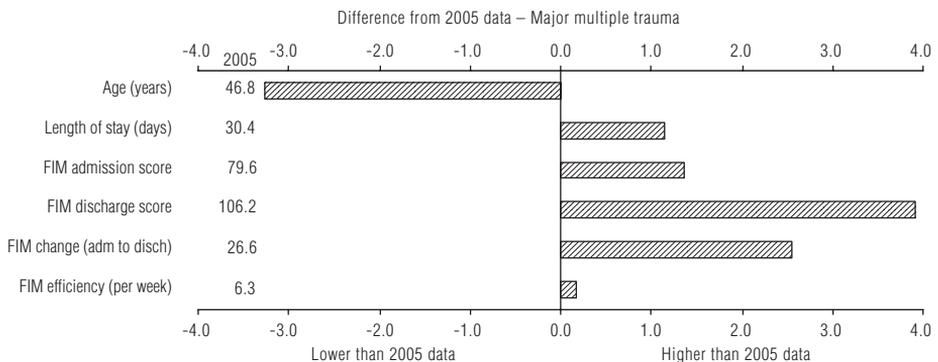
15 Other disabling impairments

A Change in number of other disabling impairments episodes over time (2000-2006)

Number of episodes by quarter - Other disabling impairments
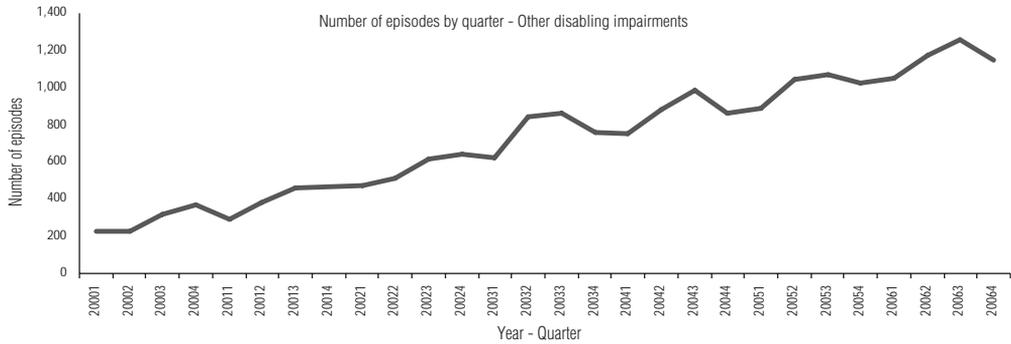
B Summary of other disabling impairments episodes in 2006

AN-SNAP class:	229	230	231	232	All Other disabilities
Number of episodes	1,512	1,562	1,236	106	4,624
Proportion of episodes	34.2%	35.4%	28.0%	2.4%	100.0%
Sector (%)					
Private	57.5	61.2	41.9	17.0	54.6
Public	42.5	38.8	58.1	83.0	45.4
Gender (%)					
Female	60.8	62.2	58.7	50.0	61.0
Male	39.2	37.8	41.3	50.0	39.0
Age (Mean+95%CI)	75.3 (74.6–76.0)	79.4 (78.8–80.0)	79.6 (78.9–80.3)	78.2 (75.8–80.6)	77.4 (77.0–77.7)
Admission FIM (Mean+95%CI)	111.9 (111.7–112.0)	98.4 (98.3–98.5)	85.3 (85.1–85.5)	67.4 (67.0–67.8)	88.4 (87.8–89.0)
LOS (Mean+95%CI)	14.4 (13.9–14.9)	0	22.4 (21.5–23.2)	24.7 (21.1–28.3)	17.7 (17.4–18.1)
Discharge destination (%)					
Discharged to community	89.7	87.8	78.8	63.2	82.1
Remaining in hospital system	10.3	12.2	21.2	36.8	17.9
FIM improvement (Mean+95%CI)	8.1 (7.7–8.5)	16.6 (16.0–17.1)	19.1 (18.2–20.0)	15.0 (10.8–19.1)	14.3 (13.9–14.7)
FIM efficiency (FIM imp./LOS)	0.6	1.0	0.9	0.6	0.8

C Other disabling impairments discharge destination, and LOS & FIM change by AN-SNAP class

Discharge destination - Other disabling impairments

LOS and FIM change by AN-SNAP class
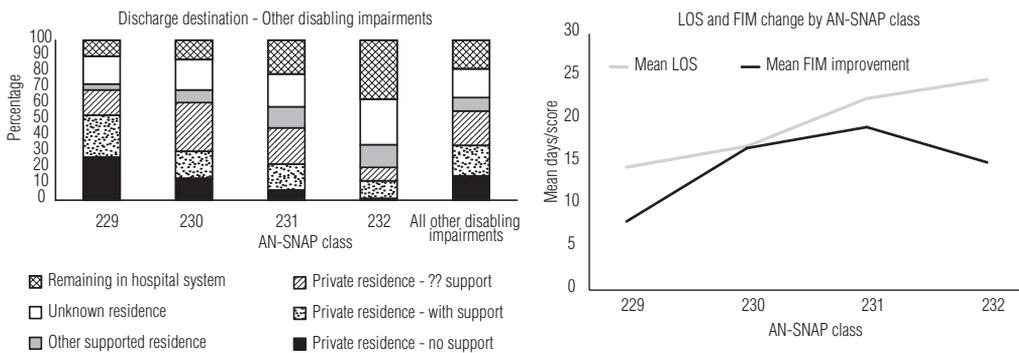
D Change in Outcome Measures in Other Disabling Impairments - 2005 to 2006

Difference from 2005 data – All Other disabling impairments
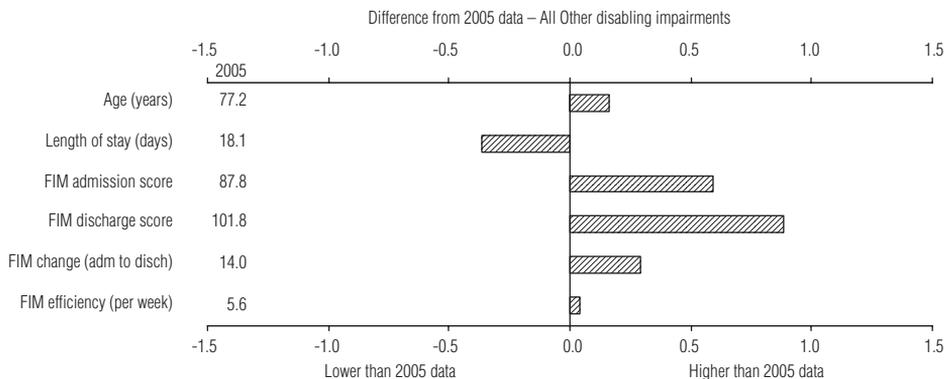
and describes a different picture to that expected by trending across from the other three impairment classes. Being an "other" category it is hard to draw generalisations from the data. Refer to Box 15, A–D for more detailed information about these episodes in 2005.

Changes in rehabilitation

In the inaugural AROC Annual Report we commented on the changes in rehabilitation outcomes between 2000 and 2005. For consistency, we report here on the changes between 2000 and 2006, but we also report on the changes between 2005 and 2006.

Box 16 describes the overall changes in rehabilitation outcomes between 2000 and 2006.

The difference between this graphic and the graphic contained in last years' report (change between 2000 and 2005) is minimal. In an overall sense, outcomes in rehabilitation improved significantly between 2000 and 2006. The ALOS decreased, FIM improvement increased, as has the efficiency with which this improvement is achieved.

Box 17 describes the overall changes in rehabilitation between 2005 and 2006, and here the story is slightly different. The average age of patients decreased slightly in 2006, ALOS did not move, average FIM admission scores increased very slightly, while average FIM discharge scores decreased very slightly, leading to a very slight (and non-significant) decrease in both FIM change and FIM efficiency.

16 Changes over time in rehabilitation in Australia, 2000–2006

17 Changes over time in rehabilitation in Australia, 2005–2006
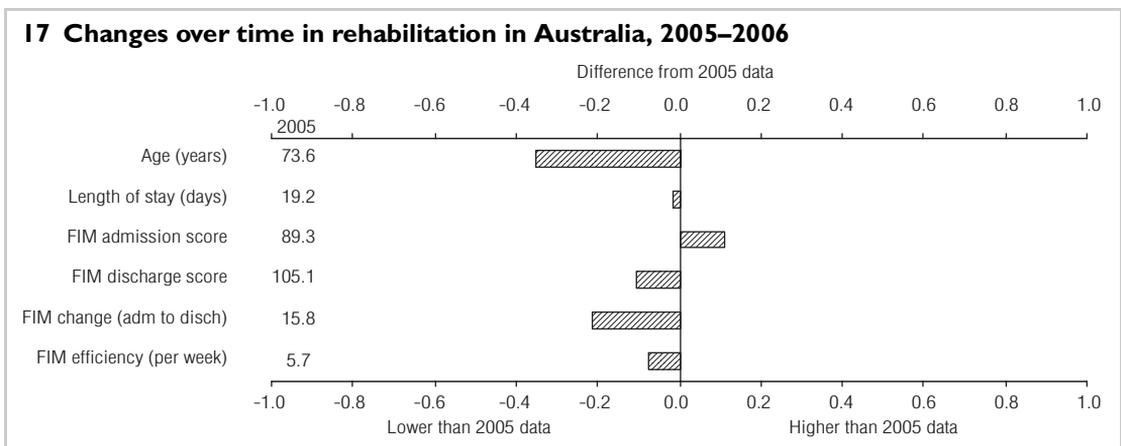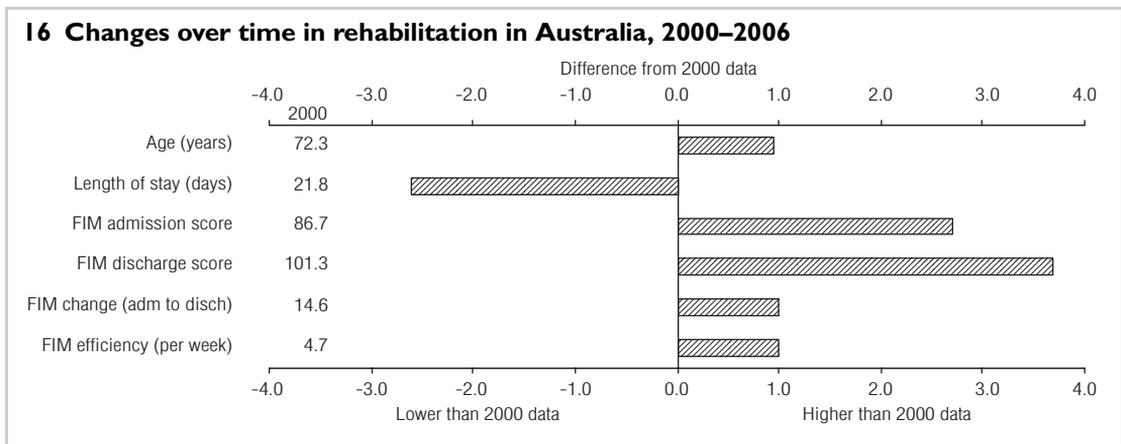
Neither Box 16 nor Box 17 contains discharge destination data. Box 18 describes the reported discharge destination data collected between 2000 and 2006. The graphic combines data collected via three data elements contained within the AROC dataset: mode of episode end; accommodation post discharge; and level of support required (if discharged to a private residence) post discharge. The graphic shows that the number of people reported as remaining in the hospital system after discharge from rehabilitation has dropped from approx 30% to under 20%, a positive outcome. The graphic also shows that the proportion of episodes where the patient has been discharged to the community, but to an "unknown residence", has been steadily decreasing over time, with a significant leap in data quality over the last year. However, such variability in data collection has limited the ability for AROC to compare discharge destination data at a summary level on a year-to-year basis.

To add another facet to consideration of the 2006 data versus that of 2005, Box 19 describes the change in the number of episodes in each impairment group between 2005 and 2006. In compiling the data for this graphic, the growth in episodes due to an increased number of facilities submitting to AROC has been controlled for. The growth displayed is real total growth of 9.6%. However, by impairment the growth has been variable. The arthritis, amputee and pulmonary categories saw negative growth. Multi-trauma saw over 80% growth in episodes, but on small volume.

Discussion

In general, in 2006 the AROC dataset describes a situation similar to that in 2005. That is:

- there was a preponderance of female patients aged over 70 years
- there were more patients managed in the private sector rather than in the public sector

18 Change in reported discharge destination, 2000–2006

Legend:
- Remaining in hospital system
- Unknown residence
- Other supported residence
- Private residence – unknown support
- Private residence – with support
- Private residence – no support

19 Change in number of episodes by impairment group between 2005 and 2006
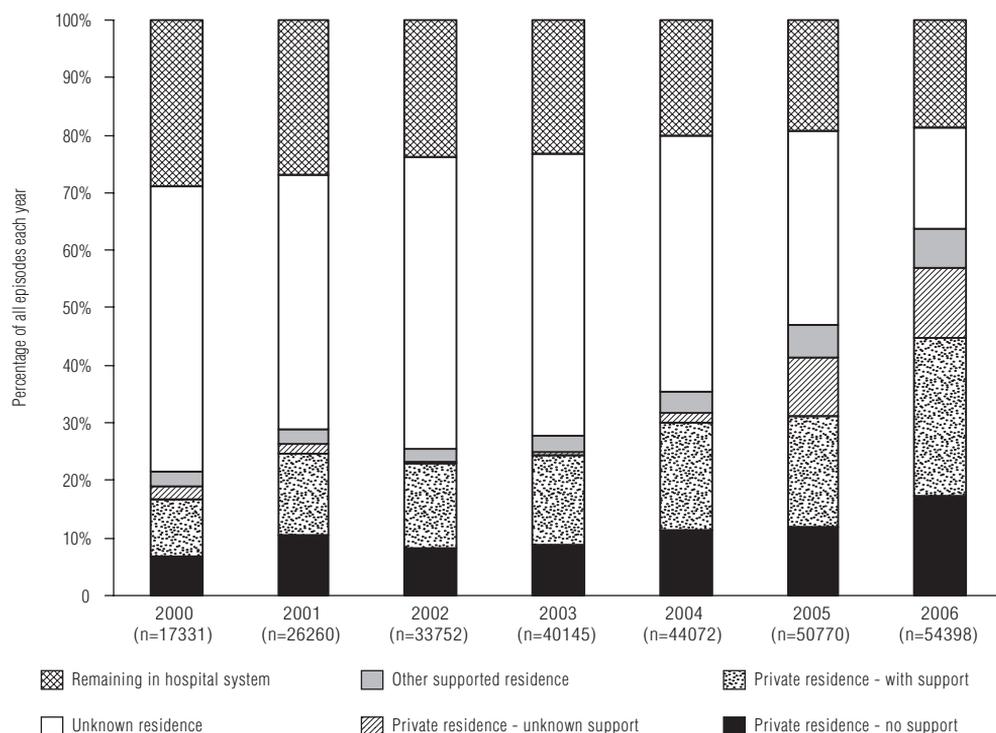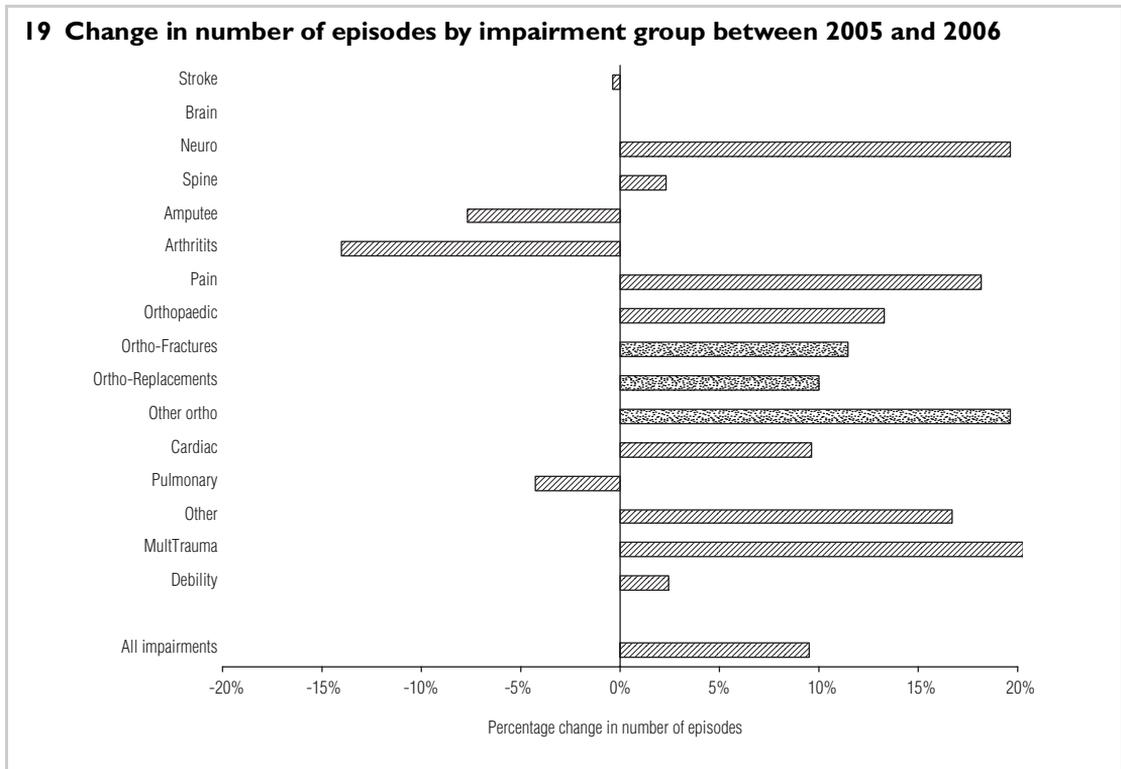
- the public sector tended to treat a greater percentage of the most impaired patients
- the greatest percentage of patients fell into the least disabled classes
- the greater the impairment, the greater the FIM gain, and the longer the LOS
- the vast majority of rehabilitation patients returned to the community after discharge, although the proportion decreased with increasing impairment.

However, there have been slight changes in the picture since 2005, as described above. While the changes are small, it will be interesting to monitor these over the next few years to establish whether this will become the trend.

As also described in Box 19, the volume of rehabilitation episodes continued to increase over time, due in part to the ageing of the population, and perhaps in part to the fact that the community is better educated, more aware that rehabilitation may allow them to remain independent for longer, and less willing to accept dependence as their lot. While the health sector places significant focus on acute care, and downstream on community care, it is rehabilitation that often provides the glue between those two sectors. In attempting to ensure an efficient and effective distribution of a limited budget the health sector is actively encouraging people to maintain their independence as long as possible (ageing in place, home-based care, etc). Rehabilitation deserves the recognition that it plays a significant and important role in allowing this to be achieved.

Trends and issues in rehabilitation

There continues to be an increasing emphasis on the provision of ambulatory rehabilitation, both from providers, payers and regulators. Each of these stakeholders is also interested in measuring the outcomes of ambulatory rehabilitation episodes and comparing the efficiencies and outcomes achieved by this model of care with those achieved by the more traditional inpatient model

of rehabilitation care. However, historically this section of the sector has been less structured and less sophisticated in their provision of rehabilitation care, and this has presented challenges, especially for those with an interest in collecting data against ambulatory episodes. Thus, parties interested in ambulatory rehabilitation have been in a sense "flying blind" for some time.

During 2006, AROC developed a draft ambulatory dataset which has been trialled in a number of facilities that provide both inpatient and ambulatory care. Once the results of the trial are analysed and any modifications made, this dataset will be implemented across the sector. As was achieved in the inpatient sector, the implementation of a national benchmarking service will allow the measurement of trends in clinical practice, which will in turn lead to an improved understanding of the factors that influence rehabilitation outcomes and costs, and therefore performance of the ambulatory sector.

Linked to the increasing emphasis on non-inpatient rehabilitation has been the growing trend for more complex patients to be transferred from the acute sector to rehabilitation. This has required rehabilitation facilities to develop and/or access the infrastructure, skills and resources necessary to care for these patients while they undergo their rehabilitation. Of course there is a cost to this.

Another growth area within the rehabilitation sector is paediatric rehabilitation. In volume this is a small sector, with only one specialised paediatric rehabilitation unit in each state (and two in New South Wales), but one of the key themes of the sector has been the expansion of options for children requiring rehabilitation. However, as rehabilitation provided for children is impacted by the age, developmental stage and predicted recovery trajectory upon outcomes, to date there has not been a nationally agreed suite of assessment and outcome measures for children receiving rehabilitation, and therefore services providing this care have not been able to benchmark their performance. The sector recognises the need for such a suite of measures, and the need for an agreed national data collection proto-

col, in order to drive the achievement of effective outcomes and a culture of benchmarking and continual improvement to directly benefit these children. AROC, in association with each and all of the paediatric rehabilitation units in Australia, is currently seeking funding to undertake the development of a paediatric rehabilitation dataset and data collection protocol.

While the average age of a person undergoing rehabilitation is over 70 years of age, the sector does treat a significant number of younger people. In 2006, the difficulty that facilities have in accessing support services and supported accommodation for younger people with significant disability worsened. This affects facilities' ability to achieve timely discharge, and restricts their ability to admit new patients requiring care.

The rehabilitation sector is also not immune to the workforce shortages affecting the rest of the health sector. Although inequities in distribution presently apply, with regard to rehabilitation physicians, the Australasian Faculty of Rehabilitation Medicine (AFRM) has been proactive in establishing a national training program designed to address the predicted requirement in Australia into the future. However, during 2006, rehabilitation facilities and services had difficulties in staffing nursing and allied health roles. Unlike the acute sector where the clinicians' "tools of trade" are often "machines that go ping", the rehabilitation physician's tool of trade is the multidisciplinary allied health team, and achieving optimal outcomes in an efficient manner is made more difficult in the absence of adequate tools.

AROC dataset changes

In 2006 AROC undertook projects that culminated in the implementation of version 3 of the AROC inpatient dataset on 1 July 2007. Incorporated in this new dataset has been a review of the AROC impairment codes, which have been revised to ensure their continued clinical relevance. In addition, support documentation in the form of Impairment Coding Guidelines has been developed.

Also incorporated in the version 3 dataset are all necessary data items for the collection and calculation of the version 4 ACHS Rehabilitation Medicine clinical indicators. AROC, in association with the AFRM, undertook a revision of the version 3 indicators in 2006, culminating in the deletion of two indicators and the addition of two outcome measuring indicators. AROC members are trialling the new version of the indicators from 1 July 2007, and they will be officially implemented by the ACHS from 1 January 2008. Also during 2006, the AN-SNAP classification system was reviewed. Version 2 of the AN-SNAP classification was launched on 1 July 2007.

Acknowledgements

Competing interests

The authors declare that they have no competing interests.

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(Received 15/08/07, accepted 4/11/07)   ❑