

CAHSPR Conference Hospitalizations, Early Revisions and Infections Following Joint Replacement Surgery

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Objective

- To examine the consequences of joint replacements (hospitalizations, early revisions and infections) in order to understand the implications on the hospital system in terms of resource use and care delivery

Context

- Identified as a priority for wait time reduction in 2004
- Predominantly elective
- Resource-intensive
- Growing and changing utilization

Study Questions

- How does hospital use among joint replacement patients compare with the experience of the same group in the year before surgery?
- Of the hospitalizations in the year following surgery, what proportion is related to infection or early revisions?
- What are the resource implications of any 'extra' hospital use?



Methods

- Data source: CIHI (The Canadian Institute for Health Information)
 - Discharge Abstract Database (DAD) (all provinces outside of Quebec)
- Sample selection:
 - Primary joint replacement in 2005-2006
 - elective and emergent
 - Records with a valid HCN



Methods continued

- Hospital use
 - 365 days preceding and following surgery
 - Built hospitalization episodes
 - Excluded:
 - episodes where there was another primary joint replacement
 - patients who died in the index joint replacement episode

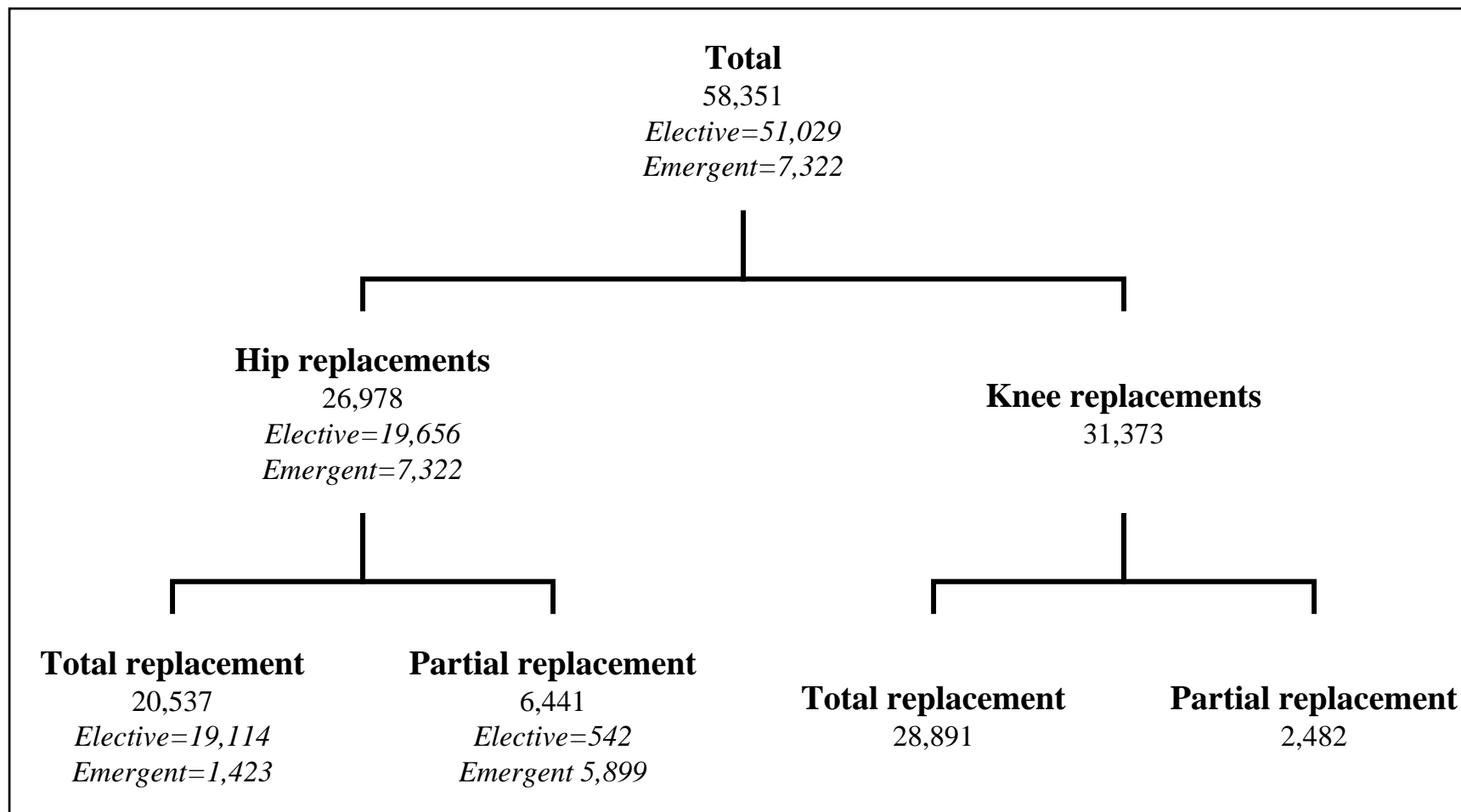


Methods continued

- Hospitalizations related to revision or infection in year after surgery
 - Factors:
 - type of surgery (elective/ emergent, hip/knee)
 - age, gender
 - Diabetes
- Resource use related to “extra” hospital days
 - Additional acute care beds
 - Cases per additional bed
 - “extra” costs per joint



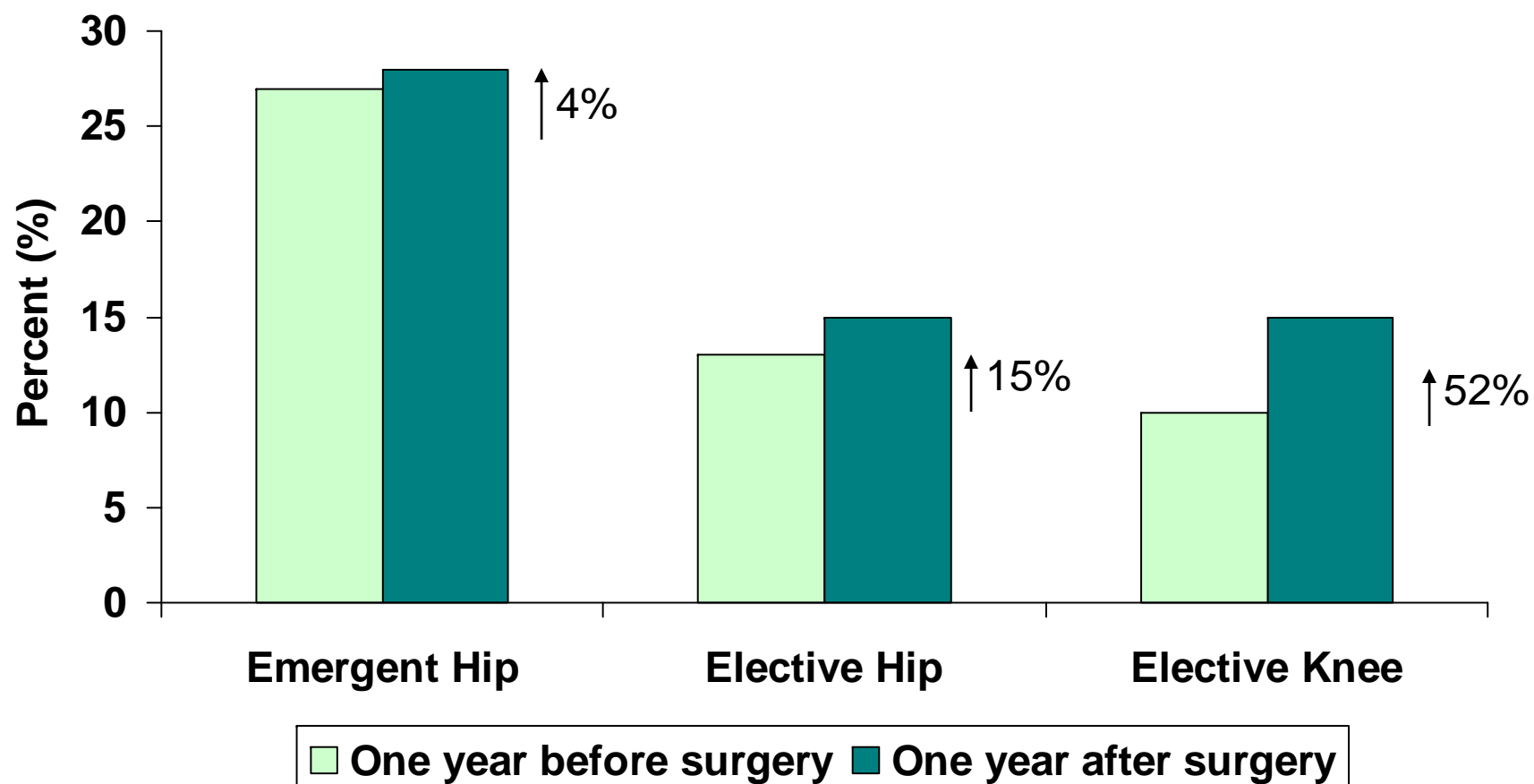
Study Group



Data Source: Discharge Abstract Database 2005-06
All provinces excluding Quebec



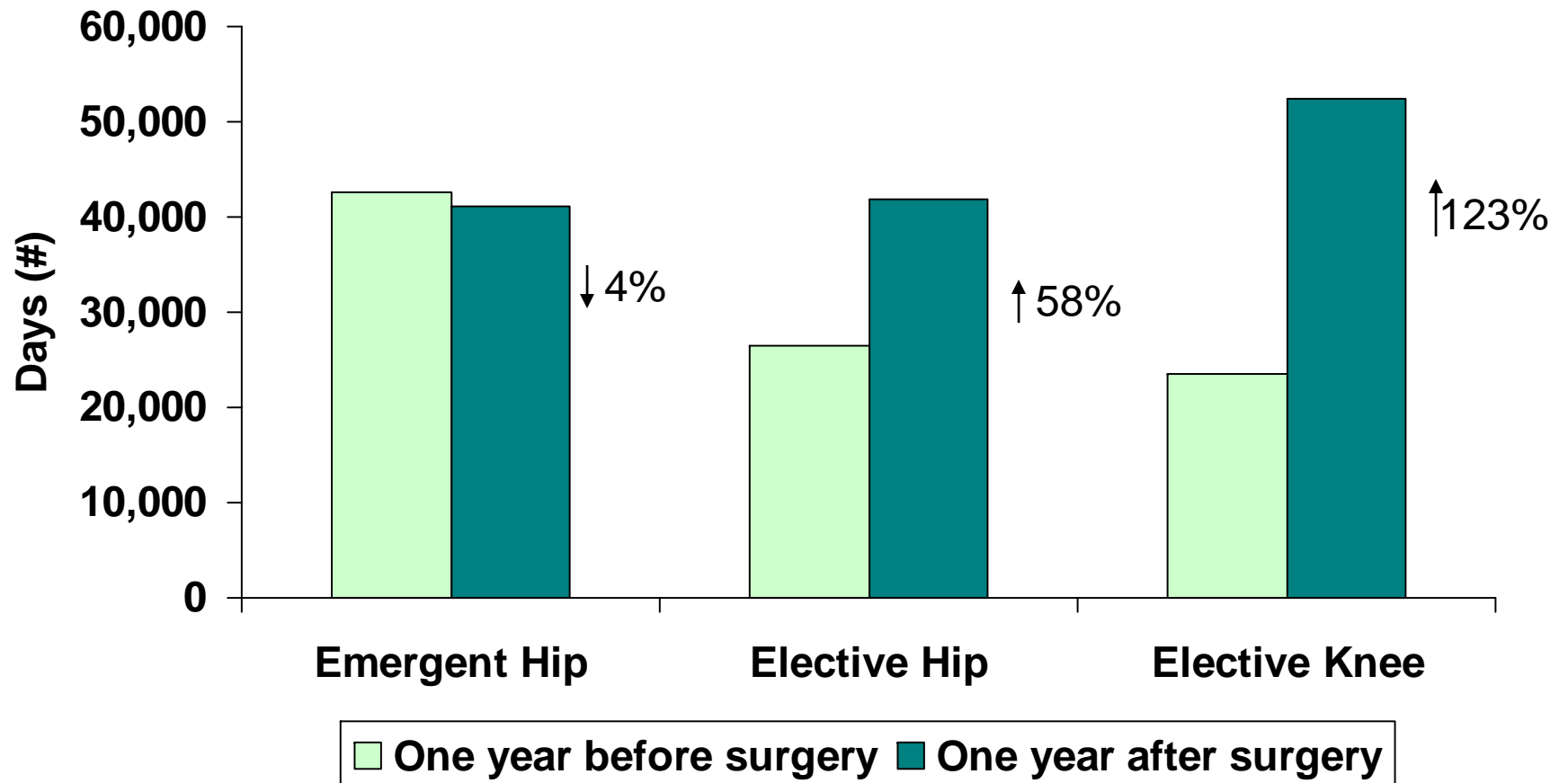
Results - Hospitalizations



Data Source: Discharge Abstract Database 2004-05 to 2006-07
All provinces excluding Quebec



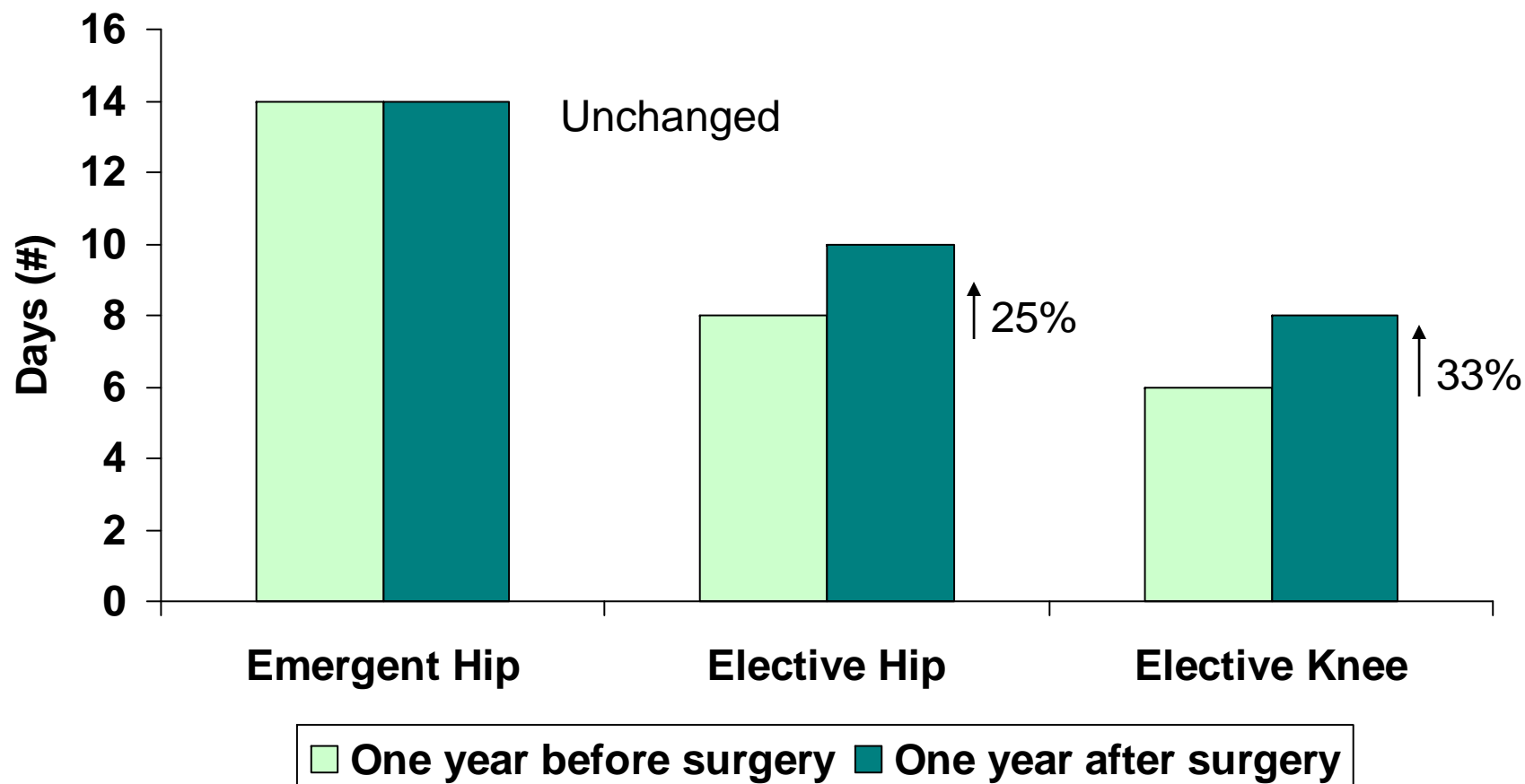
Total number of hospital days



Data Source: Discharge Abstract Database 2004-05 to 2006-07
All provinces excluding Quebec



Average days per visit



Data Source: Discharge Abstract Database 2004-005 to 2006-07
All provinces excluding Quebec



Reasons for Admissions - Emergent

Emergent Hip Pts (n = 7,322)	Hospitalizations in Year Before Surgery	Hospitalizations in Year After Surgery
Top 5 reasons for hospitalization	<ol style="list-style-type: none"> 1. COPD (6%) 2. Heart failure (5%) 3. Pneumonia (3%) 4. Fracture of the femur (3%) 5. Acute MI (2%) 	<ol style="list-style-type: none"> 1. Complications of internal orthopedic device (6%) 2. Heart failure (6%) 3. COPD (5%) 4. Pneumonia (5%) 5. Fracture of the femur (4%)

Data Source: Discharge Abstract Database 2004-05 to 2006-07
All provinces excluding Quebec



Reasons for Admissions - Elective

Elective Hip Patients (n = 19,656)	Hospitalizations in Year Before Surgery	Hospitalizations in Year After Surgery
Top 5 reasons for hospitalization	<ol style="list-style-type: none"> 1. Persons encountering health service for specific procedures, not carried out (6%) 2. Fracture of the femur (5%) 3. Complications of internal orthopedic device (4%) 4. Arthrosis of hip (3%) 5. COPD (3%) 	<ol style="list-style-type: none"> 1. Complication of internal orthopedic device (15%) 2. Complication of procedure (5%) 3. Other medical care (2%) 4. Heart failure (2%) 5. COPD (2%)

Data Source: Discharge Abstract Database 2004-05 to 2006-07
All provinces excluding Quebec



Reasons for Admissions - Elective

Elective Knee Patients (n=31,373)	Hospitalizations in Year Before Surgery	Hospitalizations in Year After Surgery
<p>Top 5 reasons for hospitalization</p>	<ol style="list-style-type: none"> 1. Persons encountering health service for specific procedures, not carried out (7%) 2. Complication of internal orthopedic device (3%) 3. Pain in throat and chest (3%) 4. Arthrosis of knee (3%) 5. Chronic ischaemic heart disease (2%) 	<ol style="list-style-type: none"> 1. Complication of internal orthopedic device (13%) 2. Complication of procedure (5%) 3. Acute MI (2%) 4. Heart failure (2%) 5. Atrial fibrillation and flutter (2%)

Data Source: Discharge Abstract Database 2004-05 to 2006-07
All provinces excluding Quebec



Early Revisions

	% Revised within 1 Year (p<0.001)	Top Reason for Revision
Emergency Hip Patients	2.0%	Mechanical complications
Elective Hip Patients	1.7%	Mechanical Complications
Elective Knee Patients	0.9%	Infection

Data Source: Discharge Abstract Database 2004-05 to 2006-07
All provinces excluding Quebec

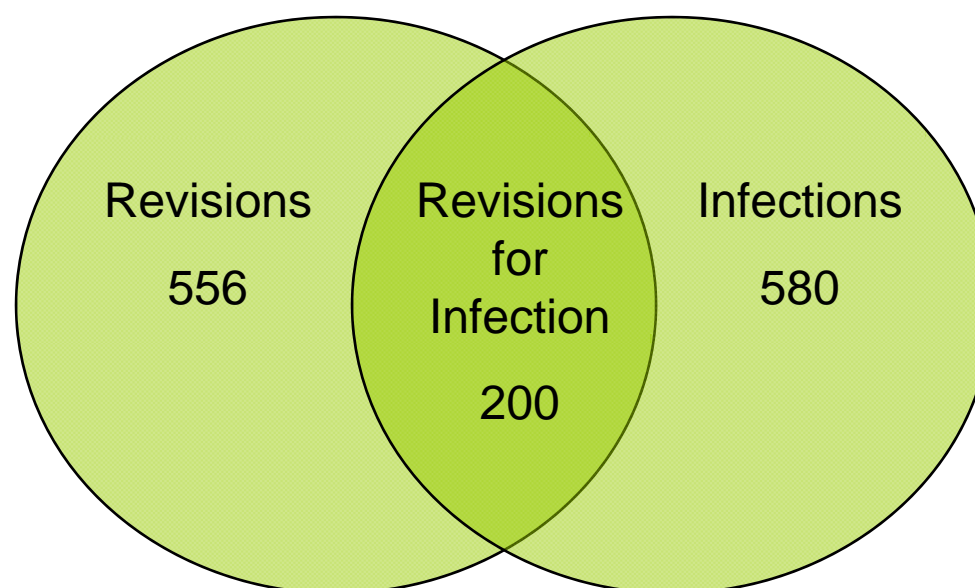


Deep Joint Infections within 1 Year of Surgery

- 1.3% of hip and knee patients
 - men 1.6% vs. women 1.2% ($p < 0.001$)
 - diabetics 2.2% ($p < 0.001$)
- Not significant
 - emergent or elective patients
 - hip or knee
 - age



Revisions for Infection



Data Source: Discharge Abstract Database 2004-05 to 2006-07
All provinces excluding Quebec

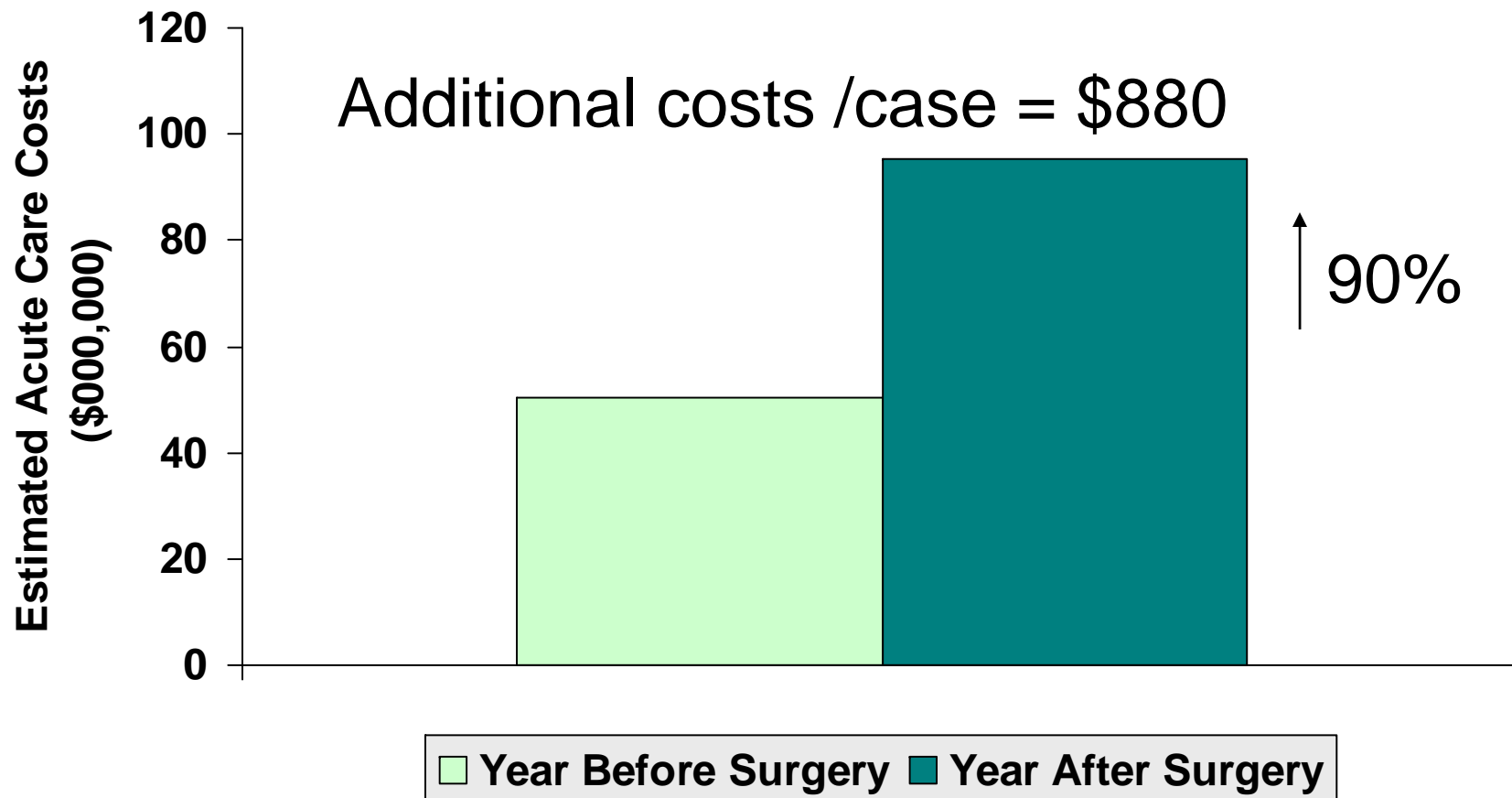
Resource Use – Extra Beds

Elective TJR patients = 51,029	Before surgery	After surgery	Difference
Inpatient days	50,080	94,392	44,312
Average inpatient days per case	0.98	1.85	0.87
Equivalent beds (90% occupancy)	152	287	135
Number of TJRs that will fill an acute care bed for a year = 378			

Data Source: Discharge Abstract Database 2004-05 to 2006-07
All provinces excluding Quebec



Resource Use – Total Estimated Inpatient Costs



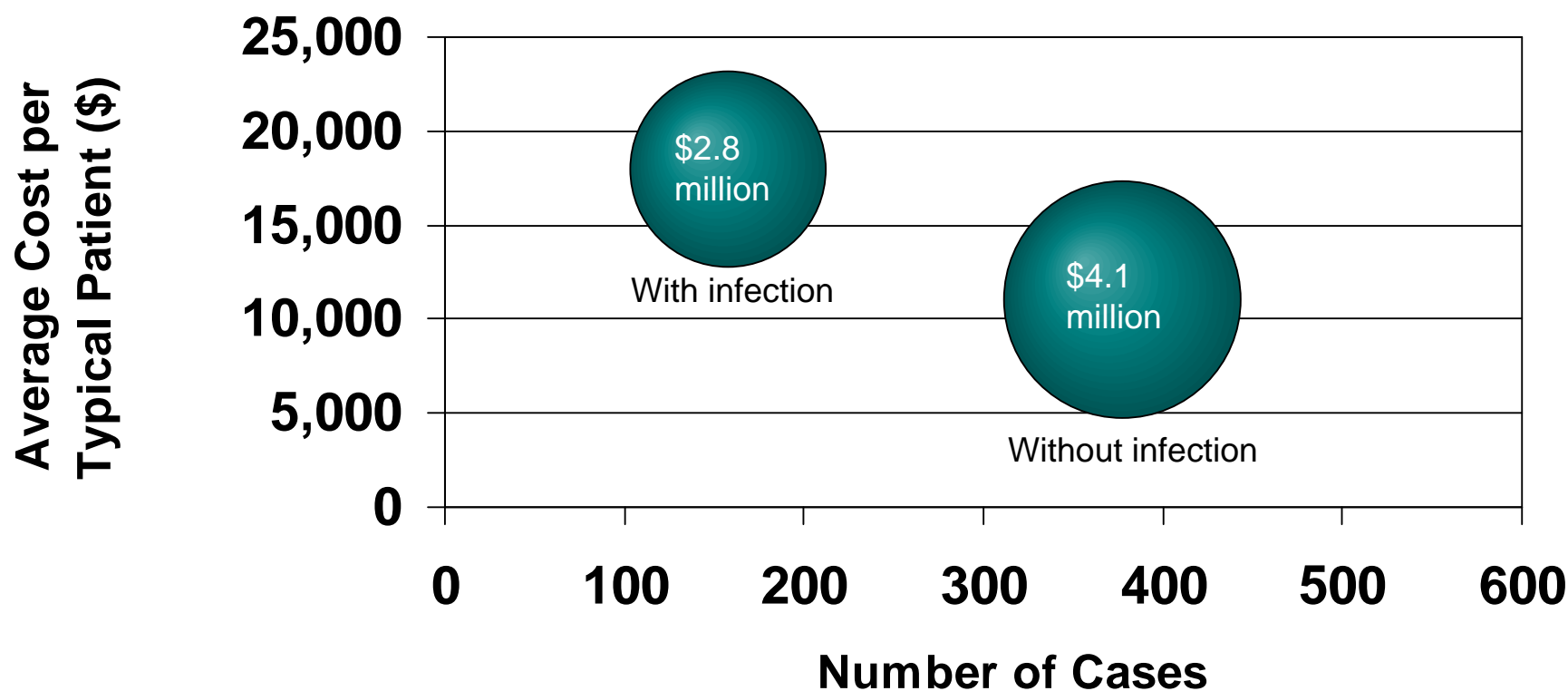
Data Source: Discharge Abstract Database 2004-05 to 2006-07,
Canadian MIS Database
All provinces excluding Quebec



Resource Use – Cost of Revisions

Hospital Costs for Revisions

● Total Acute Hospital Cost



Data Source: Discharge Abstract Database 2005-06 to 2006-07,
costing data 2005-06

All provinces excluding Quebec



Conclusions

- Total joint replacement patients have increased hospital use in the year following surgery
 - elective knee patients > elective or emergent hip patients
- Hip replacement patients are more likely to require a revision
- Infection rates did not vary by joint involved
- Additional hospitalizations can increase costs per case by \$880

