

# QE II Orthopaedic Surgery Wait List Project

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# Stimuli for project

- Patient dissatisfaction with access to care
- Surgeon dissatisfaction with access to resources to treat patients in need
- Hospital administration dissatisfaction with quality of evidence
- Very hot topic nationally and internationally
  - Increasing demand
  - Aging population
  - UN - Bone and Joint Decade



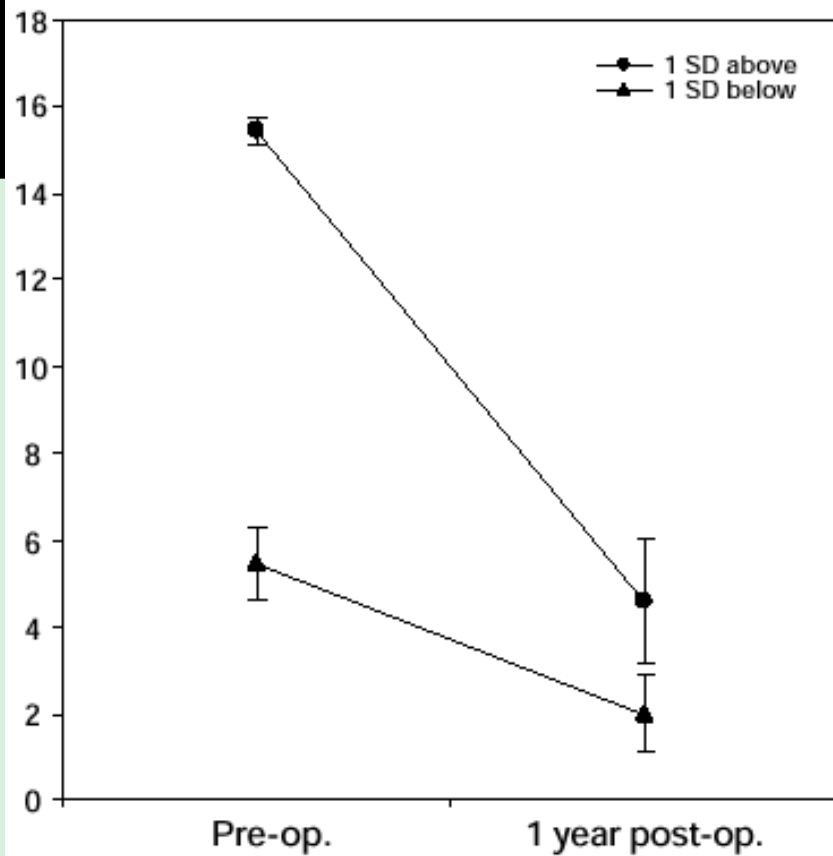
# Institutional Evidence?

Prior to the Wait List Management project, data was limited to the following:

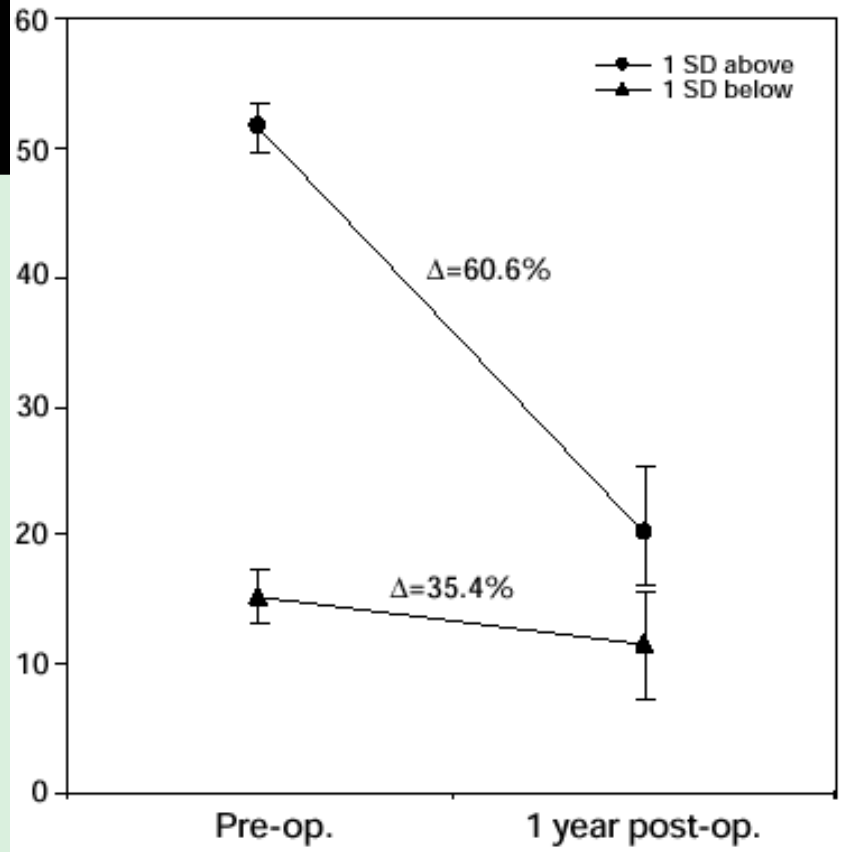
- Anecdotal reports
  - from surgeons
  - from pts in the media
- Data from enterprise systems but definition of wait-time not standardized



### WOMAC Pain



### WOMAC Physical Function



# Project Initiation

- Orthopaedic Pilot
- Initiated 1st quarter 2002
- Initiators:
  - Maura Davies – V.P. Planning & Performance
  - Prof Bob Stone – Head, Dept. of Surgery (Faculty of Medicine)
  - Dr. Michael Dunbar - Director of Orthopaedic Research



# WL Project Main Objectives

- Centralize the list of patients waiting for defined services
- Report wait times and patient volumes patient specific, surgeon specific, procedure specific
- List patients by priority rating (acuity) as determined by the physician associated with their wait
- Report wait list information prospectively
- Development of forecasting simulation capabilities



# Methods

- Definition of wait
- Determination of patient acuity
- Team Development
- Implement wait time collection process
- Utilization of institutional data
- Collection of patient derived health outcome data
- Development of simulation model
- Data must be simple



patient surgeon

consultation

decision to have surgery is made

**BEFORE WLMS**

booking forms with application date

forms filed in each surgeon's office



assortment of digital & paper databases with demographic, diagnostic test & surgeon-derived data only

**AFTER WLMS**

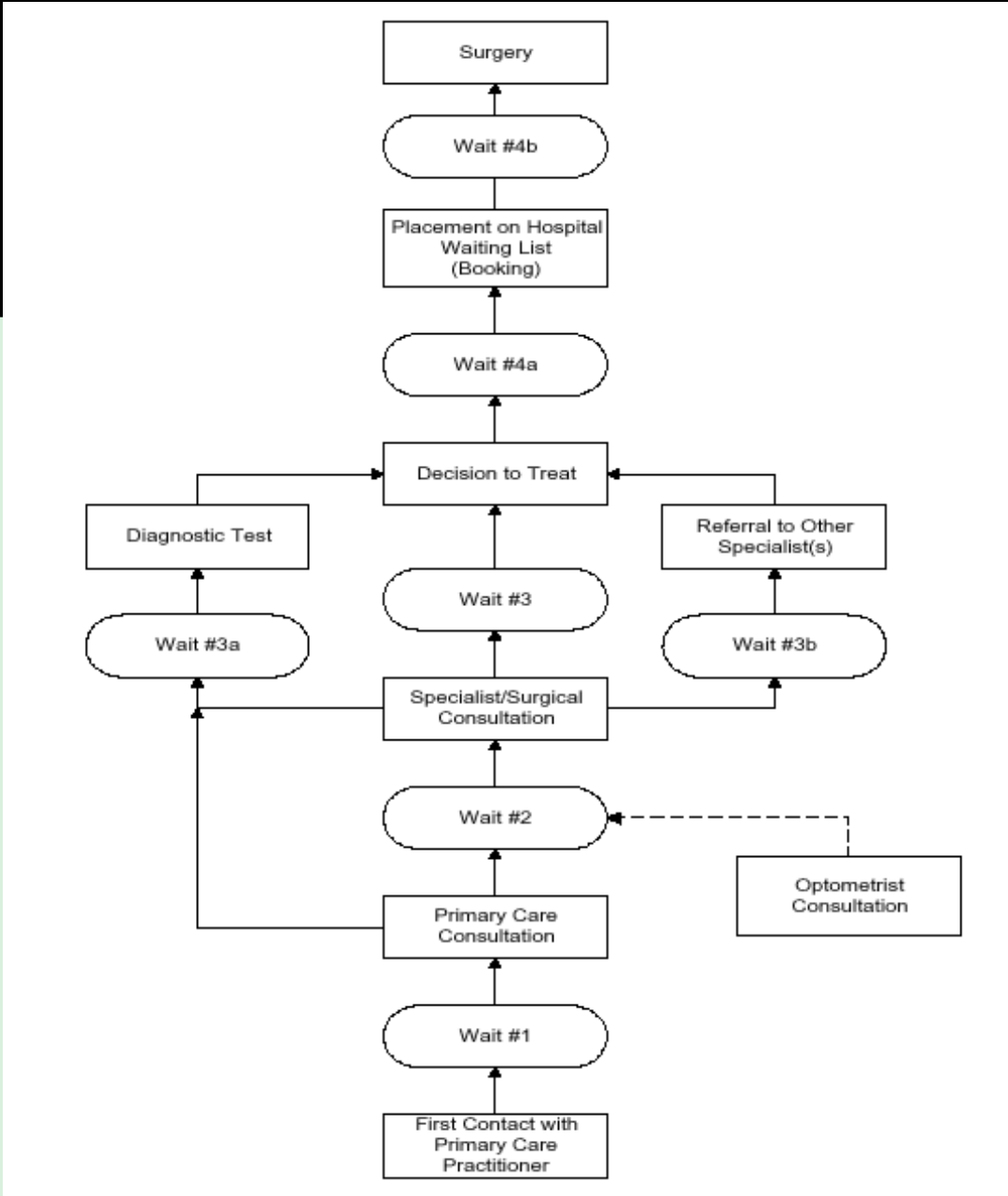
booking forms with application date & surgeon assessed acuity

forms sent to Wait List Coordinator who enters and validates data

**Orthopaedic Surgery Wait List Database**  
prospective data on total number waiting, wait time, patient acuity, & functional status







# Simple Solution



# Surgical Acuity Visual Analog Scale

## Patient Priority for Surgery

Considering all the patients you have seen with a similar condition, what is this patients acuity



## Waiting Times by Patient Priority with Volume Changes

For period: 01-Apr-2002 to 30-Jun-2002

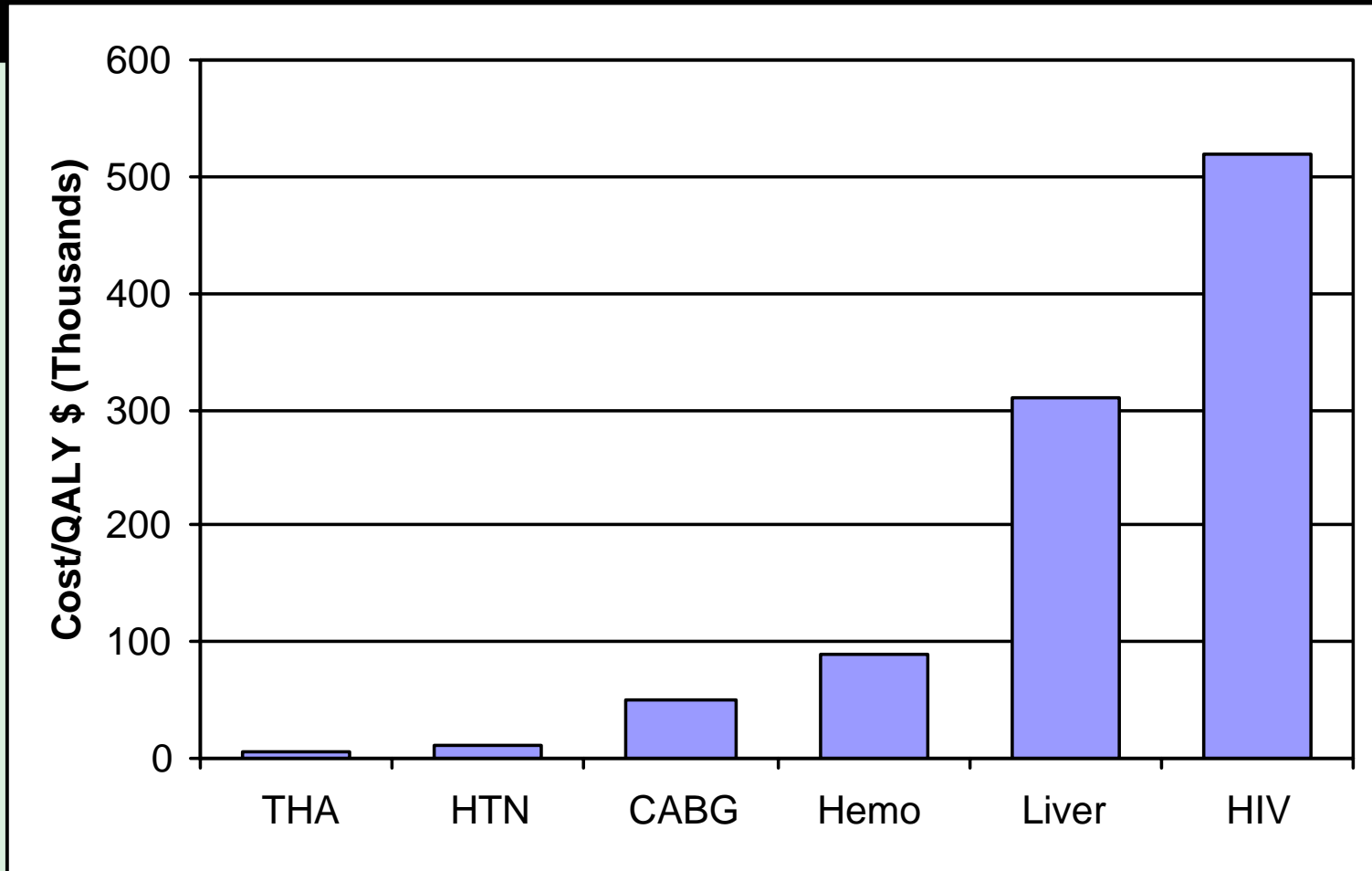
Physician	Procedure	Priority	Total	New	Surgery	Received Surgery (Days)			Still Waiting (Days)		
						Min	Max	Avg	Min	Max	Avg
<b>19350</b>											
	<i>Arthroscope Primary</i>										
		-1	1	0	0				205	205	205
		0	2	2	0				9	55	32
		1	9	7	0				9	112	51
		2	2	1	0				55	112	83
			14	10	0				9	205	64
	<i>THA Bilateral</i>										
		-1	1	0	0				205	205	205
			1	0	0				205	205	205
	<i>THA Primary</i>										
		-1	11	1	0				66	254	135
		5	1	0	0				98	98	98
		7	1	1	0				9	9	9
		8	2	2	0				9	19	14
		9	1	1	0				55	55	55
		10	1	1	0				44	44	44
			17	6	0				9	254	134
	<i>THA Secondary</i>										
		-1	4	0	0				114	202	190

Tuesday, June 25, 2002

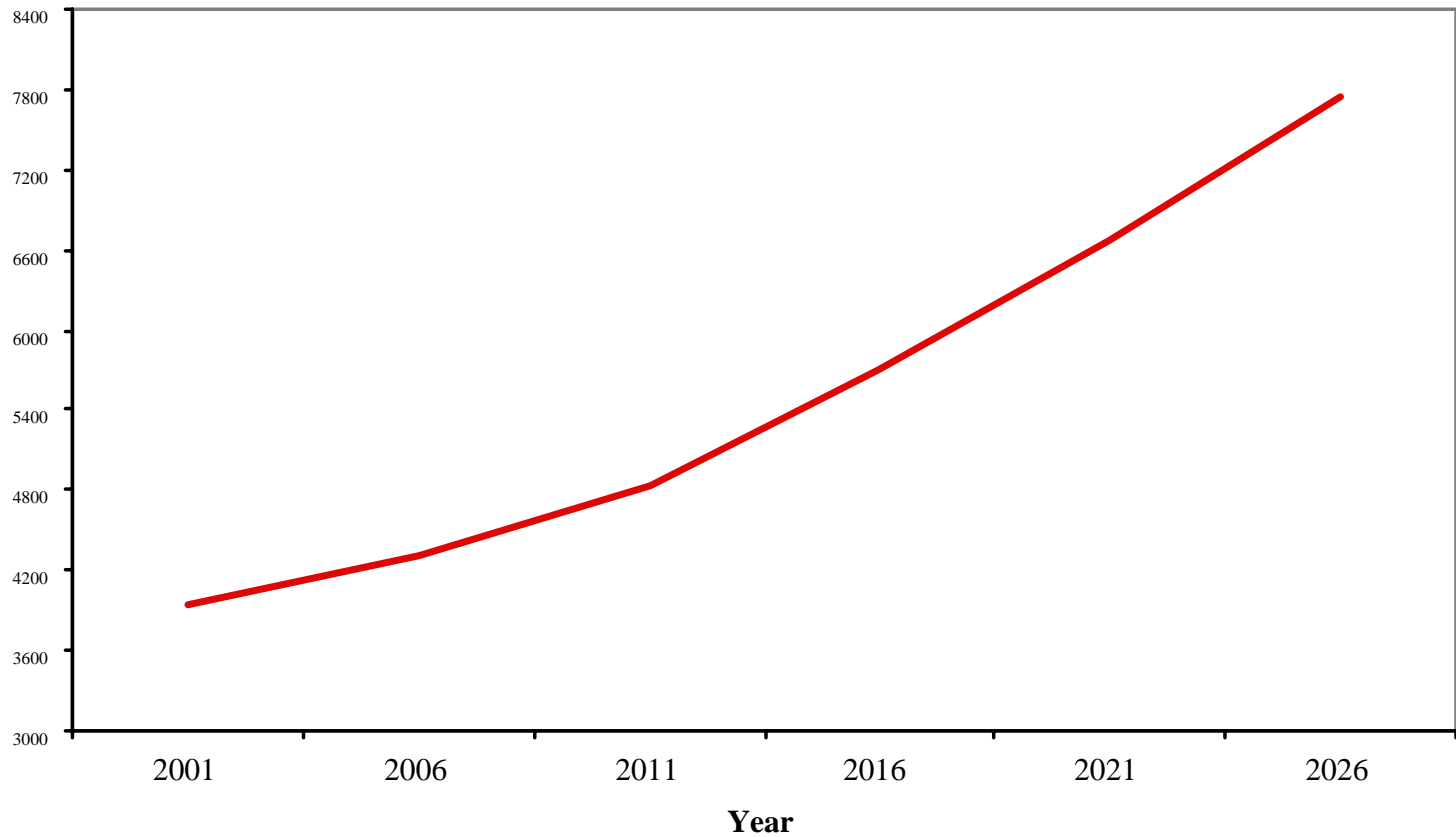
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# Ratio of Cost to Quality of Life Improvement by Procedure

Laupacis et al 1992



## Projected Number of Population > 65 yo (Canada)



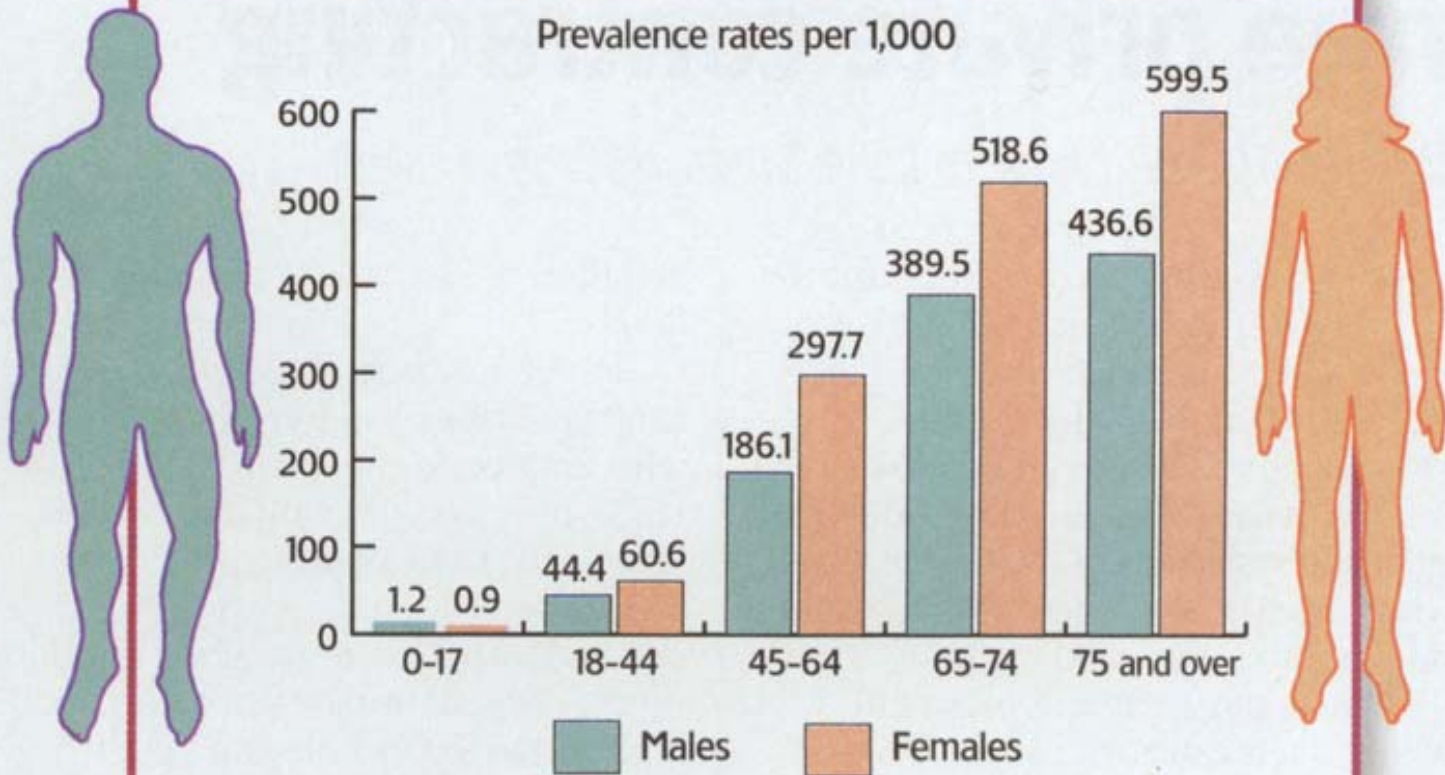
# The Demand

- The “age quake” is coming...
  - By 2010, for the first time, there will be more people **over 60 years of age than under 20**
  - By 2020, the elderly will **represent 25%** of the population



## Average annual prevalence rates of arthritis U.S. 1992–1994

Prevalence rates per 1,000



Source: National Center for Health Statistics, National Health Interview Survey, 1992–1994





# Age-sex standardized prevalence of arthritis by province/territory among household population aged 15 years and over, Canada, 2000

Province / Territory	Prevalence of Arthritis
Nova Scotia	22.4
Prince Edward Island	19.0
Saskatchewan	18.9
New Brunswick	18.3
Ontario	17.5
Alberta	17.3
Manitoba	16.7
Newfoundland and Labrador	16.3
Territories	15.9
British Columbia	15.0



Consensus document

## The Bone and Joint Decade 2000–2010

for Prevention and Treatment of Musculo-Skeletal Disorders

April 17–18, 1998  
Lund, Sweden



Organized by Lund University  
Consensus meeting co-sponsored by WHO



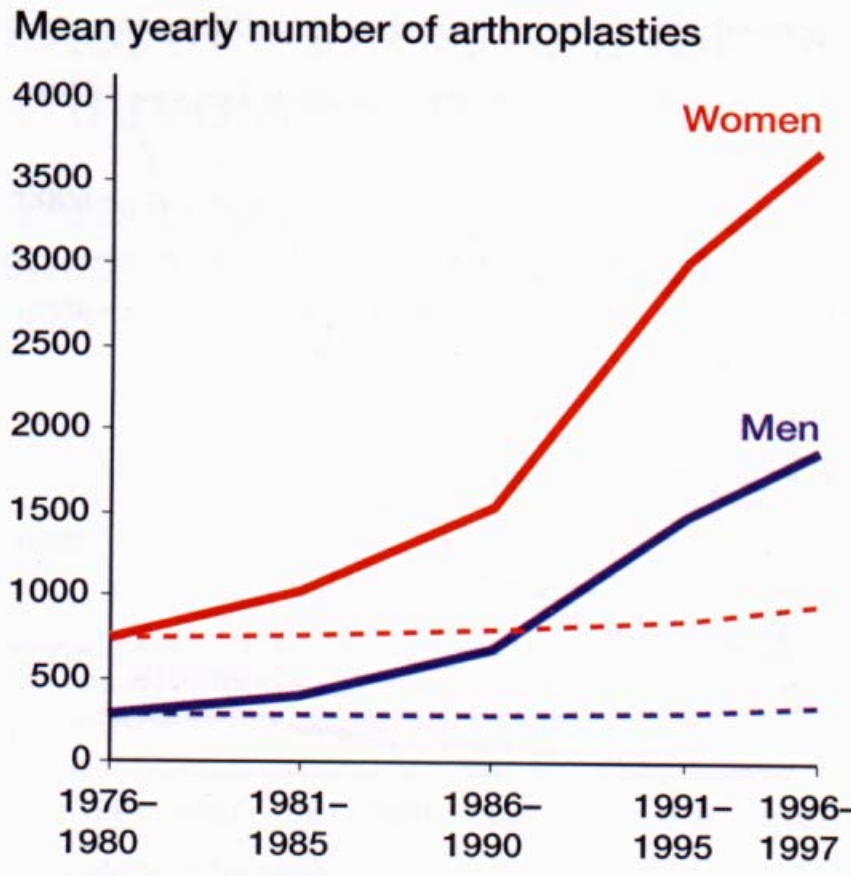
“...joint disorders and the demand for Arthroplasty... some of the most significant issues facing the globe.””



# Past incidence and future demand for knee arthroplasty in Sweden

A report from the Swedish Knee Arthroplasty Register regarding the effect of past and future population changes on the number of arthroplasties performed

Otto Robertsson<sup>1</sup>, Michael J Dunbar<sup>2</sup>, Kaj Knutson<sup>1</sup> and Lars Lidgren<sup>1</sup>



# Number and Distribution of Total Knee Replacement Procedures by Age Group and Sex, Canada, 2001-2002 Compared to 1994-1995

Age Groups	Males			Females		
	1994/1995	2001/2002	7 Year % Change	1994/1995	2001/2002	7 Year % Change
<45 years	104	136	30.8%	155	206	32.9%
45-54 years	282	648	129.8%	397	1067	168.8%
55-64 years	1,292	2,181	68.8%	1,684	3,030	79.9%
65-74 years	2,754	4,008	45.5%	4,170	5,884	41.1%
75-84 years	1,564	2,559	63.6%	2,597	4,321	66.4%
85+ years	117	261	123.1%	244	514	110.7%
<b>TOTAL</b>	<b>6,113</b>	<b>9,793</b>	<b>60.2%</b>	<b>9,247</b>	<b>15,022</b>	<b>62.5%</b>

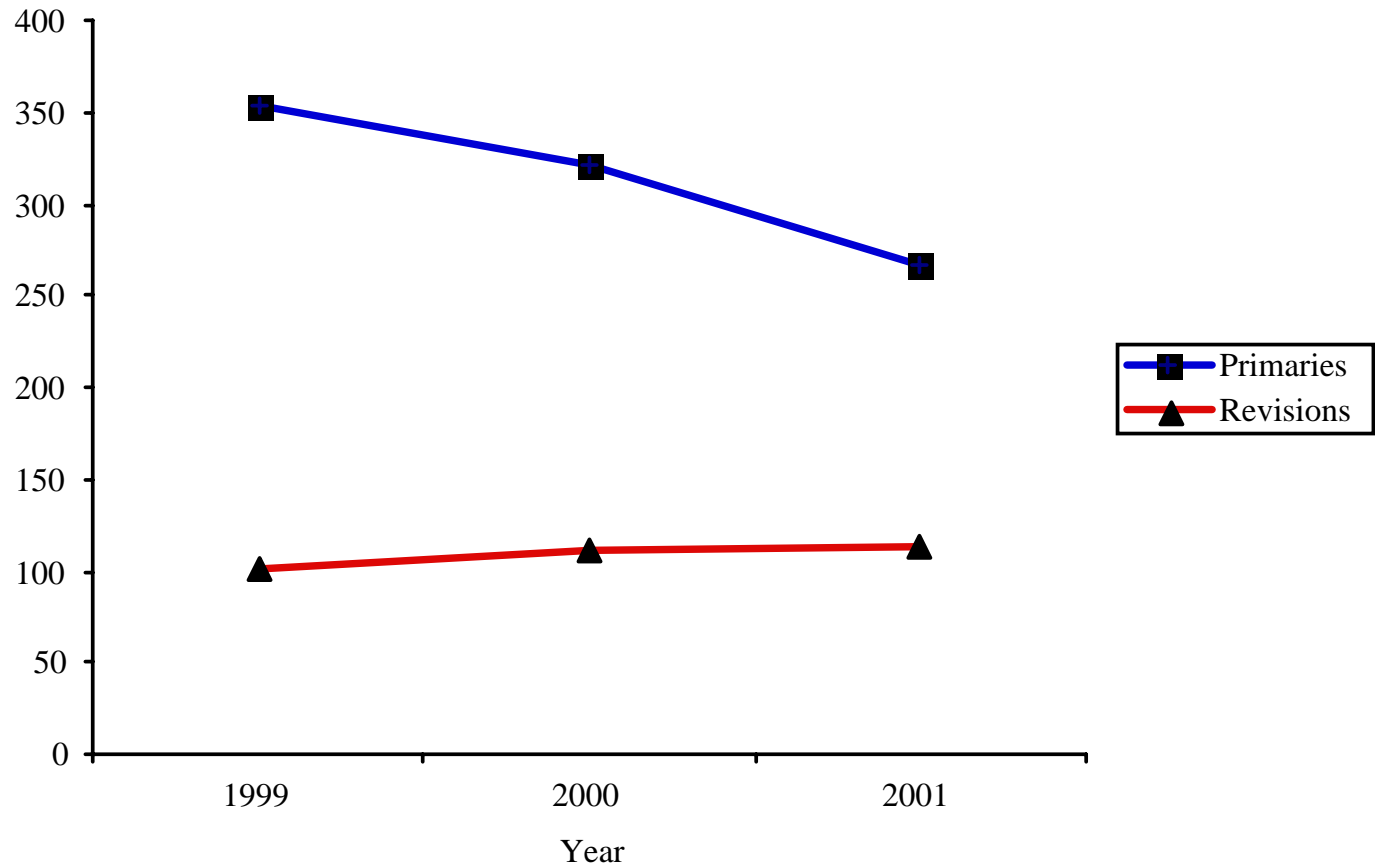
Source: Hospital Morbidity Database, CIHI



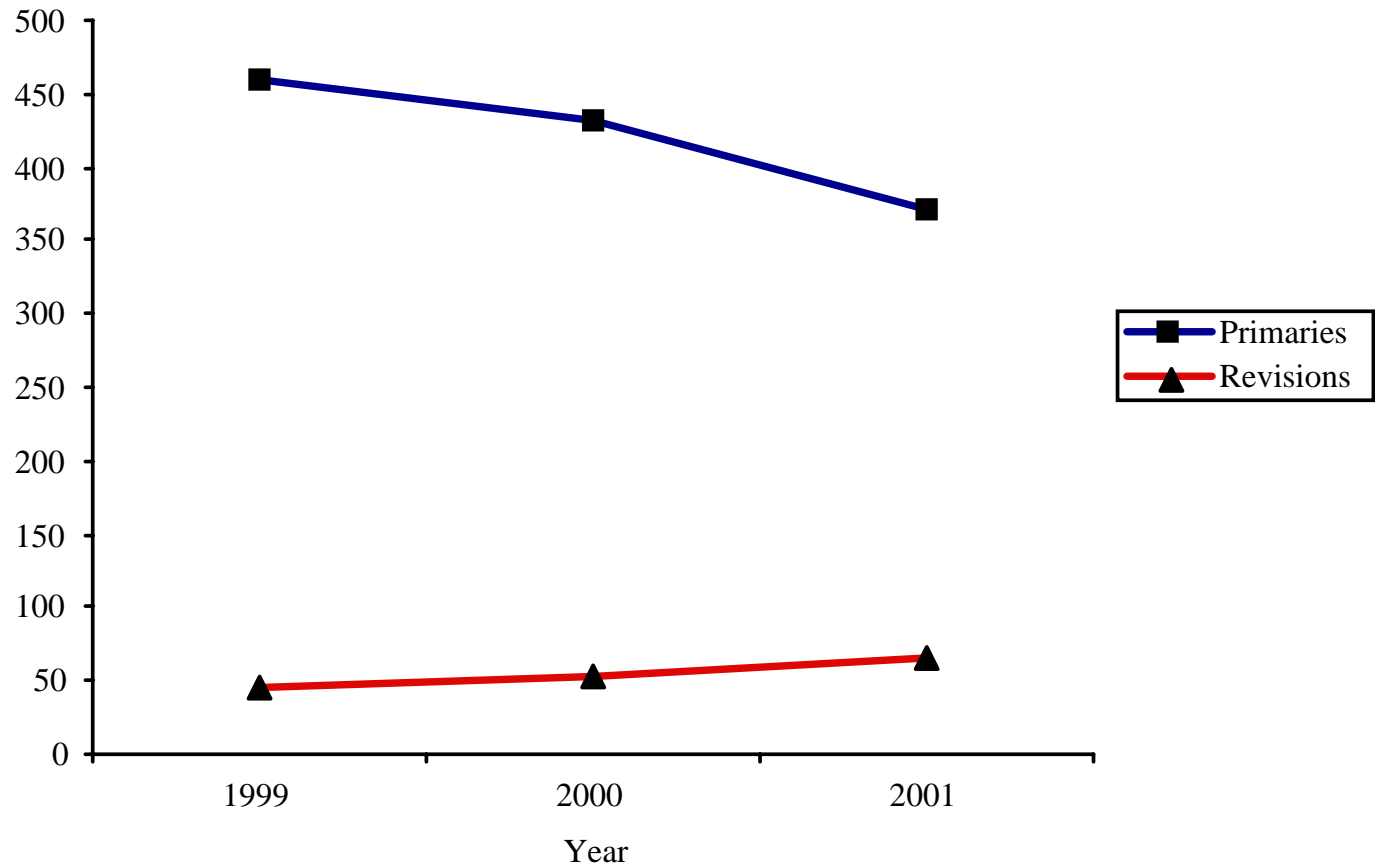
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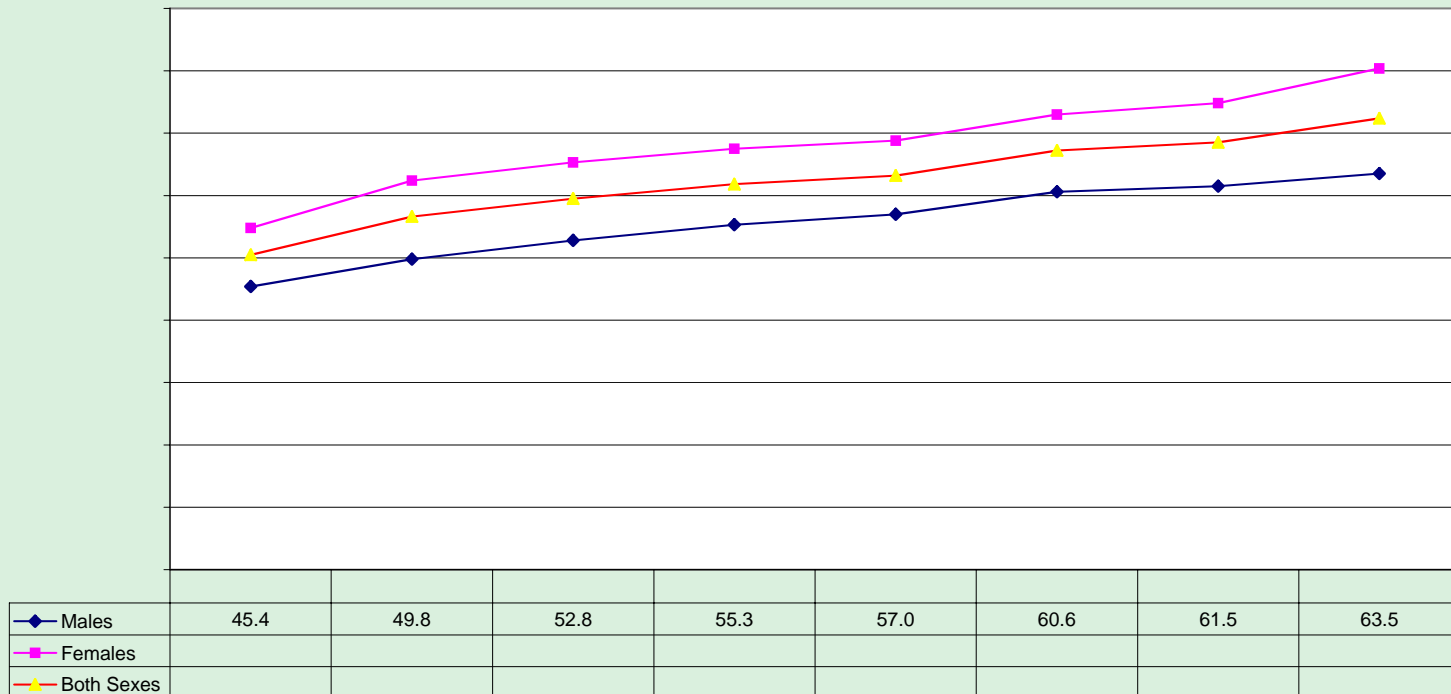
## Number THR Performed



## Number TKR Performed



# TKR Rates Across Canada



# Age-Standardized Rates of Total Knee Replacement Procedures Performed in Canada Based Patient Residence, 1994-1995, 2000-2001 and 2001-2002

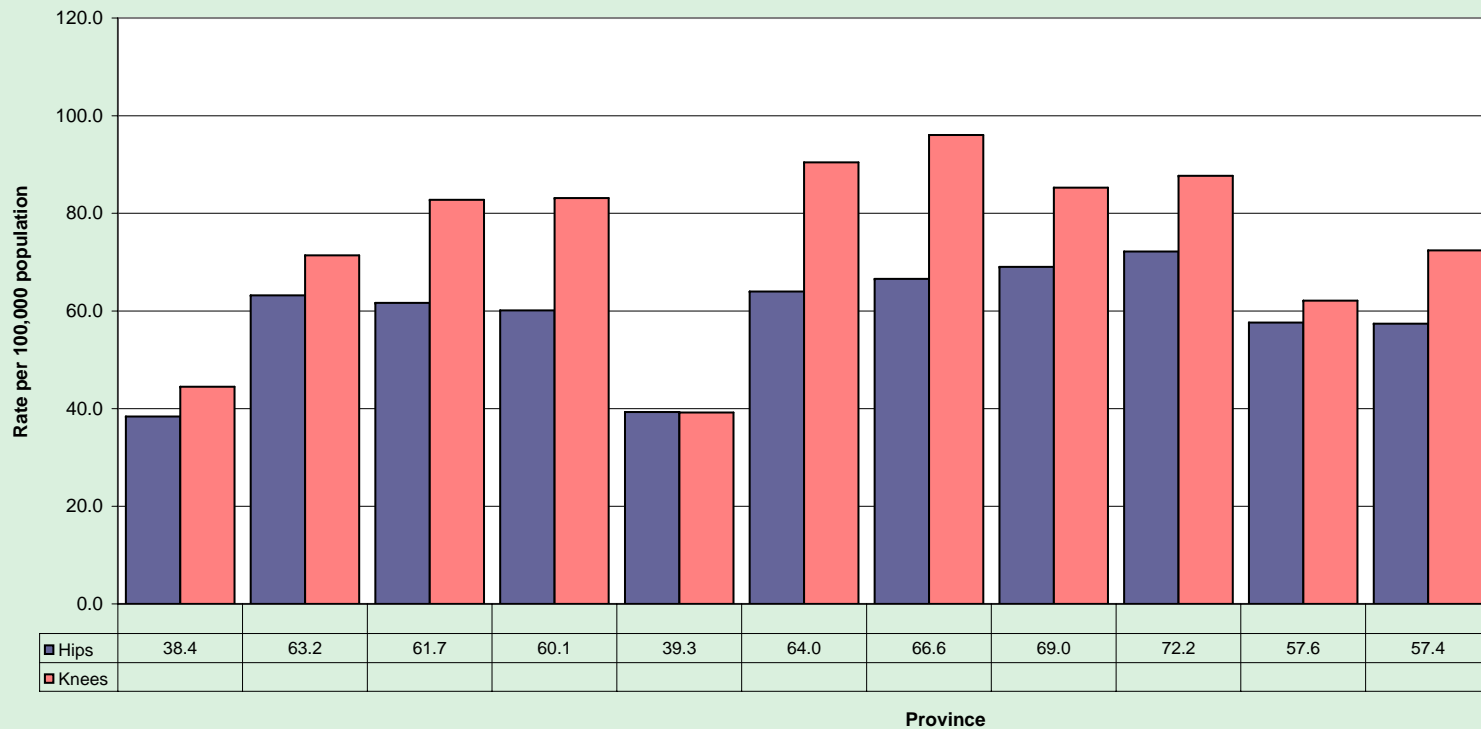
Province	Total Knee Replacement 1994/1995	Total Knee Replacement 2000/2001	Total Knee Replacement 2001/2002	7 Year % Change	1 Year % Change
Newfoundland <sup>1</sup>	33.6 <sup>1</sup>	39.6	44.5	+ 32.4%	+ 12.4%
Prince Edward Island	61.2	65.1	71.4	+ 16.7%	+ 9.7%
<b>Nova Scotia</b>	67.6	100.6	82.7	<b>+ 22.3%</b>	<b>-17.8%</b>
New Brunswick	50.8	80.8	83.1	+ 63.6%	+ 2.8%
Quebec	29.0	37.0	39.2	+ 35.2%	+ 5.9%
Ontario	60.9	81.8	90.5	48.6%	+ 10.6%
Manitoba	46.3	91.4	96.0	+ 107.3%	+ 5.0%
Saskatchewan	70.0	81.2	85.2	+ 21.7%	+ 4.9%
Alberta	70.0	82.2	87.7	+ 25.3%	+ 6.7%
British Columbia	46.9	64.4	62.2	+ 32.6%	-3.4%
<b>Territories</b>	**	**	**	N/A	N/A
<b>CANADA<sup>2</sup></b>	<b>50.5</b>	<b>68.5</b>	72.4	<b>+ 43.4%</b>	<b>+ 5.7%</b>



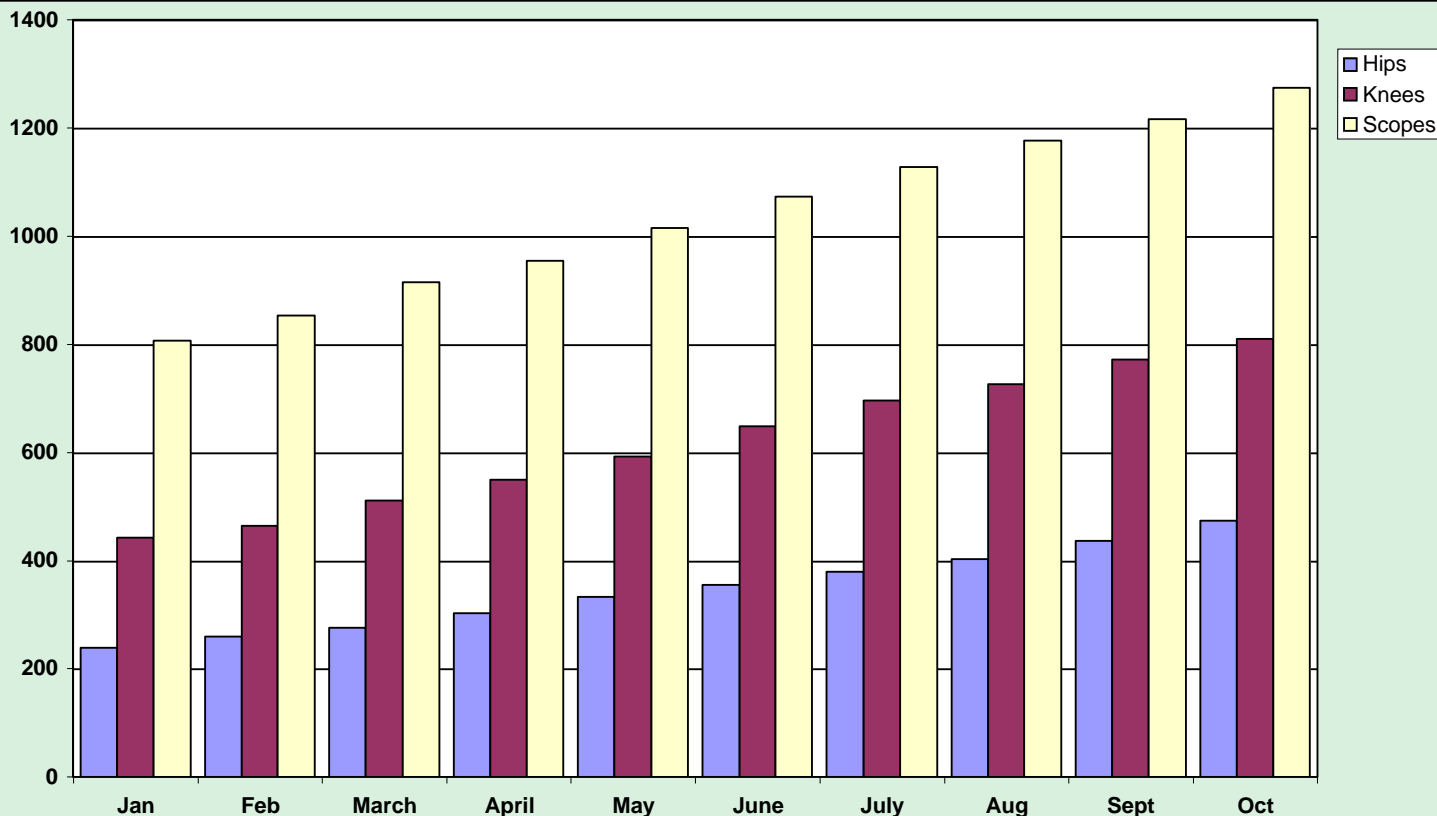


# Rates of Hip and Knee Replacement by Province

Figure 13. Age-Standardized Rates (per 100,000 population) of Total Hip and Total Knee Replacement Procedures by Province, 2001/2002



# Patients Waiting for Surgery by Month 2003



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# Number of Patients Waiting for Index Procedures - January 26, 2004

Procedure	Number of Patients Waiting
Total Hip	488
Total Hip revision	56
Total Knee	871
Total Knee Revision	53
Back Surgeries	87
Arthroscopes	1449
<b>Total</b>	<b>3004</b>



# Average Waits

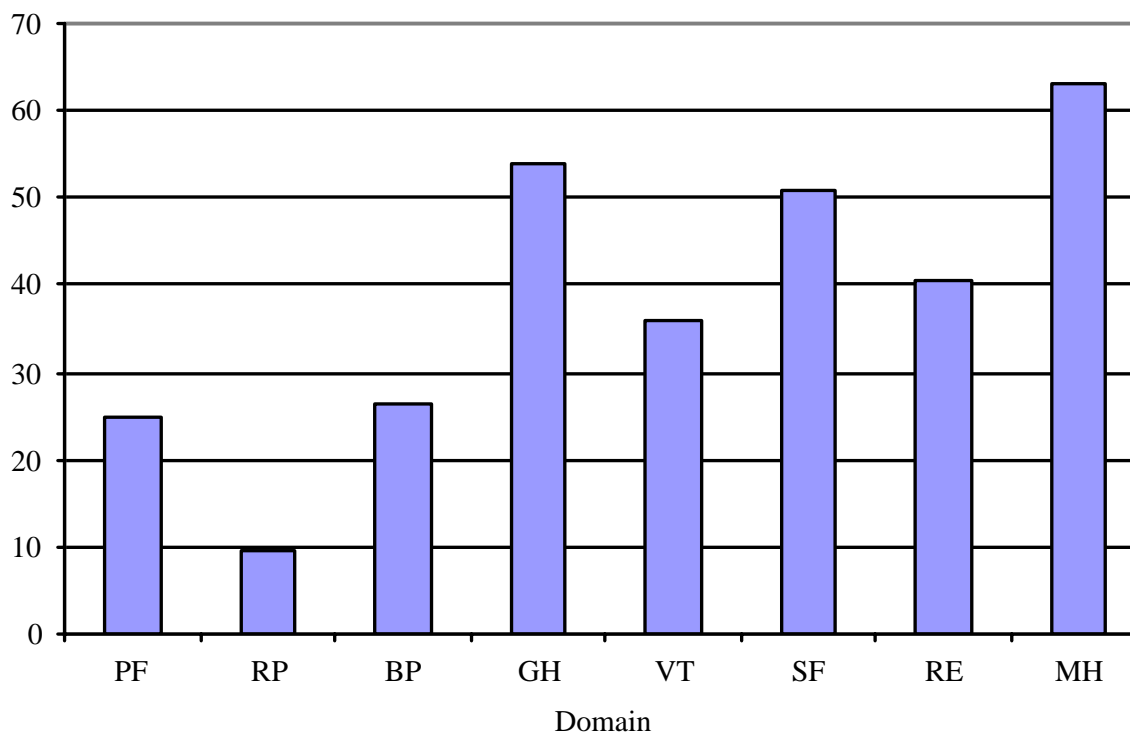
## NB - not yet validated

- Most acute/urgent cases waiting 3-12 months
- Less urgent cases waiting 12-36 months
- Provincial, National, International standard is 6 months or less

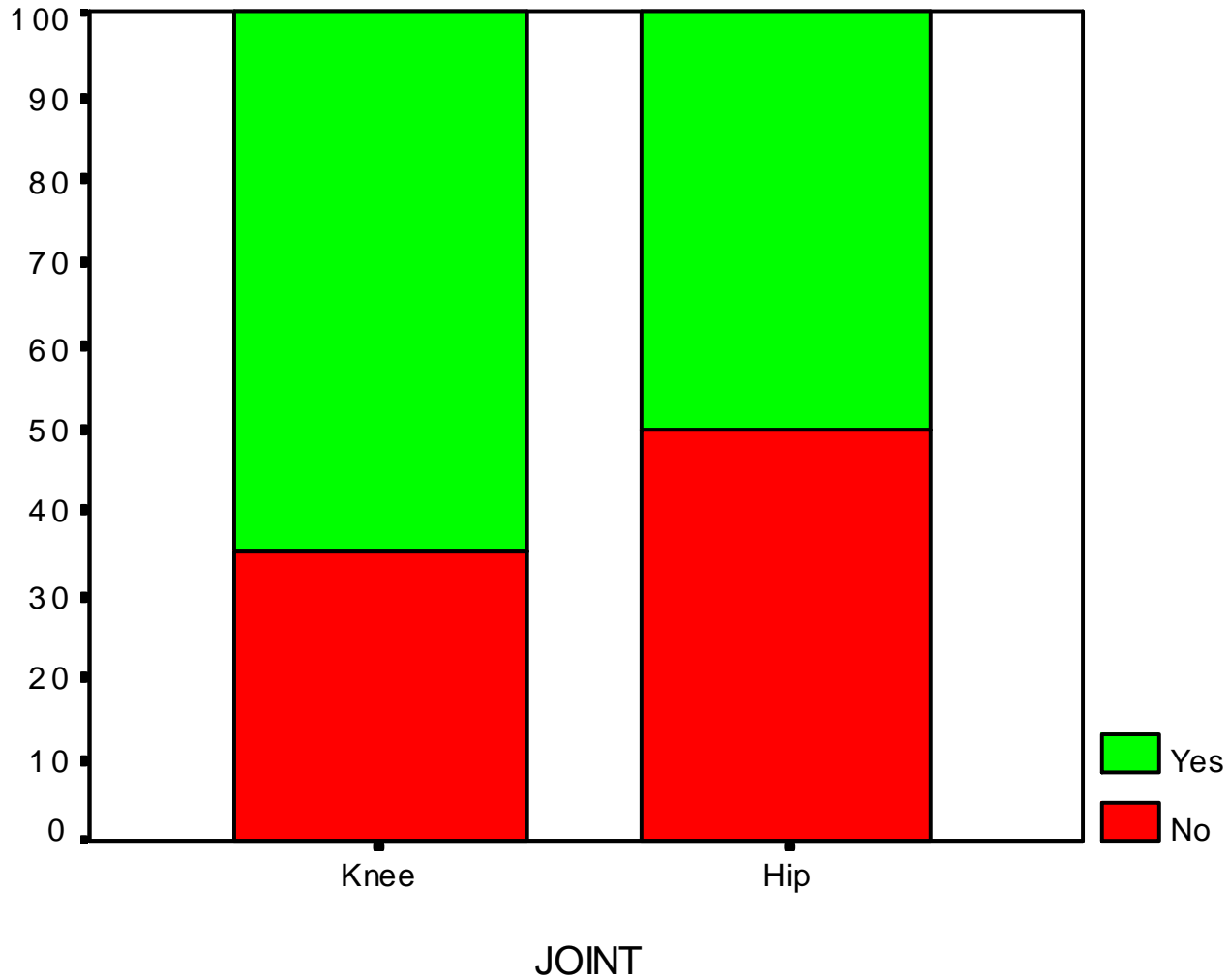


# Questionnaire Results

SF-36 results for patients waiting for hip and knee arthroplasty



## Will wait affect your outcome?



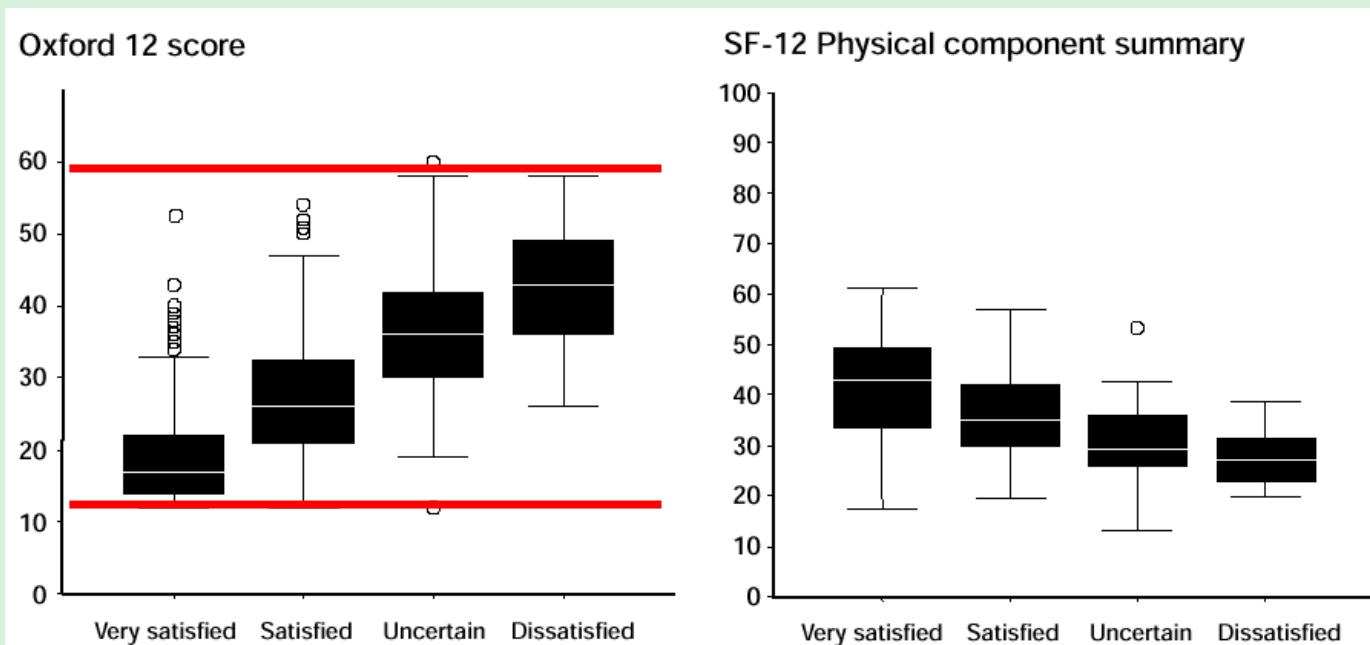
# Patient satisfaction after knee arthroplasty

A report on 27,372 knees operated on between 1981 and 1995 in Sweden

Otto Robertsson<sup>1</sup>, Michael Dunbar<sup>2</sup>, Thorbjörn Pehrsson<sup>1</sup>, Kaj Knutson<sup>1</sup> and  
Lars Lidgren<sup>1</sup>



# What are we Measuring?



**Figure 4** – For patients having expressed the same level of satisfaction, the range of their health scores is expressed as a box-plot showing the median (white line), interquartile range (block box representing 25% of scores on each side of the median), fences (horizontal lines between which 95% of the score lie) outliers (circles). On the left side are the scores for the Oxford-12 and to the right for the Physical Component Summary for the SF12.

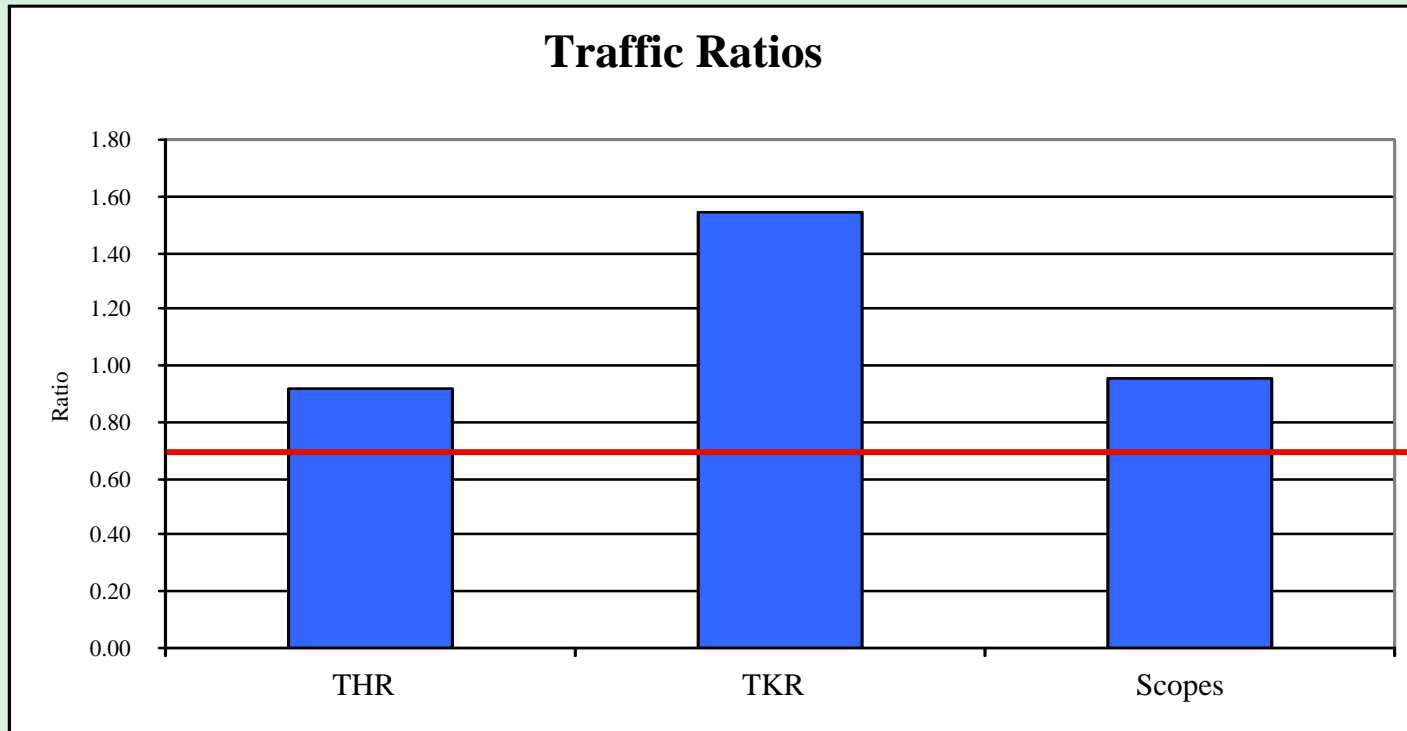




## Percentage Satisfaction by Joint Regarding Waiting Times



# Simulation Model Results



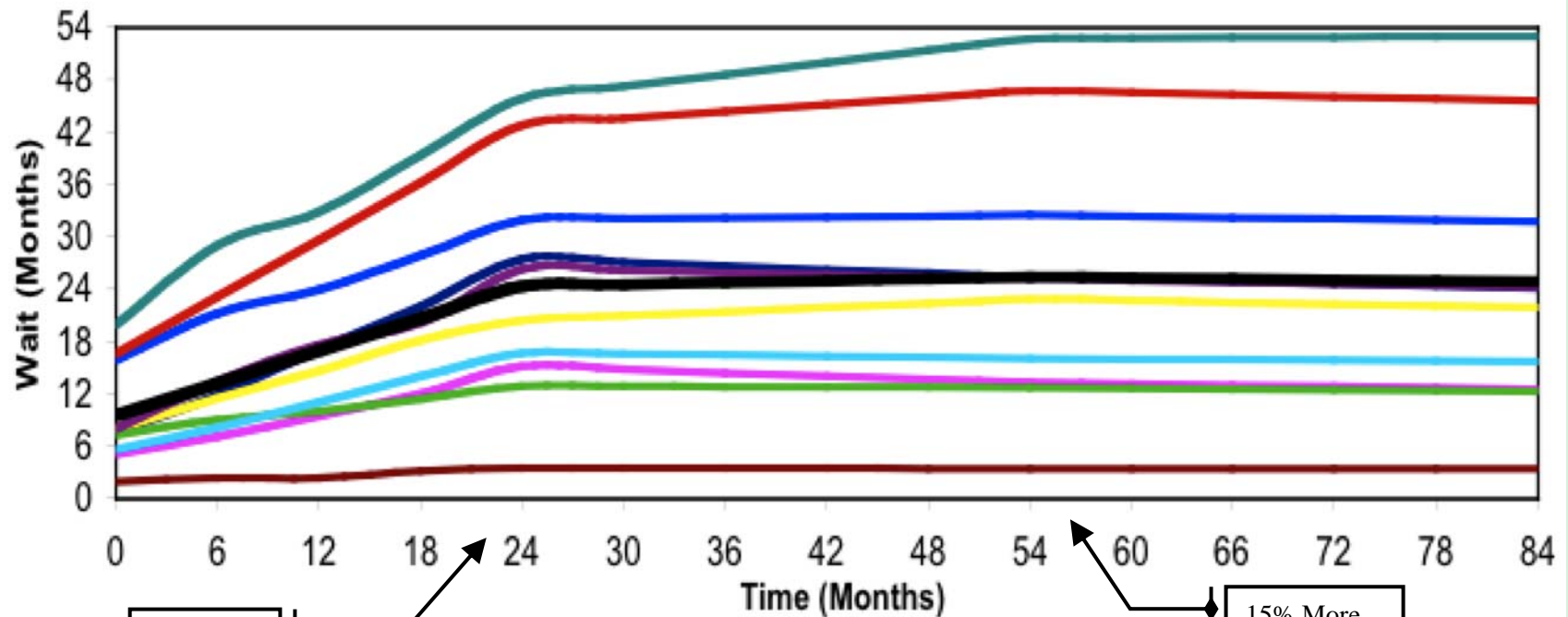
# Variables included in the Model

- Ratio of TKA/THA & scopes to other types of procedures for each surgeon
- Time to complete surgical procedures for each surgeon
- Number of beds on the surgical inpatient units
- Number of patients waiting
- Arrival rates for all surgeries
- Length of stay for all surgeries
- Rate of cancellation for all surgeries
- OR turnover times
- Available OR time by surgeon



# Computer Forecast Model

## Wait Time Growth as a Function of Time



25 Beds  
Added  
Here

15% More  
OR Time  
Added Here

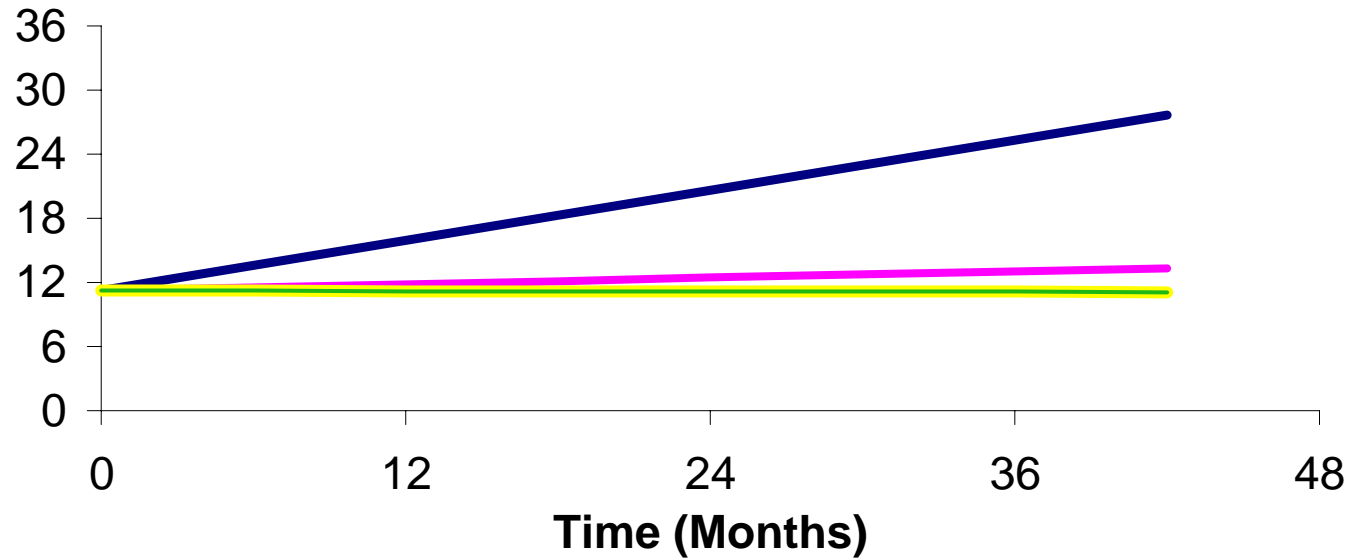


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## Wait Time Growth as a Function of Time



# International Comparison of Crude Rates (per 100,000 population) of Primary Total Hip Replacements

Country	Crude Rate per 100,000	Year	Reference
Norway	114	1990	Bulletin Hospital Joint Diseases 1999;58(3):139-47
	124	2000	Personal communication, Birgitte Espehaug, Statistician, The Norwegian Arthroplasty Register, December 2001.
New Zealand	119	2000	Personal communication, Toni Hobbs, New Zealand Joint Replacement Register Co-Ordinator, November 2001.
Sweden	100	N/A	Acta Orthop Scand 2000;71(2):111-21
Finland	93	1999	Acta Orthop Scand 2001 ;72(5):433-41
Australia	74	1999-2000	2001 Annual Report
<i>Canada<sup>1</sup></i>	<b>64</b>	<b>2001-2002</b>	<b><i>Canadian Institute for Health Information Hospital Morbidity Database</i></b>
United States <sup>2</sup>	52	1996	American Academy of Orthopaedic Surgeons, Musculoskeletal Conditions in the United States. Arthroplasty and Total Joint Procedures, 1999.



# Conclusions

- Orthopaedic surgery at the QE II is in crisis
- The wait list is too long and is continuing to grow
- Patients and surgeons are frustrated and at their limits
- 25 beds and 1 new OR minimum at the QE II are required just to stop the list from growing



# Recommendations

## Requirements to Stabilize Wait Times

- Minimum of 25 new beds and concomitant resources
- Increase operating time by opening another OR suite

## Requirements to Decrease Wait Times

- Additional 25 beds and concomitant resources
- Continued project funding for reassessment





# DOH Announcement

- 25 new Orthopaedic beds
- 1 new OR
- 33 long term care beds opening
- Implementation in part by July 2004 to be complete by September 2004



# Suggestions

- More resources as soon as possible (Summer slow down?)
- Continuation of project to monitor effect of new resources with positive action taken if situation not improving sufficiently
- MIS surgery
- OR operational efficiencies
- Bed Blockers



Table 2. Correlation between patient satisfaction and different domains of general health and disease-specific questionnaires.  $P < 0.001$  for all correlation's

Questionnaire	Spearman	n
<b>NHP</b>		
→ Pain	0.62	669
→ Physical Mobility	0.47	690
Energy	0.42	711
Emotional Reaction	0.36	674
Sleep	0.33	702
Social Isolation	0.20	699
<b>SF-12</b>		
Physical Component Summary	0.42	579
Mental Component Summary	0.25	579
<b>SF-36</b>		
→ Body Pain	0.48	704
→ Physical Component Summary	0.45	485
Physical Functioning	0.43	628
General Health	0.39	666
Social Functioning	0.38	687
Vitality	0.35	684
Mental Health	0.34	686
Role-Emotion	0.32	687
Mental Component Summary	0.32	485
Role-Physical	0.29	693
<b>Oxford-12</b>	0.68	899
<b>WOMAC</b>		
→ Pain	0.67	957
→ Physical Function	0.64	854
Stiffness	0.63	977

Remember,  
medicine is an  
art as much as it  
is a science



# Key Messages

- Leadership commitment (price of admission)
- Puts whole system under the microscope
  - Be prepared to expand scope
- Decisions based on unbiased evidence moves a system toward its optimum
- Combat complacency
- Buy-in by all stake-holders
- Patient-centered
  - Evidence-based management
- Keep it simple



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  - Dalhousie University
- Allan Hennigar BSc
  - Orthopaedic Research Manager
- Jane Storey BSc Health ED
  - Research Assistant



Halifax Waterfront



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