

Reimbursement for Clinical Performance Joint Replacement Surgery in Australia



Australian
Orthopaedic
Association
National
Joint
Replacement
Registry

Presenter: Stephen Graves

Joint Replacement Surgery

In 2018 almost 120,000 hip, knee and shoulder replacements were undertaken

Hip replacement (47,972)

Knee replacement (63,854)

Shoulder replacement (6,536)

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Joint Replacement Surgery

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**Very conservative estimate of health care cost
for 2018 was \$2.5 Billion**

Incidence is Increasing

Hip replacement	↑ 78% (2003-2017)
Knee replacement	↑ 124% (2003-2017)
Shoulder replacement	↑ 141% (2008-2017)

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Most studies predict rates of increase seen over the last 10-15 years are anticipated to continue for the foreseeable future.

Aging, Increasing BMI, Increased use in younger patients

Later not in Australia

Is this a sustainable cost burden?

Depends

- What are the drivers for increased utilization and are they modifiable?
- Are procedures being undertaken for appropriate indications and at the required threshold of symptom severity?
- Can cost per procedure be reduced?
- Are techniques, clinical practice and joint prosthesis performance optimized to ensure success?
- Can new technology and innovation be introduced safely and effectively
- How can this information be obtained and disseminated?

What is a Registry?

A Registry is a continuous quality assurance program (national or large regional) which is integrated into health care systems.

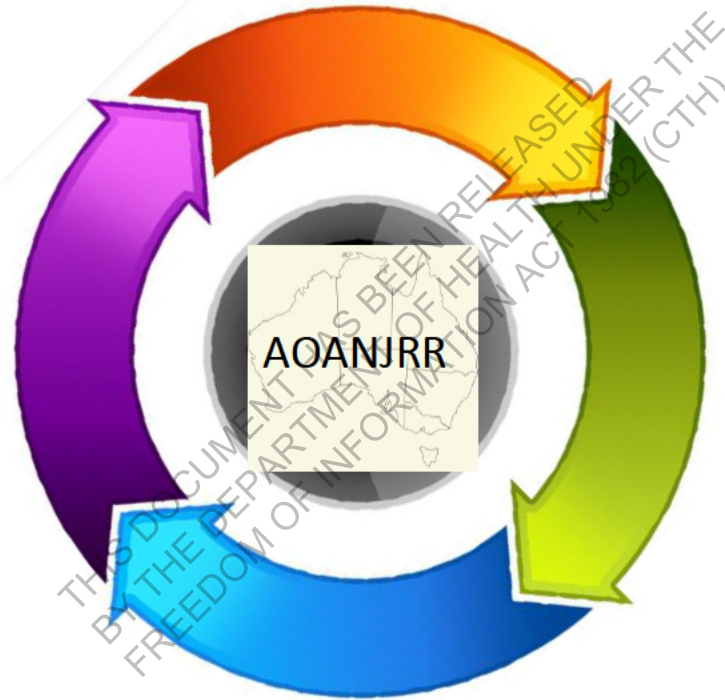
They are appropriately designed, governed and managed to ensure that they bring about significant improvement in health outcomes.

They are transparent and accountable

AOANJRR is a National Learning Health care System

**Accurate, high quality, data collection
which is information rich**

**Monitors change in outcomes
and care delivery as a
consequence of information
provided and then refines
evidence requirements**



**This actionable information is
provided to clinicians, patients and a
wide range of health industry and
government stakeholders
real world and real time**

**Information and evidence transform
interactions from reactive to proactive,
identifying both benefits and harms**

AOANJRR Background

- Fully owned by the Australian Orthopaedic Association
- Data collection commenced in 1999, staged introduction with full national implementation completed mid 2002
- Funded by the Australian Federal Government (Federal legislation 2009 implemented a cost recovery process, updated in 2015)
- A Listed Federal Quality Assurance Activity
- Major impact on improving the outcome of joint replacement surgery both Nationally and Internationally

AOANJRR Overview (Feb 27 2019)

Participation Entirely Voluntary:

- Hospitals – **310** public & private (100%)
- Surgeons – **100 %** participation
- Patients – **45** “have opted off”
- Data on over **99%** of all procedures since mid 2002 (Validated to ensure accuracy and completeness)

Currently information over **1.5 million** Procedures

- **646,249** hip procedures
- **786,189** knee procedures
- **52,473** shoulder procedures
- Additional procedures elbow, wrist, ankle, spinal disc (**15,554**)

AOANJRR Information

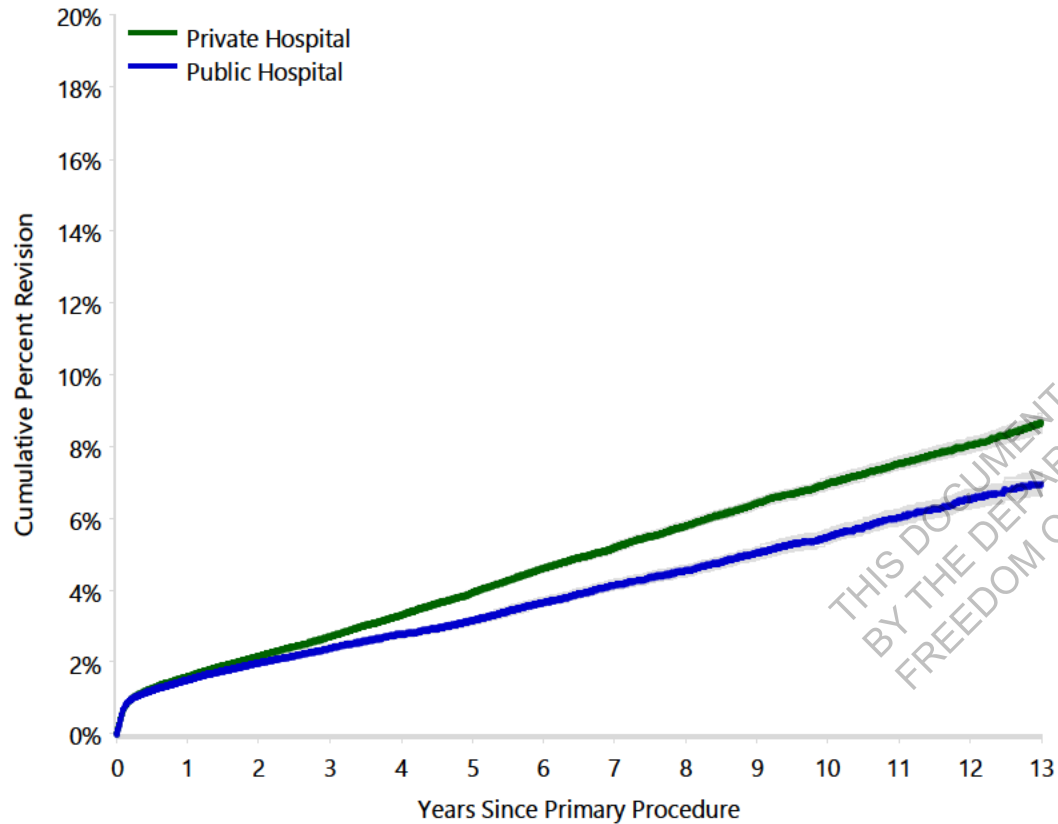
- Publicly available Annual Report which includes multiple supplementary reports (13 in 2017) detailed information on identified devices and a lay report
- Real time website access surgeons, orthopaedic industry, government and regulators AOANJRR
- Detailed individual surgeon reports annually
- Ad Hoc reports (over 300 per year) provided to surgeons, hospitals, hospital owners, researchers, academic institutions, governments (state and federal), regulators and orthopaedic industry
- Automated Reporting system for orthopaedic industry commenced May 2018. Over 300 Industry requested reports since that time.
- Scientific Publications (approaching 200), national and international presentations (80-100 per year)
- Consult and provide advice to all stakeholders to improve practice and implement policy change

Many Factors Influence the Outcome of Joint Replacement Surgery

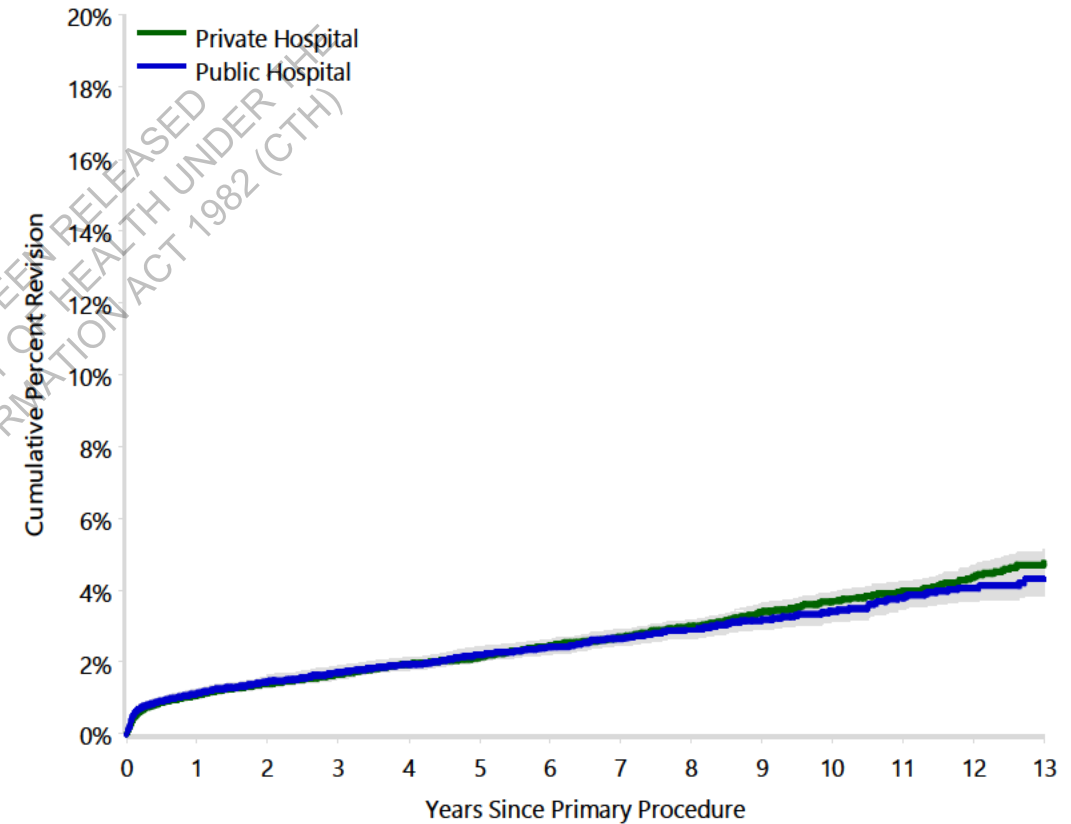
- Patient, surgeon, technique, hospital and prosthesis specific factors.
- The final result is a complex interaction between each of these.
- Registries are able to assess the relative importance of each of these factors and provide insight into the reasons for outcome variation
- Identifies best and worst practice and the factors that influence this

Hospital/Health system performance by TKR Prosthesis

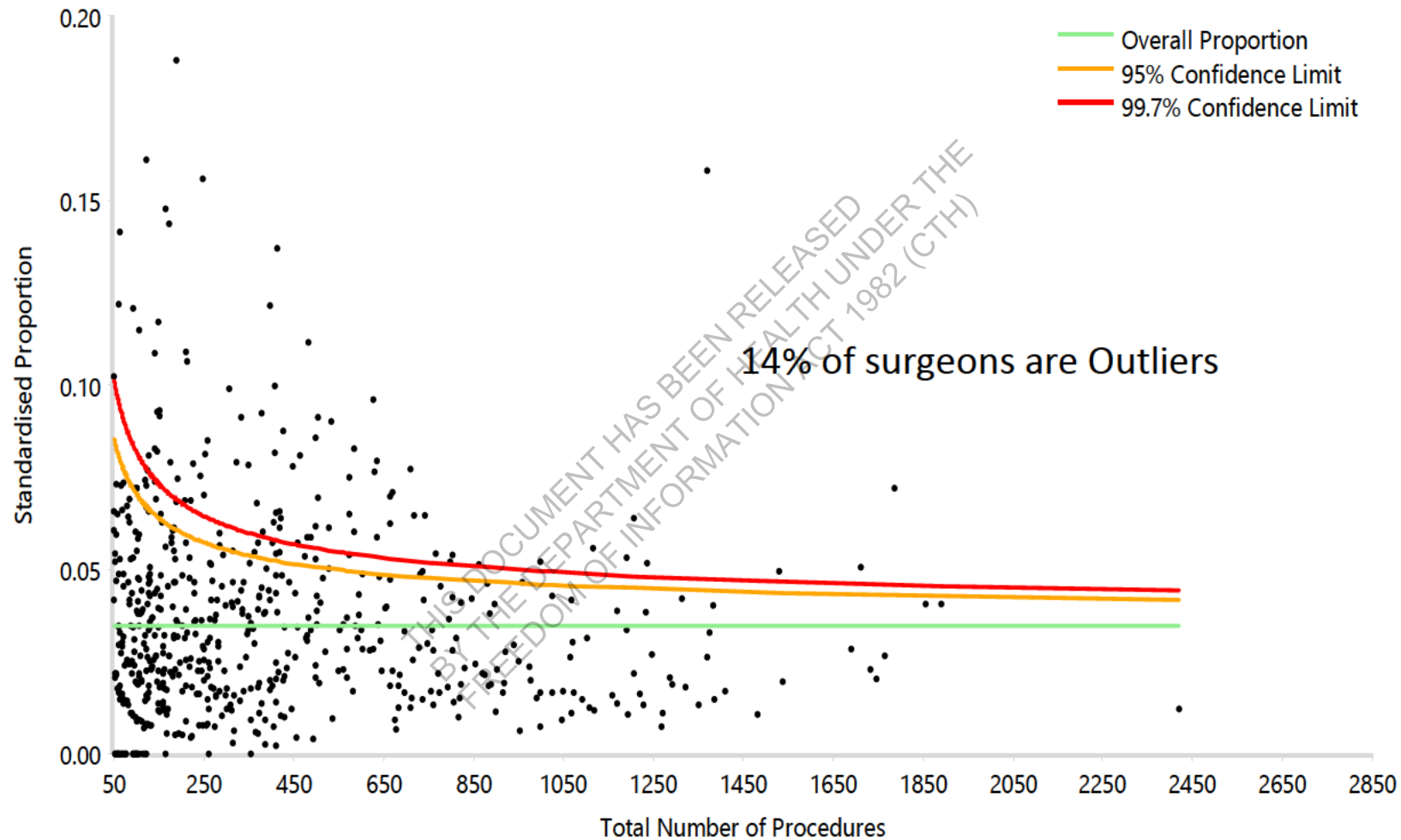
All Prostheses



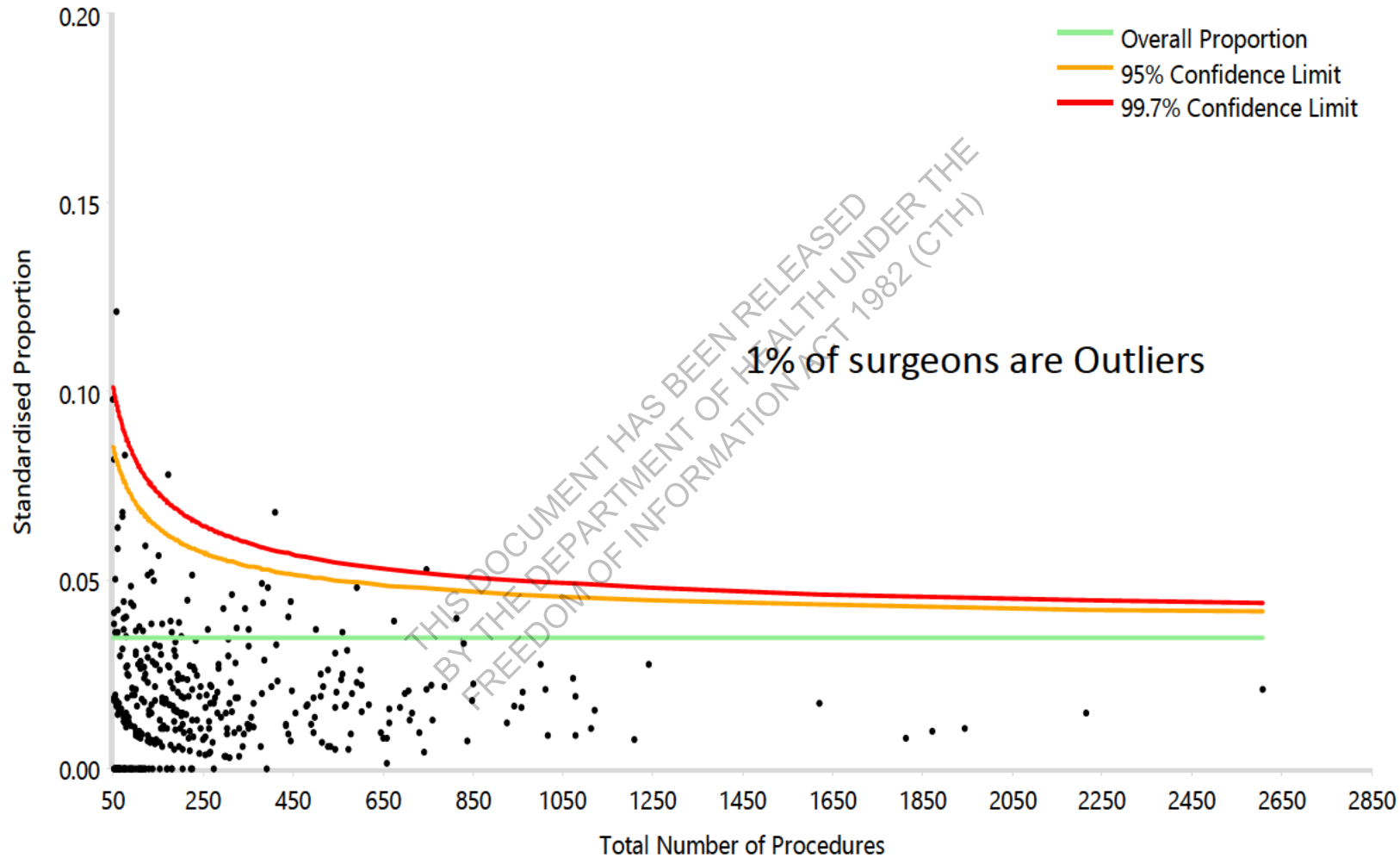
10 Best Prostheses



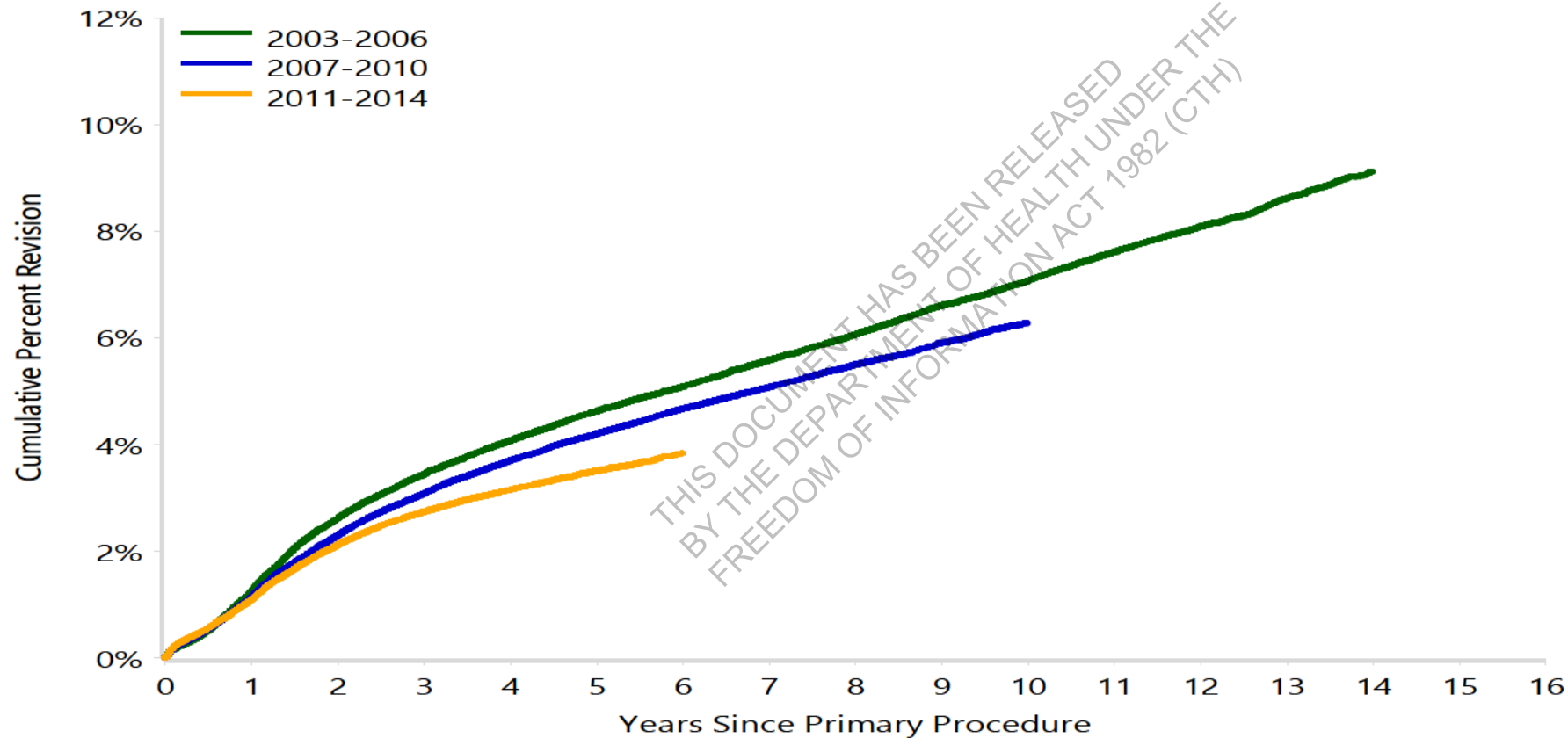
Surgeon Variation (Exc 10 best TKR prostheses)



Surgeon Variation (10 best TKR prostheses)



Change of Revision Risk with time (TKR)



Examples of improvement in quality of care

- Large Head MoM, other classes of a devices, over 140 individual outlier devices
- Identified techniques and prosthesis types that are most suitable in specific patient populations
- Impacts of surgeon experience, surgeon volume and learning curve on outcomes of joint replacement
- Individual surgeon variation and the reasons for this
- Individual hospital variation and the reasons for this
- Instrumental in Policy change (national and internationally)

Improved Outcomes

- *Revision hip procedures* have decreased as a proportion of all hip procedures from

14.8% in 2002 to **8.2%** in 2018

- *Revision knee procedures* have decreased as a proportion of all knee procedures from

10.7% in 2002 to **7.1%** in 2018

- ACSCHC

>\$600 M benefit in 10 years to 2014

Prosthesis Performance

- Not all prostheses are the same
- Hips 10-year CPR (1.7-50%)
- Knees 10-year CPR (2.7-14.0%)
- In the 10 years to end of 2012 over 700 new hip & knee prostheses introduced into the Australian market
- Over 50% - insufficient procedures to assess performance
- 45% did not perform as well as available best prostheses
- 1 performed better (unicompartment knee replacement)
- Only 15-25 % of devices are still on the market 10 years after introduction

Prosthesis Performance

- Safety and Effectiveness (Regulatory assessment)
- Value - Comparative performance - Is it worth paying for? (Reimbursement assessment)
- To achieve this it is necessary to have quality data on device specific performance.

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Problems and Solutions

- Prevent less satisfactory device use
- Maintain quality devices on the market
- International Benchmarking Working Group
- Collaboration between International Registries (ISAR), Benchmarking organisations and Industry
- Underpinned by an expert statistical subcommittee
- Developed an evidence based global approach to assess comparative performance of devices (early and late)

Recommendations

Early Assessment

- Can be done at 2 yrs
- 250 procedures will identify inferior devices when compared to current standards

Late assessment

- Best performed devices – Upper CI of the revision estimate better than expected performance (superior performance) (10-15%)
- Non inferior performance (Upper CI, 20% above expected performance estimate) (30%)

Benefit

- Allows the rapid early assessment of novel devices
 - Assist regulation and the safe introduction of new technology
 - Avoids the use of substantial equivallance
- Allows the identification of best performed devices
 - targeted and appropriate reimbursement

Consensus Statement (AOA/MTAA)

- Recommends evidence requirements for new technology (more stringent than current)
- Provisional approval (enables controlled safe assessment of new technology)
- Recommend reintroduction of Superior Performance reimbursement

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Can assessment Joint Replacement Surgery be improved

- 2/3 of cost not related to the prosthesis
- Better assessment of disease severity and post operative recovery
 - Data linkage
 - PROM's
- Cost efficient strategies to assess patient care, and practice change
 - Registry nested studies

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Data Linkage

- NDI Linkage
- Linkage to large population cohort studies
- MBS/PBS Linkage Jan 2019
- Linkage to Other national registries (ANZDATA, AROC)
- Requested Permission to link to State Hospital Admissions and ED Data.

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PROM's

- Developed integrated electronic system to automatically collect PROM's from all patients receiving joint replacement pre and post operatively (ICHOM and ISAR compliant, international committee recommendations)
 - EQ5D – L5
 - Oxford Score (hip, knee, shoulder)
 - Pain (joint and spine)
 - Charnley comorbidity questions
 - Expectations / Satisfaction
- Implementation commenced in 50 hospitals (July 2018, 12,000 pts July 2019)
- 92% pre-op data collection and 87% post op data collection
- National roll-out being considered

Clinical Trials Platform/ Patient specific additional data collection

- Integrate with data already collected Core/Linked/PROM's
- Use electronic infrastructure developed for PROM's which has built in flexibility to enable the collection of trial specific data
- Ability to collect radiology, investigative results
- 10,000 patient registry nested randomised clinical trial (Clexane v aspirin) to commenced April 2019 (2,000 pts in the first 2mths)
- First trial to assess new device technology commenced July 2019
- Inexpensive and effective platform for assessing the safety of new innovation, techniques and changing approaches to clinical management and health care delivery

Future

- Australia is well positioned to ensure optimised high quality care for patients receiving joint replacement surgery
- Implement strategies and policies to reduce cost but at the same time improve outcomes and minimise adverse events
- Continually monitor the impact of change with transparent and accountable reporting in real time
- The establishment of a learning health care environment is a model of care that is applicable to a wide range of medical interventions.

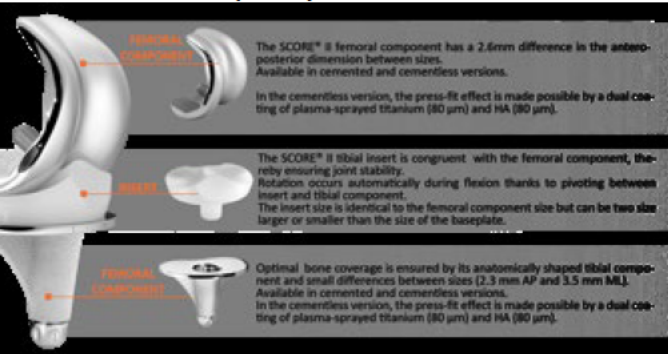


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Thank you

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Score knee by Amplitude (Fr)



Impact of Revision vs Primary

Cemented rotating revision \$3,489 vs standard rotating \$2,146

Uncemented rotating revision \$4,338 vs std uncemented rotating \$2,996



Cost in overcharge to PHI funds > \$3,710,000

Tibial baseplate, CoCr, uncemented, stippled surface, titanium
FOI 1850 plasma spray with HA



Zimmer NexGen Stemmed Tibial Component - cemented

Stemmed tibial baseplate, cemented for fixed insert, titanium PMMA coated, with capacity for augment and stem attachment

I used the Zimmer Nexgen TKR system. I would routinely use the cemented tibial tray WITH an extended intramedullary stem for ALL primary cases. There is excellent evidence that this is appropriate BUT that would not justify Zimmer billing

50 of 50



Zimmer Persona Tibial Tray, Stemmed

[Technique for stem augments for Persona](#)

Revision Suffix \$3,265

Standard Tibia \$1,923

Cost in overcharge to PHI funds > \$50,000,000

DOCUMENT 3

PRECISIONMED