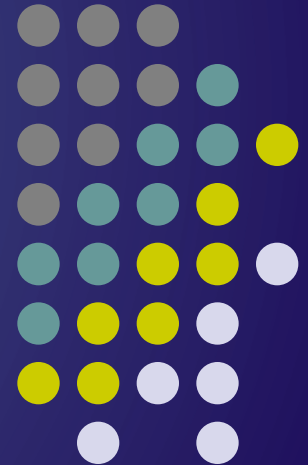


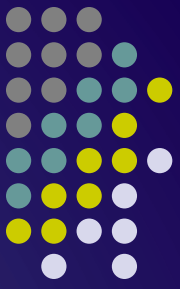
# Successful Joint Replacement Surgery :

## Physician and Patient Perceptions

Dr Sunil P Reddy



# 6 month post-op consultation after TKR

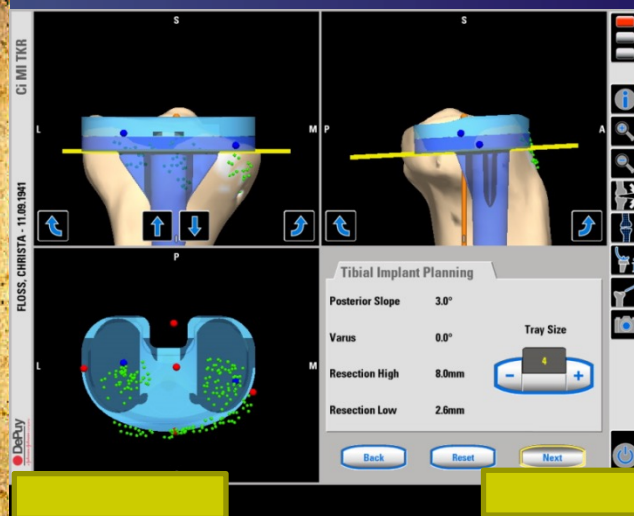
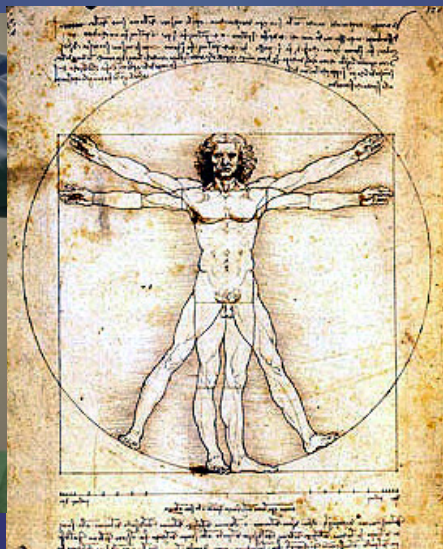
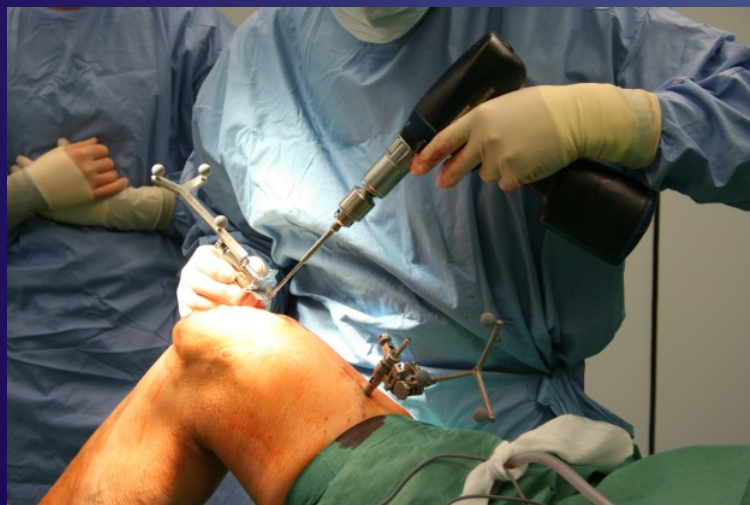


- Stable knee
- ROM 5-110 degrees
- Quadriceps 5/5
- Pain occasional
- Xray looks great
- Still swollen and feels tight
- Difficult to walk down a flight of stairs
- Can't get out of bed for 15 min after waking up
- Difficult to get on or off the bus
- Can't tie my shoe laces
- Can't play golf

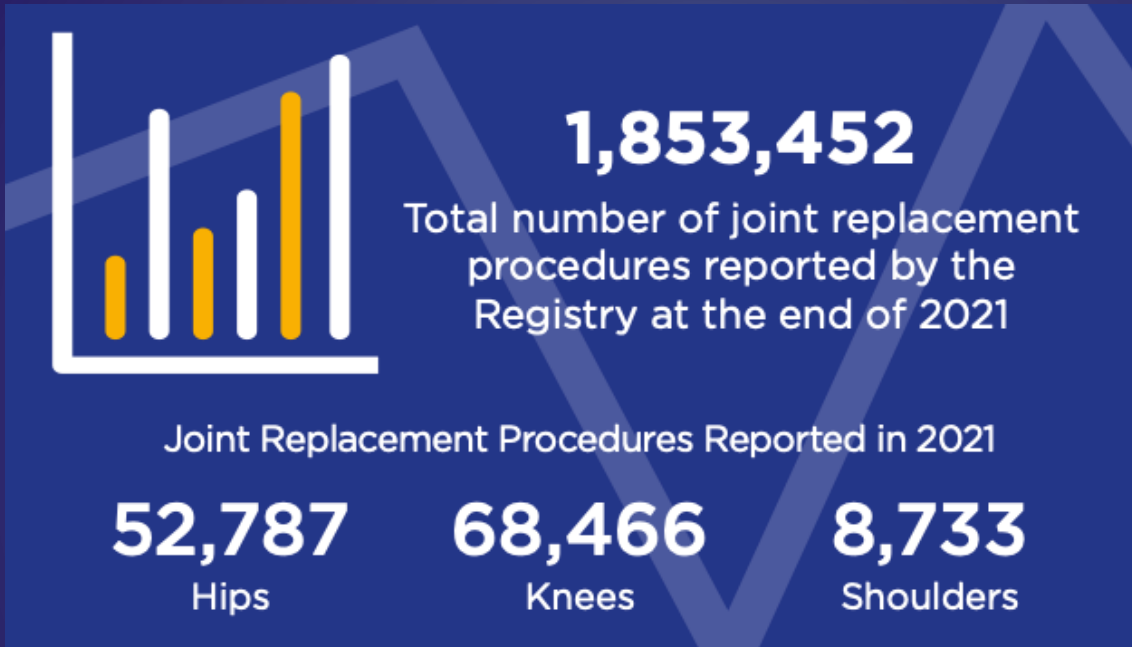


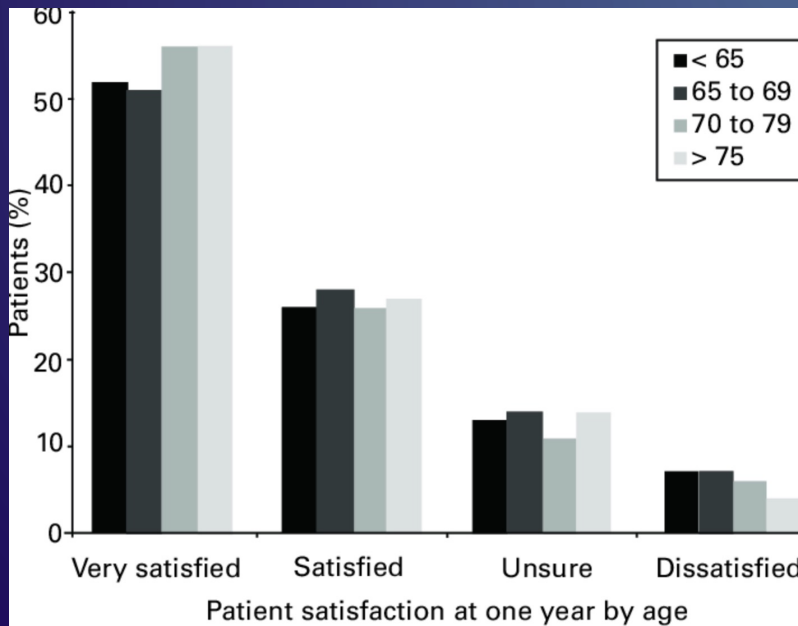
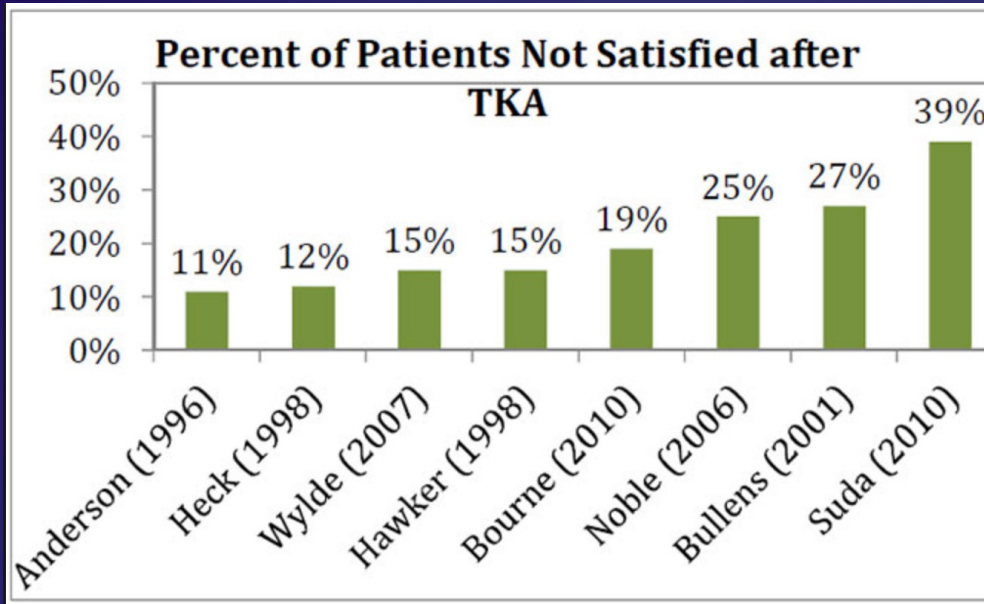
# Success of total knee arthroplasty(TKA)

- Accuracy of component positioning
- Optimal soft tissue balancing
- Respectful management of extensor mechanism



# AOA NJRR DATA TILL DEC 2021







# Doubling time of Medical Information



- 1950 - 50 yrs
- 1980 - 7 yrs
- 2010 - 3.5 yrs
- 2020 - 73 days

**MEDICAL KNOWLEDGE VS MEDICAL INFORMATION !!!**



**Figure 2. Time to reach 50 million users**



Source: Bernd Leger, "20 fresh mobile trends," Localytics, May 13, 2013, <http://www.localytics.com/blog/2013/mobile-statistics>.

Graphic: Deloitte University Press | DUPress.com



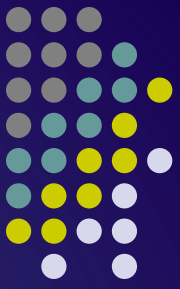
## Context

**What are PROs and PROMs?**

**How do they differ from traditionally reported outcomes?**

**Relevance to our Practice**





## Main reasons for patient consultation

- Pain
- Disability
- Deformity
- Diagnosis and Information

## Most common indication for surgery

- Improve pain
- Reduce or eliminate disability
- Improve QOL
- Find a diagnosis
- Improve cosmesis
- Prevention/prophylaxis

Context:

# Adding years to life & life to years



Reasons for Healthcare:

Live Longer

Better Quality of Life

= Better Health  
Outcome



But health services  
traditionally focused on  
one outcome

Mortality

# Patient Centred



**If quality is to be at the heart of everything we do, it must be understood from the perspective of patients. Patients pay regard both to clinical outcomes and their experience of the service...**

Darzi

**The ultimate measure by which to judge the quality of medical effort is whether it helps patients, as they see it.**

Donald Berwick

# What Are Outcomes



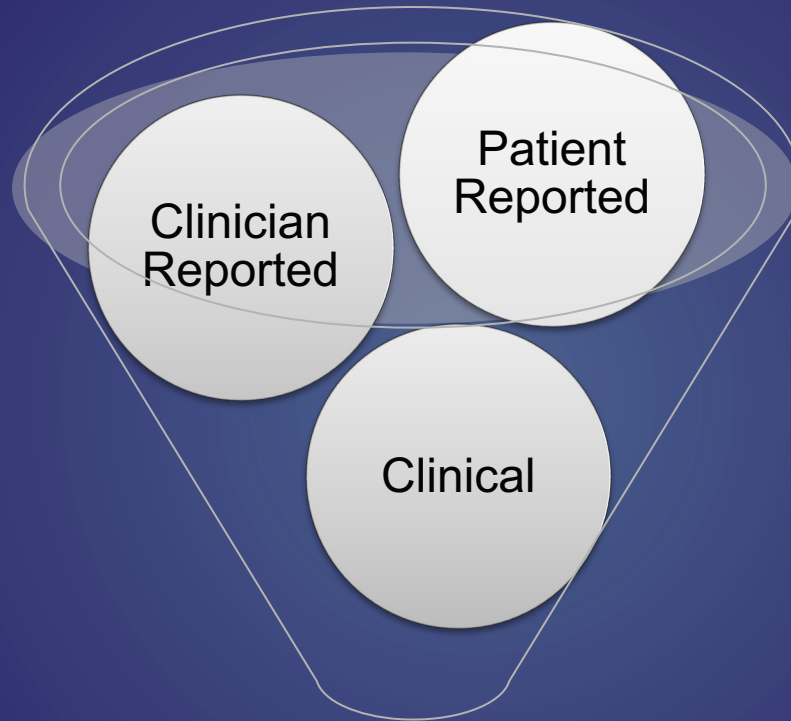
## Traditional Ways of Planning = Measuring in terms of OUTPUT

- Quantifying what is produced, implemented, provided, and developed in the health service

## Increasing Focus = Measuring in terms of OUTCOME

- Quantifying extent of any health impact on patients
- Change in various dimensions ~physiological (e.g. functional status) or psychological (e.g. attitudes)

# Sources of Outcomes



**Outcomes**

# Traditional outcome measures



Death – 30 day or 1 year mortality

Infection, Osteomyelitis

DVT

Pressure sores

Non-Union, Malunion

etc

*Based on history, examination, Imaging, follow-up.*





# Patient Reported Outcomes

Validated questionnaires to determine the patient's assessment of their health status

Was your pain managed appropriately after surgery?

Were you treated with respect by your Surgeon?

How was the hospital food and accommodation?

# Measuring PROMs



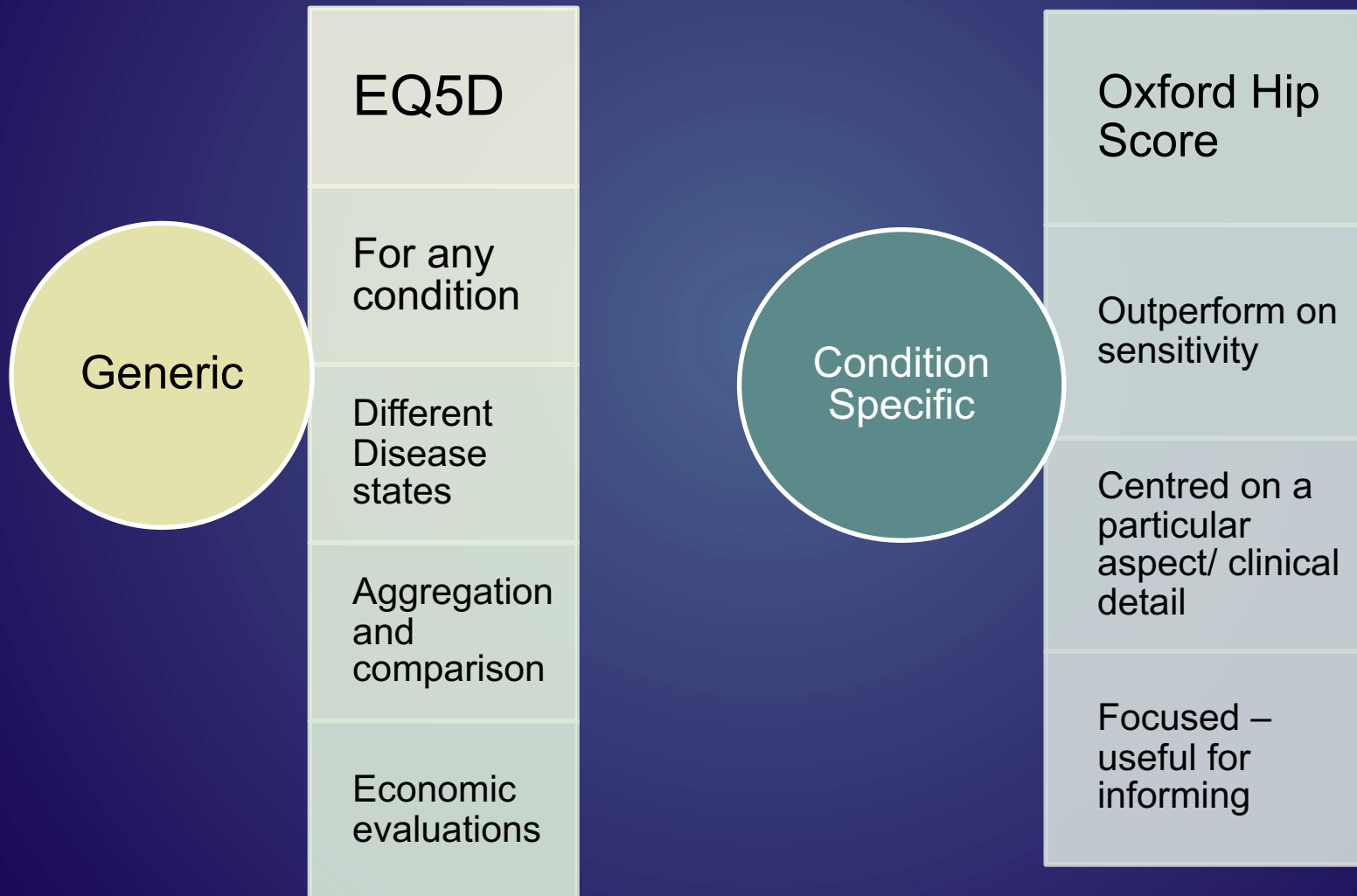
## Patient Reported Outcomes (PRO)

- Health status as perceived by the patient

## Patient Reported Outcomes Measures (PROMs)

- Measurement tools to harness this information
- Can be used in two or more points in time to record change in health status
- Can be assessed against patient progress or health interventions received
- Various types available
- Dedicated research and analysis on validating questionnaire types

# Types of PROMS





## EQ5D index score

- Multi-dimensional – five areas
- Responses record three levels of severity
- Scores are weighted and combined to give a single index

## EQ5D Visual Analogue Scale

- Self rating health related quality of life
- Places self reported health state on a point in a line
- Line ranges from 0 to 100

## Oxford Hip Score

- Validated tool specific for Total Hip Replacements
- 12 questions to assess function and pain, 0-4 points
- Given as a single summed score from 0 to 48

## Oxford Knee Score

- Validated tool specific for Total Knee Replacements
- 12 questions to assess function and pain, 0-4 points
- Given as a single summed score from 0 to 48

# OXFORD KNEE SCORE

## PROBLEMS WITH YOUR KNEE

Tick (✓) one box for every question.

### 1. During the past 4 weeks...

How would you describe the pain you usually have from your knee?

None  Very mild  Mild  Moderate  Severe

### 2. During the past 4 weeks...

Have you had any trouble with washing and drying yourself (all over) because of your knee?

No trouble at all  Very little trouble  Moderate trouble  Extreme difficulty  Impossible to do

### 3. During the past 4 weeks...

Have you had any trouble getting in and out of a car or using public transport because of your knee? (whichever you would tend to use)

No trouble at all  Very little trouble  Moderate trouble  Extreme difficulty  Impossible to do

### 4. During the past 4 weeks...

For how long have you been able to walk before pain from your knee becomes **severe**? (with or without a stick)

No pain/More than 30 minutes  16 to 30 minutes  5 to 15 minutes  Around the house only  Not at all/pain severe when walking

### 5. During the past 4 weeks...

After a meal (sat at a table), how painful has it been for you to stand up from a chair because of your knee?

Not at all painful  Slightly painful  Moderately painful  Very painful  Unbearable

### 6. During the past 4 weeks...

Have you been limping when walking, because of your knee?

Rarely/never  Sometimes, or just at first  Often, not just at first  Most of the time  All of the time

### 7. During the past 4 weeks...

**Could** you kneel down and get up again afterwards?

Yes, easily  With little difficulty  With moderate difficulty  With extreme difficulty  No, impossible

### 8. During the past 4 weeks...

Have you been troubled by pain from your knee in bed at night?

No nights  Only 1 or 2 nights  Some nights  Most nights  Every night

### 9. During the past 4 weeks...

How much has pain from your knee interfered with your usual work (including housework)?

Not at all  A little bit  Moderately  Greatly  Totally

### 10. During the past 4 weeks...

Have you felt that your knee might suddenly 'give way' or let you down?

Rarely/never  Sometimes, or just at first  Often, not just at first  Most of the time  All of the time

### 11. During the past 4 weeks...

**Could** you do the household shopping on your own?

Yes, easily  With little difficulty  With moderate difficulty  With extreme difficulty  No, impossible

### 12. During the past 4 weeks...

**Could** you walk down one flight of stairs?

Yes, easily  With little difficulty  With moderate difficulty  With extreme difficulty  No, impossible

**Finally, please check back that you have answered each question.**

**Thank you very much.**

# HOOS 12



**Pain**

**1. How often do you experience hip pain?**

<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Monthly	<input type="checkbox"/> Weekly	<input type="checkbox"/> Daily	<input type="checkbox"/> Always
---	----------------------------------	---------------------------------	--------------------------------	---------------------------------

**What amount of hip pain have you experienced the last week during the following activities?**

**2. Walking on a flat surface**

<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mild	<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe	<input type="checkbox"/> Extreme
--	-------------------------------	-----------------------------------	---------------------------------	----------------------------------

**3. Going up or down stairs**

<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mild	<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe	<input type="checkbox"/> Extreme
--	-------------------------------	-----------------------------------	---------------------------------	----------------------------------

**4. Sitting or lying**

<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mild	<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe	<input type="checkbox"/> Extreme
--	-------------------------------	-----------------------------------	---------------------------------	----------------------------------

**Function, daily living**

The following questions concern your physical function. By this we mean your ability to move around and to look after yourself. For each of the following activities please indicate the degree of difficulty you have experienced in the last week due to your hip.

**5. Rising from sitting**

<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mild	<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe	<input type="checkbox"/> Extreme
--	-------------------------------	-----------------------------------	---------------------------------	----------------------------------

**6. Standing**

<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mild	<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe	<input type="checkbox"/> Extreme
--	-------------------------------	-----------------------------------	---------------------------------	----------------------------------

**7. Getting in/out of car**

<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mild	<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe	<input type="checkbox"/> Extreme
--	-------------------------------	-----------------------------------	---------------------------------	----------------------------------

**8. Walking on an uneven surface**

<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mild	<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe	<input type="checkbox"/> Extreme
--	-------------------------------	-----------------------------------	---------------------------------	----------------------------------

**Quality of Life**

**9. How often are you aware of your hip problem?**

<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Monthly	<input type="checkbox"/> Weekly	<input type="checkbox"/> Daily	<input type="checkbox"/> Constantly
---	----------------------------------	---------------------------------	--------------------------------	-------------------------------------

**10. Have you modified your life style to avoid activities potentially damaging to your hip?**

<input checked="" type="checkbox"/> Not at all	<input type="checkbox"/> Mildly	<input type="checkbox"/> Moderately	<input type="checkbox"/> Severely	<input type="checkbox"/> Totally
--	---------------------------------	-------------------------------------	-----------------------------------	----------------------------------

**11. How much are you troubled with lack of confidence in your hip?**

<input checked="" type="checkbox"/> Not at all	<input type="checkbox"/> Mildly	<input type="checkbox"/> Moderately	<input type="checkbox"/> Severely	<input type="checkbox"/> Extremely
--	---------------------------------	-------------------------------------	-----------------------------------	------------------------------------

**12. In general, how much difficulty do you have with your hip?**

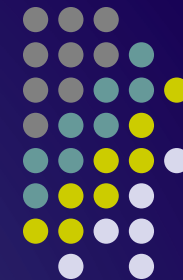
<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mild	<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe	<input type="checkbox"/> Extreme
--	-------------------------------	-----------------------------------	---------------------------------	----------------------------------



# Challenges

- Time and cost
- Patient participation
- Care is multi-dimensional
- Attributing outcomes to quality of care
- Trauma scenarios
- Use and privacy of data





# ePROs

## New England Journal of Medicine 2017

- Median overall survival in the PRO intervention arm was **5 months longer** than the control arm.

> N Engl J Med. 2017 Jan 12;376(2):105-108. doi: 10.1056/NEJMp1611252.

### Patient-Reported Outcomes – Harnessing Patients' Voices to Improve Clinical Care

Ethan Basch <sup>1</sup>

Affiliations + expand

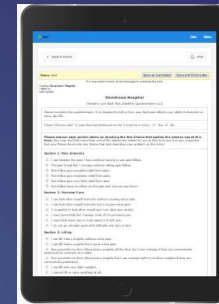
PMID: 28076708 DOI: [10.1056/NEJMp1611252](https://doi.org/10.1056/NEJMp1611252)

## Practical Radiation Oncology Journal 2013

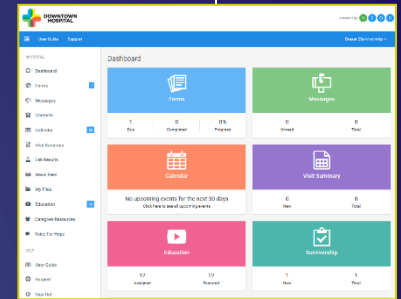
- 52% to 90%+ improved compliance at 6 months
- 36% to 82% improved compliance at 1 year
- 10 min per patient/form time saved



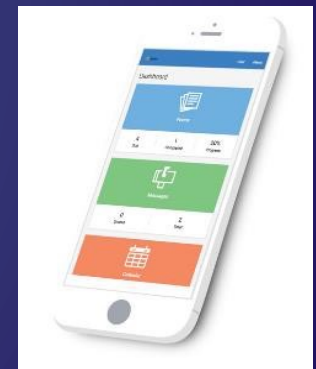
- **Patient Portal:** standard features such as patient-facing forms, patient education, file sharing and two-way secure messaging
- **KioskMode:** Forms are presented to patient at point of care and via tablet or desktop workstation
- **FastTrack:** Forms are completed by patient on their own mobile device – smart phone, tablet, laptop or desktop computer – from a link received via email or SMS



Point of Care



Patient Portal



VTOC in App Store®, Play Store® and accessible on all desktop and mobile browsers





# JRC PROMs Protocol

## Datapoints:

Pre-op

Early measures Day of discharge and Day 14 - TUG

Postop 6 weeks, 6 months, 12 months, 5 and 10 years

### Knee:

Oxford Knee score  
KOOS 12  
EQ-5D-5L  
SANE and VAS  
Satisfaction with  
JRC  
TUG , ROM

### Hip:

Oxford Hip score  
HOOS 12  
EQ-5D-5L  
SANE and VAS  
Satisfaction with  
JRC  
TUG , ROM

### Shoulder:

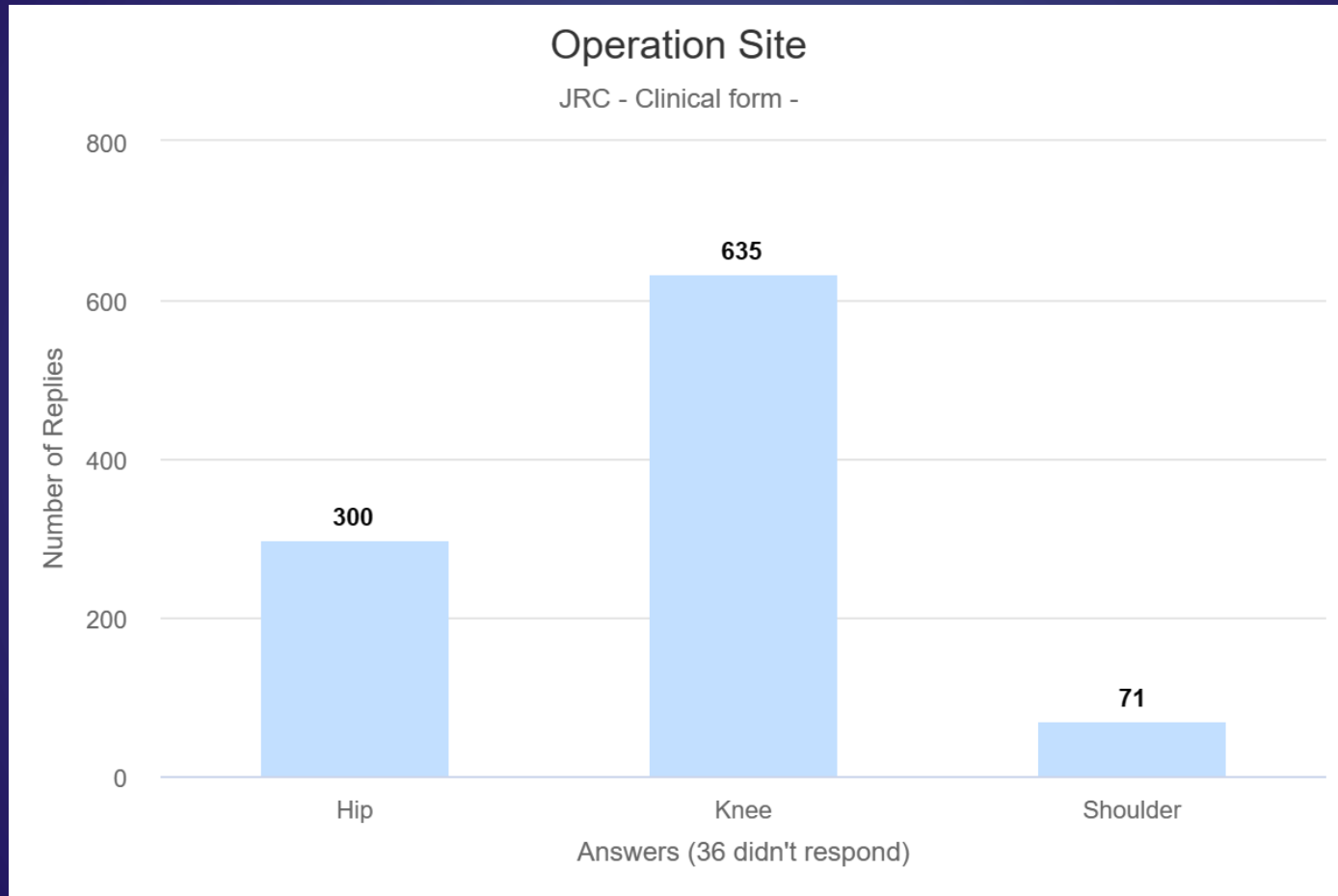
Oxford Shoulder  
score  
SANE and VAS  
Satisfaction with  
JRC

# Additional Patient satisfaction and Quality control data



- Coordination and consistency of JRC care
- Home Support Services: Nursing Care
- Home Support Services : Care worker
- Home Support Services : Transport
- Estia Health : Nurses and Physio
- Estia Health : Condition of Room and Services Provided
- Physiotherapy : Quality of Care
- Hospital Stay : Nurses
- Hospital Stay: Condition of Room and Services Provided
- Patient complications
- Length of Stay

# JRC PATIENT DATA TILL MARCH 2023

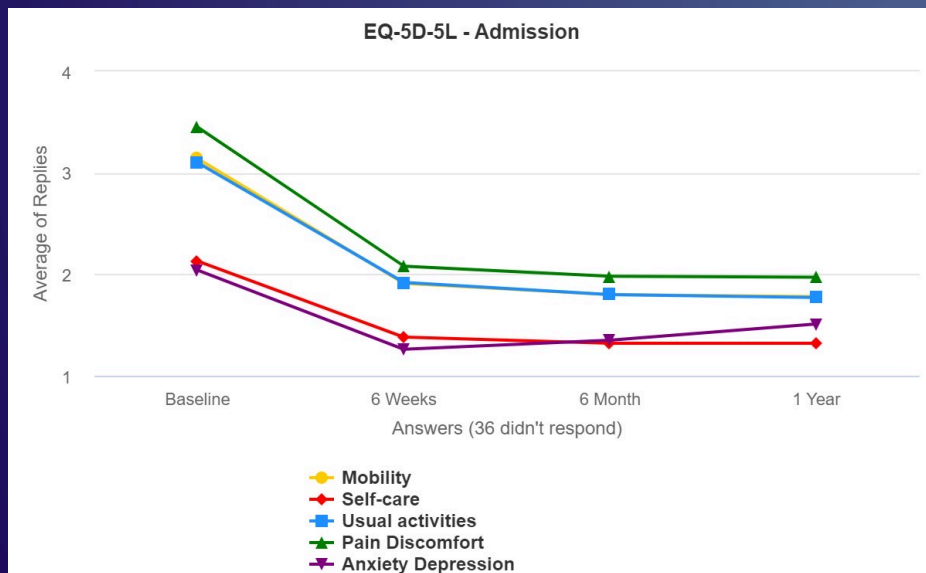






# EQ-5D-5L Hips

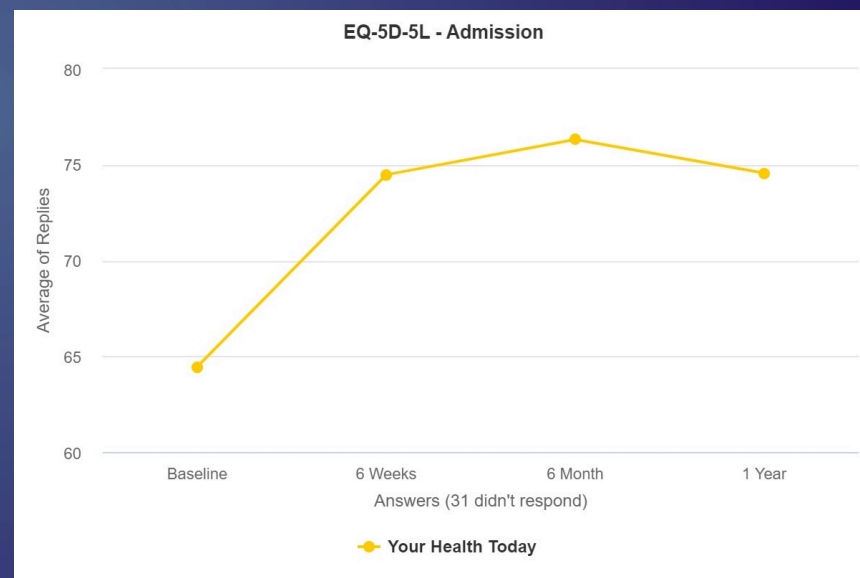
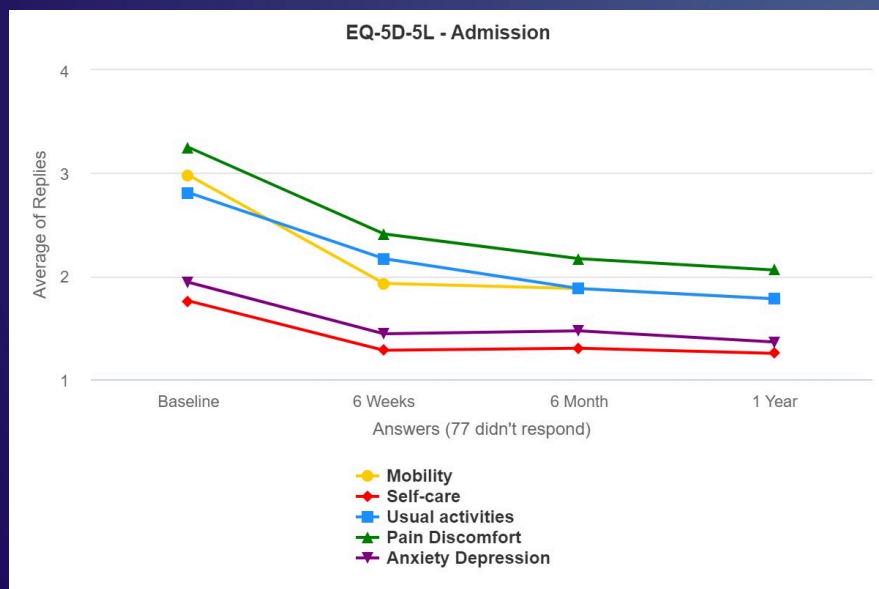
- Hips, average of total VTOC entries
- Lower scores correspond to better outcomes
- Your Health Today asks for a measure out of 100, where 100 is the best health the patient can imagine





# EQ5D-5L Knees

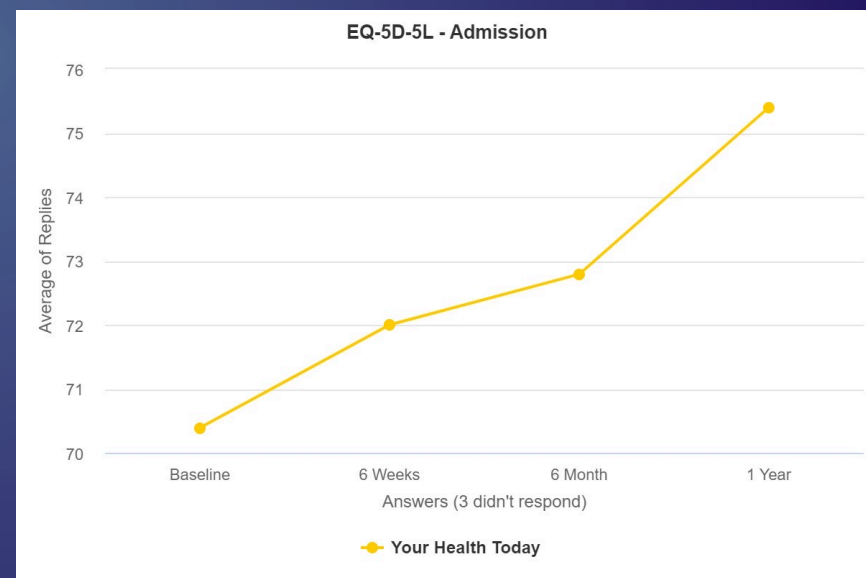
- Knees, average of total VTOC entries
- Lower scores correspond to better outcomes
- Your Health Today asks for a measure out of 100, where 100 is the best health the patient can imagine





# EQ5D-5L Shoulders

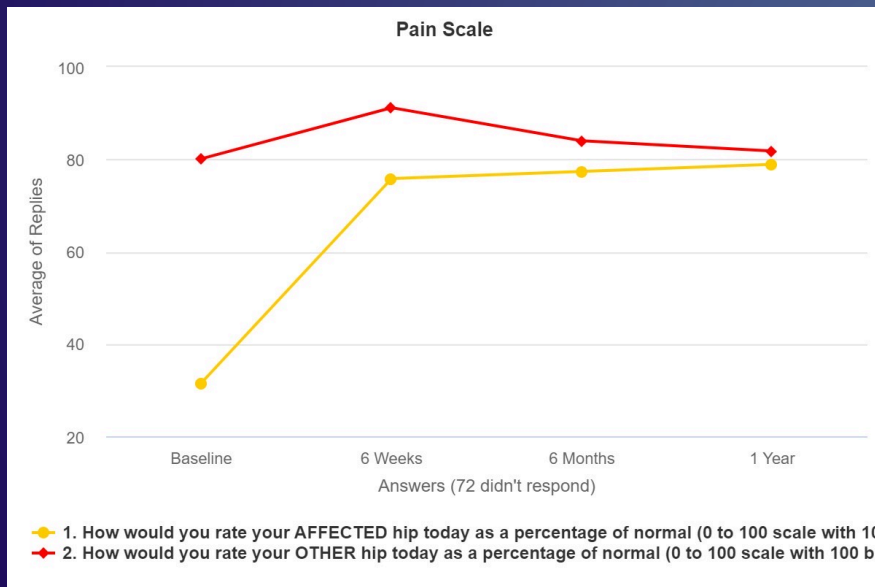
- Shoulders, average of total VTOC entries
- Lower scores correspond to better outcomes
- Your Health Today asks for a measure out of 100, where 100 is the best health the patient can imagine





# SANE VAS Pain Scale Hip

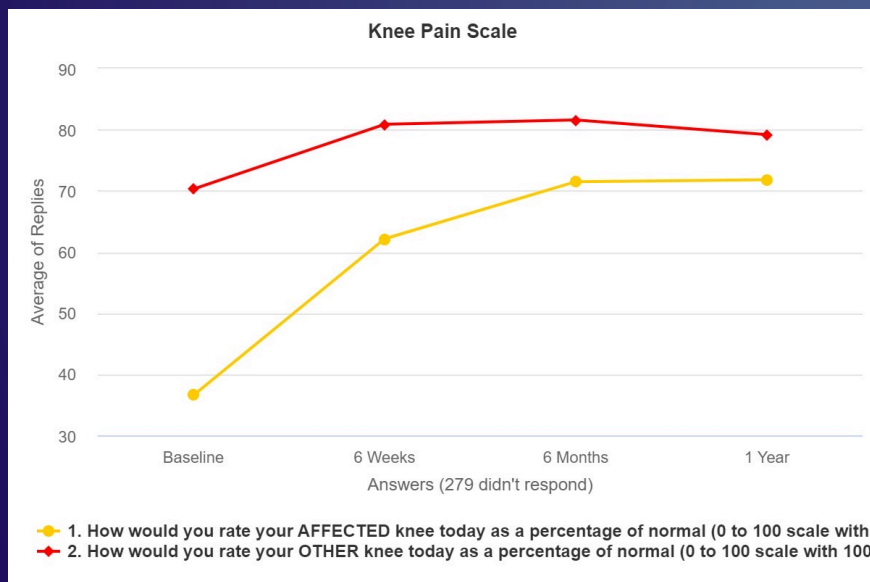
- Export 16/6/2022
- SANE % of normal
- VAS 0-100 where 100 is the worst possible pain





# SANE + VAS Pain Scale Knee

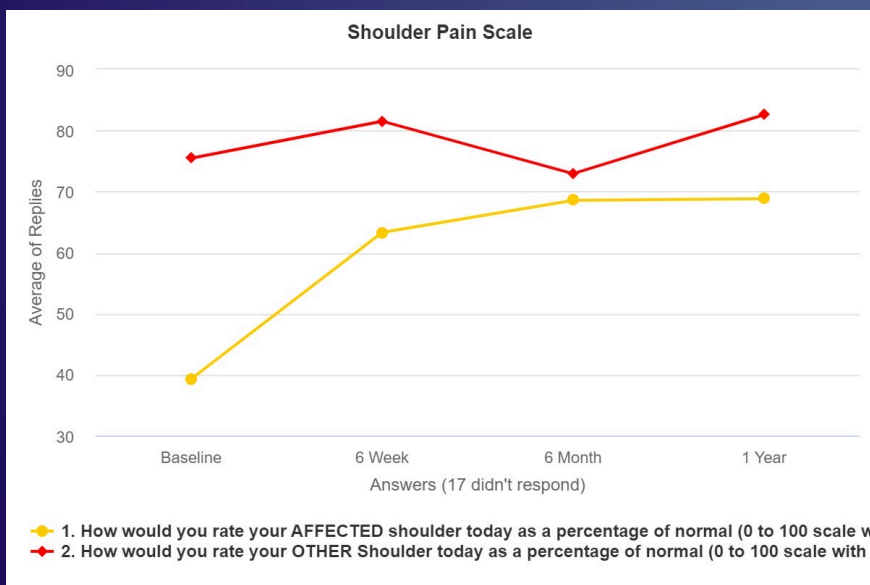
- Export 16/6/2022
- SANE % of normal
- VAS 0-100 where 100 is the worst possible pain





# VAS Worst Pain Scale Shoulder

- Export 16/6/2022
- SANE % of normal
- VAS 0-100 where 100 is the worst possible pain

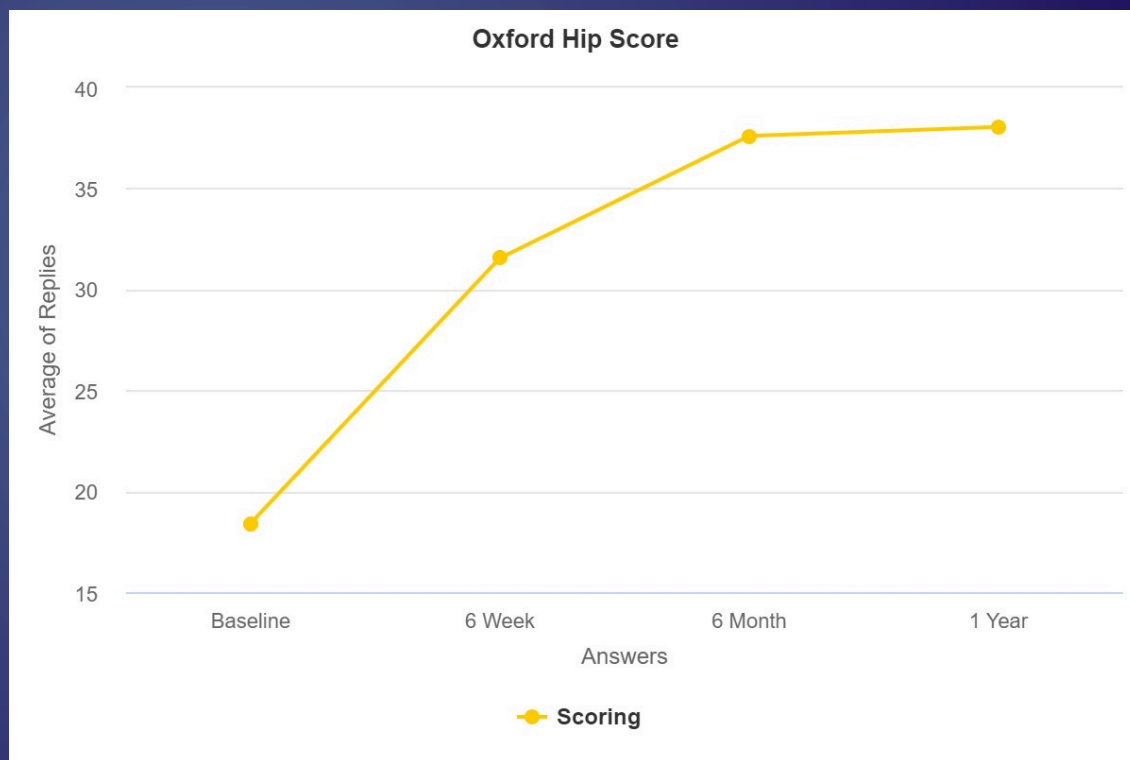






# Oxford Score Hip

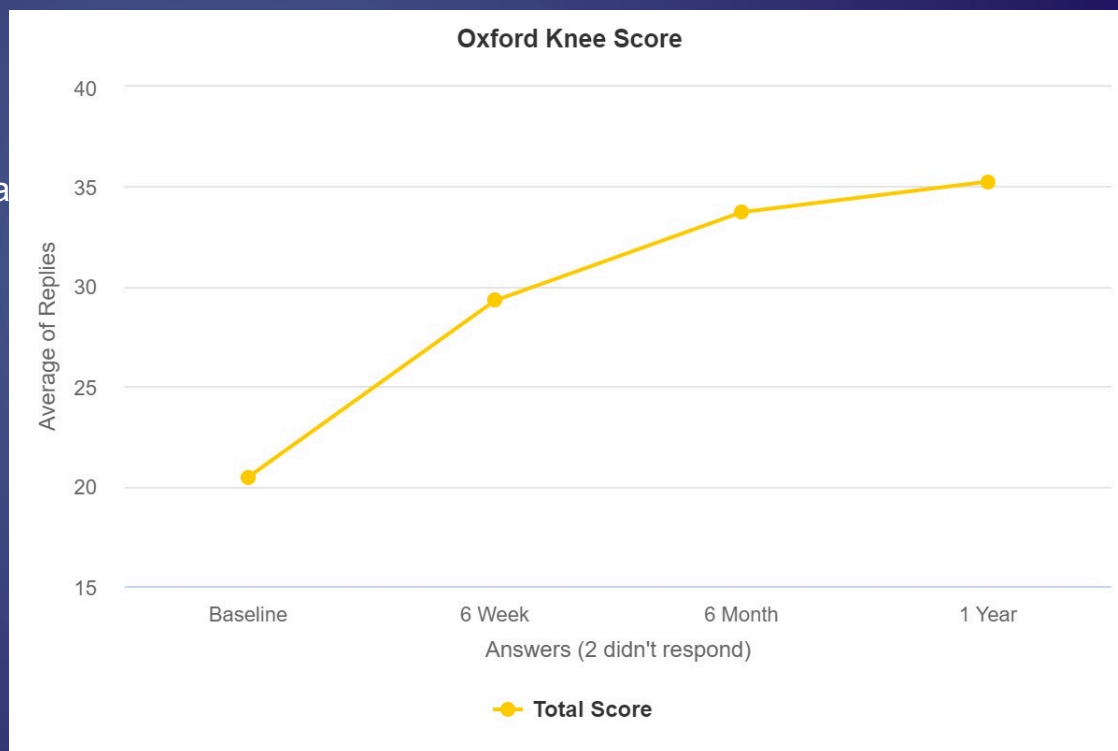
- Export 16/6/2022
- Higher scores correspond to better outcomes
- Aim to compare to the AOANJRR data available from PROMs pilot study





# Oxford Score Knee

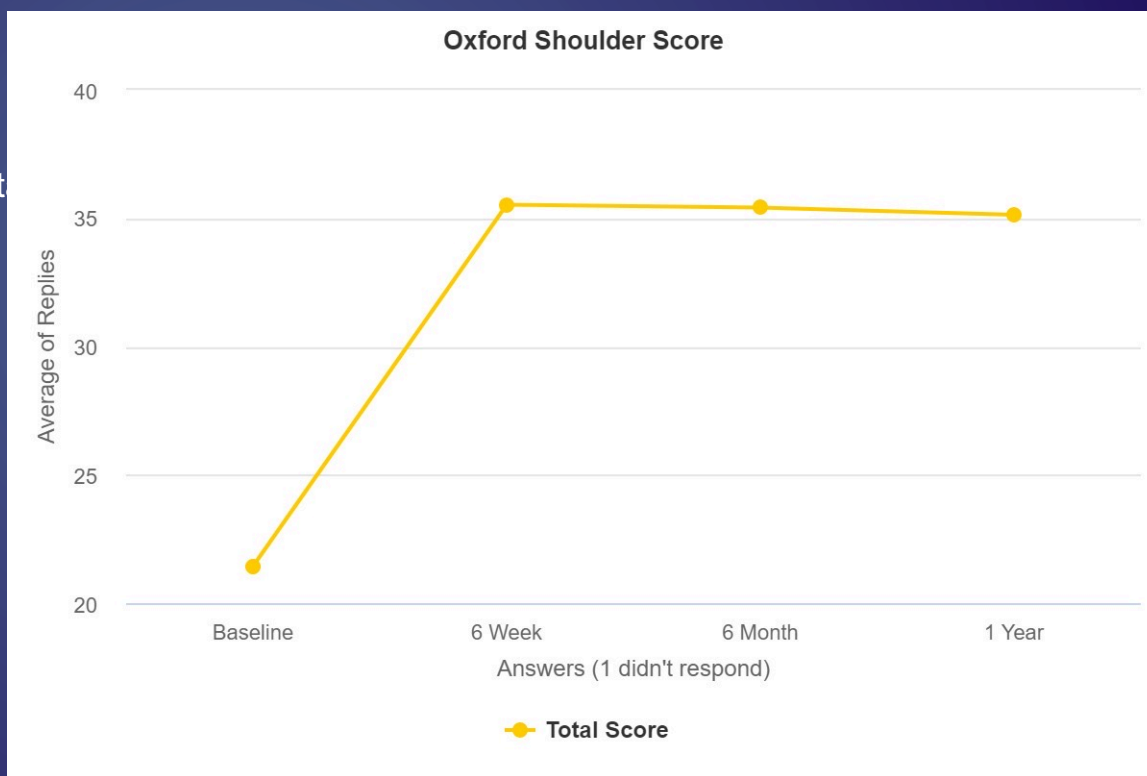
- Export 16/6/2022
- Higher scores correspond to better outcomes
- Aim to compare to the AOANJRR data available from PROMs pilot study





# Oxford Score Shoulder

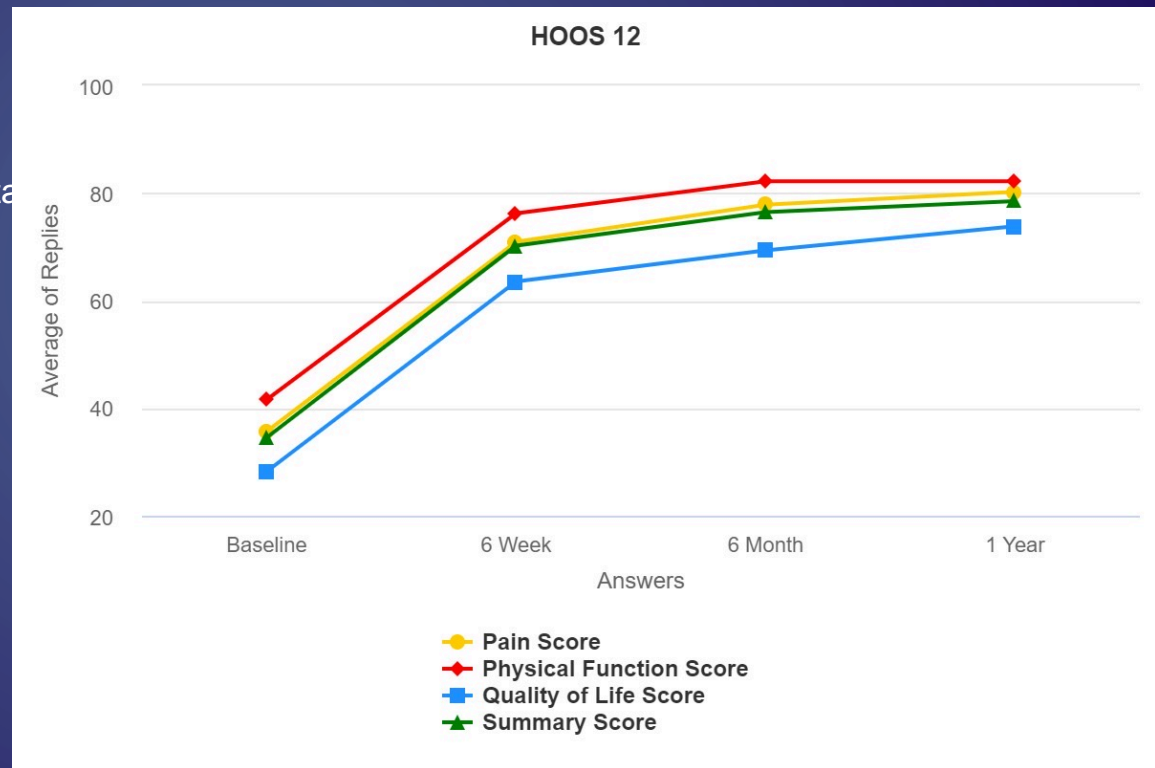
- Export 16/6/2022
- Higher scores correspond to better outcomes
- Aim to compare to the AOANJRR data available from PROMs pilot study





# HOOS12Q

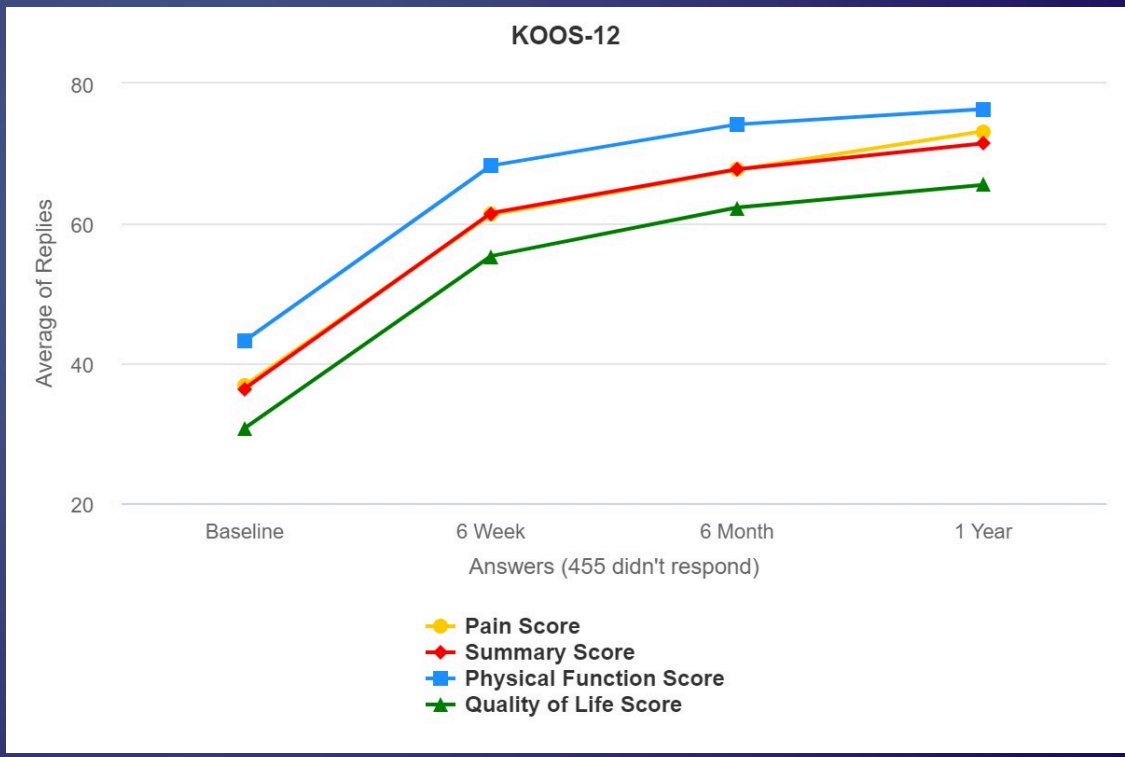
- Export 16/6/2022
- Higher scores correspond to better outcomes
- Aim to compare to the AOANJRR data available from pilot study





# KOOS12Q

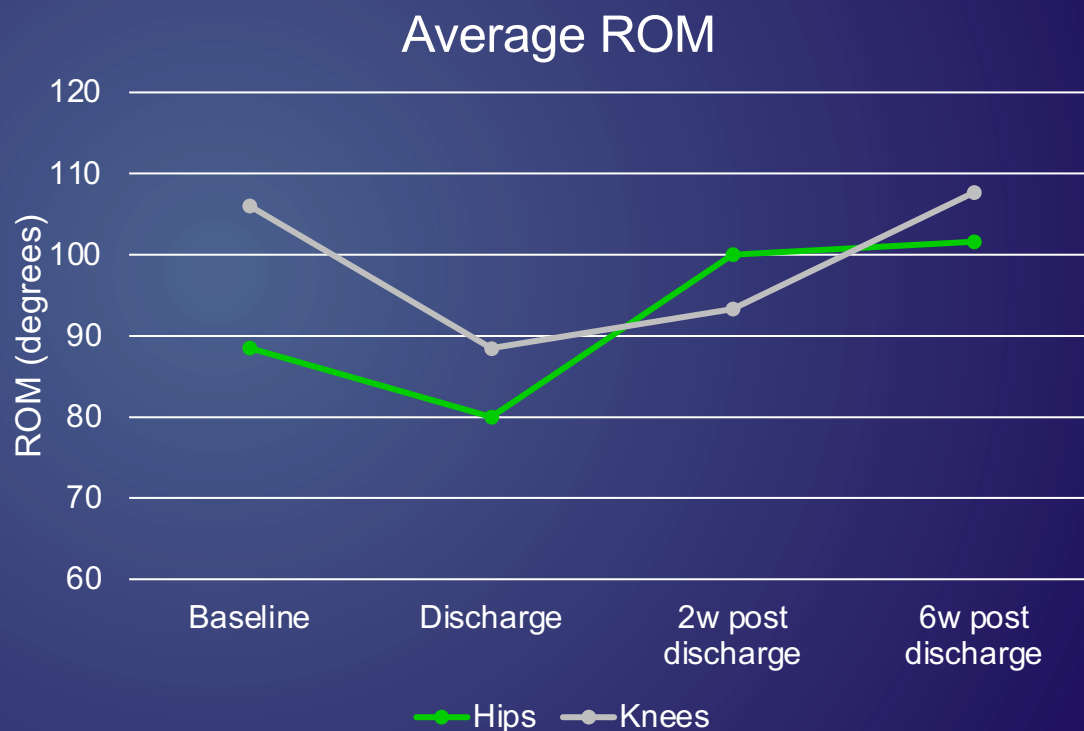
- Export 16/6/2022
- Higher scores correspond to better outcomes
- Aim to compare to AOANJRR data available from pilot study





# Range of Motion (ROM)

- Previous version found from Anjini
- Time period: May 2019–Oct 2020
- Patients:
  - 147 Knees
  - 61 Hips
- Currently have all recent hard copies, transferring into excel for analyses
- This will still take a few weeks to complete

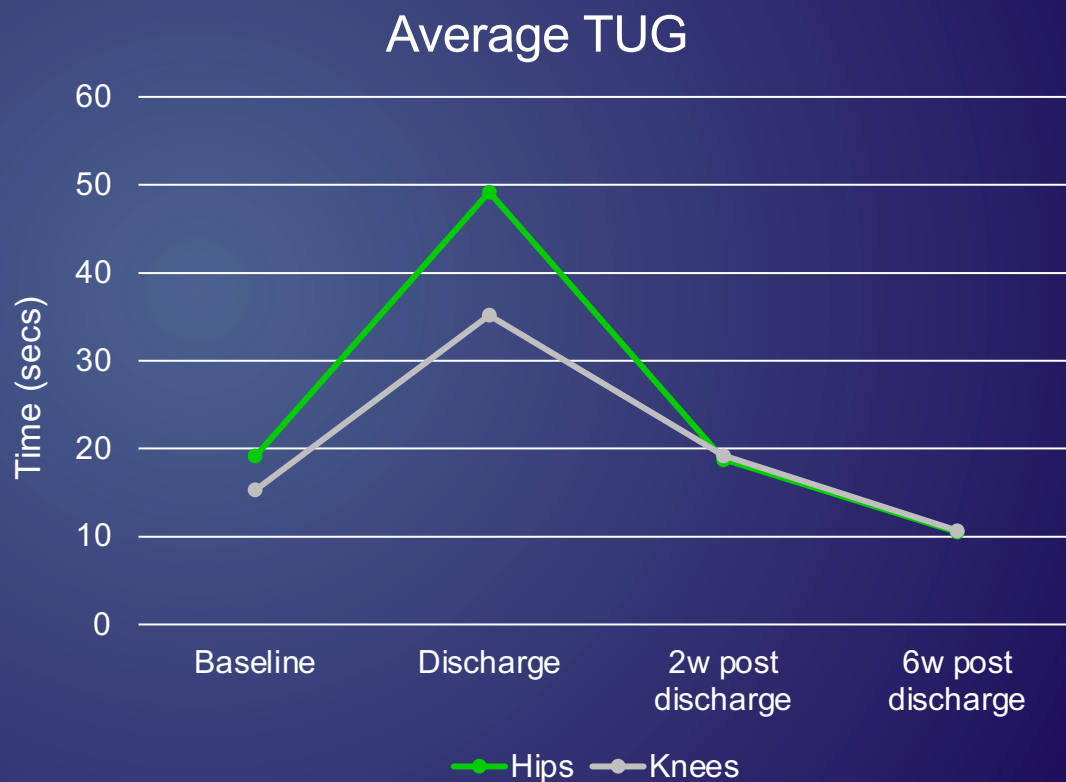





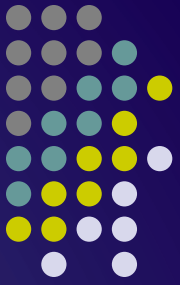


# Timed Up and Go (TUG)

- Previous version found from Anjini
- Time period: May 2019– Oct 2020
- Patients:
  - 150 Knees
  - 66 Hips
- Lower scores correspond to better outcomes
- Currently have all recent hard copies, transferring into excel for analyses



# THANK YOU



Australia's first end-to-end 'no-gap' service.  
Renewing Mobility,  
restoring life.