Evidence Review

Elective Primary Total Hip and Knee Replacement

4 May 2012

Ian Harris
Professor of Orthopaedic Surgery UNSW
Co-Lead, ACI Musculoskeletal Network
Elective Joint Replacement Evidence Review Working Group
Background

Why did the network decide to review the evidence for elective hip and knee replacement?

1. Clinical variation
2. Variable provision or access to joint replacement
3. Increasing demand for joint replacement
1. Clinical variation

Clinicians and consumers reported:

▲ Differences between surgeons in the same facility
▲ Differences between facilities

in the preoperative, perioperative and postoperative aspects of care
2. Provision or access - hip

Hip replacement procedures annually (per 100,000) international comparisons

- Germany: 289
- Switzerland: 226
- France: 220
- Sweden: 207
- Netherlands: 205
- UK: 195
- USA: 162
- Australia: 155
- NSW: 145
- NZ: 145
- Canada: 121

2. Provision or access - knee

Hip replacement procedures annually (per 100,000) international comparisons

- Germany: 206
- USA: 183
- Switzerland: 179
- NSW: 164
- Australia: 158
- UK: 146
- Canada: 142
- Netherlands: 119
- France: 114
- Sweden: 110
- NZ: 96

3. Demand

![Graph showing procedures per 100,000 population from 1993-94 to 2005-06 for hip and knee replacement procedures by sex.]

*Note:* Rates are based on a count of all primary total hip replacement or primary total knee replacement procedures performed in separations with the principal diagnosis of arthritis (see Appendix 2 table A2.1 for codes used). More than one such procedure may have been performed within a single separation.

*Source:* AIHW National Hospital Morbidity Database.

**Figure 7.3: Primary total hip and knee replacement rates, 1993-94 to 2006-07**

2. Demand

- Since 2003, primary conventional THR
  - 43.3% increase in private sector
  - 33.5% increase in public sector

- Since 2003, primary TKR
  - 79.1% increase in private sector
  - 59.9% increase in public sector

Joint Replacement Projects

- International
  - “Fast track’ / ‘express recovery’ / ‘early discharge’ programs e.g. Denmark, UK, Netherlands, Canada
  - Guidelines for specific aspects of care e.g. VTE prophylaxis, blood management

- Australian
  - Victoria developed a system for prioritisation and management of people referred for public orthopaedic consultation
  - Queensland orthopaedic physiotherapy screening clinic to assess and case manage individuals for timely and appropriate care
  - NSW OACCP
What was done

- ACI Musculoskeletal Network convened a working group from its membership, expanded for necessary expertise
- Project defined (resources, expertise, scope)
- Inclusion and exclusion criteria determined
- Literature review: Medline, EMBASE, CENTRAL, Cochrane
- Multiple reviewers
- Guidelines, RCT’s, meta-analysis, extended to prospective cohorts if RCT lacking
Evidence Review Aim, Context, Scope

To develop a guideline, informed by existing high level evidence, to reduce unnecessary clinical variation, and promote care which is effective and safe, while giving consideration to the use of health care resources through the preoperative, perioperative and postoperative care pathways for people within NSW public health services electing to undergo primary total hip or knee replacement.
What was found pre, peri and postoperative

- No high level evidence comparing joint replacement with conservative care
- Well designed, randomised controlled trials lacking in most areas
- Room to improve existing knowledge
- Quality of the existing evidence in many areas necessitates caution when drawing conclusions
Preoperative

Higher level evidence was found for:

- Multidisciplinary teams to address
  - Expectations of surgery (I B)
  - Post-discharge needs (I B)

- Exercise to improve pain and function (I C)

- Smoking cessation before surgery and in the acute care period (II B)
Preoperative (cont.)

- Lower levels of evidence were found for:
  - Promotion of function (III-2C)
  - Multidisciplinary team to optimise surgical outcomes (III-2C)
  - Co-morbid conditions increase the likelihood of adverse events or complications (III-2C)

- No clear agreement at this time on prioritisation for surgery
Peri-operative

Higher level support was found for:

▲ Multidisciplinary blood management program in each facility e.g Hb management preop (IB)
▲ No superior outcome for particular prostheses; patella resurfacing reduces risk of reoperation (IA)
▲ Regional anaesthesia (IB)
▲ Deflation of tourniquet prior to wound closure (IB)
▲ Insufficient evidence to support the use of drains (IC); cryotherapy (IB); CPM (TKR) (IA)
▲ Multimodal VTE prophylaxis
▲ Early mobilisation (IA)
Peri-operative (cont.)

- Lower levels of evidence found for:
  - Structured care pathway (III-2C)

- Inconclusive due to lack of quality evidence are:
  - Type of catheterisation
  - Use of hip precautions
  - Effect of surgical volume (surgeon or facility)
Postoperative

- Rehabilitation: defined by the World Health Organisation as “…appropriate measures, including…peer support, to enable persons…to attain and maintain their maximum independence, full physical, mental, social and vocational ability, and full inclusion and participation in all aspects of life”
Postoperative

- Rehabilitation
  - insufficient evidence to show superiority of particular location, type, timing or duration

- Follow up
  - No evidence to guide duration or frequency of surgical follow-up
  - Need to collect long term measures of surgical outcome
Where to from here?

- Consultation with orthopaedic surgeons and orthopaedic departments in NSW
- Publication of findings
- Development of a model of care for implementation of the current evidence to improve experiences for people in the public health sector
Working Group

Elizabeth Armstrong
Claire Crane
Susan Dietsch
John Eisman
Jenny Follett
Danella Hackett
Ian Harris
Jenson Mak
Rajat Mittal
Jillian Moxy
Linda Ross
Robyn Speerin
Amanda Thomson
Richard Walker

Cathy Bennett
Edward Davidson
Amy Donlan
Emily Farquhar
Marlene Fransen
Elaine Harnett
David Hunter
Lyn March
Robert Molnar
Justine Naylor
Natalie Shiel
Paul Stalley
Peter Walker
Megan White
Any Questions?
Ian Harris
Professor of Orthopaedic Surgery
South West Sydney Clinical School UNSW
Stream Director (Bone and Joint, Neurosurgery, Plastics and Trauma)
SWSLHD
Director
Injury Research Stream Ingham Institute and
Whitlam Orthopaedic Research Centre

02 8738 3898
ian.harris@sswahs.nsw.gov.au