Changing Incidence Low Value Knee Arthroscopy Procedures – Australian Private Sector

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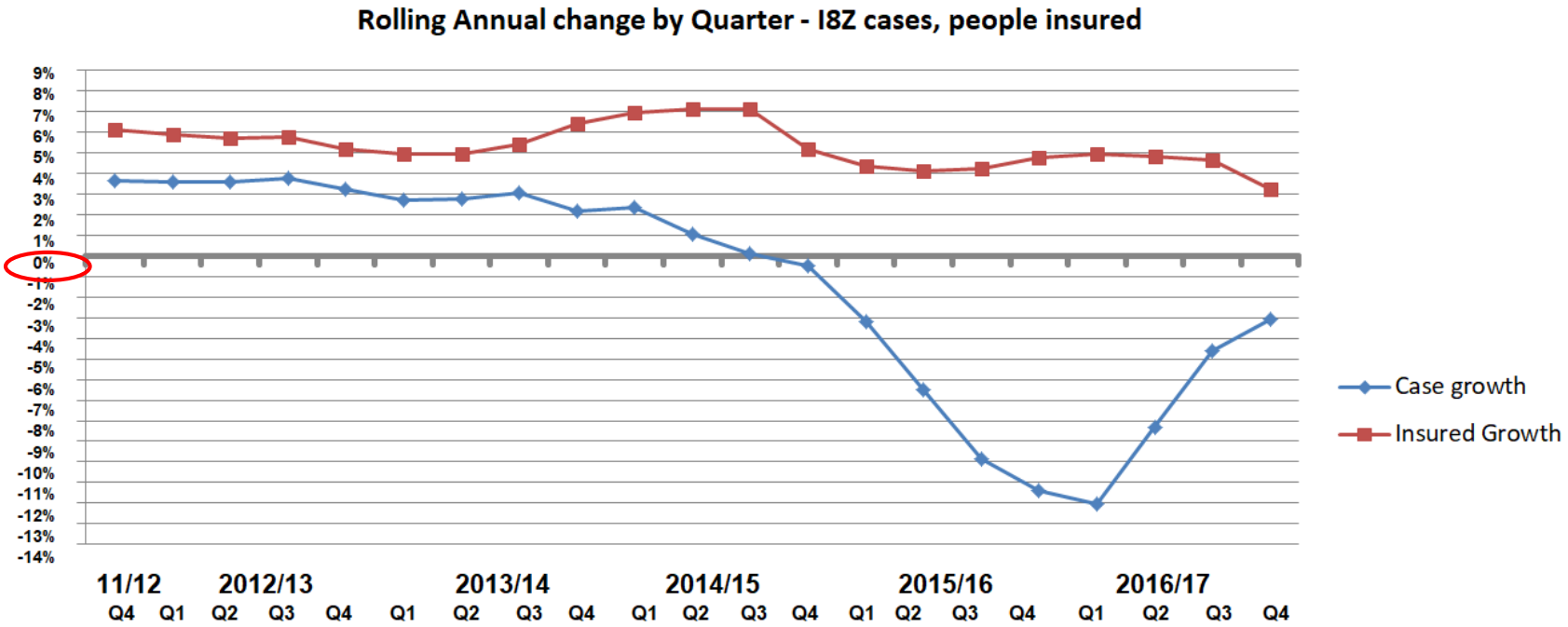
Background

- Papers in major journals have cast doubts on the value of a number of common knee arthroscopy procedures
- Analysis of Private Sector data is an appropriate method of determining if these papers have changed clinical practice and altered incidence of such procedures
  - **Changes in waiting time that could affect incidence in the public sector do not affect the private sector**
  - **Analysis of Persons covered by 5 year age cohort over time a powerful tool**
    - **change in people covered and their demography versus utilization change**
- These cases map into ARDRGv6x – *"Other Knee procedures"*
  - ~96% of cases in this DRG have arthroscopic procedures
  - virtually all elective – emergency cases only 1.0% to 2.6%
  - **This analysis does not include arthroscopic knee reconstruction cases (ARDRGv6x I29Z – *"Knee Reconstruction or Revision"*)**

Changing Case Numbers I18Z

On a rolling quarterly basis:

- Annual change in people covered by current AHSA funds and
- Annual change in I18Z case numbers



What does this mean?

- At the aggregate level, the growth in people covered has always been higher than growth in I18Z cases
  - **Is there a change in incidence of subgroups of I18Z cases where papers have questioned the value of such cases?**
- Subgroup incidence analysis should take into account the change in the number of people covered by AHSA funds and their demography
  - Growth has been substantial over the last six years, particularly in older age cohorts
  - Peak 2010-11 incidence was in those aged 60-64

Persons covered (current AHSA funds)	FY 2010-11	FY 2016-7	Growth
All those over 54	470,355	686,078	45.86%
All those over 64	211,577	357,005	68.74%
All persons covered	1,583,106	2,168,149	36.96%

Subgroup 1- Knee Lavage (Washout)

This subgroup of cases reflected a view that washing out an arthritic knee would alleviate symptoms

- Papers published in the New England Journal of Medicine (NEJM) in 2002 (1) and 2008 (2) showed lavage was no better than placebo
- I18Z cases identified where:
  - only diagnosis code related to arthritis (ICD-10-AM M17 group)
  - only procedure code was 49558-00 (Arthroscopic debridement of knee)
- This was to ensure comparability with NEJM cases

Year	FY10-11	FY11-12	FY12-13	FY13-14	FY14-15	FY15-16	FY16-17
Lavage Cases	34	34	24	20	15	10	8
All I18Z cases	8,863	9,196	9,492	9,694	9,658	8,557	8,295
Percent lavage	0.38%	0.37%	0.25%	0.21%	0.16%	0.12%	0.10%

There are few lavage cases in the private sector this decade and their incidence has declined to near zero

Subgroup 2- Arthroscopic Menisectomy with Co-existing Degenerative knee Disease

This subgroup of reflected the view that torn menisci were a cause of knee pain even if co-existing degenerative knee disease was present

- Arthroscopic menisectomy considered to be of value in such cases
- Two papers published in the New England Journal of Medicine (NEJM) in 2013 (3,4) raised suggested this was not the case
- The I18Z cases in the AHSA dataset were searched to replicate the type of cases in the NEJM papers
  - The primary and secondary diagnosis were arthritis (ICD-10-AM M17 group) and meniscal disorders (M23.2 or M23.3 ICD-10-AM code) and
  - Menisectomy procedures occurred (49560-03 or 49561-01)
  - Only cases where the above strings were the first and secondary ICD codes were selected to include menisectomy in the context of existing osteoarthritis
  - The order of these codes was irrelevant to the analysis

Subgroup 2- Aggregate results - Method

- The number of I18Z cases can change from year to year due to changes in:
  - The total number of people insured
  - The relative change in people in each age cohort
  - The number of cases in each age cohort per person insured

- The change in cases expected in each age cohort is projected according to change in the number insured:
  - Using the preceding year as the base incidence in each age cohort to measure year on year change
  - Using 2010-11 as the base year to measure cumulative change
  - The cases are summed over all age cohorts to compare actual cases numbers to those expected based on previous utilization rates

Subgroup 2- Aggregate results

Comparison of actual and projected I18Z cases in subgroup 2 on a YoY change and cumulative change basis

Subgroup 2 - I18Z	FY11-12	FY12-13	FY13-14	FY14-15	FY15-16	FY16-17
Actual cases	3,283	3,404	3,530	3,428	2,805	2,598
Projected cases	*(previous years incidence each five year age cohort)*					
	3,354	3,472	3,582	3,740	3,599	2,938
YOY change	-2.12%	-1.96%	-1.45%	-8.33%	-22.07%	-11.57%
Projected cases	*(based on 2010-11 incidence each five year age cohort)*					
	3,354	3,545	3,734	3,960	4,160	4,369
Cumulative change	-2.12%	-3.98%	-5.46%	-13.43%	-32.58%	-40.54%

Substantial cumulative reduction in subgroup 2 cases has occurred compared to that expected based on 2010-11 incidence

- On current trends further reductions albeit at a slower rate can be anticipated

How does this compare with trends in incidence for Other types of I18Z cases?

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Other I18Z Cases - Aggregate results

Comparison of actual and projected Other I18Z cases on a YoY change and cumulative change basis

Other I18Z Cases	FY11-12	FY12-13	FY13-14	FY14-15	FY15-16	FY16-17
Actual cases	5,905	6,079	6,161	6,225	5,748	5,691
Projected cases	*(previous years incidence each five year age cohort)*					
	6,028	6,216	6,376	6,519	6,483	5,975
YOY change	-2.08%	-2.26%	-3.49%	-4.72%	-12.79%	-4.99%
Projected cases	*(based on 2010-11 incidence each five year age cohort)*					
	6,028	6,352	6,669	7,066	7,363	7,669
Cumulative change	-2.04%	-4.29%	-7.61%	-11.90%	-21.93%	-25.79%

- A substantial decrease has also occurred, albeit markedly less than that of subgroup 2 cases (-25.79% vs -40.54%)
- A number of cases in this subgroup are clinically similar to subgroup 2 even though they are differ in terms of ICD and procedure codes

I18Z subgroups - Results by Age Cohort

Cumulative reduction in cases by age cohort for Subgroup 2 and Other cases

- Only age cohorts with at least 50 cases are included
- There is marked difference in the reduction in subgroup 2 between those aged under 50 and over 49
- Knee pain in age <50 more likely to be a consequence of a meniscal injury
- Knee pain in age >49 where meniscal injuries are increasingly likely to co-exist with degenerative knee disease which is the most likely cause of knee pain in these age cohorts

Age group	Subgroup 2	Other cases
30-34	-31.86%	-39.03%
35-39	-35.40%	-29.06%
40-44	-21.53%	-28.60%
45-49	-19.95%	-23.39%
50-54	-42.96%	-25.15%
55-59	-44.81%	-23.55%
60-64	-42.07%	-31.02%
65-69	-42.29%	-24.18%
70-74	-48.20%	-38.54%
75-79	-51.86%	-24.38%
80-84	-51.34%	-45.17%

I18Z subgroups – Results by Jurisdiction

Cumulative reduction in cases by age cohort for Subgroup 2 and Other I18Z Cases

- Only larger jurisdictions are included. Comparators are:
  - 2010-11 national norms (historical)
  - 2016-17 national norms
  - 2016-17 NSW norms – the jurisdiction with the lowest incidence

Sub Group 2 cases	NSW	QLD	SA	Vic	Nat
Actual 2016-17 cases	474	586	399	827	2,599
if 2010-11 norms	1,015	1,019	560	1,259	4,337
if national 16-17 norms	777	566	190	816	2,599
if NSW 2016-17 norms	474	347	116	500	1,591

Other I18Z cases	NSW	QLD	SA	Vic	Nat
Actual 2016-17 cases	1,168	1,278	848	1,751	5,696
if 2010-11 norms	1,713	1,557	958	2,555	7,574
if national 16-17 norms	1,716	1,239	401	1,744	5,696
if NSW 2017 norms	1,168	841	275	1,181	3,856

Comments on Jurisdiction Results

The reduction in projected cases if 2010-11 utilization norms had continued is substantial

- Subgroup 2 cases
  - 40.07% nationally and varies from 28.75% (SA) to 54.30% (NSW).
- Other I18Z cases
  - 24.80% nationally and varies from 11.48%(SA) to 31.82%(NSW)
- State comparisons compared to the expected cases (2016/17 national norms)
  - QLD and Victoria are close to the norms
  - SA is about 110% above
  - NSW ~35% below (for both subgroups)

Comments on Jurisdiction Results (cont.)

The reduction in projected cases if 2010-11 utilization norms had continued is substantial

- State comparisons compared to the expected cases (2016-17 NSW norms)
  - SA is over 200% above,
  - QLD and Victoria both about 50% above, for both subgroups
- If NSW norms applied nationally across all jurisdictions there would have been 5,447 I18Z cases – a reduction of 2,848 or 34.3%

There is still scope for large reduction in I18Z cases

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Has Surgical Practice changed?

- Referenced papers have highlighted that changing clinical practice is not straightforward even given persuasive evidence
  - NEJM in 2016 (5), MJA in 2017 (6)
- The reduction in I18Z cases, particularly in subgroup 2 cases age >49 is consistent with a significant change in surgical practice
- The degree of change between surgeons and jurisdictions varies

The result is a marked reduction in the incidence of low value knee arthroscopies

Further reduction can reasonably be expected

- There is reason for optimism that the 2017 clinical practice guidelines for arthroscopic surgery for degenerative knee arthritis and meniscal tears as published in the BMJ (7) will be widely adopted

References

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