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The AROC annual report: the state of rehabilitation in Australia in 2008

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The AROC annual report: the state of rehabilitation in Australia in 2008

Abstract

This is the fourth comprehensive annual report describing discharge episodes from subacute inpatient rehabilitation programs provided by facilities that are members of the Australasian Rehabilitation Outcomes Centre (AROC). The inaugural report was published in April 2007 and described the 2005 data; this fourth instalment describes the 2008 data.

Keywords

annual, 2008, aroc, australia, rehabilitation, state, report

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1 Introduction

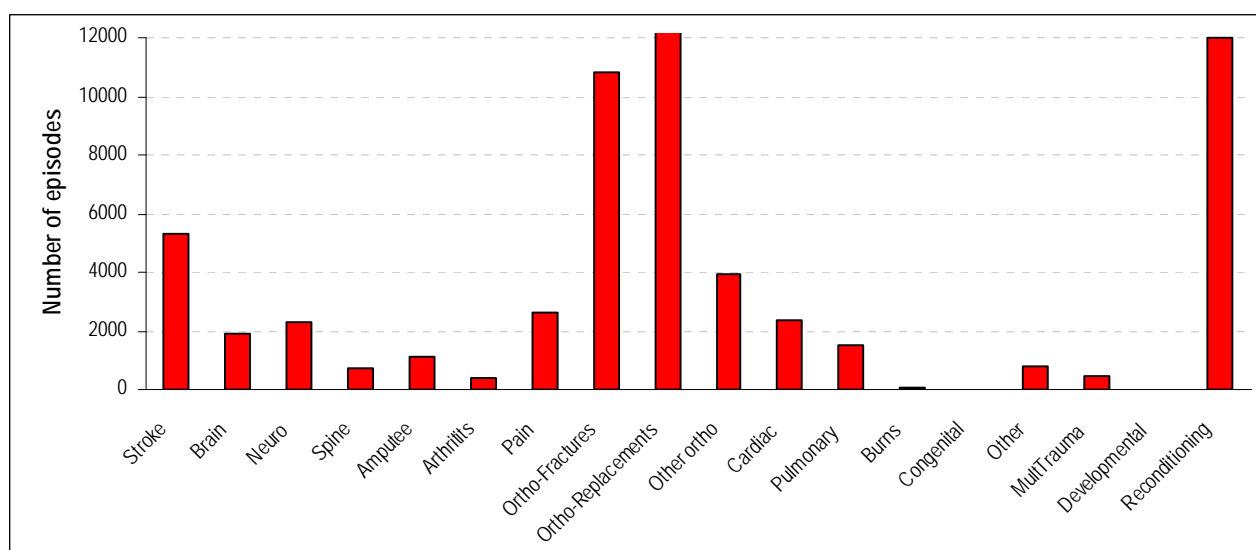
This is the fourth comprehensive annual report describing discharge episodes from subacute inpatient rehabilitation programs provided by facilities that are members of the Australasian Rehabilitation Outcomes Centre (AROC)¹. The inaugural report was published in April 2007 and described the 2005 data; this fourth instalment describes the 2008 data.

2 Rehabilitation in Australia – 2008

The provision of rehabilitation in Australia continues to grow in volume, with 2008 seeing an 11.2% real increase in inpatient episodes of rehabilitation provided. By far the majority of that volume growth is coming from the reconditioning impairment group, who for the second year in a row grew by more than half, such that the volume of episodes has doubled over the last 2 years.

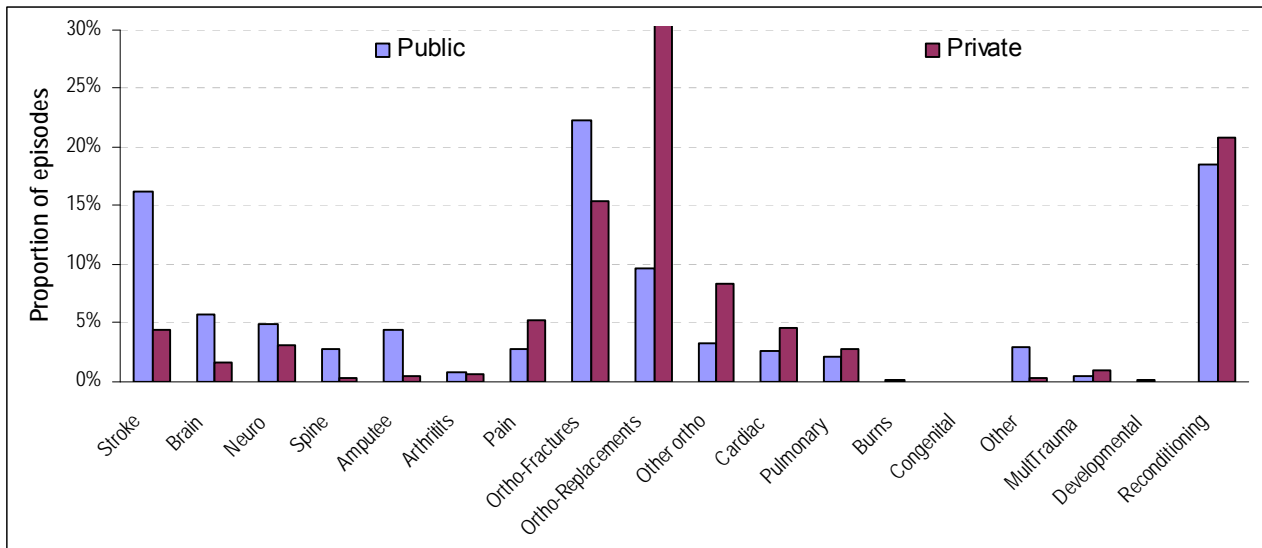
Across all impairment categories, the average age was unchanged at 74.0 years, the majority of episodes of care (57.6%) were for female patients, and were provided by the private sector (63.5%). Figure 2A presents the 2008 data by AROC impairment group whilst Figure 1B presents the same data broken down into episodes provided by the private and public sectors. Orthopaedic rehabilitation is the largest type of rehabilitation in Australia, accounting for 54.5% of all private episodes and 35.3% of all public episodes. Orthopaedic rehabilitation is broken down into three categories, fractures, joint replacements and other, and these vary markedly by sector. The private sector provided more orthopaedic joint replacement episodes compared to the public sector (84.7% versus 15.3%), and for the first time more orthopaedic fracture rehabilitation (54.6% versus 45.4%). Overall the private sector provided the majority (72.8%) of orthopaedic episodes. Reconditioning was the second most common category accounting for 19.9% of all episodes (up from 14.0% last year), with the private sector again providing the majority of episodes (66.2%, down from 71.1% last year). Stroke rehabilitation was the third largest category accounting for 8.8% of all episodes, with most episodes (67.6%) provided by the public sector.

Figure 1A *Proportion of episodes by AROC impairment group, 2008*



¹ Details on rehabilitation medicine and related definitions, the Australasian Rehabilitation Outcomes Centre (AROC) and the AROC data set are available in the inaugural report. Simmonds F, Stevermuer T. The AROC Annual Report: the state of rehabilitation in Australia 2005. Aust Health Rev 2007: 31 Suppl 1: s31-53. Available at: http://www.aushealthreview.com.au/publications/articles/issues/ahr_31_1_0407/ahr_31_1_s031.asp. See also the Australasian Rehabilitation Outcomes Centre website: chsd.uow.edu.au/aroc

Figure 2B Proportion of episodes by AROC impairment group and sector, 2008



In Figure 3, the funding source for the 2008 data is described. Some 29.4% of episodes were funded by the public health system, 14.8% by the Department of Veterans' Affairs and 51.8% 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. Compared to 2007 there has been a small decrease in the proportion of episodes funded by the Department of Veterans' Affairs and the public sector (0.5% & 1% respectively) and an equal increase in the proportion funded by the private sector.

Figure 3 Funding sources for rehabilitation in Australia, 2008

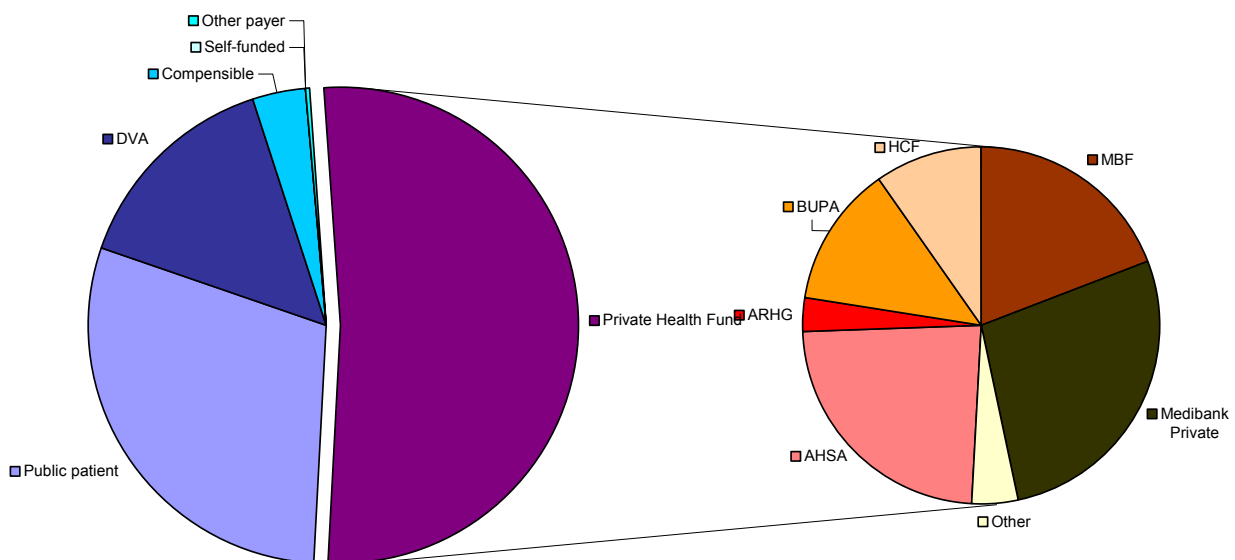


Figure 4 Version 2 AN-SNAP classes for inpatient rehabilitation

| VERSION 1 AN-SNAP CLASSES | | VERSION 2 AN-SNAP CLASSES | |
|---------------------------|---------------------------------------|---------------------------|--|
| 201 | Admit for assessment only | 2-201 | Admit for assessment only |
| 202 | Brain,Neuro,Spine & MMT,FIM 13 | 2-202 | Brain,Neuro,Spine & MMT,FIM 13 |
| 203 | All other impairments, FIM 13 | 2-203 | All other impairments, FIM 13 |
| 204 | Stroke and Burns,Mot 63-91,Cog 20-35 | 2-204 | Stroke ,Mot 63-91,Cog 20-35 |
| 205 | Stroke and Burns,Mot 63-91,Cog 5-19 | 2-205 | Stroke ,Mot 63-91,Cog 5-19 |
| 206 | Stroke and Burns, motor 47-62 | 2-206 | Stroke, motor 47-62, cog 16-35 |
| | | 2-207 | Stroke, motor 47-62, cog 5-15 |
| | | 2-208 | Stroke, Mot 14-46, Age>=75 |
| 207 | Stroke and Burns, Mot 14-46, Age>=75 | 2-209 | Stroke, Mot 14-46, Age<=74 |
| 208 | Stroke and Burns, Mot 14-46, Age<=74 | | |
| 209 | Brain Dysfunction, motor 71-91 | 2-210 | Brain Dysfunction, motor 56-91, cog 32-35 |
| | | 2-211 | Brain Dysfunction, motor 56-91, cog 24-31 |
| | | 2-212 | Brain Dysfunction, motor 56-91, cog 20-23 |
| | | 2-213 | Brain Dysfunction, motor 56-91, cog 5-19 |
| | | 2-214 | Brain Dysfunction, motor 24-55 |
| 210 | Brain Dysfunction, mot 29-70, Age>=55 | 2-215 | Brain Dysfunction, motor 14-23 |
| 211 | Brain Dysfunction, mot 29-70, Age<=54 | | |
| 212 | Brain Dysfunction, motor 14-28 | | |
| 213 | Neurological, motor 74-91 | | Neurological, motor 63-91 |
| 214 | Neurological, motor 41-73 | 2-216 | Neurological, motor 49-62 |
| 215 | Neurological, motor 14-40 | 2-217 | Neurological, motor 18-48 |
| | | 2-218 | Neurological, motor 14-17 |
| | | 2-219 | |
| 216 | Spnl Cord Dysfnc,Mot 81-91 | | Spnl Cord Dysfnc,Mot 81-91 |
| 217 | Spnl Cord Dysfnc,Mot 47-80 | 2-220 | Spnl Cord Dysfnc,Mot 47-80 |
| 218 | Spnl Cord Dysfnc,Mot 14-46 | 2-221 | Spnl Cord Dysfnc,Mot 14-46, Age>=33 |
| | | 2-222 | Spnl Cord Dysfnc,Mot 14-46, Age<=32 |
| | | 2-223 | |
| 219 | Amp of limb,Mot 66-91 | 2-224 | Amp of limb,Mot 72-91 |
| 220 | Amp of limb,Mot 47-65 | 2-225 | Amp of limb,Mot 14-71 |
| 221 | Amp of limb,Mot 14-46 | | |
| 222 | Pain Syndromes | 2-226 | Pain Syndromes |
| 223 | Orthpaed Conds,Mot 74-91 | 2-227 | Orthpaed Conds, Fractures, Mot 58-91 |
| 224 | Orthpaed Conds,Mot 58-73 | 2-228 | Orthpaed Conds, Fractures, Mot 48-57 |
| 225 | Orthpaed Conds,Mot 52-57 | 2-229 | Orthpaed Conds, Fractures, Mot 14-47, Cog19-31 |
| 226 | Orthpaed Conds,Mot 14-51 | 2-230 | Orthpaed Conds, Fractures, Mot 14-47, Cog 5-18 |
| | | 2-231 | Orthpaed Conds, Replcmnt, Mot 72-91 |
| | | 2-232 | Orthpaed Conds, Replcmnt, Mot 49-71 |
| | | 2-233 | Orthpaed Conds, Replcmnt, Mot 14-48 |
| | | 2-234 | Orthpaed Conds, Other, Mot 68-91 |
| | | 2-235 | Orthpaed Conds, Other, Mot 53-67 |
| | | 2-236 | Orthpaed Conds, Other, Mot 14-52 |
| 227 | Cardiac | 2-237 | Cardiac |
| 228 | Major Multiple Trauma | | Major Multiple Trauma, FIMtotal 101-126 |
| | | 2-238 | Major Multiple Trauma, FIMtotal 74-100, Burns Mot>13 |
| | | 2-239 | Major Multiple Trauma, FIMtotal 44-73 |
| | | 2-240 | Major Multiple Trauma, FIMtotal 19-43 |
| | | 2-241 | |
| 229 | Oth Impairs,Mot 67-91 | 2-242 | Oth Impairs,Mot 67-91 |
| 230 | Oth Impairs,Mot 53-66 | 2-243 | Oth Impairs,Mot 53-66 |

3 Outcomes by Impairment

A series of figures and tables are provided for each impairment category; these outline the key descriptive data for 2008, changes in episode volumes between 2004 and 2008, and changes in rehabilitation outcome measures between 2007 and 2008:

- The first figure in each category outlines the number of episodes for each quarter over the past five years, and documents any changes in episode volume over time and/or seasonal trends.
- The second is a table outlining key 2008 data for the respective impairment category by version 2 of the AN-SNAP class.
- The third figure provides a summary of the discharge destination of all episodes by AN-SNAP class.
- The fourth figure provides a graphical representation of 2008 length of stay (LOS) and improvement in the Functional Independence Measure (FIM™ – the FIM instrument, Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities Inc, State University of New York, Buffalo, NY, USA) by AN-SNAP class.
- Finally, the fifth figure presents the key changes in rehabilitation outcome measures between 2007 and 2008. The horizontal axis describes the difference between the 2007 and 2008 averages, while the actual 2007 data are presented on the left side of the graph. This figure now includes changes to discharge to community, previously not reported due to data quality concerns.

3.1 Stroke

Figure 4A illustrates the consistent seasonal variation in stroke rehabilitation episodes observed in previous reports, with a peak during winter and a trough in summer. As shown in Figure 4B, the average age was 73.1 years, the average length of stay (ALOS) was 27 days, ranging from 16.7 days for the least impaired class to 41.7 days for the most impaired class, and the average FIM improvement achieved was 19.6, again ranging considerably across the AN-SNAP classes, as would be expected. Figure 4D demonstrates that FIM efficiency was greatest for the moderately impaired classes (S2-206 and S2-207). Figure 4C demonstrates that individuals with greater impairments were less likely to be discharged into the community. For example, 93.4% to 90.6% of episodes from classes S2-204 and S2-205 were discharged into the community, compared to only 73.1% to 74.4% of episodes from classes S2-208 and S2-209.

Figure 4A Change in number of stroke episodes over time (2004-2008)

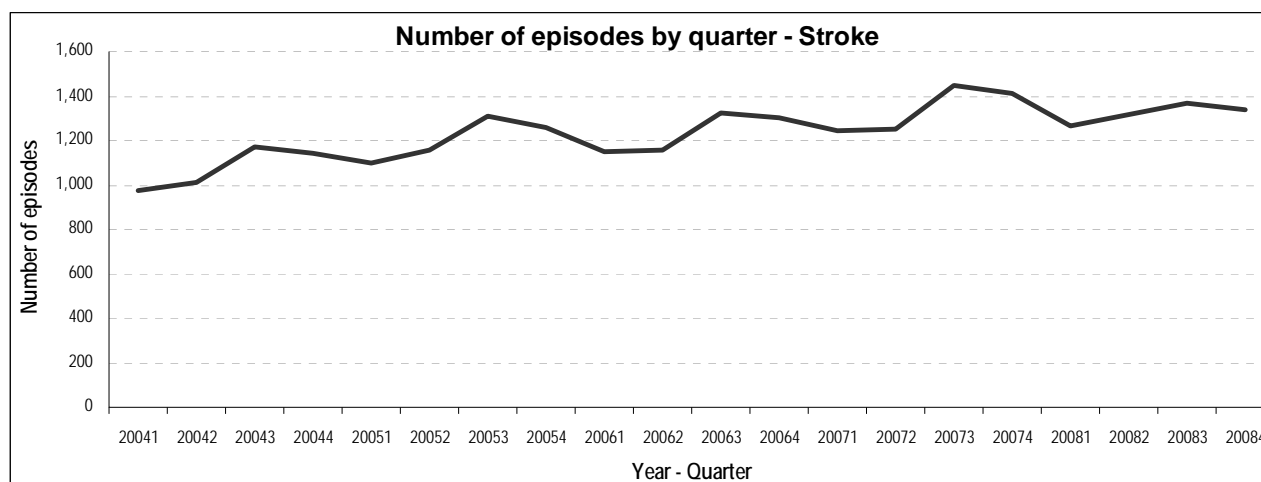


Figure 4B Summary of stroke episodes in 2008

| AN-SNAP class: | S2-204 | S2-205 | S2-206 | S2-207 | S2-208 | S2-209 | All stroke |
|-------------------------------|---------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Number of episodes | 1,632 | 160 | 1,396 | 114 | 1,118 | 864 | 5,284 |
| Proportion of episodes | 30.9% | 3.0% | 26.4% | 2.2% | 21.2% | 16.4% | 100.0% |
| Sector (%) | | | | | | | |
| Private | 36.6 | 30.0 | 39.9 | 22.8 | 30.7 | 16.6 | 32.4 |
| Public | 63.4 | 70.0 | 60.1 | 77.2 | 69.3 | 83.4 | 67.6 |
| Gender (%) | | | | | | | |
| Female | 46.0 | 47.5 | 49.2 | 55.3 | 54.8 | 41.8 | 48.3 |
| Male | 54.0 | 52.5 | 50.8 | 44.7 | 45.2 | 58.2 | 51.7 |
| Age (Mean+95%CI) | 71.2 (70.5-71.9) | 70.6 (68.4-72.9) | 75.3 (74.6-76.0) | 73.8 (71.2-76.5) | 82.8 (82.4-83.1) | 61.2 (60.5-61.9) | 73.1 (72.8-73.5) |
| Admission FIM (Mean+95%CI) | 104.1 (103.6-104.5) | 87.6 (86.3-89.0) | 82.5 (82.1-82.9) | 66.5 (65.5-67.5) | 52.4 (51.5-53.2) | 52.9 (51.9-54.0) | 78.4 (77.7-79.1) |
| LOS (Mean+95%CI) | 16.7 (16.2-17.3) | 25.2 (22.7-27.8) | 24.6 (23.8-25.3) | 27.9 (24.6-31.2) | 35.0 (33.8-36.2) | 41.7 (40.1-43.2) | 27.0 (26.5-27.5) |
| Discharge destination (%) | | | | | | | |
| Discharged to community | 93.4 | 90.6 | 88.0 | 84.2 | 73.1 | 74.4 | 84.3 |
| Remaining in hospital system | 6.6 | 9.4 | 12.0 | 15.8 | 26.9 | 25.6 | 15.7 |
| FIM improvement (Mean+95%CI) | 11.2 (10.8-11.6) | 16.0 (14.1-17.8) | 21.6 (20.9-22.3) | 22.9 (19.6-26.2) | 22.3 (21.1-23.5) | 29.9 (28.4-31.5) | 19.6 (19.1-20.1) |
| FIM efficiency (FIM imp./LOS) | 0.7 | 0.6 | 0.9 | 0.8 | 0.6 | 0.7 | 0.7 |

Figure 4C Stroke discharge destination

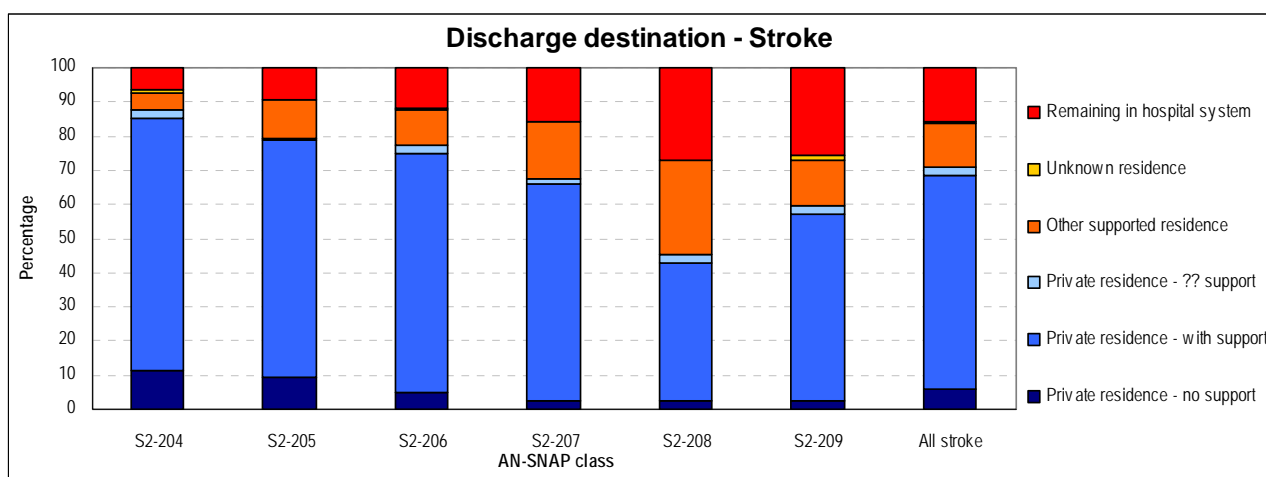
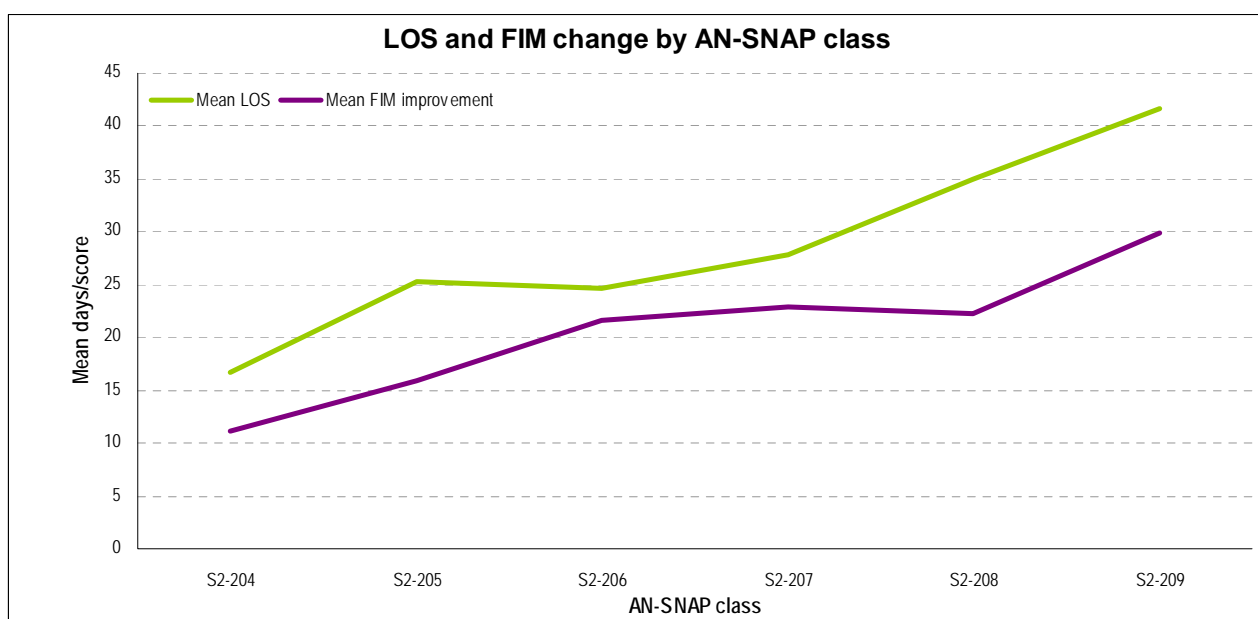


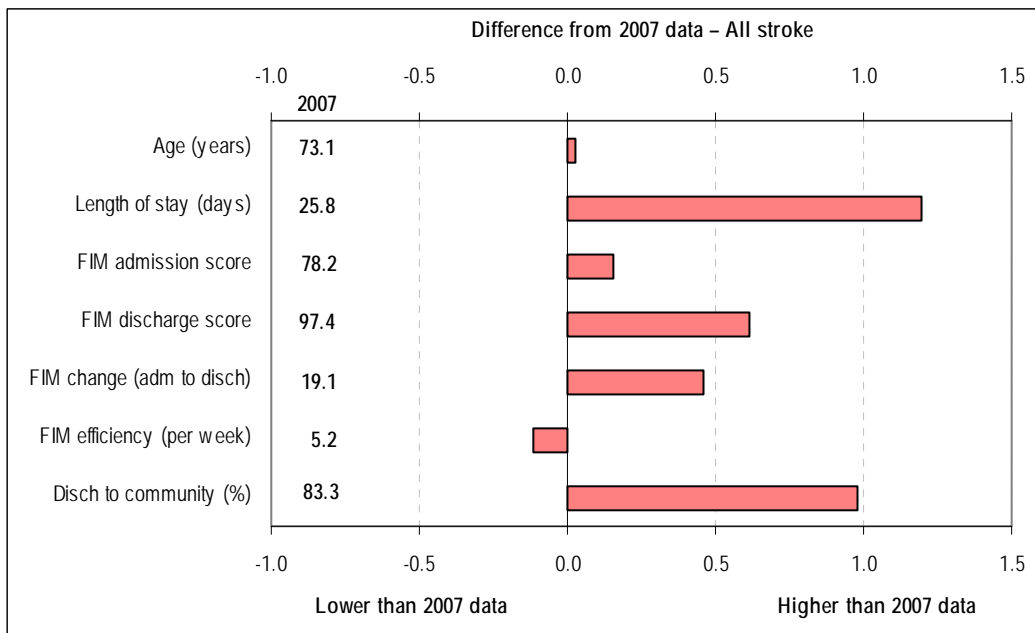
Figure 4D Stroke LOS & FIM change by AN-SNAP class



Key changes since 2007

Interestingly, in 2008 the proportion of stroke rehabilitation episodes provided by the public sector increased by 5% (67.6% vs 62.4% in 2007). The overall volume of episodes increased, but the proportion of episodes in each AN-SNAP class remained quite steady. The key differences in outcome data between the 2007 and 2008 data are presented in Figure 4E. The most interesting change is that in 2008 ALOS has increased by 1.2 days, whereas last year in 2007 ALOS had decreased by 2.2 days. However, even though ALOS has increased FIM efficiency has not been badly affected due to the increase in the FIM change achieved during the episode during 2008. The other positive outcome is that in 2008 there was a 1% increase in the proportion of patients discharged to the community.

Figure 4E Change in Outcome Measures in Stroke - 2007 to 2008



3.2 Brain Dysfunction

The average age for brain dysfunction episodes remained steady at 56.2 years, with most patients being male (60.9%). The majority of episodes (65.7%) were provided by the public sector, although this was not the case for the least impaired class (S2-210). The average FIM admission score was 86.7, the ALOS was 24.8 days ranging from 15 days for the least impaired class to 40.7 days for the most impaired class. The overall FIM improvement was 18.4, with the most impaired classes (i.e. S2-214 and S2-215) showing the greatest improvements. Although the majority (84.5%) of brain dysfunction episodes were discharged to the community, this varied considerably according to the level of impairment. For example, only 61.4% of episodes with the greatest impairment (S2-215) were discharged to the community compared to 94.7% of the least impaired episodes (S2-211).

Figure 5A Change in number of brain dysfunction episodes over time (2004-2008)

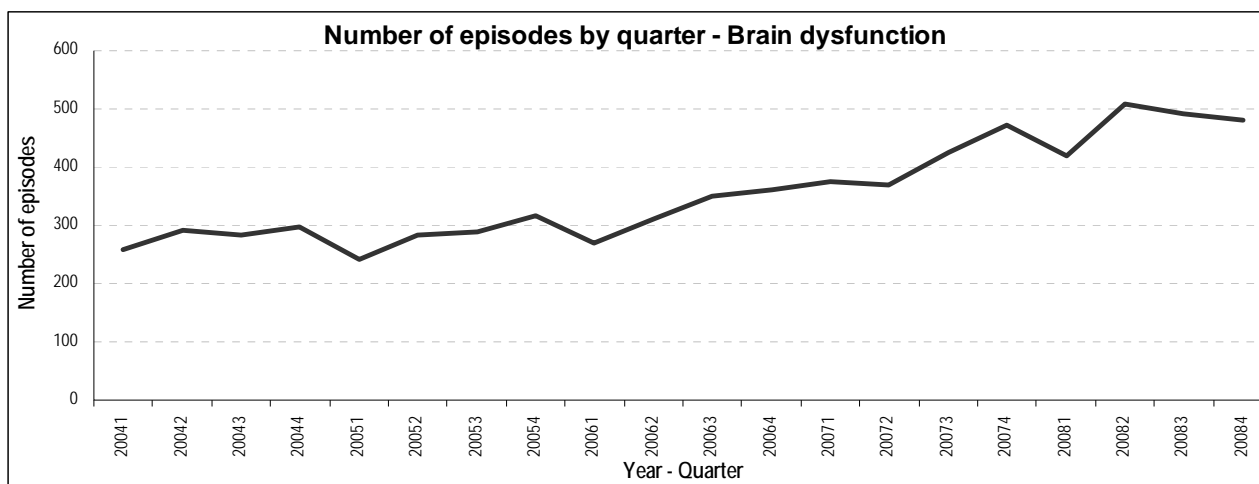


Figure 5B Summary of brain dysfunction episodes in 2008

| AN-SNAP class: | S2-210 | S2-211 | S2-212 | S2-213 | S2-214 | S2-215 | All Brain dysfunction |
|-------------------------------|---------------------|-------------------|------------------|------------------|------------------|------------------|-----------------------|
| Number of episodes | 338 | 521 | 156 | 233 | 506 | 145 | 1,899 |
| Proportion of episodes | 17.8% | 27.4% | 8.2% | 12.3% | 26.6% | 7.6% | 100.0% |
| Sector (%) | | | | | | | |
| Private | 59.8 | 33.2 | 23.7 | 14.2 | 35.0 | 20.0 | 34.3 |
| Public | 40.2 | 66.8 | 76.3 | 85.8 | 65.0 | 80.0 | 65.7 |
| Gender (%) | | | | | | | |
| Female | 46.7 | 39.3 | 26.3 | 27.0 | 43.7 | 37.2 | 39.1 |
| Male | 53.3 | 60.7 | 73.7 | 73.0 | 56.3 | 62.8 | 60.9 |
| Age (Mean+95%CI) | 60.5 (58.3-62.6) | 54.1 (52.1-56.0) | 49.9 (46.7-53.1) | 50.4 (47.9-52.8) | 61.1 (59.3-63.0) | 52.7 (49.3-56.1) | 56.2 (55.2-57.2) |
| Admission FIM (Mean+95%CI) | 107.8 (106.8-108.9) | 2.0 (101.0-103.0) | 95.7 (93.8-97.6) | 87.5 (86.0-88.9) | 63.6 (62.4-64.9) | 33.5 (31.8-35.2) | 86.7 (85.6-87.9) |
| LOS (Mean+95%CI) | 15.0 (13.9-16.2) | 19.7 (18.4-21.0) | 25.8 (23.1-28.4) | 29.5 (26.9-32.1) | 31.2 (29.4-33.0) | 40.7 (36.0-45.3) | 24.8 (23.9-25.6) |
| Discharge destination (%) | | | | | | | |
| Discharged to community | 94.7 | 93.1 | 84.0 | 79.0 | 78.1 | 61.4 | 84.5 |
| Remaining in hospital system | 5.3 | 6.9 | 16.0 | 21.0 | 21.9 | 38.6 | 15.5 |
| FIM improvement (Mean+95%CI) | 10.8 (9.8-11.8) | 13.2 (12.3-14.1) | 16.7 (14.8-18.7) | 19.2 (17.3-21.0) | 26.8 (24.8-28.9) | 31.1 (24.6-37.6) | 18.4 (17.6-19.2) |
| FIM efficiency (FIM imp./LOS) | 0.7 | 0.7 | 0.6 | 0.6 | 0.9 | 0.8 | 0.7 |

Figure 5C Brain dysfunction discharge destination

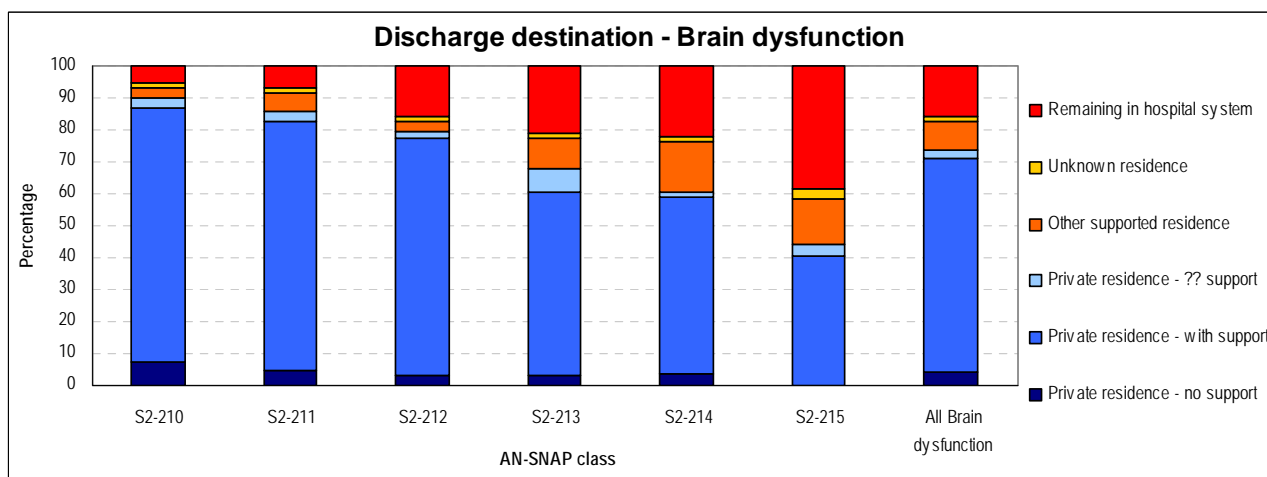
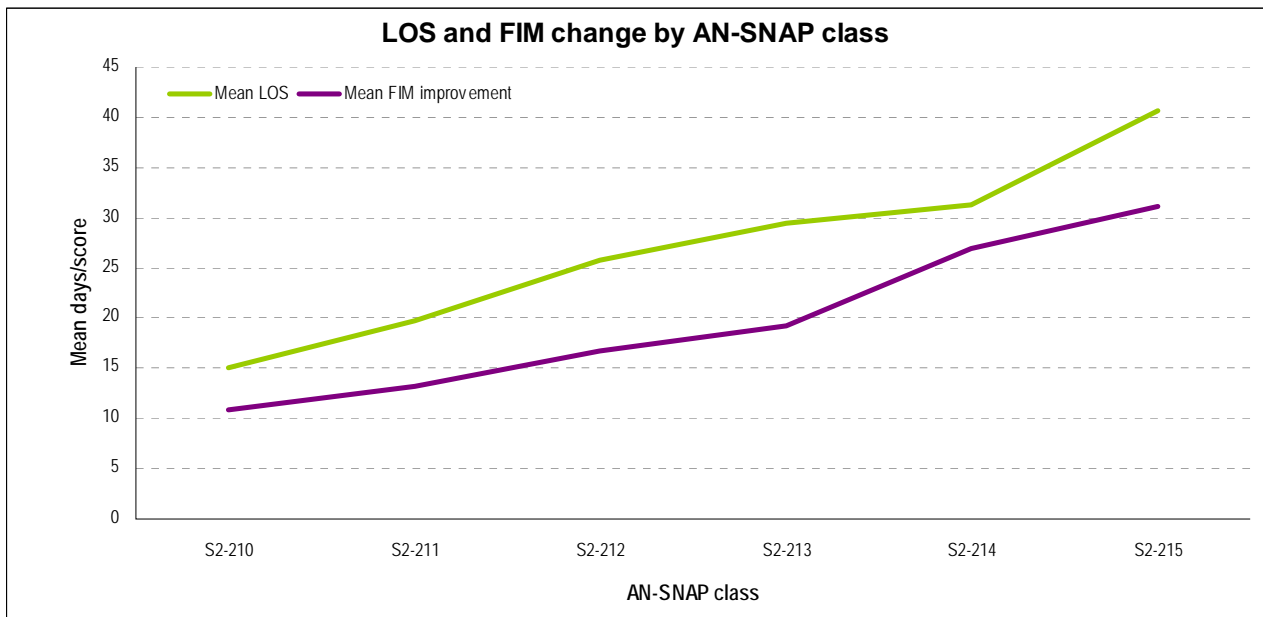


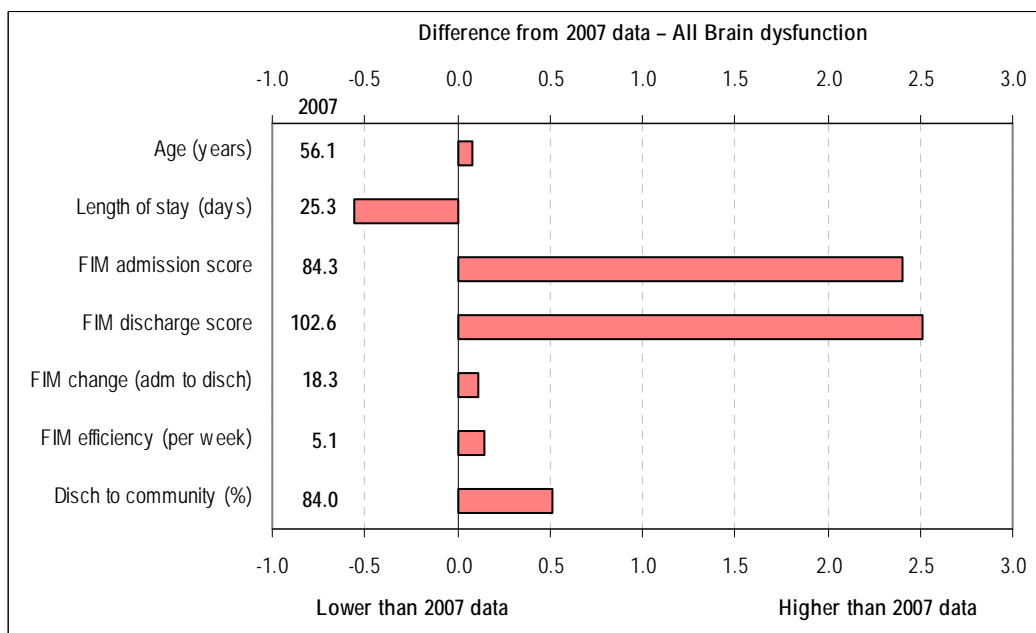
Figure 5D Brain dysfunction LOS & FIM change by AN-SNAP class



Key changes since 2007

In 2008 the proportion of brain dysfunction rehabilitation episodes provided by the public sector increased by 8% (65.7% vs 57.6% in 2007) reversing the trend seen last year when the proportion of episodes provided by the public sector decreased from 74.3% to 57.6%. The overall volume of episodes increased, but the proportion of episodes in each AN-SNAP class varied only slightly. The key differences between the 2007 and 2008 outcome data are presented in Figure 5E. The average age of brain dysfunction episodes steadied in 2008, after continually increasing over the last few years. The average FIM scores at admission and discharge again increased significantly (as they did in 2007), but neither FIM improvement nor FIM efficiency changed noticeably. The overall ALOS decreased by 0.6 days, although this was not consistent across AN-SNAP classes. Class S2-215's ALOS decreased significantly this year (40.7 vs 48.4 days), whereas the ALOS of classes S2-210, S2-211 & S2-212 all increased.

Figure 5E Change in Outcome Measures in Brain Dysfunction - 2007 to 2008



3.3 Neurological Conditions

This impairment category contains patients undergoing rehabilitation for multiple sclerosis, parkinsonism, polyneuropathy, Guillian-Barre, cerebral palsy, and neuromuscular disorders. The most common neurological class was S2-216, which accounted for 46.3% of all episodes within this category. The average age was 65.8 years; the majority of episodes were provided by the private sector (52.4%), with the exception of the most impaired class. The average FIM admission score was 87.4, and ranged from 37.0 to 104.5 across the four classes. The ALOS was 20.1 days and ranged from 15.3 days for the least impaired class to 36.8 days for the most impaired class. The average FIM improvement was 14.2; however, FIM efficiency was lowest for the most impaired class (S2-219). The majority of episodes (89.2%) were discharged into the community and this was fairly consistent across the four classes.

Figure 6A Change in number of neurological condition episodes over time (2004-2008)

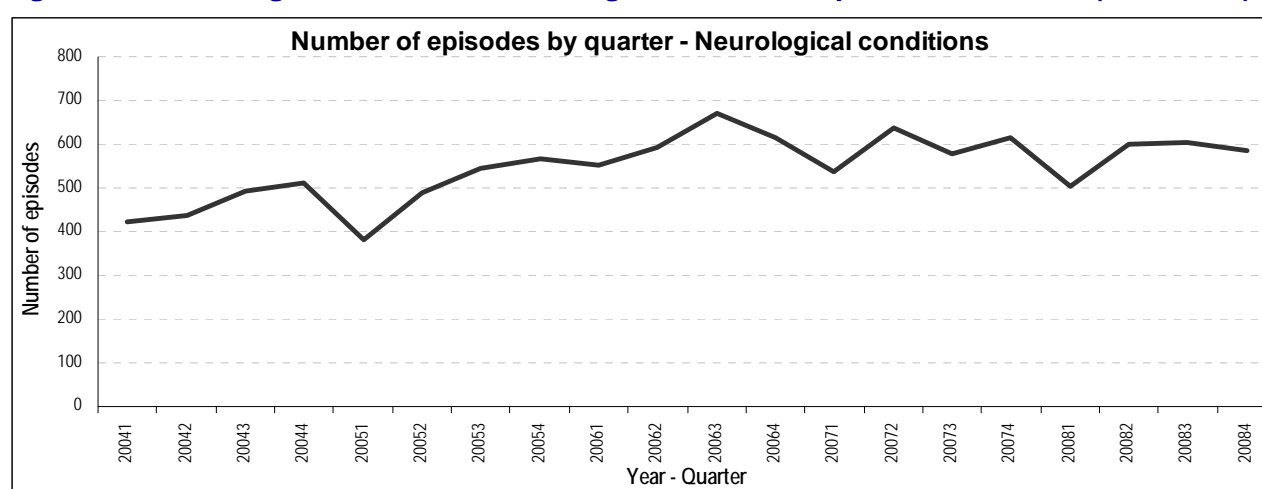


Figure 6B Summary of neurological condition episodes in 2008

| AN-SNAP class: | S2-216 | S2-217 | S2-218 | S2-219 | All Neurological conditions |
|-------------------------------|---------------------|------------------|------------------|------------------|-----------------------------|
| Number of episodes | 1,062 | 585 | 616 | 30 | 2,293 |
| Proportion of episodes | 46.3% | 25.5% | 26.9% | 1.3% | 100.0% |
| Sector (%) | | | | | |
| Private | 57.8 | 57.8 | 39.4 | 23.3 | 52.4 |
| Public | 42.2 | 42.2 | 60.6 | 76.7 | 47.6 |
| Gender (%) | | | | | |
| Female | 55.1 | 60.5 | 52.9 | 56.7 | 55.9 |
| Male | 44.9 | 39.5 | 47.1 | 43.3 | 44.1 |
| Age (Mean+95%CI) | 63.9 (62.9-64.9) | 68.1 (66.8-69.5) | 67.3 (65.9-68.6) | 58.0 (50.0-66.1) | 65.8 (65.1-66.5) |
| Admission FIM (Mean+95%CI) | 104.5 (104.0-105.1) | 85.5 (84.9-86.1) | 60.7 (59.7-61.7) | 37.0 (33.1-40.9) | 87.4 (86.5-88.3) |
| LOS (Mean+95%CI) | 15.3 (14.7-15.9) | 20.8 (19.7-21.8) | 27.1 (25.8-28.4) | 36.8 (25.7-47.8) | 20.1 (19.5-20.6) |
| Discharge destination (%) | | | | | |
| Discharged to community | 93.1 | 90.4 | 82.0 | 73.3 | 89.2 |
| Remaining in hospital system | 6.9 | 9.6 | 18.0 | 26.7 | 10.8 |
| FIM improvement (Mean+95%CI) | 9.8 (9.3-10.3) | 16.7 (15.7-17.7) | 19.6 (18.1-21.1) | 11.1 (3.1-19.1) | 14.2 (13.6-14.7) |
| FIM efficiency (FIM imp./LOS) | 0.6 | 0.8 | 0.7 | 0.3 | 0.7 |

Figure 6C *Neurological condition discharge destination*

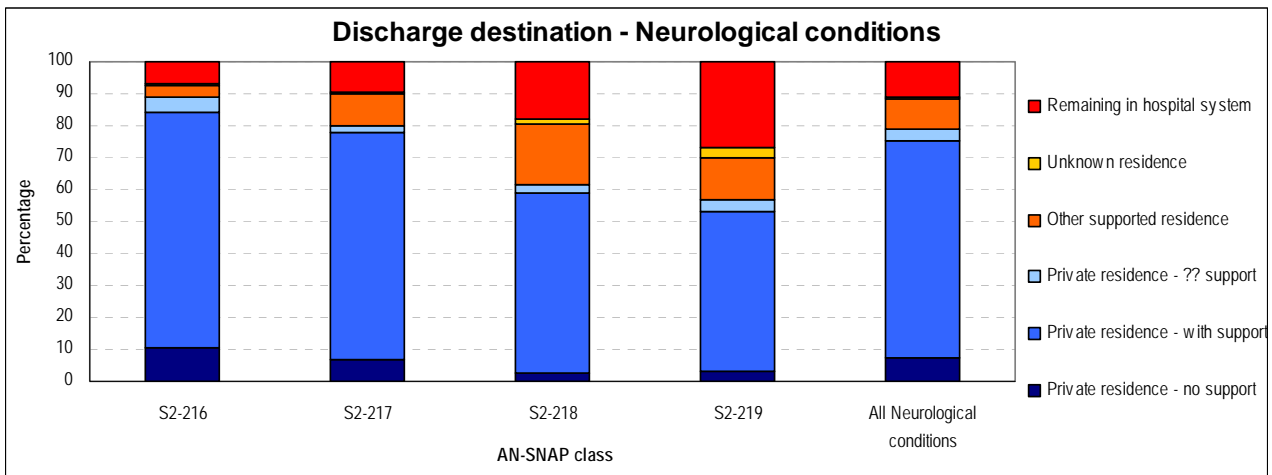
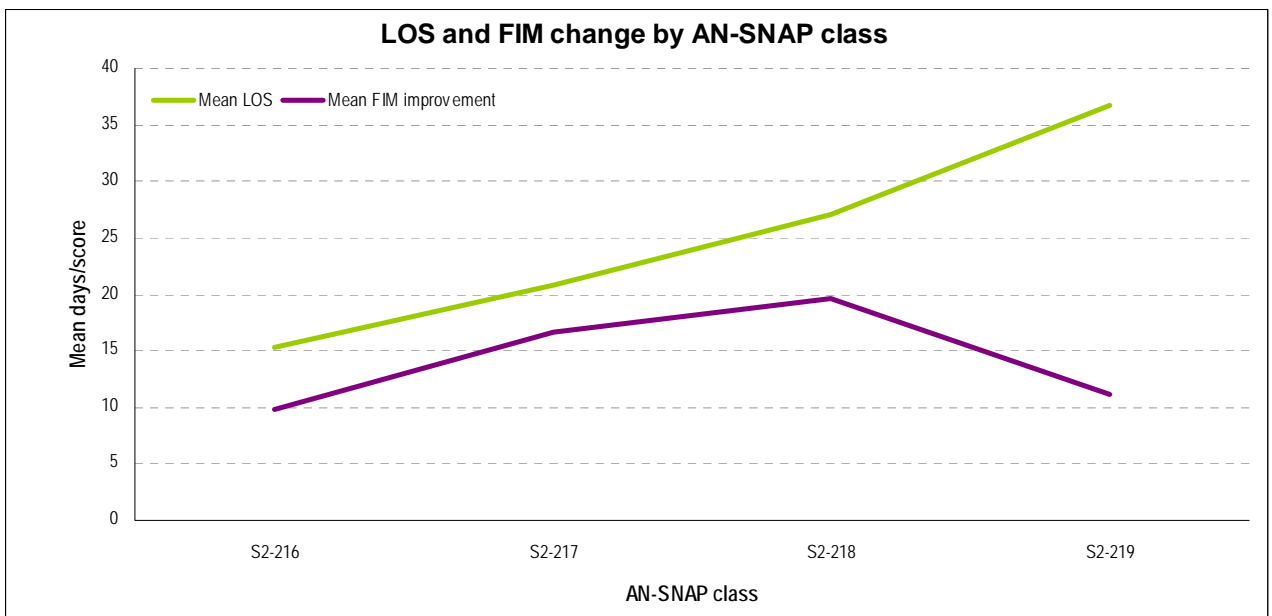


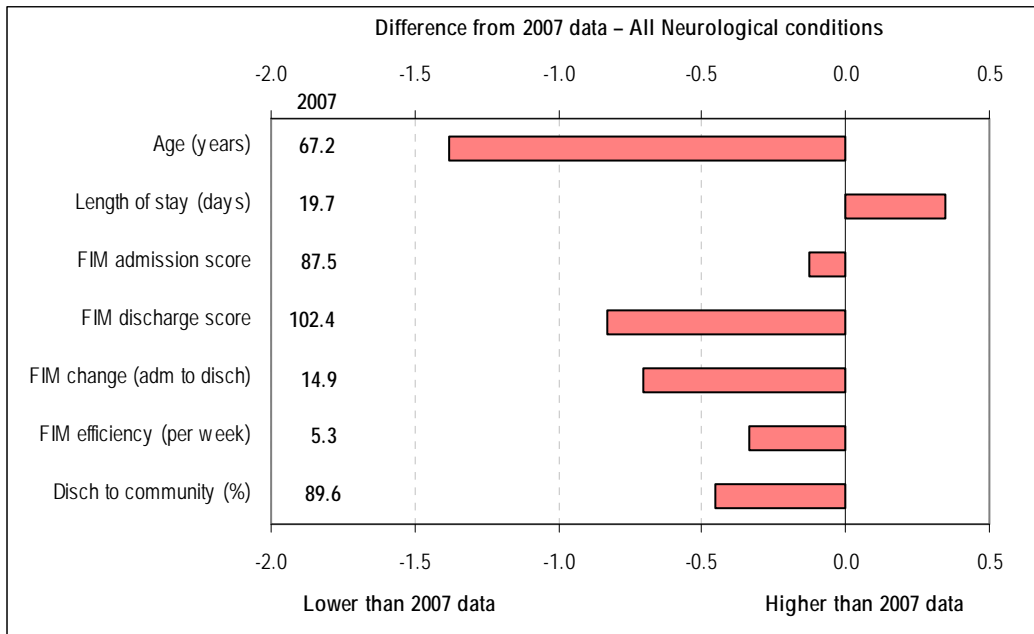
Figure 6D *Neurological condition LOS & FIM change by AN-SNAP class*



Key changes since 2007

The key differences between the 2007 and 2008 data are presented in Figure 6E. There was little change in LOS or FIM admission scores, although interestingly LOS has climbed slightly now for 2 years in a row. The proportion of episodes discharged to the community remained relatively stable.

Figure 6E Change in Outcome Measures in Neurological Conditions - 2007 to 2008



3.4 Spinal Cord Dysfunction

The majority of spinal cord dysfunction episodes were provided by the public sector (83.8%), with class S2-222 accounting for the majority of episodes (44.7%). The average age was 56.6 years and this differed considerably between classes S2-222 and S2-223; this is not surprising given that these classes represent two distinct age categories (i.e. ≤ 32 years and ≥ 33 years). The majority of spinal cord dysfunction episodes were male (63.6%) and this pattern was consistent across the classes but was most pronounced for class S2-223. The average FIM admission score was 79.8 and ranged from 61.6 to 118.0 across the four AN-SNAP classes. The average FIM improvement was 15.5, and the largest improvements were observed in the most impaired classes. The average FIM efficiency was 0.4 and was lowest for the least impaired class (S2-220). The ALOS was 34.8 days and ranged from 13.9 days for the least impaired class to 48.6 days for the most impaired class.

Figure 7A Change in number of spinal cord dysfunction episodes over time (2004-2008)

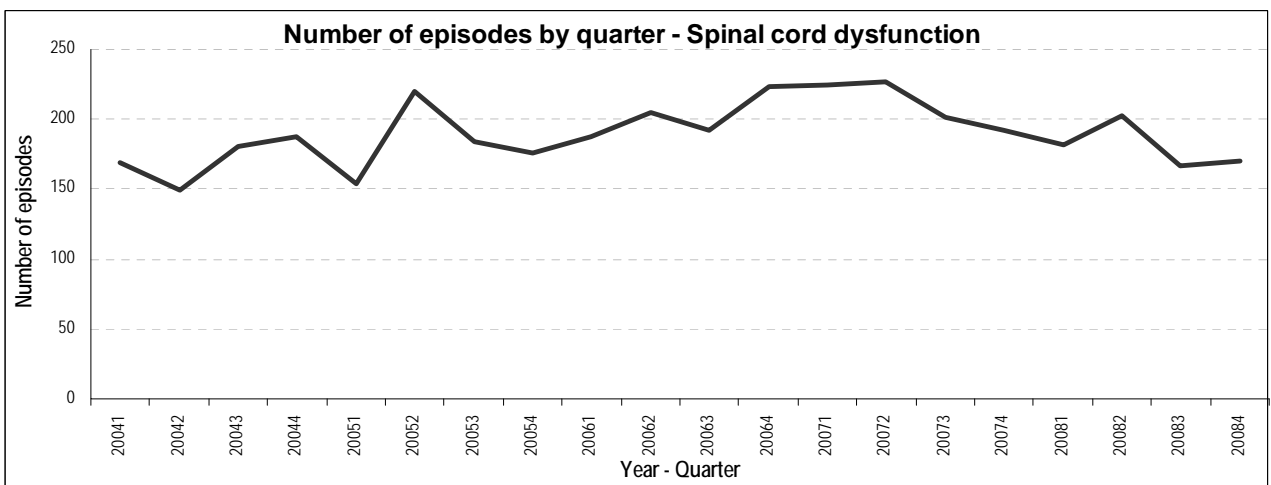


Figure 7B Summary of spinal cord dysfunction episodes in 2008

| AN-SNAP class: | S2-220 | S2-221 | S2-222 | S2-223 | All Spinal cord dysfunction |
|-------------------------------|---------------------|------------------|------------------|------------------|-----------------------------|
| Number of episodes | 41 | 285 | 323 | 73 | 722 |
| Proportion of episodes | 5.7% | 39.5% | 44.7% | 10.1% | 100.0% |
| Sector (%) | | | | | |
| Private | 31.7 | 27.0 | 8.0 | 1.4 | 16.2 |
| Public | 68.3 | 73.0 | 92.0 | 98.6 | 83.8 |
| Gender (%) | | | | | |
| Female | 31.7 | 43.9 | 35.3 | 15.1 | 36.4 |
| Male | 68.3 | 56.1 | 64.7 | 84.9 | 63.6 |
| Age (Mean+95%CI) | 55.4 (49.8–60.9) | 59.2 (56.9–61.4) | 62.4 (60.8–64.1) | 21.1 (20.1–22.2) | 56.6 (55.1–58.0) |
| Admission FIM (Mean+95%CI) | 118.0 (116.3–119.6) | 95.2 (93.9–96.5) | 61.6 (60.3–62.8) | 63.0 (60.0–66.0) | 79.8 (78.1–81.5) |
| LOS (Mean+95%CI) | 13.9 (10.0–17.7) | 25.5 (23.1–27.8) | 44.8 (41.6–48.1) | 48.6 (40.6–56.5) | 34.8 (32.8–36.9) |
| Discharge destination (%) | | | | | |
| Discharged to community | 95.1 | 86.3 | 65.0 | 71.2 | 75.8 |
| Remaining in hospital system | 4.9 | 13.7 | 35.0 | 28.8 | 24.2 |
| FIM improvement (Mean+95%CI) | 2.7 (1.5–4.0) | 13.5 (12.0–15.0) | 18.2 (15.8–20.6) | 22.0 (16.6–27.4) | 15.5 (14.2–16.8) |
| FIM efficiency (FIM imp./LOS) | 0.2 | 0.5 | 0.4 | 0.5 | 0.4 |

Figure 7C Spinal cord dysfunction discharge destination

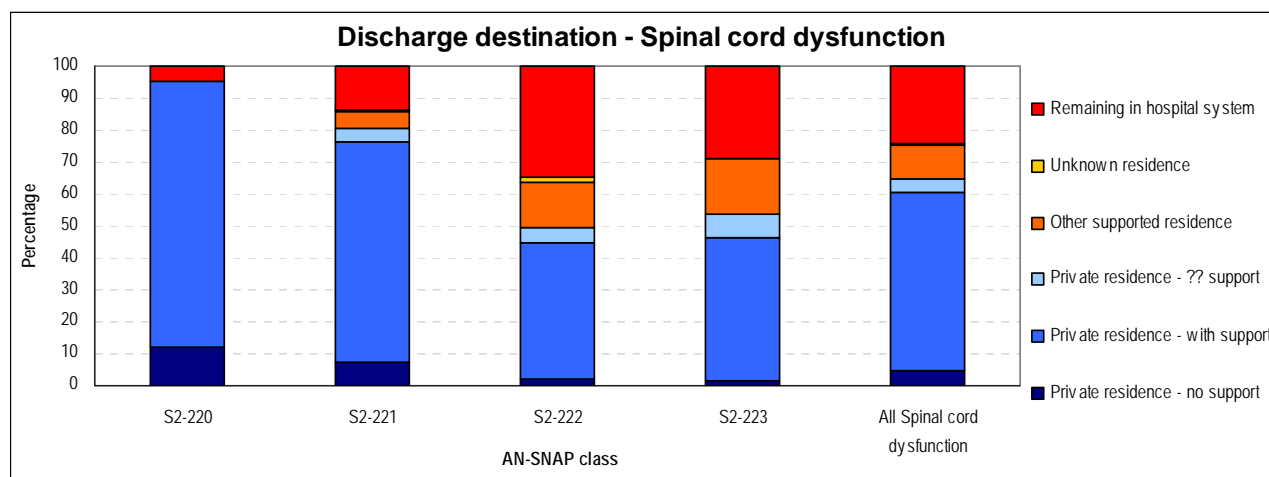
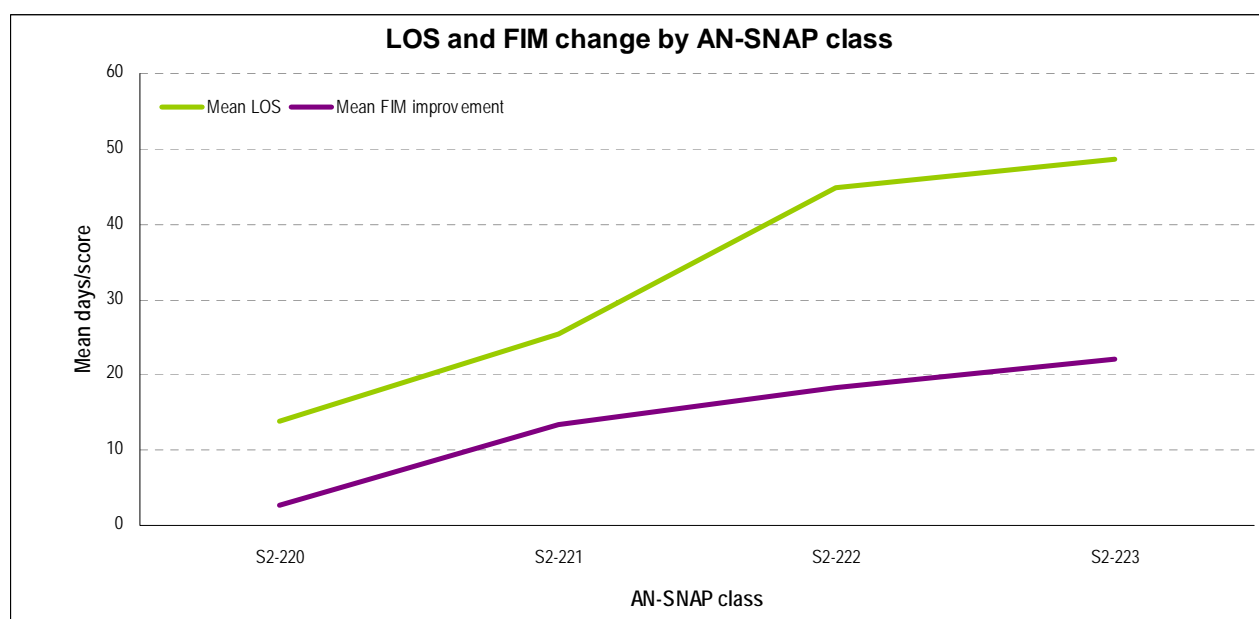


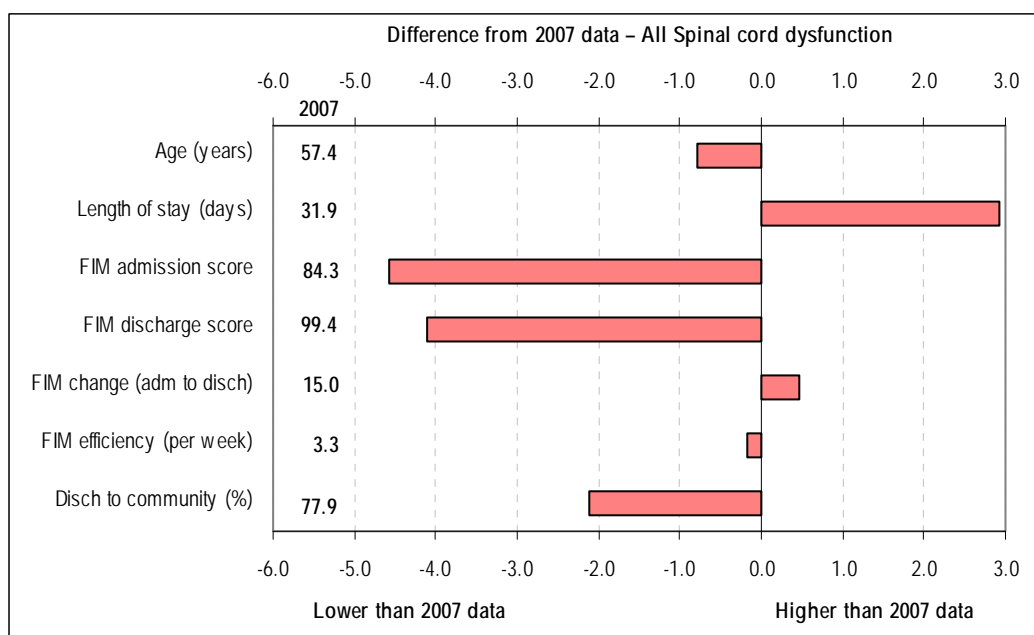
Figure 7D Spinal cord dysfunction LOS & FIM change by AN-SNAP class



Key changes since 2007

The key differences between the 2007 and 2008 data are presented in Figure 7E. The average age decreased in 2008 after increasing in 2007. The proportion of males increased to 63.6% (from 58.1% in 2007), although this proportion is similar to 2006 data. After decreasing 1 day in 2007, the ALOS increased by almost 3 days to 34.8 days this year. Interestingly, the average admission and discharge FIM scores decreased in 2008 by about the same amount as they had increased in 2007. Given the changes in ALOS and FIM scores, FIM change and FIM efficiency were stable. The proportion of patients discharged to the community decreased slightly in 2008 after a large increase in 2007.

Figure 7E Change in Outcome Measures in Spinal Cord Dysfunction - 2007 to 2008



3.5 Amputation of Limb

There are two AN-SNAP classes within this impairment category, with class S2-225 accounting for the majority of episodes (78.8%). The public sector provided the majority of episodes (84.3%), which was consistent across the two classes. Furthermore, more than two-thirds of episodes were male (71.2%) and the average age was 68.1 years. The average FIM at admission was 89.4 and the average FIM improvement was 12.4. The most impaired class showed a greater FIM improvement, a higher FIM efficiency and a longer ALOS. Consistent with the other AN-SNAP classes, episodes in the most impaired class were less likely to be discharged into the community (88.5% for S2-224 compared to 72.7% for S2-225).

Figure 8A Change in number of amputation of limb episodes over time (2004-2008)

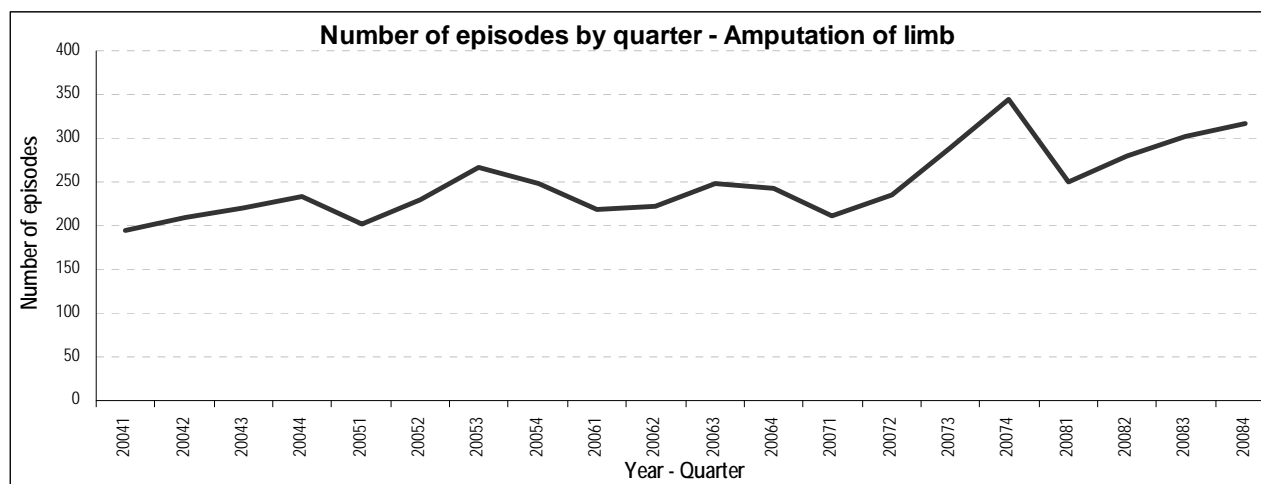


Figure 8B Summary of amputation of limb episodes in 2008

| AN-SNAP class: | S2-224 | S2-225 | All Amputation of limb |
|-------------------------------|---------------------|------------------|------------------------|
| Number of episodes | 243 | 904 | 1,147 |
| Proportion of episodes | 21.2% | 78.8% | 100.0% |
| Sector (%) | | | |
| Private | 11.1 | 16.9 | 15.7 |
| Public | 88.9 | 83.1 | 84.3 |
| Gender (%) | | | |
| Female | 21.9 | 30.6 | 28.8 |
| Male | 78.1 | 69.4 | 71.2 |
| Age (Mean+95%CI) | 61.5 (59.5–63.4) | 69.9 (69.0–70.8) | 68.1 (67.3–69.0) |
| Admission FIM (Mean+95%CI) | 110.1 (109.4–110.8) | 83.5 (82.4–84.6) | 89.4 (88.3–90.6) |
| LOS (Mean+95%CI) | 23.1 (20.9–25.2) | 33.7 (32.4–35.1) | 31.3 (30.2–32.5) |
| Discharge destination (%) | | | |
| Discharged to community | 88.5 | 72.7 | 76.0 |
| Remaining in hospital system | 11.5 | 27.3 | 24.0 |
| FIM improvement (Mean+95%CI) | 4.7 (3.8–5.6) | 14.7 (13.8–15.6) | 12.4 (11.7–13.2) |
| FIM efficiency (FIM imp./LOS) | 0.2 | 0.4 | 0.4 |

Figure 8C Amputation of limb discharge destination

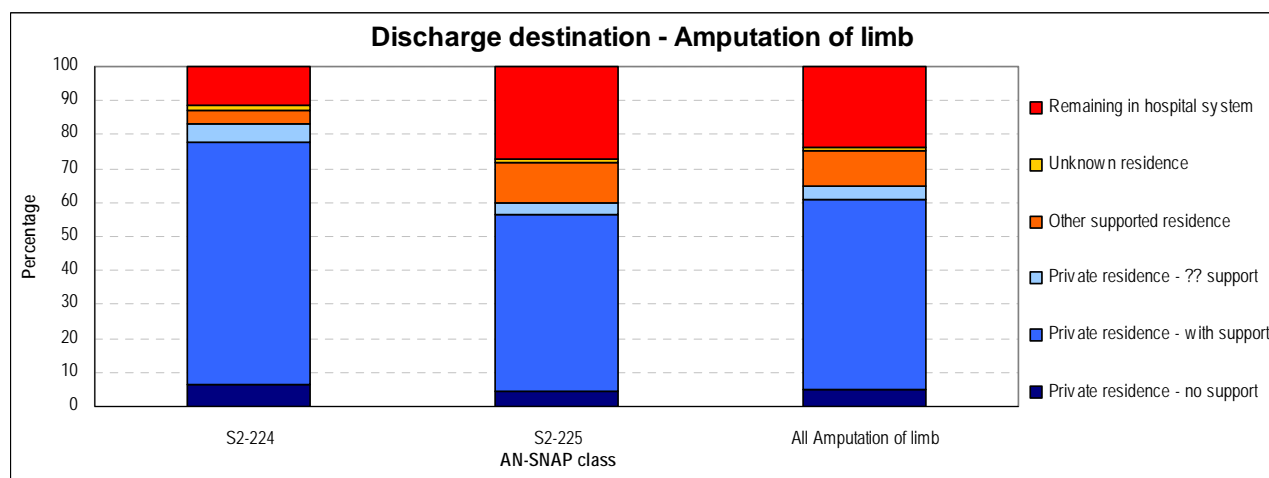
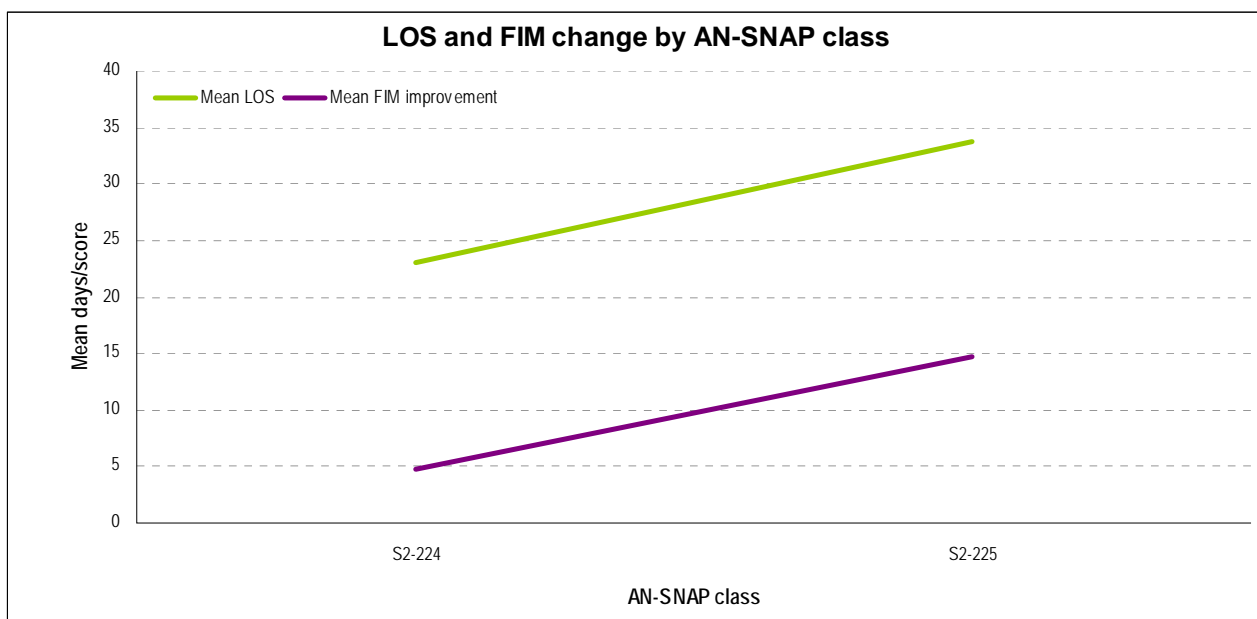


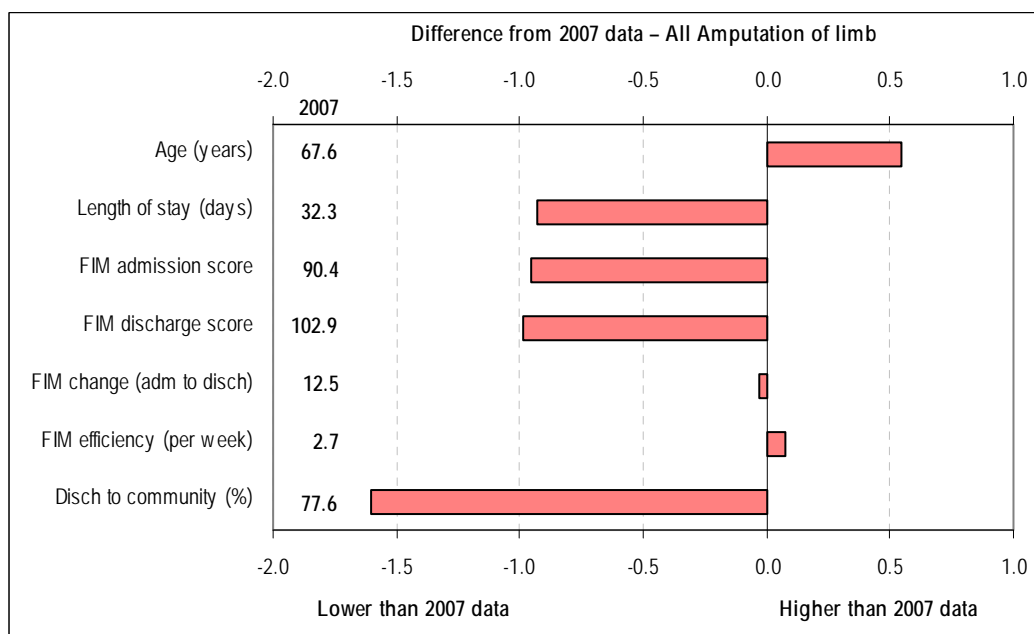
Figure 8D Amputation of limb LOS & FIM change by AN-SNAP class



Key changes since 2007

The key differences between the 2007 data and the 2008 data are presented in Figure 8.D. There was a slight reduction in the average length of stay to 31.3 days. The proportion of episodes provided in the public sector increased from 79.7% to 84.3% (see Figure 8B). The average FIM scores on admission and at discharge decreased by 0.9 and 1.0% respectively, after increasing by similar proportions last year, and the proportion of episodes discharged to the community decreased by 1.6%, again after increasing by 2.0% last year.

Figure 8E Change in Outcome Measures in Amputation of Limb - 2007 to 2008



3.6 Arthritis

There are four AN-SNAP classes within this impairment category. Most episodes were for female patients (71.9%) while class S2-242 accounts for just under half of all episodes. Just over half the episodes were provided by the private sector (55.4%) with the exception of classes S2-244 and S2-245 where the public sector provided the majority of episodes (however the number of episodes in each of these classes is low). The average age was 75.1 years and this was fairly consistent across the four classes. The average FIM admission score was 95.4 and ranged from 41.6 to 109.7 across the four AN-SNAP classes. The ALOS was 16.1 days and the average FIM improvement was 12.5. A total of 89.9% of episodes were discharged to the community, consistent with 2007 data.

Figure 9A Change in number of arthritis over time (2004-2008)

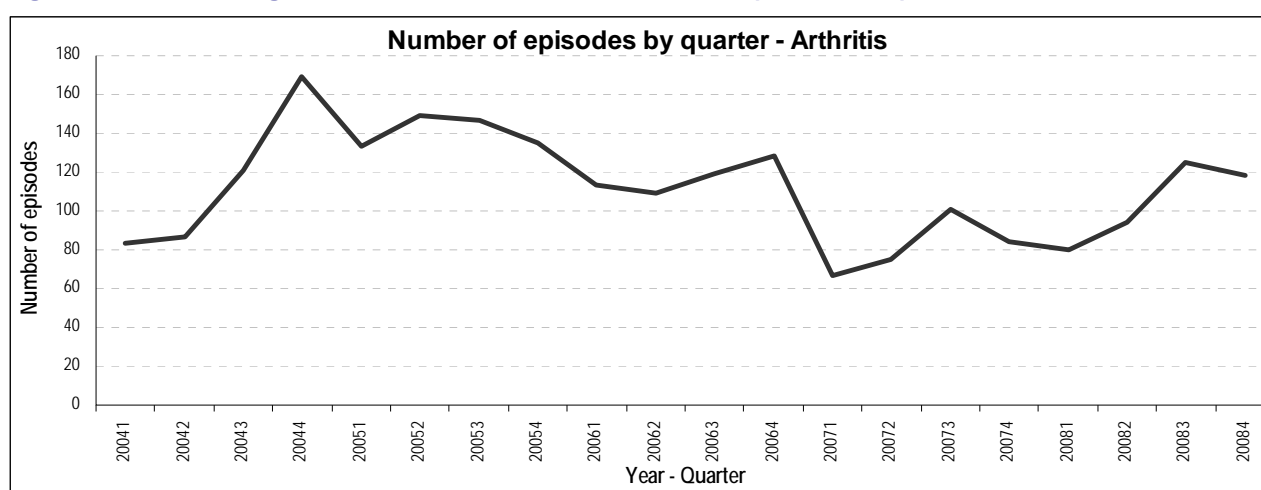


Figure 9B Summary of arthritis episodes in 2008

| AN-SNAP class: | S2-242 | S2-243 | S2-244 | S2-245 | All Arthritis |
|-------------------------------|---------------------|------------------|------------------|------------------|------------------|
| Number of episodes | 194 | 140 | 74 | 9 | 417 |
| Proportion of episodes | 46.5% | 33.6% | 17.7% | 2.2% | 100.0% |
| Sector (%) | | | | | |
| Private | 61.9 | 55.0 | 40.5 | 44.4 | 55.4 |
| Public | 38.1 | 45.0 | 59.5 | 55.6 | 44.6 |
| Gender (%) | | | | | |
| Female | 71.1 | 76.4 | 66.2 | 66.7 | 71.9 |
| Male | 28.9 | 23.6 | 33.8 | 33.3 | 28.1 |
| Age (Mean+95%CI) | 71.4 (69.3-73.4) | 77.7 (75.9-79.4) | 79.3 (75.9-82.7) | 79.6 (70.5-88.6) | 75.1 (73.7-76.4) |
| Admission FIM (Mean+95%CI) | 109.7 (108.7-110.8) | 92.4 (91.5-93.3) | 70.2 (67.9-72.4) | 41.6 (35.8-47.3) | 95.4 (93.6-97.1) |
| LOS (Mean+95%CI) | 12.8 (11.7-13.9) | 15.8 (14.4-17.3) | 24.6 (20.8-28.4) | 18.6 (10.5-26.6) | 16.1 (15.0-17.1) |
| Discharge destination (%) | | | | | |
| Discharged to community | 95.4 | 92.9 | 73.0 | 66.7 | 89.9 |
| Remaining in hospital system | 4.6 | 7.1 | 27.0 | 33.3 | 10.1 |
| FIM improvement (Mean+95%CI) | 7.4 (6.5-8.2) | 16.9 (15.7-18.0) | 18.1 (14.9-21.4) | 7.1 (1.5-12.7) | 12.5 (11.6-13.4) |
| FIM efficiency (FIM imp./LOS) | 0.6 | 1.1 | 0.7 | 0.4 | 0.8 |

Figure 9C Arthritis discharge destination

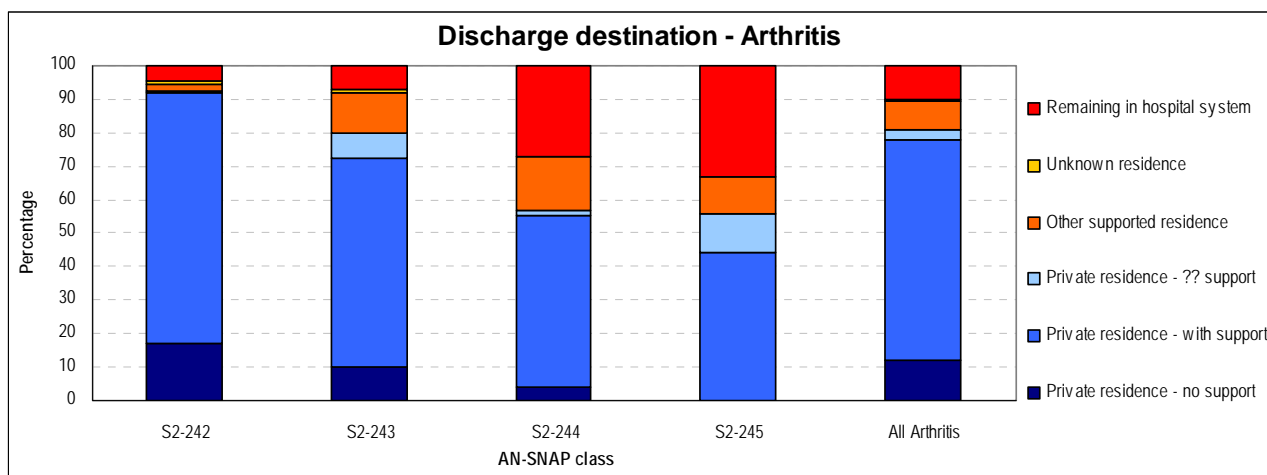
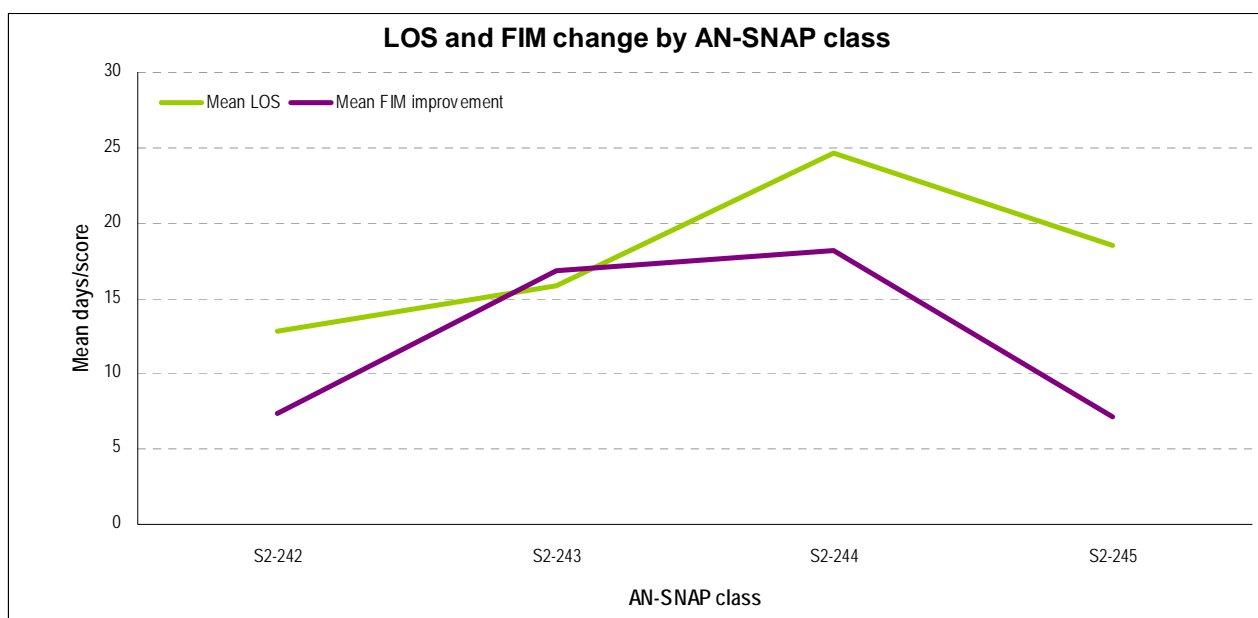


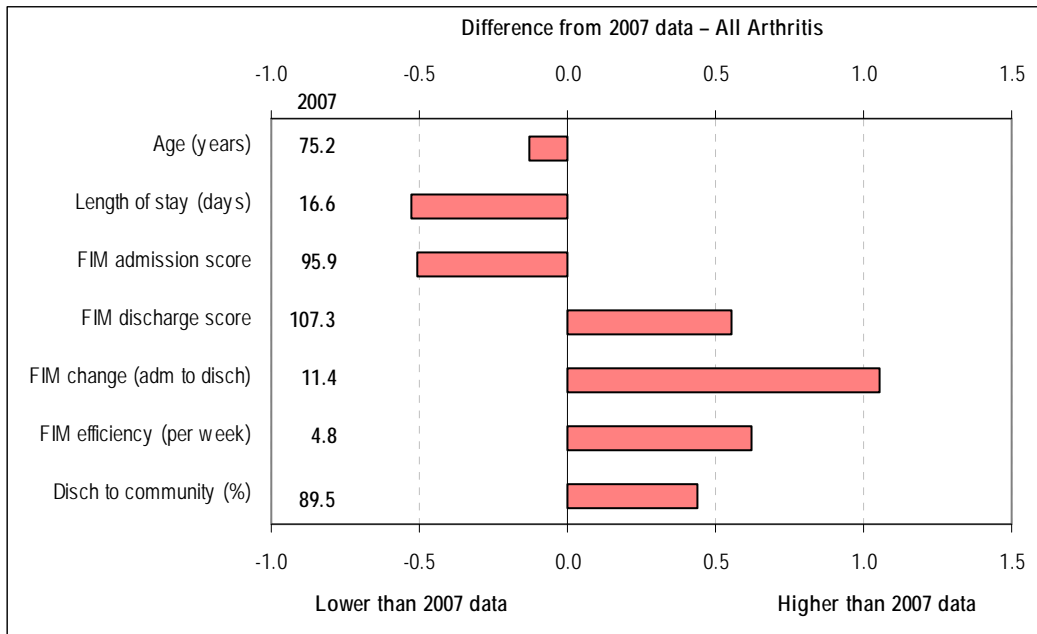
Figure 9D Arthritis LOS & FIM change by AN-SNAP class



Key changes since 2007

The key differences between the 2007 and 2008 data are presented in Figure 9E. The average age of arthritis patients stabilised in 2008. While there was relatively little change in the average length of stay or FIM scores at admission, FIM discharge and improvement scores increased by 0.6 and 1.1% respectively. Finally, the proportion of episodes discharged to the community increased by 0.4%.

Figure 9E Change in Outcome Measures in Arthritis - 2007 to 2008



3.7 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, their outcomes are shown separately. Also presented are the data for the entire orthopaedic conditions cohort. While the “other” category comprised nearly 14% of all orthopaedic episodes, it is not presented in detail. Information about all orthopaedic episodes in 2008 is presented in Figure 10, A–E, while information specific to episodes with fractures is presented in Figure 11, A-E and information specific to episodes with joint replacements is presented in Figure 12, A-E.

In Figure 10B it can be seen that joint replacements and other orthopaedic conditions were most likely to occur in the private sector, while fractures were marginally more likely to be treated in the private sector. Generally orthopaedic fracture episodes had lower admission FIMs with longer LOS, they were slightly older and less likely to be discharged to the community than joint replacement or other orthopaedic episodes; this is consistent with data from the previous year. Joint replacements and other orthopaedic episodes were very similar.

Figure 10A Change in number of orthopaedic conditions over time (2004-2008)

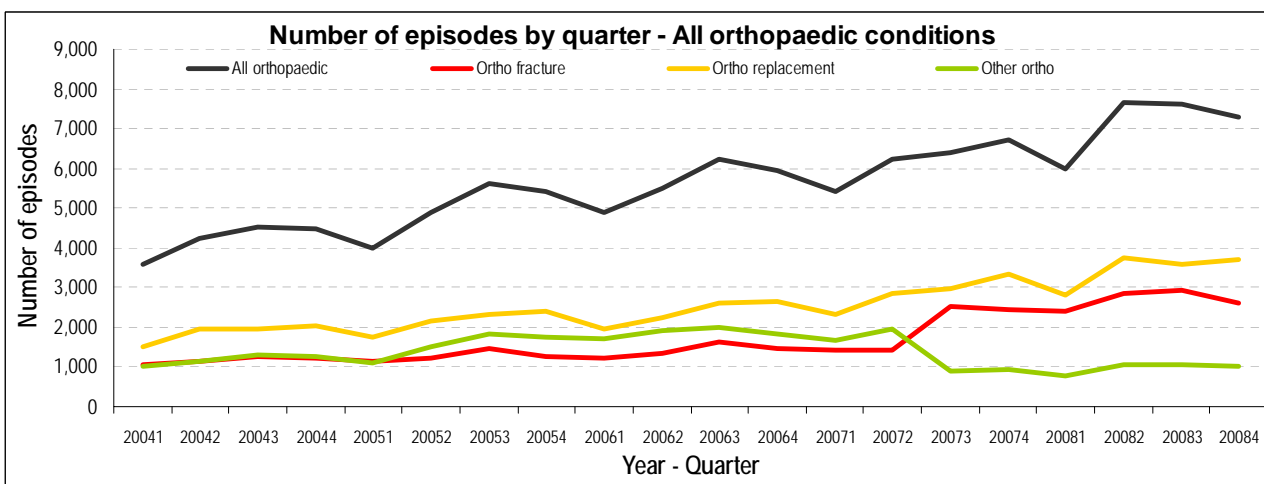


Figure 10B Summary of orthopaedic conditions episodes in 2008

| | Fractures | Replacements | Other | All orthopaedic conditions |
|-------------------------------|------------------|------------------|------------------|----------------------------|
| Number of episodes | 10,787 | 13,847 | 3,919 | 28,553 |
| Proportion of episodes | 37.8% | 48.5% | 13.7% | 100.0% |
| Sector (%) | | | | |
| Private | 54.6 | 84.7 | 81.2 | 72.8 |
| Public | 45.4 | 15.3 | 18.8 | 27.2 |
| Gender (%) | | | | |
| Female | 73.7 | 65.7 | 64.1 | 68.5 |
| Male | 26.3 | 34.3 | 35.9 | 31.5 |
| Age (Mean+95%CI) | 78.2 (77.9–78.5) | 72.5 (72.3–72.7) | 69.7 (69.2–70.2) | 74.3 (74.1–74.4) |
| Admission FIM (Mean+95%CI) | 83.0 (82.7–83.4) | 97.7 (97.5–98.0) | 95.9 (95.4–96.4) | 92.0 (91.8–92.2) |
| LOS (Mean+95%CI) | 21.7 (21.4–21.9) | 12.9 (12.7–13.0) | 15.1 (14.8–15.5) | 16.5 (16.3–16.6) |
| Discharge destination (%) | | | | |
| Discharged to community | 87.0 | 96.6 | 93.6 | 92.6 |
| Remaining in hospital system | 13.0 | 3.4 | 6.4 | 7.4 |
| FIM improvement (Mean+95%CI) | 18.3 (18.0–18.5) | 15.7 (15.5–15.8) | 16.1 (15.8–16.5) | 16.7 (16.6–16.8) |
| FIM efficiency (FIM imp./LOS) | 0.8 | 1.2 | 1.1 | 1.0 |

Figure 10C Orthopaedic conditions discharge destination

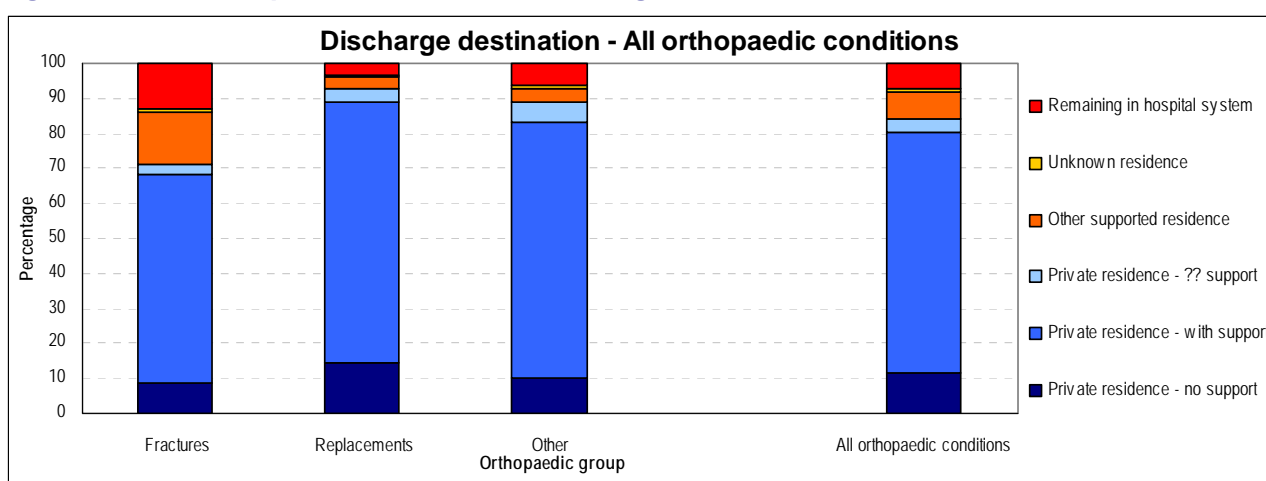


Figure 10D Orthopaedic conditions LOS & FIM change by AN-SNAP class

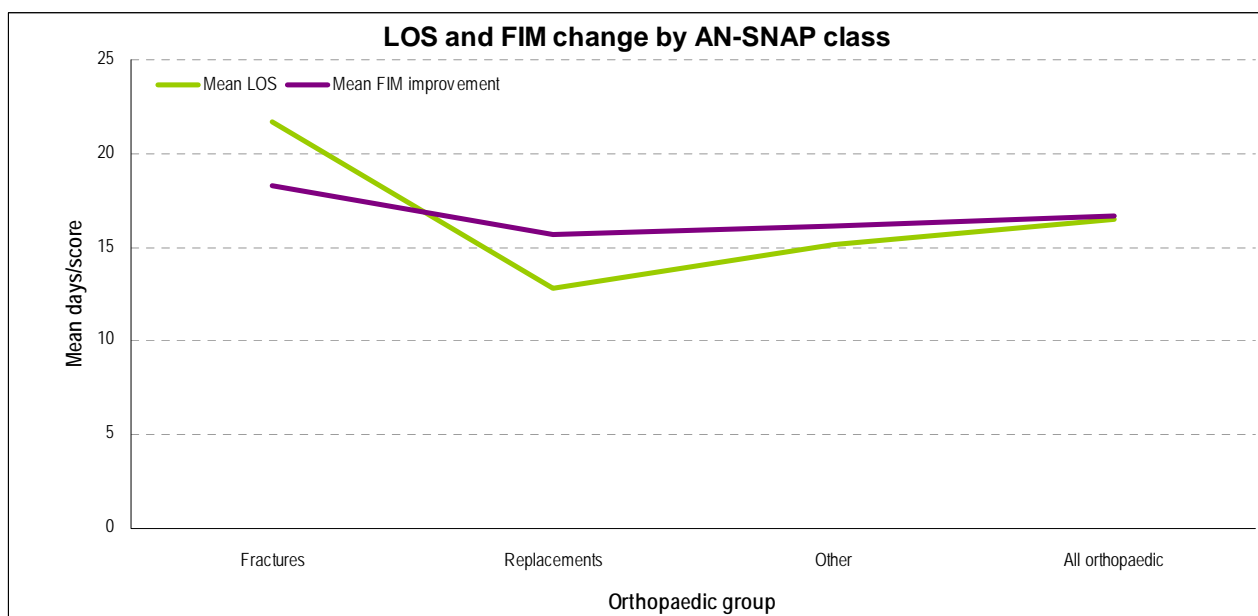
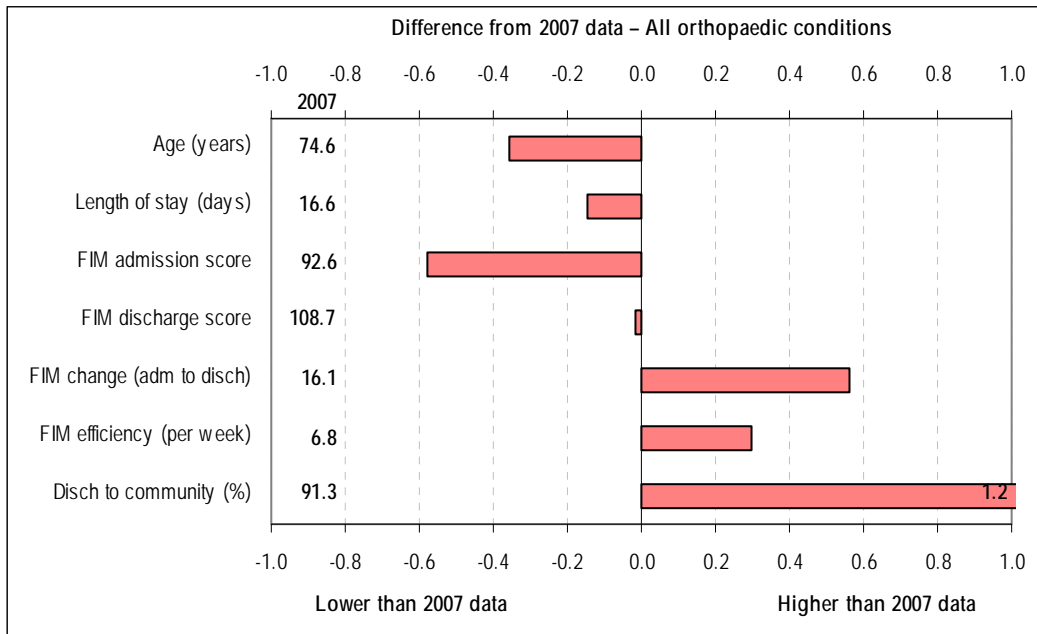


Figure 10E Change in Outcome Measures in Orthopaedic Conditions - 2007 to 2008



3.7.1 Orthopaedic: fractures

As shown in Figure 11A, there appeared to be some degree of seasonality in this impairment category, with episode volumes peaking in the third quarter (winter) of each year. The large increase in the 2007 and 2008 data can be attributed to a change in the collection of the impairment code which resulted in more accurately collected data – this change was a direct result of an audit conducted on orthopaedic data in 2007. The majority of orthopaedic fractures were female (73.7%), with an average age of 78.2 years; however, age increased with increasing impairment. The average FIM on admission was 83.0 and ranged from 44.7 to 98.3 across the classes. The most impaired classes had the longest ALOS and showed the greatest FIM improvement. Consistent with the other categories, the most impaired patients were less likely to be discharged into the community.

Figure 11A Change in number of orthopaedic fractures over time (2004-2008)

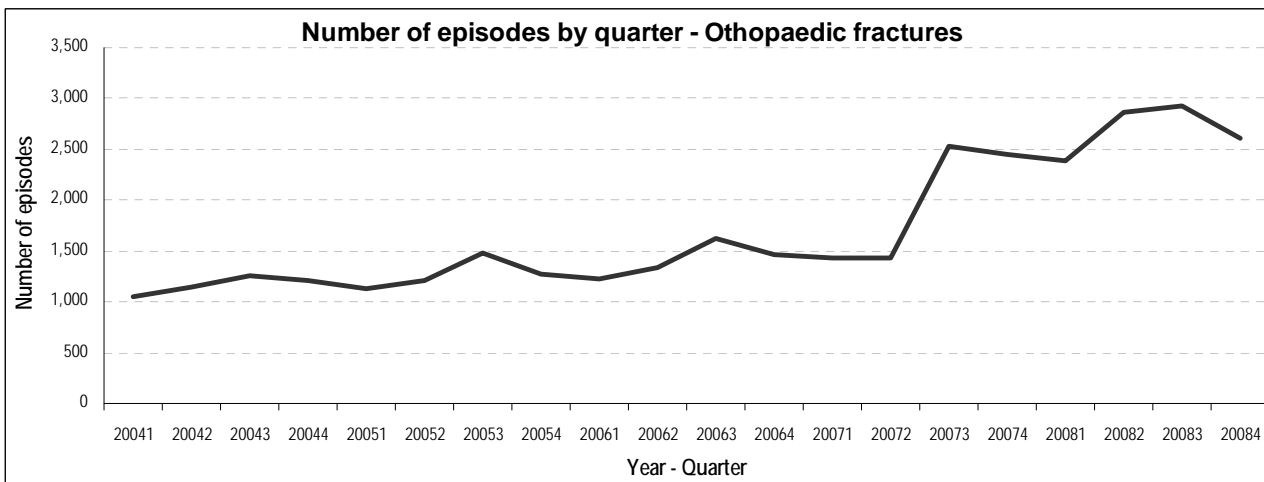


Figure 11B Summary of orthopaedic fractures episodes in 2008

| AN-SNAP class: | S2-227 | S2-228 | S2-229 | S2-230 | All Orthopaedic fractures |
|-------------------------------|------------------|------------------|------------------|------------------|---------------------------|
| Number of episodes | 4,585 | 2,860 | 2,660 | 682 | 10,787 |
| Proportion of episodes | 42.5% | 26.5% | 24.7% | 6.3% | 100.0% |
| Sector (%) | | | | | |
| Private | 61.0 | 55.7 | 48.6 | 30.6 | 54.6 |
| Public | 39.0 | 44.3 | 51.4 | 69.4 | 45.4 |
| Gender (%) | | | | | |
| Female | 72.4 | 76.0 | 73.3 | 74.6 | 73.7 |
| Male | 27.6 | 24.0 | 26.7 | 25.4 | 26.3 |
| Age (Mean+95%CI) | 75.5 (75.0–75.9) | 79.5 (79.0–79.9) | 80.4 (79.8–80.9) | 82.9 (82.1–83.7) | 78.2 (77.9–78.5) |
| Admission FIM (Mean+95%CI) | 98.3 (98.1–98.6) | 82.3 (82.0–82.5) | 66.3 (65.9–66.6) | 44.7 (43.9–45.6) | 83.0 (82.7–83.4) |
| LOS (Mean+95%CI) | 17.2 (16.9–17.5) | 22.4 (21.9–22.8) | 28.1 (27.5–28.8) | 24.6 (23.5–25.7) | 21.7 (21.4–21.9) |
| Discharge destination (%) | | | | | |
| Discharged to community | 93.6 | 88.3 | 78.4 | 70.4 | 87.0 |
| Remaining in hospital system | 6.4 | 11.7 | 21.6 | 29.6 | 13.0 |
| FIM improvement (Mean+95%CI) | 13.2 (13.0–13.5) | 20.6 (20.2–21.0) | 24.4 (23.8–25.1) | 19.4 (17.9–20.9) | 18.3 (18.0–18.5) |
| FIM efficiency (FIM imp./LOS) | 0.8 | 0.9 | 0.9 | 0.8 | 0.8 |

Figure 11C Orthopaedic fractures discharge destination

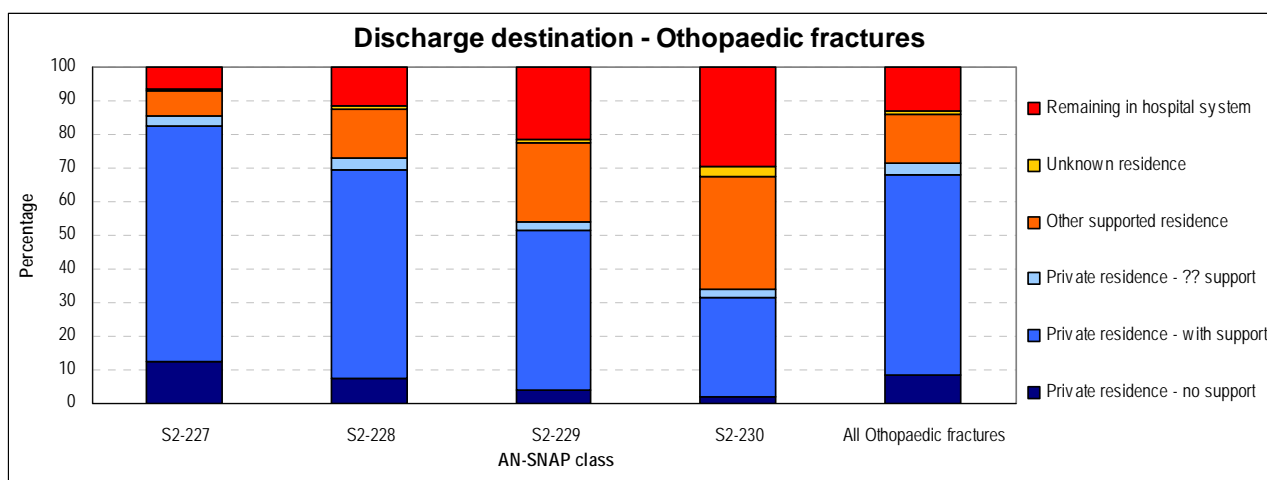
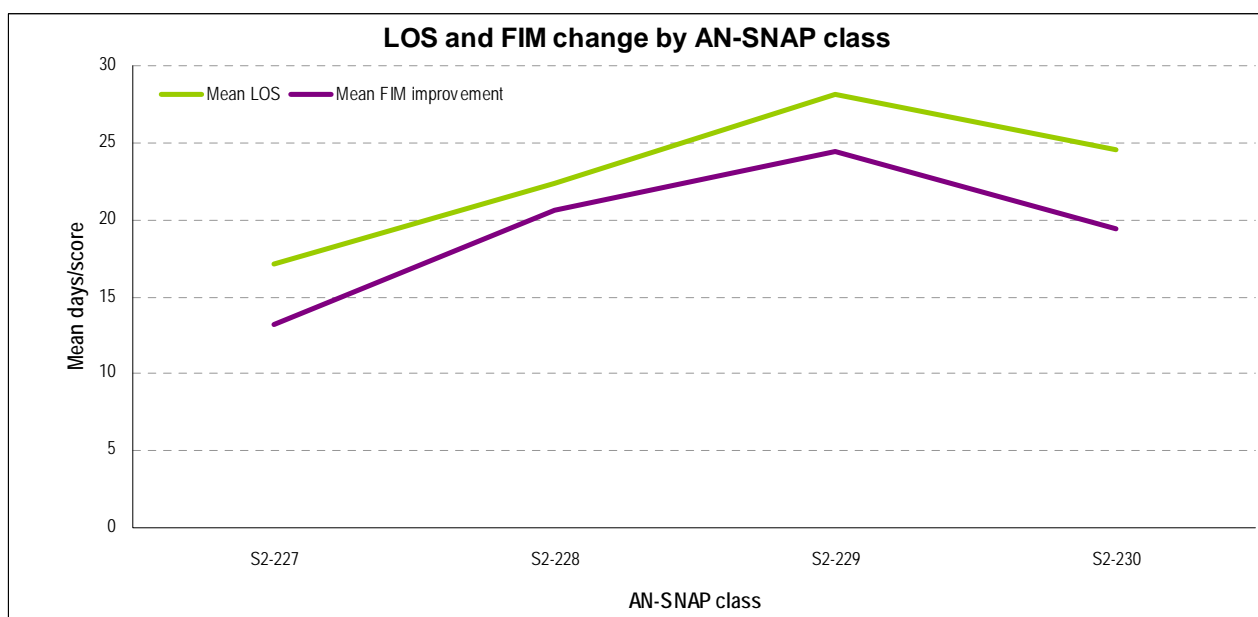


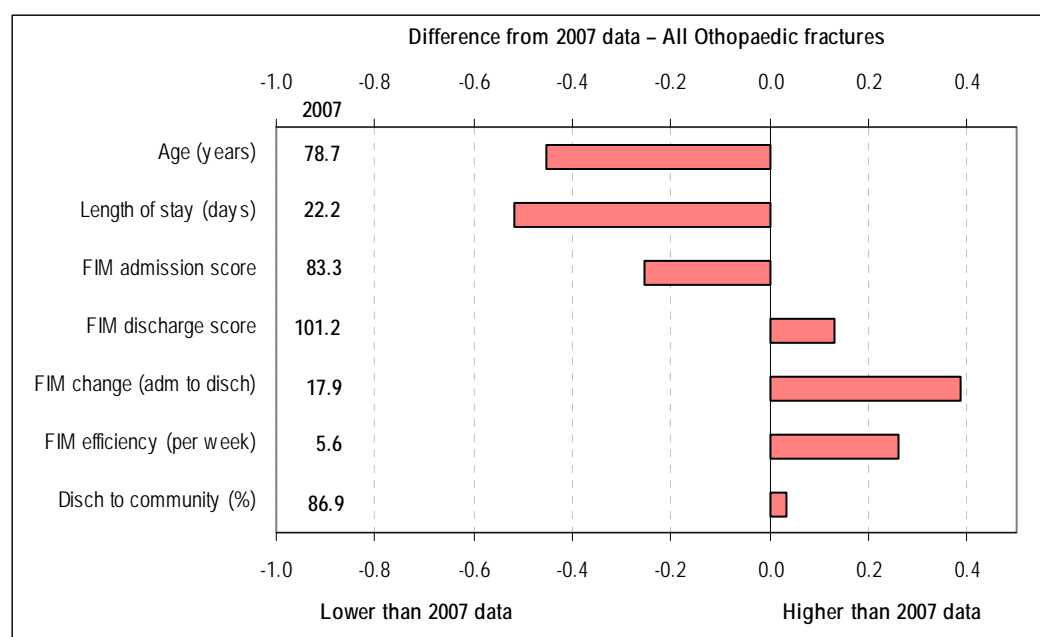
Figure 11D Orthopaedic fractures LOS & FIM change by AN-SNAP class



Key changes since 2007

The key differences between the 2007 and 2008 data are presented in Figure 11E. The average age of patients decreased slightly by 0.5 years while average length of stay decreased by 0.5 days. There was a small improvement in the average scores for FIM change and FIM efficiency of 0.5% and 0.8% respectively.

Figure 11E Change in Outcome Measures in Orthopaedic Fractures - 2007 to 2008



3.7.2 Orthopaedic: joint replacements

Consistent with orthopaedic fracture rehabilitation, the majority of episodes within this category were female (65.7%) and this pattern was evident across the three classes. The AN-SNAP class S2-232 accounted for 65.3% of all episodes, and the vast majority of episodes were provided by the private sector (84.9%). The average age of patients was 72.5 years, with patients in the most impaired class approximately 10 years older on average compared with the least impaired class. The average FIM on admission was 97.7, and ranged from 68.1 to 109.9 across the three classes. The ALOS was 12.9 days and ranged from 10.7 days for the least impaired class to 21.2 days for the most impaired class. The average FIM improvement was 15.7 and was greatest for the most impaired class, whilst FIM efficiency was lowest in the least impaired class. In total, 96.6% of patients were discharged into the community, but this figure was considerably lower in the most impaired class.

Figure 12A Change in number of orthopaedic joint replacements over time (2004-2008)

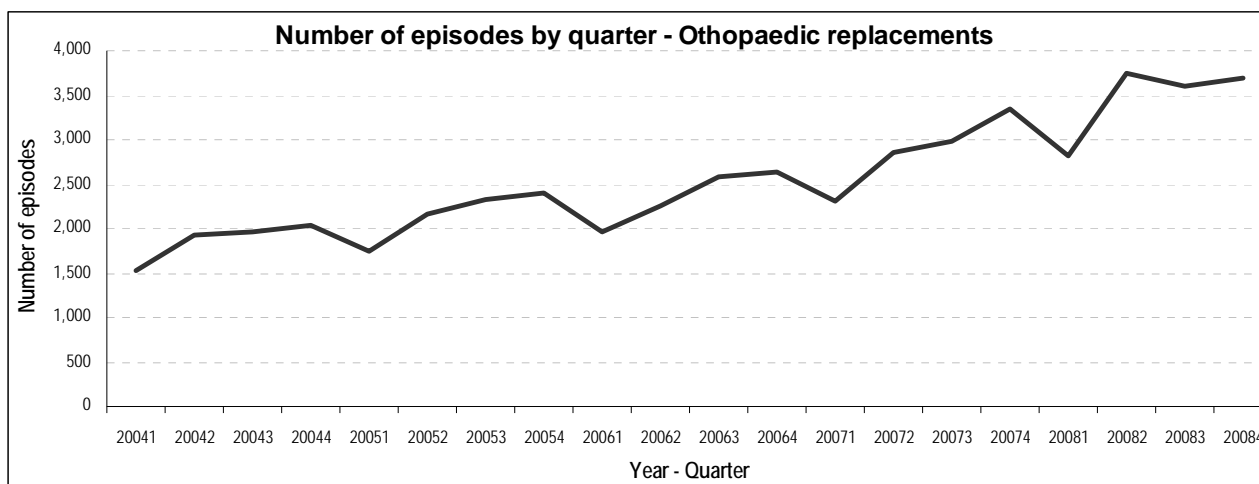


Figure 12B Summary of orthopaedic joint replacements episodes in 2008

| AN-SNAP class: | S2-231 | S2-232 | S2-233 | All Othopaedic replacements |
|-------------------------------|---------------------|------------------|------------------|-----------------------------|
| Number of episodes | 3,961 | 9,042 | 844 | 13,847 |
| Proportion of episodes | 28.6% | 65.3% | 6.1% | 100.0% |
| Sector (%) | | | | |
| Private | 88.4 | 84.9 | 64.9 | 84.7 |
| Public | 11.6 | 15.1 | 35.1 | 15.3 |
| Gender (%) | | | | |
| Female | 60.2 | 68.4 | 62.6 | 65.7 |
| Male | 39.8 | 31.6 | 37.4 | 34.3 |
| Age (Mean+95%CI) | 69.1 (68.7-69.4) | 73.4 (73.2-73.6) | 78.5 (77.8-79.2) | 72.5 (72.3-72.7) |
| Admission FIM (Mean+95%CI) | 109.9 (109.7-110.0) | 95.1 (95.0-95.3) | 68.1 (67.3-68.8) | 97.7 (97.5-98.0) |
| LOS (Mean+95%CI) | 10.7 (10.6-10.9) | 13.0 (12.9-13.2) | 21.2 (20.3-22.1) | 12.9 (12.7-13.0) |
| Discharge destination (%) | | | | |
| Discharged to community | 98.5 | 96.8 | 85.8 | 96.6 |
| Remaining in hospital system | 1.5 | 3.2 | 14.2 | 3.4 |
| FIM improvement (Mean+95%CI) | 7.9 (7.8-8.1) | 18.1 (17.9-18.2) | 26.6 (25.5-27.6) | 15.7 (15.5-15.8) |
| FIM efficiency (FIM imp./LOS) | 0.7 | 1.4 | 1.3 | 1.2 |

Figure 12C Orthopaedic joint replacements discharge destination

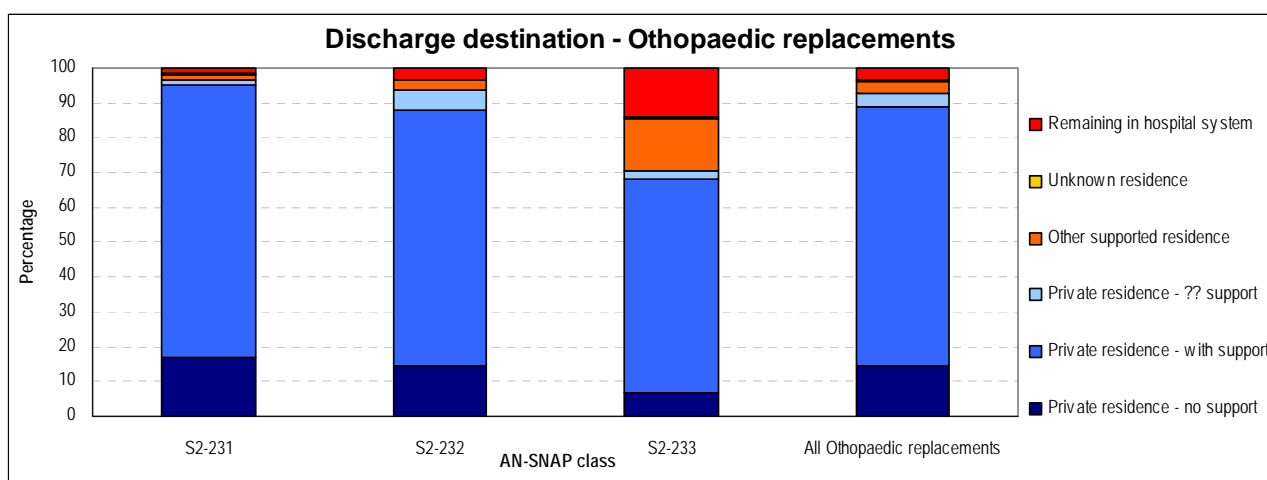
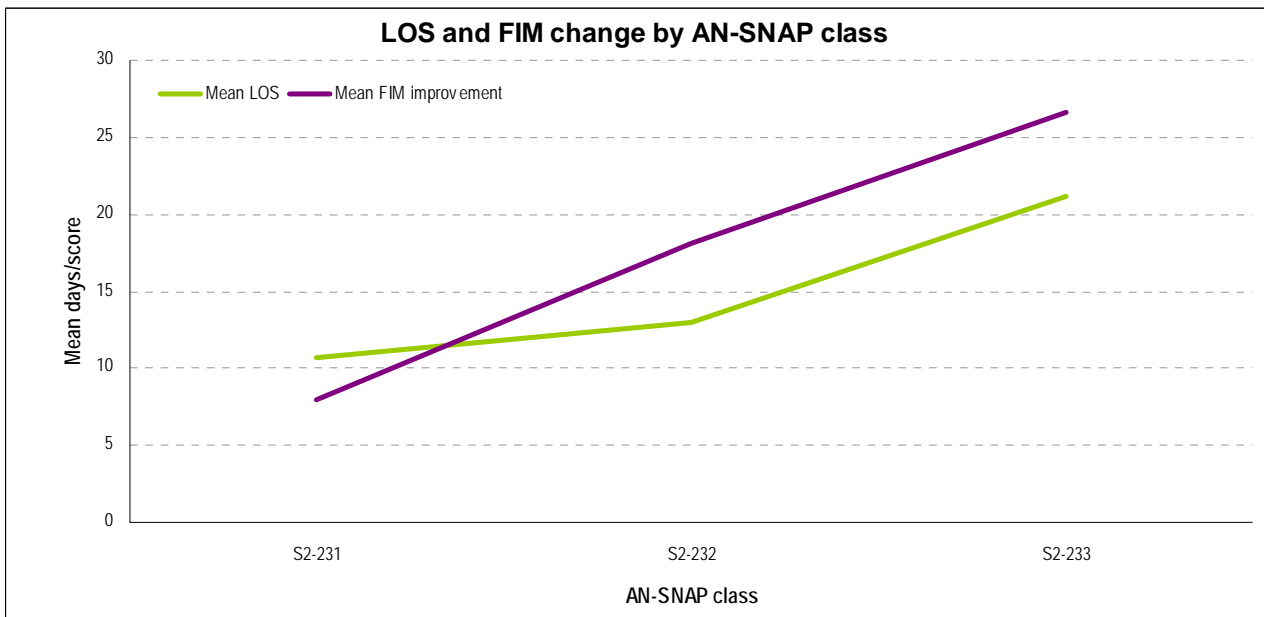


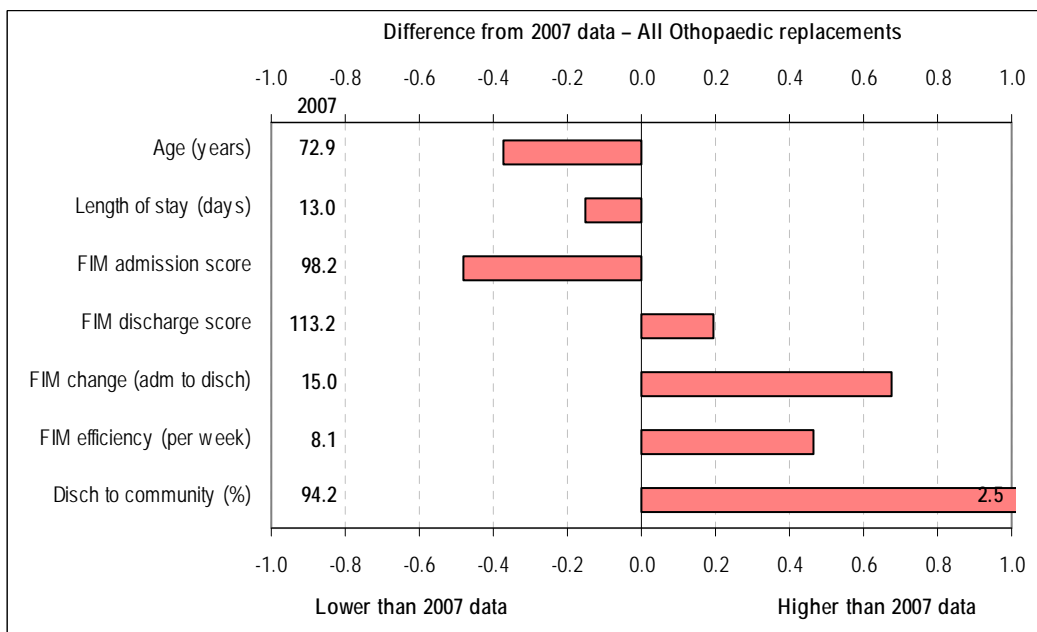
Figure 12D Orthopaedic joint replacements LOS & FIM change by AN-SNAP class



Key changes since 2007

The key differences between the 2007 and 2008 data are presented in Figure 12E. There was a continuation in the trend of most patients being discharged to the community (2.5% increase). The average age of patients decreased slightly by 0.4 years. FIM admission scores decreased slightly, whilst FIM discharge scores increased slightly resulting in an improvement in FIM change. As LOS decreased slightly as well, FIM efficiency also increased.

Figure 12E Change in Outcome Measures in Orthopaedic Joint Replacements - 2007 to 2008



3.8 Pulmonary

Figure 13A demonstrates consistent seasonal variation in pulmonary episodes over the past five years with a peak observed during the third quarter (winter). This could reflect the increased incidence of pulmonary medical conditions, particularly in older individuals, during the winter months. Overall the majority of pulmonary episodes were provided by the private sector (68.7%), but this was not the case for most impaired classes. The average age of patients was 79.3 years, and this was consistent across the four classes. The average FIM admission score was 92.5 and ranged from 42.0 to 106.9 across the four classes. FIM efficiency was lowest for the least impaired class (S2-242). The majority of patients were discharged into the community (88.2%), but the proportion declined with increasing functional impairment.

Figure 13A Change in number of pulmonary over time (2004-2008)

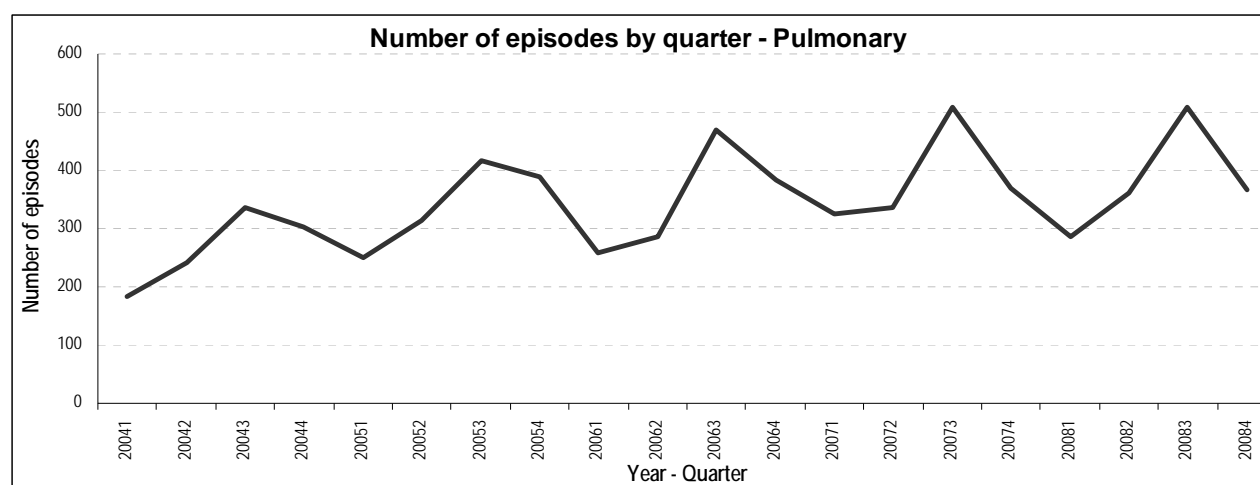


Figure 13B Summary of pulmonary episodes in 2008

| AN-SNAP class: | S2-242 | S2-243 | S2-244 | S2-245 | All Pulmonary |
|-------------------------------|---------------------|------------------|------------------|------------------|------------------|
| Number of episodes | 600 | 599 | 295 | 29 | 1,523 |
| Proportion of episodes | 39.4% | 39.3% | 19.4% | 1.9% | 100.0% |
| Sector (%) | | | | | |
| Private | 79.8 | 71.1 | 45.1 | 31.0 | 68.7 |
| Public | 20.2 | 28.9 | 54.9 | 69.0 | 31.3 |
| Gender (%) | | | | | |
| Female | 53.8 | 57.9 | 50.8 | 65.5 | 55.1 |
| Male | 46.2 | 42.1 | 49.2 | 34.5 | 44.9 |
| Age (Mean+95%CI) | 78.1 (77.3–79.0) | 80.3 (79.5–81.1) | 79.5 (78.3–80.7) | 77.6 (72.7–82.4) | 79.3 (78.7–79.8) |
| Admission FIM (Mean+95%CI) | 106.9 (106.4–107.5) | 90.7 (90.2–91.3) | 70.0 (68.7–71.3) | 42.0 (38.7–45.3) | 92.5 (91.6–93.4) |
| LOS (Mean+95%CI) | 13.3 (12.7–13.9) | 15.9 (15.2–16.5) | 21.3 (19.7–22.9) | 24.1 (17.2–31.0) | 16.0 (15.5–16.5) |
| Discharge destination (%) | | | | | |
| Discharged to community | 93.0 | 87.8 | 81.7 | 62.1 | 88.2 |
| Remaining in hospital system | 7.0 | 12.2 | 18.3 | 37.9 | 11.8 |
| FIM improvement (Mean+95%CI) | 9.4 (8.8–9.9) | 15.3 (14.3–16.3) | 18.3 (16.2–20.3) | 21.4 (11.8–31.0) | 13.6 (13.0–14.2) |
| FIM efficiency (FIM imp./LOS) | 0.7 | 1.0 | 0.9 | 0.9 | 0.8 |

Figure 13C Pulmonary discharge destination

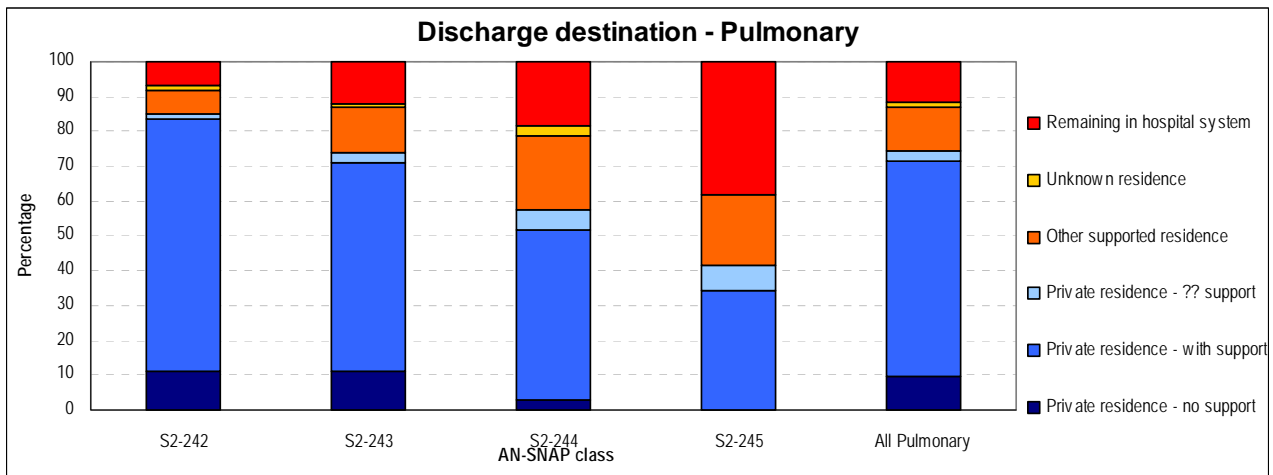
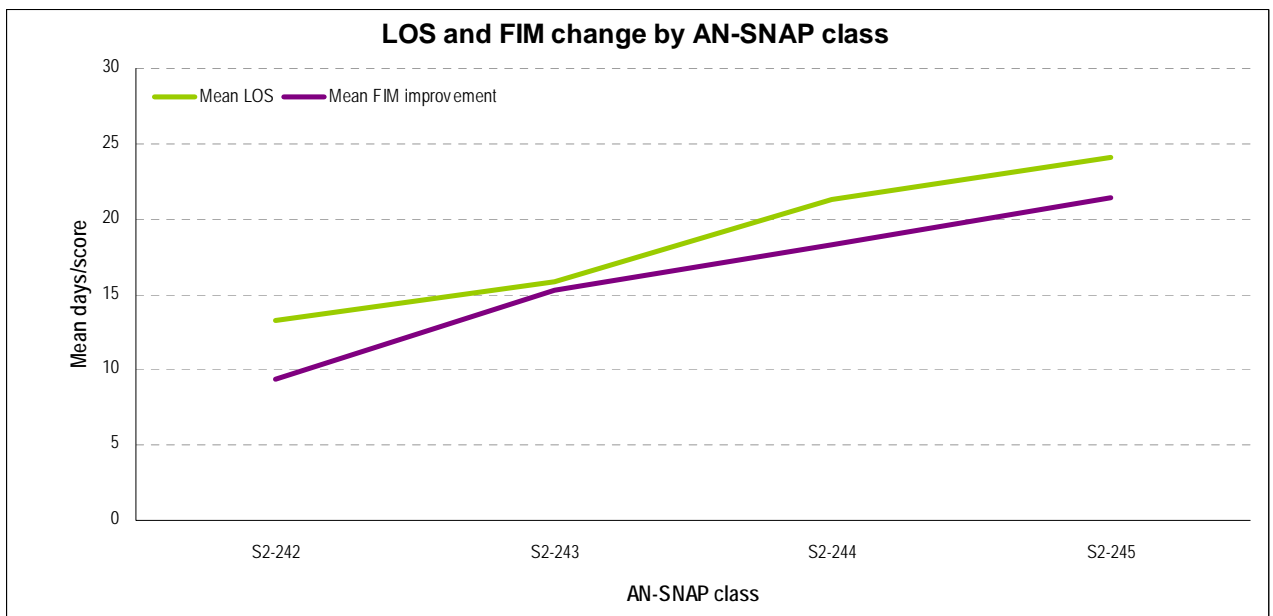


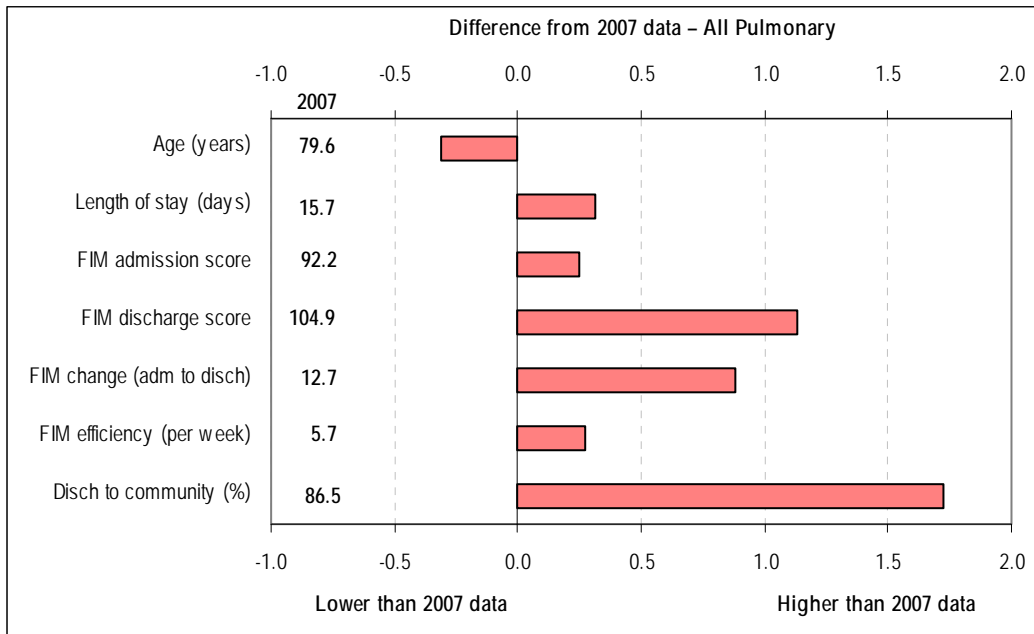
Figure 13D Pulmonary LOS & FIM change by AN-SNAP class



Key changes since 2007

The key differences between the 2007 and 2008 data are presented in Figure 13E. The proportion of patients who were discharged to the community increased by 1.7%. The average FIM admission and discharge scores increased by 0.3 and 1.2 respectively driving an overall FIM change increase of 0.9. However, as LOS increased slightly, there was little change in FIM efficiency.

Figure 13E Change in Outcome Measures in Pulmonary - 2007 to 2008



3.9 Reconditioning

Following the implementation of the version 3 AROC inpatient dataset on 1 July 2007 there has been a dramatic increase in the number of episodes reported as reconditioning, as shown in Figure 14A.

As shown in Figure 14B, the average age of patients in this category was 79.1 years, which was fairly consistent across the AN-SNAP classes. About two-thirds of episodes were provided by the private sector (66.2%), however this proportion declined with impairment with class S2-245 having the majority of episodes provided by the public sector. The average FIM score was 89.0 and ranged from 39.7 to 106.3 across the four classes. The ALOS was 17.6 days and this ranged from 13.6 days for the least impaired class to 26.0 days for the most impaired class. There was also a trend for the most impaired classes to show the greatest FIM improvement, with FIM efficiency highest for the moderately impaired classes.

Figure 14A Change in number of reconditioning over time (2004-2008)

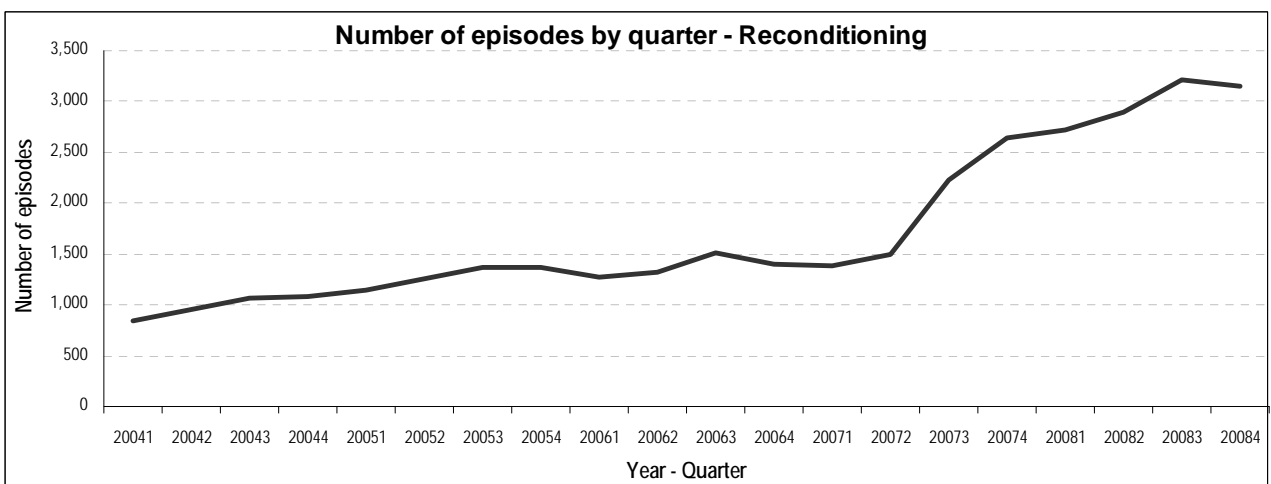


Figure 14B Summary of reconditioning episodes in 2008

| AN-SNAP class: | S2-242 | S2-243 | S2-244 | S2-245 All Reconditioning | |
|-------------------------------|---------------------|------------------|------------------|---------------------------|------------------|
| Number of episodes | 4,034 | 4,559 | 3,105 | 281 | 11,979 |
| Proportion of episodes | 33.7% | 38.1% | 25.9% | 2.3% | 100.0% |
| Sector (%) | | | | | |
| Private | 75.4 | 69.4 | 52.0 | 37.7 | 66.2 |
| Public | 24.6 | 30.6 | 48.0 | 62.3 | 33.8 |
| Gender (%) | | | | | |
| Female | 57.2 | 59.9 | 55.4 | 52.0 | 57.6 |
| Male | 42.8 | 40.1 | 44.6 | 48.0 | 42.4 |
| Age (Mean+95%CI) | 76.9 (76.5–77.3) | 80.6 (80.3–80.8) | 80.2 (79.8–80.6) | 75.8 (74.2–77.3) | 79.1 (78.9–79.3) |
| Admission FIM (Mean+95%CI) | 106.3 (106.1–106.6) | 89.7 (89.5–89.9) | 68.7 (68.3–69.1) | 39.7 (38.3–41.0) | 89.0 (88.7–89.3) |
| LOS (Mean+95%CI) | 13.6 (13.4–13.9) | 17.5 (17.2–17.8) | 22.6 (22.0–23.1) | 26.0 (23.5–28.4) | 17.6 (17.4–17.9) |
| Discharge destination (%) | | | | | |
| Discharged to community | 93.3 | 87.6 | 76.7 | 58.0 | 86.0 |
| Remaining in hospital system | 6.7 | 12.4 | 23.3 | 42.0 | 14.0 |
| FIM improvement (Mean+95%CI) | 8.4 (8.1–8.7) | 15.3 (15.0–15.6) | 18.6 (18.0–19.1) | 16.4 (13.5–19.4) | 13.8 (13.6–14.0) |
| FIM efficiency (FIM imp./LOS) | 0.6 | 0.9 | 0.8 | 0.6 | 0.8 |

Figure 14C Reconditioning discharge destination

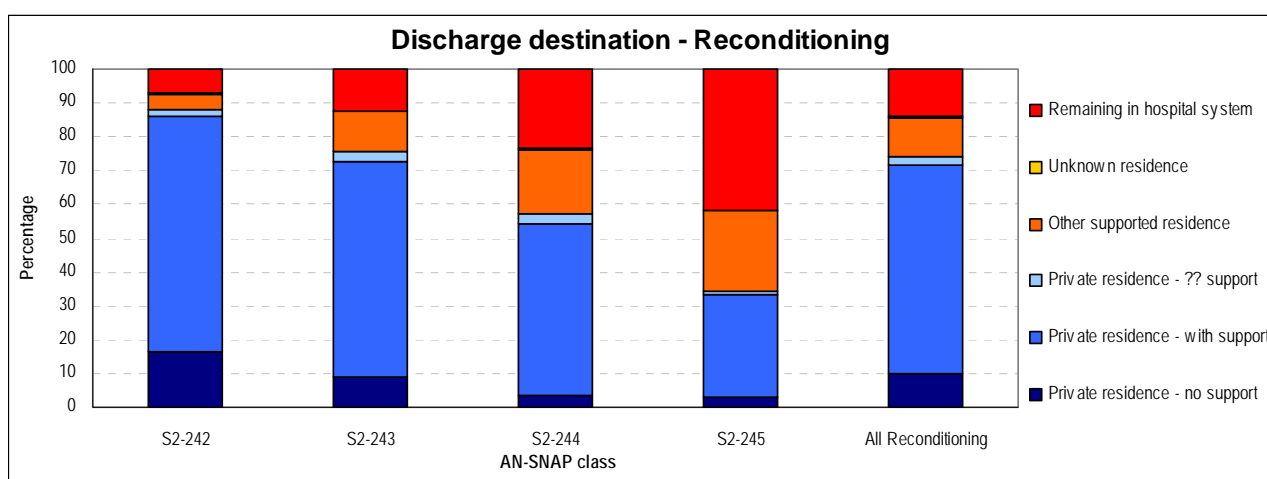
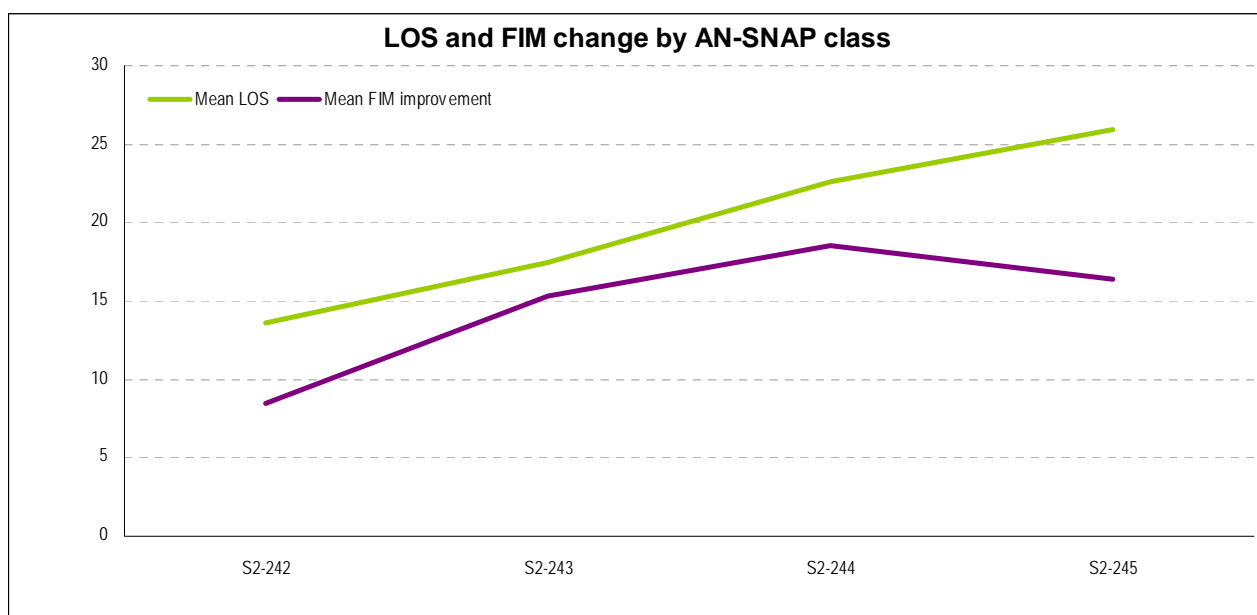


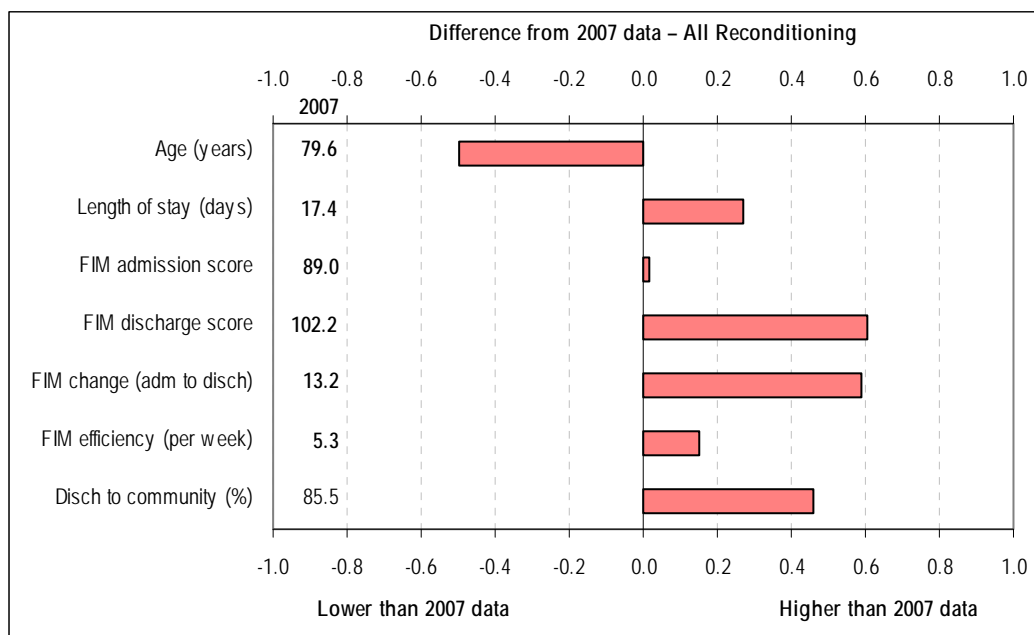
Figure 14D Reconditioning LOS & FIM change by AN-SNAP class



Key changes since 2007

The key differences between the 2007 and 2008 data are presented in Figure 14E. The average age of patients decreased by 0.5 years while average length of stay increased by 0.25 days. There was an increase in the average FIM discharge scores, although with the slight increase in LOS, the increase in the FIM efficiency score was slight. There was a small gain in the proportion of patients discharged to the community of 0.5%.

Figure 14E Change in Outcome Measures in Reconditioning - 2007 to 2008



3.10 Pain, cardiac, major multiple trauma, burns, congenital deformities, and developmental disabilities

These six impairments are displayed together because of low episode volumes, collectively accounting for less than 10% of all episodes in 2008. The majority of pain, cardiac and major multiple trauma (MMT) episodes were provided by the private sector. The public sector provided the majority of burns, congenital deformity and developmental disabilities episodes. Females accounted for the majority of pain, cardiac and developmental disabilities episodes, whereas males accounted for the majority of MMT burns and congenital deformity episodes. The average age of MMT, burns and congenital deformities patients (range 43.7 – 60.9 years) was considerably lower compared to pain, cardiac and developmental disabilities patients (range 74.0 – 78.8 years).

All of the classes had a similar rate of discharge to the community (range 88.4% to 94.3%). FIM efficiency was also similar across all classes.

Figure 15A Change in number of impairment episodes over time (2004-2008)

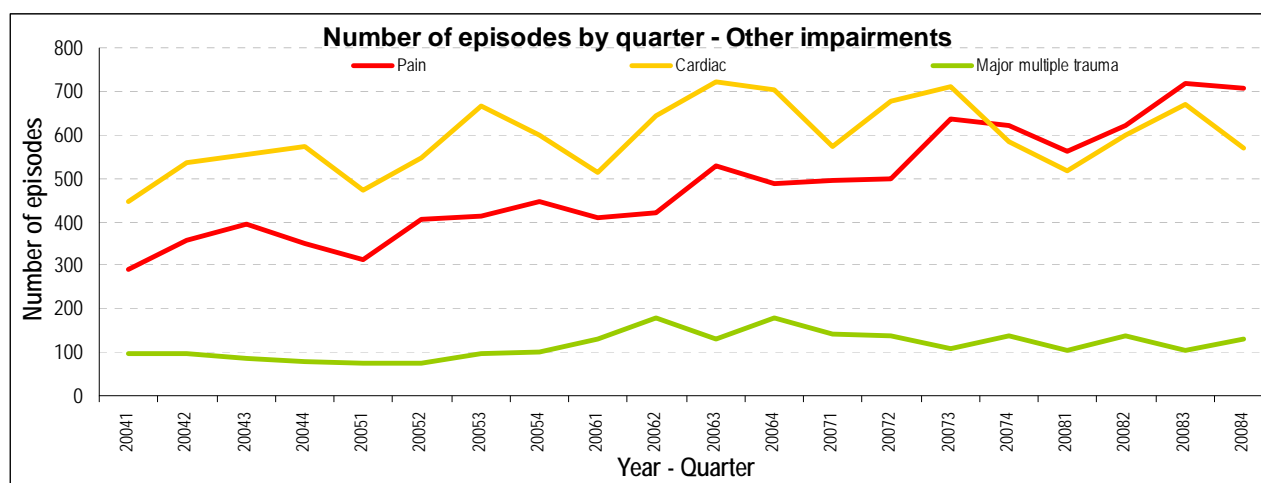


Figure 15B Summary of impairment episodes in 2008

| | Pain | Cardiac | MMT | Burns | Congenital deformatinal disability | |
|--------------------------------------|------------------|------------------|------------------|------------------|------------------------------------|------------------|
| Number of episodes | 2,608 | 2,353 | 479 | 35 | 10 | 25 |
| Proportion of total episodes in 2008 | 4.3% | 3.9% | 0.8% | 0.1% | 0.0% | 0.0% |
| Sector (%) | | | | | | |
| Private | 76.8 | 75.2 | 74.1 | 14.3 | 10.0 | 8.0 |
| Public | 23.2 | 24.8 | 25.9 | 85.7 | 90.0 | 92.0 |
| Gender (%) | | | | | | |
| Female | 71.2 | 51.6 | 34.9 | 31.4 | 40.0 | 52.0 |
| Male | 28.8 | 48.4 | 65.1 | 68.6 | 60.0 | 48.0 |
| Age (Mean+95%CI) | 74.0 (73.3-74.6) | 78.8 (78.4-79.2) | 45.7 (43.7-47.6) | 60.9 (54.6-67.1) | 46.4 (33.1-59.7) | 74.1 (67.2-81.0) |
| Admission FIM (Mean+95%CI) | 95.1 (94.4-95.8) | 95.5 (94.9-96.2) | 84.1 (82.2-86.0) | 85.4 (78.0-92.9) | 75.1 (64.9-85.3) | 69.9 (59.4-80.5) |
| LOS (Mean+95%CI) | 16.1 (15.7-16.5) | 14.2 (13.8-14.5) | 28.1 (26.4-29.9) | 29.7 (21.9-37.5) | 26.2 (18.8-33.6) | 23.8 (15.9-31.6) |
| Discharge destination (%) | | | | | | |
| Discharged to community | 92.4 | 88.4 | 91.0 | 94.3 | 90.0 | 88.0 |
| Remaining in hospital system | 7.6 | 11.6 | 9.0 | 5.7 | 10.0 | 12.0 |
| FIM improvement (Mean+95%CI) | 12.9 (12.5-13.3) | 14.0 (13.5-14.5) | 27.7 (26.0-29.4) | 20.2 (12.9-27.5) | 25.8 (15.6-35.9) | 18.7 (13.3-24.0) |
| FIM efficiency (FIM imp./LOS) | 0.8 | 1.0 | 1.0 | 0.7 | 1.0 | 0.8 |

Figure 15C Impairment discharge destination

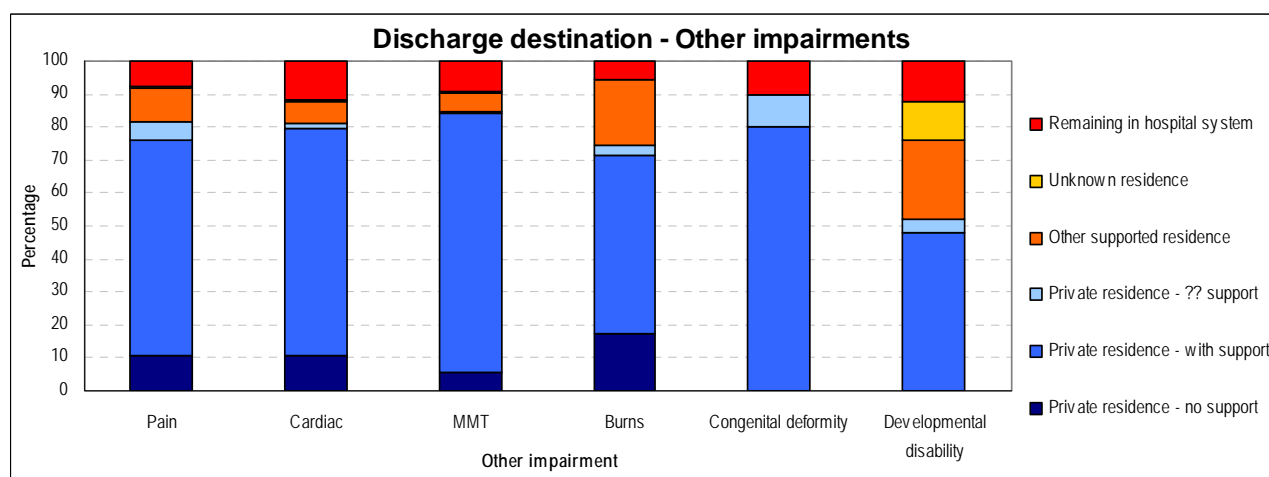
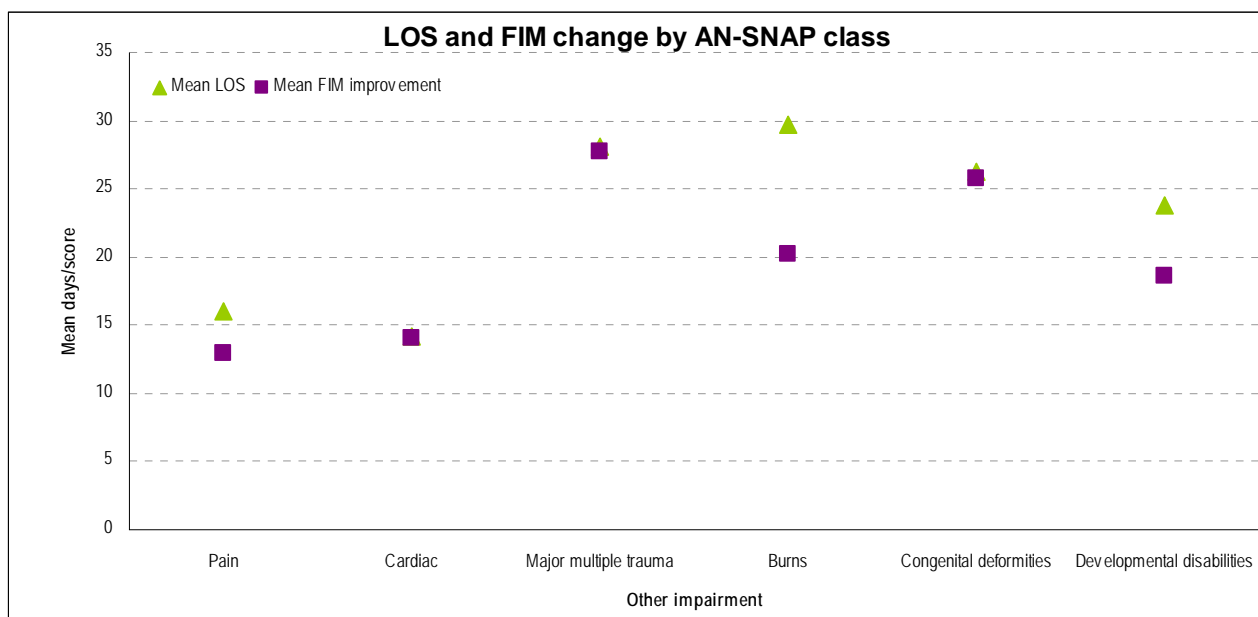


Figure 15D Impairment LOS & FIM change by AN-SNAP class



Key changes since 2007

The key differences between the 2007 and 2008 data are presented in Figure 15E. Given the low volumes for burns, congenital deformity and developmental disability episodes, only changes in pain, cardiac and MMT between 2007 and 2008 are presented and discussed. As shown in Figure 15E, for the pain category, the average age of patients increased by 0.8 years and the proportion of patients discharged to the community increased 2.2%. Average FIM admission scores decreased by 1 point. For the cardiac category (refer to Figure 15F), the most noticeable increase was in the proportion of patients discharged into the community (2.4%). There was a slight decrease in the ALOS of 0.4 days. For MMT, the average age increased by more than two years to 45.7 while the ALOS decreased by 1.2 days (refer to Figure 15G). There were improvements in average FIM admission and discharge scores of 1.3 and 1.2 respectively, and the proportion of patients discharged into the community increased 1.6%. The proportion of episodes provided by the private sector decreased from 79.1% to 74.1% (refer to Figure 15B), a small reversal after the significant increase observed in the 2006 to 2007 data.

Figure 15E Change in Outcome Measures in Pain - 2007 to 2008

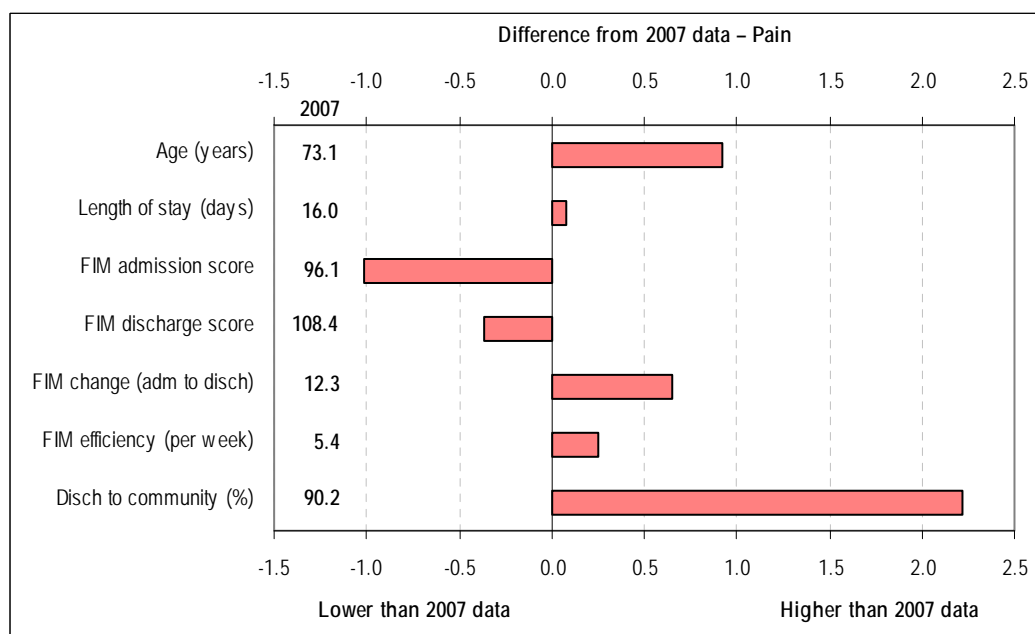


Figure 15F Change in Outcome Measures in Cardiac - 2007 to 2008

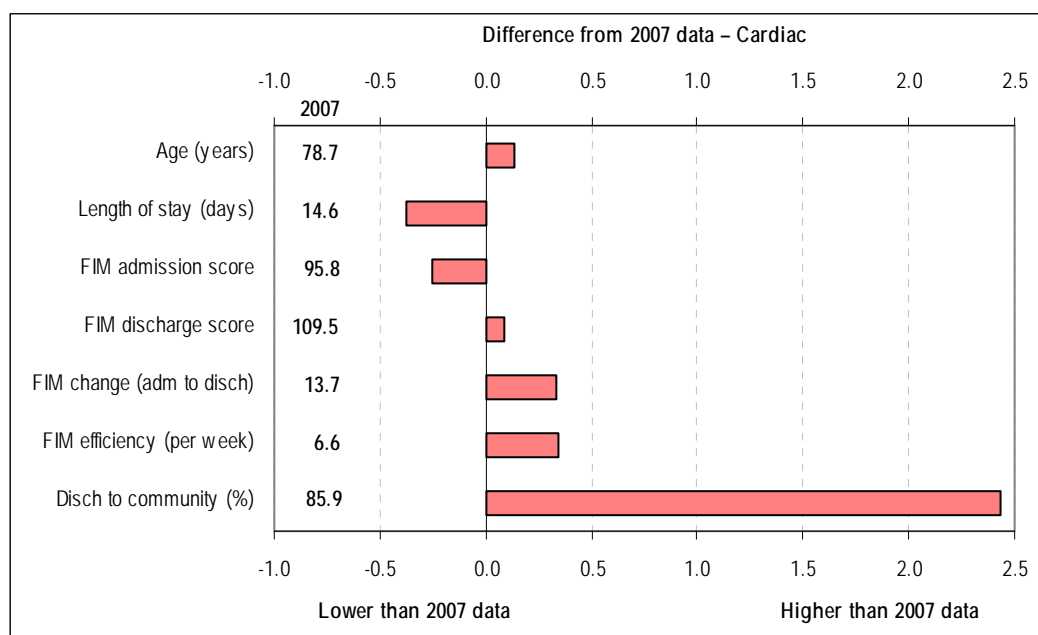
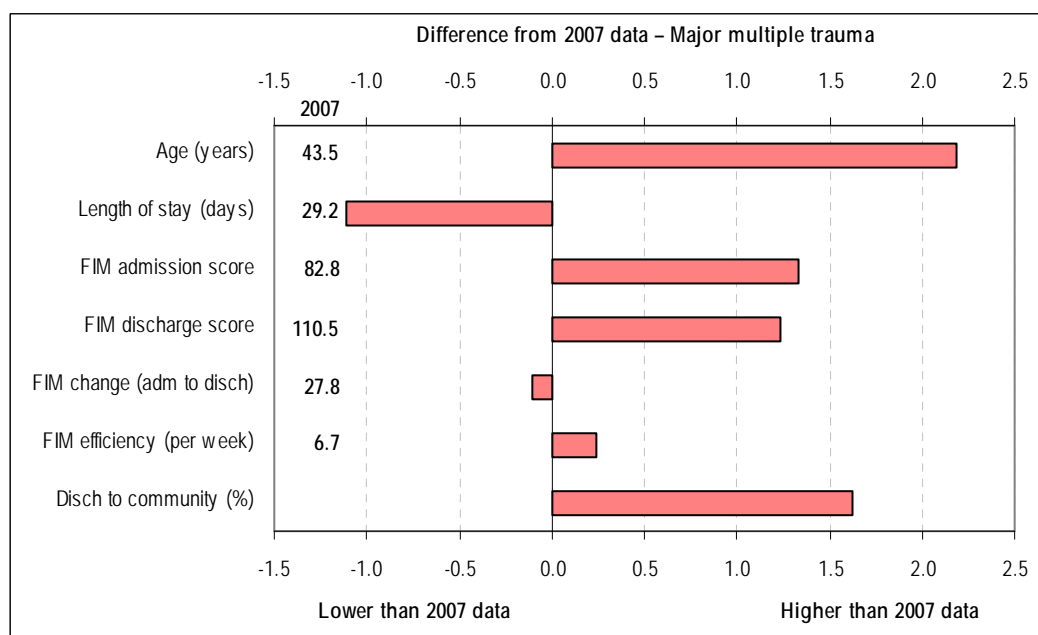


Figure 15G Change in Outcome Measures in Major Multiple Trauma - 2007 to 2008



3.11 Other Disabling Impairments

Following the implementation of the version 3 AROC dataset there has been a dramatic drop in the number of episodes being reported in this impairment category as shown in Figure 16.A; this trend continued for 2008 data.

The majority of these episodes were female (59.0%) and the average age was 76.3 years; these figures were fairly consistent across the four classes. The average FIM admission score was 84.8 and ranged from 44.7 to 98.3 across the different classes. The ALOS was 20.9 days and ranged from 16.4 days for the least impaired group to 29.4 days for the most impaired group. The average FIM improvement was 13.8 and was greatest for the most impaired class, although FIM efficiency was greatest for the moderately impaired classes. In total, 86.6% of patients were

discharged to the community, with patients from the most impaired class less likely to be discharged to the community.

Figure 16A Change in number of other disabling impairments over time (2004-2008)

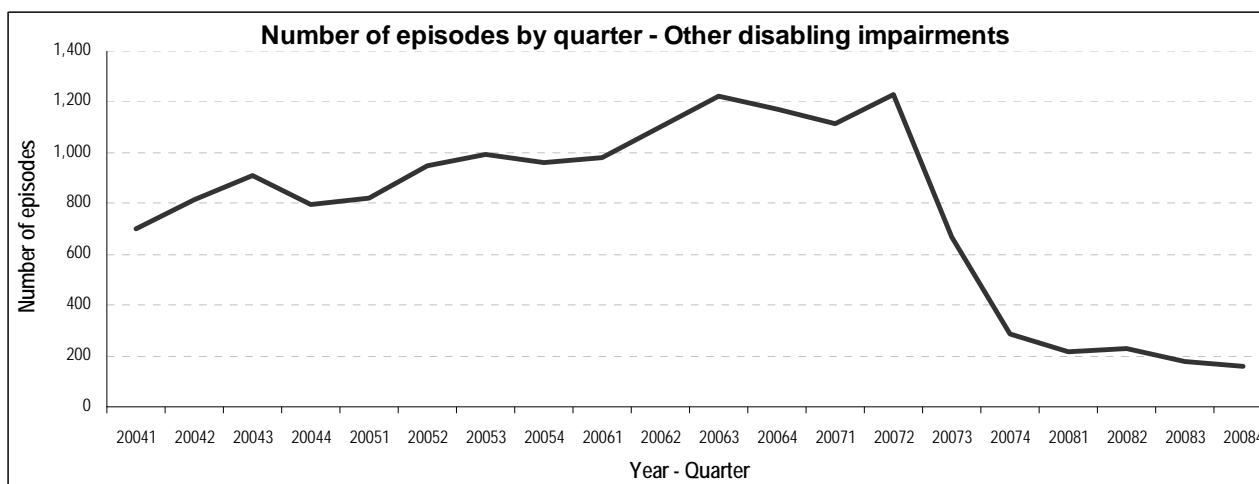


Figure 16B Summary of other disabling impairments in 2008

| AN-SNAP class: | S2-242 | S2-243 | S2-244 | S2-245 | All Other disabling impairments |
|-------------------------------|------------------|------------------|------------------|------------------|---------------------------------|
| Number of episodes | 231 | 272 | 237 | 46 | 786 |
| Proportion of episodes | 29.4% | 34.6% | 30.2% | 5.9% | 100.0% |
| Sector (%) | | | | | |
| Private | 34.6 | 17.6 | 11.0 | 0.0 | 19.6 |
| Public | 65.4 | 82.4 | 89.0 | 100.0 | 80.4 |
| Gender (%) | | | | | |
| Female | 62.3 | 57.7 | 58.2 | 54.3 | 59.0 |
| Male | 37.7 | 42.3 | 41.8 | 45.7 | 41.0 |
| Age (Mean+95%CI) | 70.5 (68.3–72.6) | 77.2 (75.5–78.8) | 80.6 (79.2–81.9) | 77.7 (73.1–82.4) | 76.3 (75.2–77.3) |
| Admission FIM (Mean+95%CI) | 98.3 (98.1–98.6) | 82.3 (82.0–82.5) | 66.3 (65.9–66.6) | 44.7 (43.9–45.6) | 84.4 (82.8–86.0) |
| LOS (Mean+95%CI) | 16.4 (15.0–17.7) | 19.9 (18.3–21.5) | 25.2 (23.3–27.1) | 29.4 (23.1–35.6) | 20.9 (19.9–21.9) |
| Discharge destination (%) | | | | | |
| Discharged to community | 94.8 | 88.2 | 79.7 | 71.7 | 86.6 |
| Remaining in hospital system | 5.2 | 11.8 | 20.3 | 28.3 | 13.4 |
| FIM improvement (Mean+95%CI) | 8.1 (6.8–9.3) | 14.8 (13.6–16.0) | 18.1 (15.9–20.3) | 15.3 (9.2–21.5) | 13.8 (12.8–14.8) |
| FIM efficiency (FIM imp./LOS) | 0.5 | 0.7 | 0.7 | 0.5 | 0.7 |

Figure 16C Other disabling impairments discharge destination

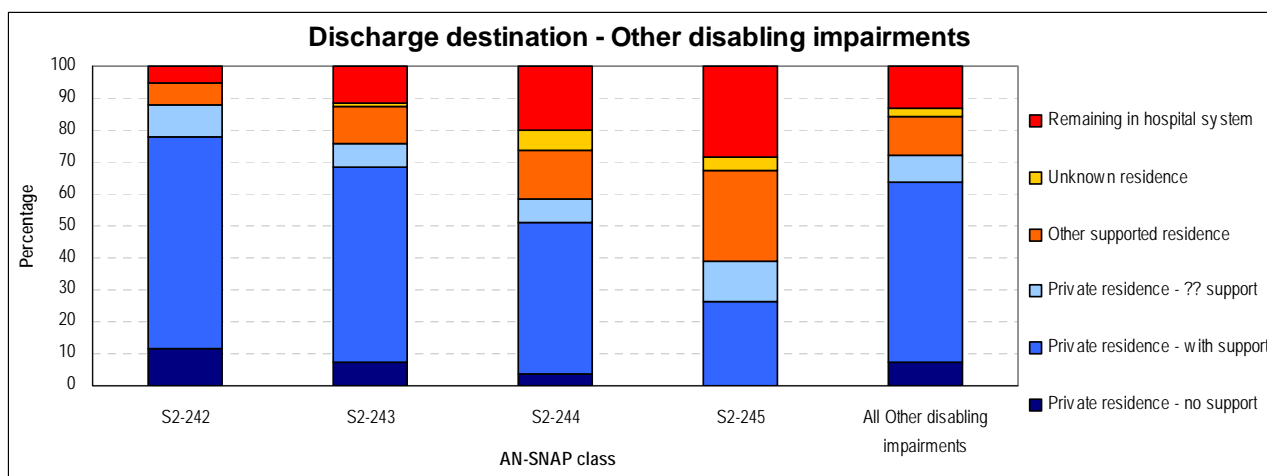
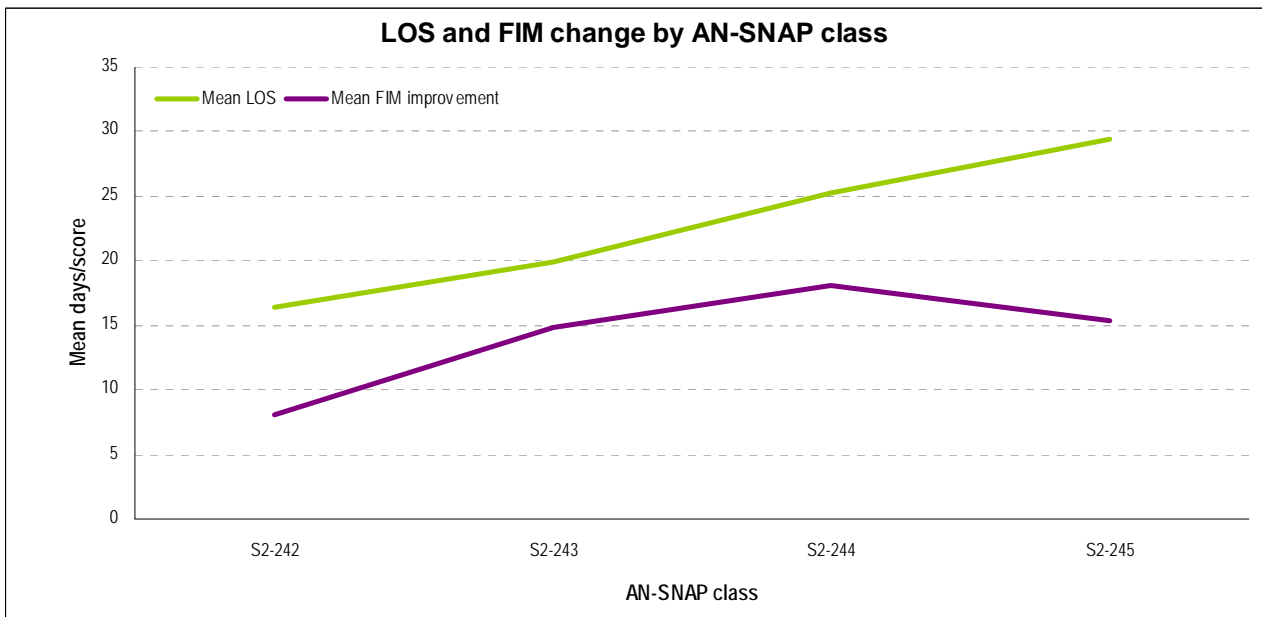


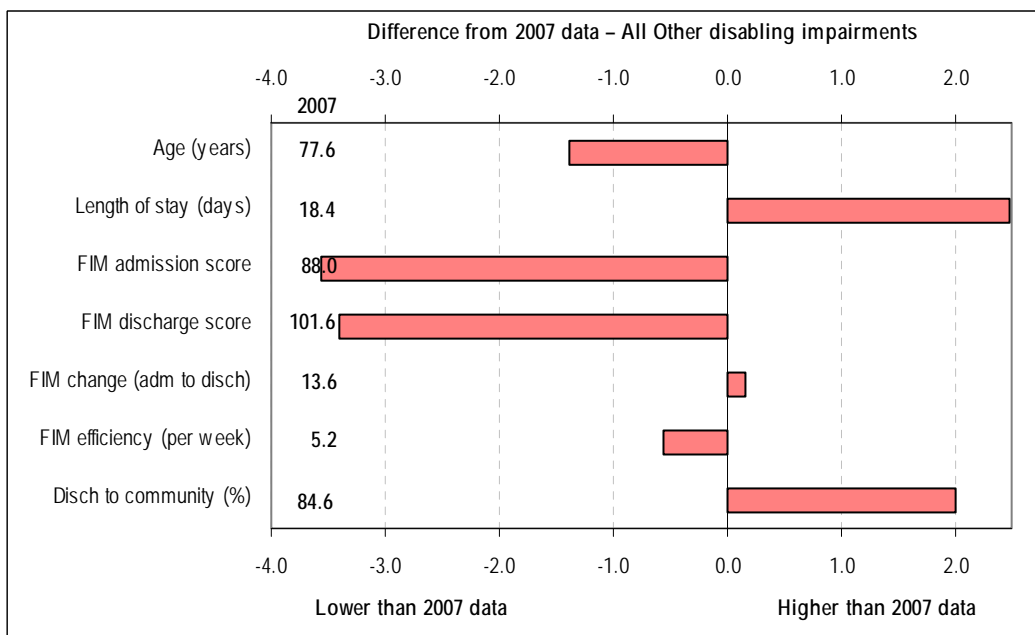
Figure 16D Other disabling impairments LOS & FIM change by AN-SNAP class



Key changes since 2007

The key differences between the 2007 and 2008 data are presented in Figure 16E. The most noticeable change was an increase in the proportion of patients treated in the public sector, from 47.9% (of 3,175 episodes) in 2007 to 80.4% (of 786 episodes) in 2008 (refer to Figure 16B). Average LOS increased by 2.5 days to 20.9 days. FIM scores at discharge decreased by 3.6 and FIM improvement also decreased by 3.4. The proportion of patients discharged to the community increased 2%. These changes should be treated with caution due to the continued drop in episodes being reported in this category.

Figure 16E Change in Outcome Measures in Other Disabling Impairments - 2007 to 2008

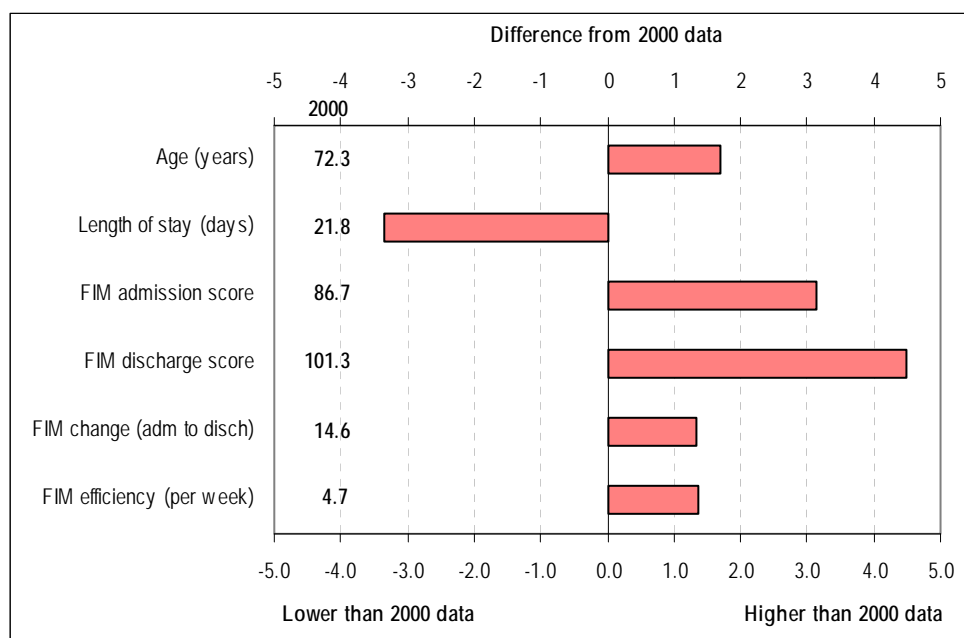


4 Changes in Rehabilitation

In the three previous AROC annual reports, we have commented on changes in rehabilitation outcomes across all impairment categories since 2000. Therefore, in this report, we comment on changes in rehabilitation outcomes between 2000 and 2008, as well as the major changes observed between 2007 and 2008.

Figure 17 presents the overall changes in rehabilitation outcomes between 2000 and 2008. The number of episodes reported by AROC continues to increase, driven in part by AROC’s increasing coverage of the sector, and in part by the growth of the sector itself. The average age of patients has remained unchanged at 74.0 years. Furthermore, there is also evidence of an improvement in the main rehabilitation outcomes during this period. For example, FIM efficiency and FIM improvement have both increased, whilst the ALOS has fallen by 3.3 days. Furthermore, the increase in the average FIM discharge score suggests that patients have more functional capacity

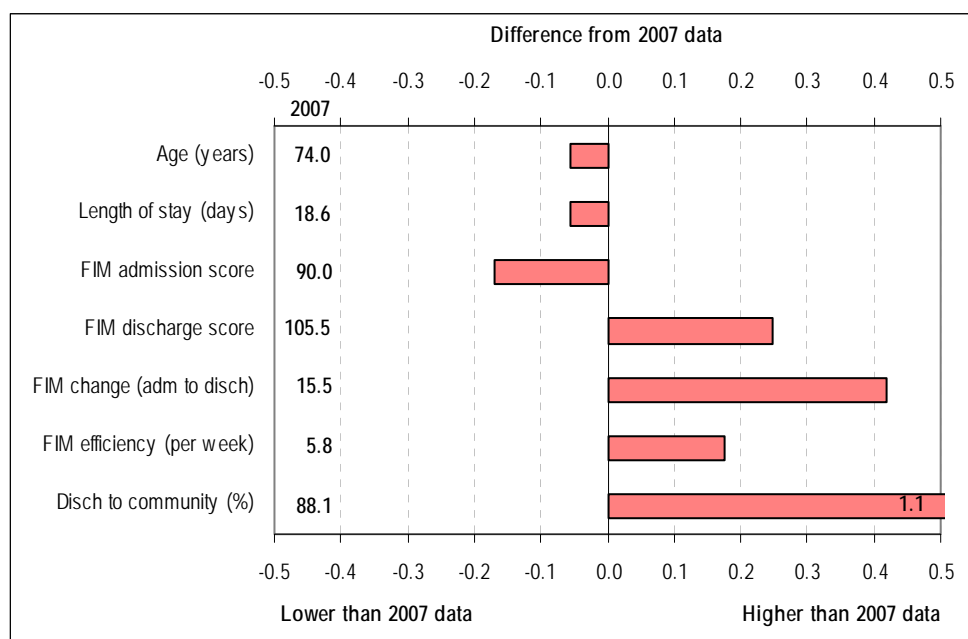
Figure 17 *Changes over time in rehabilitation in Australia, 2000–2008*



when discharged compared to previous years. Therefore, it is not surprising that the proportion of patients discharged into the community has increased 4.4%.

Figure 18 presents data on changes in rehabilitation outcomes between 2007 and 2008. It appears that the increasing average age of patients in rehabilitation has slowed, with average age in 2008 being virtually the same as that in 2007. Similarly, it appears that the decreasing ALOS of rehabilitation patients has slowed, with overall ALOS in 2008 being almost identical to that in 2007. However, with a continued decrease in the functional ability of patients on admission (as represented by the lower average FIM admission scores), yet the increase in FIM change being achieved, FIM efficiency has increased over the last year. Also pleasingly there has been an increase in the proportion of patients discharged back to the community (up by 1.1% to 89.2%).

Figure 18 Changes over time in rehabilitation in Australia, 2007–2008



Finally, Figure 19 presents data on the changes in the number of episodes by each impairment group between 2007 and 2008. Importantly, these data have been adjusted for the number of facilities submitting to AROC and hence provide an accurate indication of real growth over the past year. Leaving aside the changes to the volume of orthopaedic impairment categories which is due to the review of the other orthopaedic category and the subsequent improvement in coding of these episodes, the most striking changes are the continued increase in the volume of reconditioning (a 40% increase in 2008 after a 30% increase in 2007), the 24% growth in arthritis (after a 30% reduction in 2007), and the continued reductions of the other disabling impairment episodes. There was also significant growth in each of the brain injury, pain and orthopaedic impairment groups. The point to note is that the overall volume of rehabilitation episodes grew by some 11% in 2008, having paused in 2007 (and after a growth of 9.6% in 2006).

5 Discussion

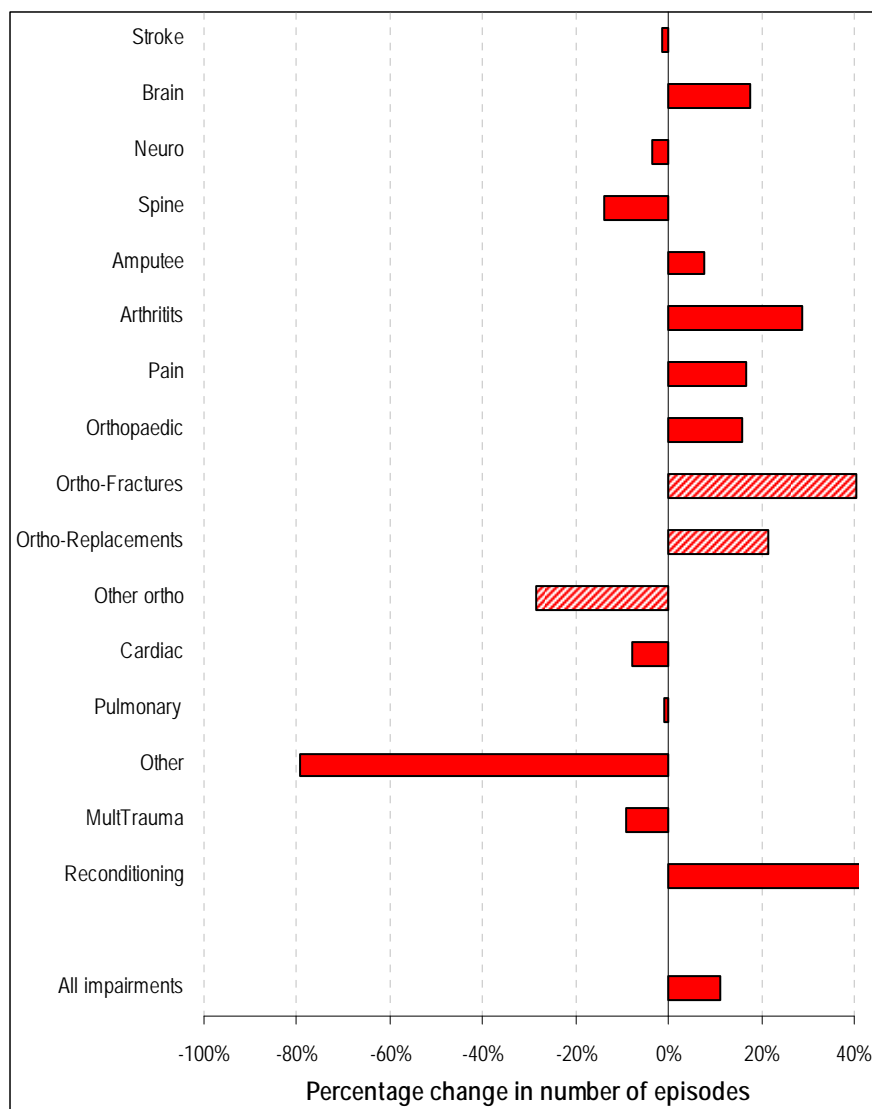
The 2008 AROC database describes rehabilitation data that are consistent with previous years. For example, the majority of episodes are female and aged over 70 years, and most episodes are provided by the private sector. Furthermore, the majority of episodes fell into the least impaired classes. There was also a trend for the most impaired classes to have longer LOS and show the greatest FIM improvement. The majority of episodes were discharged into the community, but the proportion declines with increasing functional impairment.

The data also indicate a continuing trend for an improvement in rehabilitation outcome measures. For example, FIM efficiency continues to increase driven larger by greater FIM improvement. Furthermore, the proportion of episodes discharged into the community continues to increase.

Rehabilitation will continue as an increasingly important part of the continuum of healthcare as the population ages and as governments look for more efficient ways to deliver health, disability and aged care services. In association with AFRM, AROC has continued to be active during 2008 in lobbying for the development of a national rehabilitation strategy. This culminated in the early 2009 publication of an AFRM Position Statement on the need for a National Rehabilitation Strategy. Development and implementation of such a strategy will ensure that rehabilitation services across the country will be adequate into the future and will be able to make a contribution to the broader national health agenda. Furthermore, the Commonwealth Government has demonstrated a

growing commitment to investing in sub-acute services in the 'A Healthier Future for All Australians' final report published in June 2009. The report makes specific recommendations about a substantial investment in, and expansion of, sub-acute services in both inpatient and ambulatory settings. This includes a planning and action to ensure an appropriately trained workforce, as well as expanding access to independent living aids and equipment that allows people to better manage their health conditions in the community.

Figure 19 *Change in number of episodes by impairment group between 2007 and 2008*



The five elements required for a national rehabilitation strategy are:

- national leadership to place rehabilitation firmly on the national health agenda;
- national information about rehabilitation;
- better integration between acute care, rehabilitation, community care, primary care and disability services;
- national workforce planning; and
- national service planning standards.

Acknowledgement

The Australasian Rehabilitation Outcomes Centre (AROC) is funded by all major stakeholders in the rehabilitation sector in Australia. This article is a summary of data provided to AROC by all participating rehabilitation providers in Australia.

AROC would like to thank all the staff from the rehabilitation facilities who have spent a great deal of time and care in scoring the FIM, and collecting, correcting or collating the AROC data, and without whose considerable efforts this paper would not be possible.