



UBC CENTRE FOR  
HEALTH SERVICES AND  
POLICY RESEARCH



**CHÉOS**  
Centre for Health Evaluation  
& Outcome Sciences

# Measuring patients' health-related quality of life

## Measurement and interpretation

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Surgical Quality Action Network (SQAN)

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# Disclosure – Faculty of Medicine

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- Faculty: Jason M. Sutherland
- Relationships with commercial interests:
  - None.
  - No speaking fees.
- Managing potential bias:
  - Not applicable

# Measurement and patient-reported outcomes

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## Surgical outcomes

- Traditional way:
  - Distal measures of safety and cost-efficiency
    - E.g. Readmissions, ED visits, LOS, cost per stay
- Newer approaches:
  - NSQIP – processes of surgery and outcomes
    - Good risk adjustment, demonstrated results for QI, expensive
  - Patient-reported outcomes
    - Patient-completed questionnaires regarding their health, symptoms or quality of life

# Measurement and patient-reported outcomes

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- What are patient-reported outcomes good for?
  - Patients' perceptions of their health-related quality of life
- What patient-reported outcomes won't help with
- Patient-reported outcome measures
  - Generic
    - Overall health, anxiety, depression, pain
  - Condition-specific
    - Symptom burden, function, sleep quality due to condition

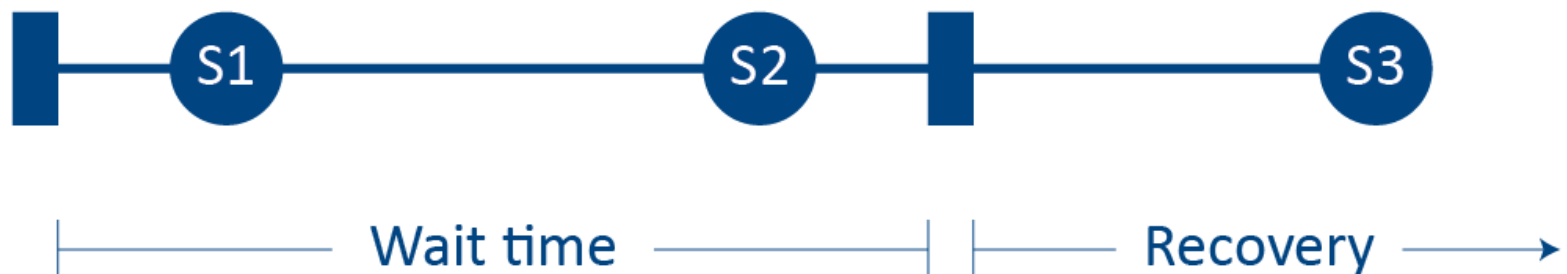
# Measurement and patient-reported outcomes

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- Measuring health across the peri-operative period
  - Reliable measures of health-related quality of life
  - Measure the effect of surgery on patients
  - Quality improvement
  - Change in clinical practice

Surgical consult or  
registered for surgery

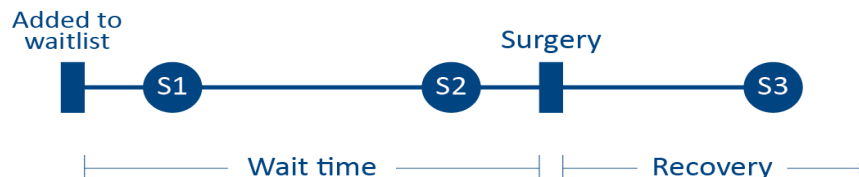
Surgery



# Measurement and patient-reported outcomes

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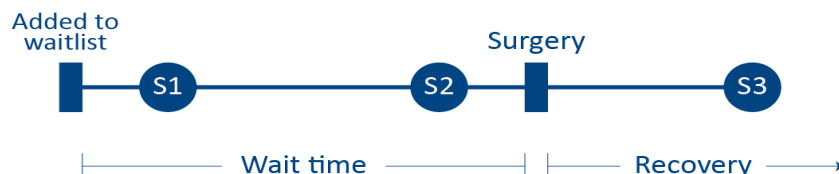
- Measuring pre-operative health and symptoms
  - Prevalence of depression, pain or anxiety
  - Indications for pre-operative medical management
  - Measuring health status or symptom burden while waiting
- Measuring gain in health attributable to surgery
  - Measuring gain in health or symptom burden
  - Effectiveness



# Measurement and patient-reported outcomes

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- Which aspects of patients' life are effected by the condition for which they are having surgery?
- Match patient-reported outcomes with aspects of life surgery is expected to change
- Deciding what to measure and why
  - Overall health
  - Symptoms or function
  - Pain interference / impairment
  - Depression
  - Anxiety
  - Sleeplessness
  - Decision confidence



# Measurement and patient-reported outcomes

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- Deciding who and when to measure
  - Setting
    - Where are patient-reported outcomes collected
      - Clinic, inpatient, home
  - Target population
    - Who is responding
      - Population versus sample of patients
  - Timing
    - Pre-operatively
    - Post-operatively



# Measurement and patient-reported outcomes

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- Deciding how to measure
  - Mode of administration
    - Paper, tablet, online
  - Interaction with clinic workflow
  - Integration with EMRs

# Measurement and patient-reported outcomes

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- Analyzing, interpreting and reporting patient-reported outcome information
- Quality improvement
  - Educational burden
    - Patients, hospital managers, health authority and ministry
  - Improvement/Minimally important different
  - Linkage with other data sources
  - Risk adjustment
    - Comorbidities
    - Age/sex

# Measurement and patient-reported outcomes

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Example:

Referred from  
primary care

Surgical consult or  
registered for surgery

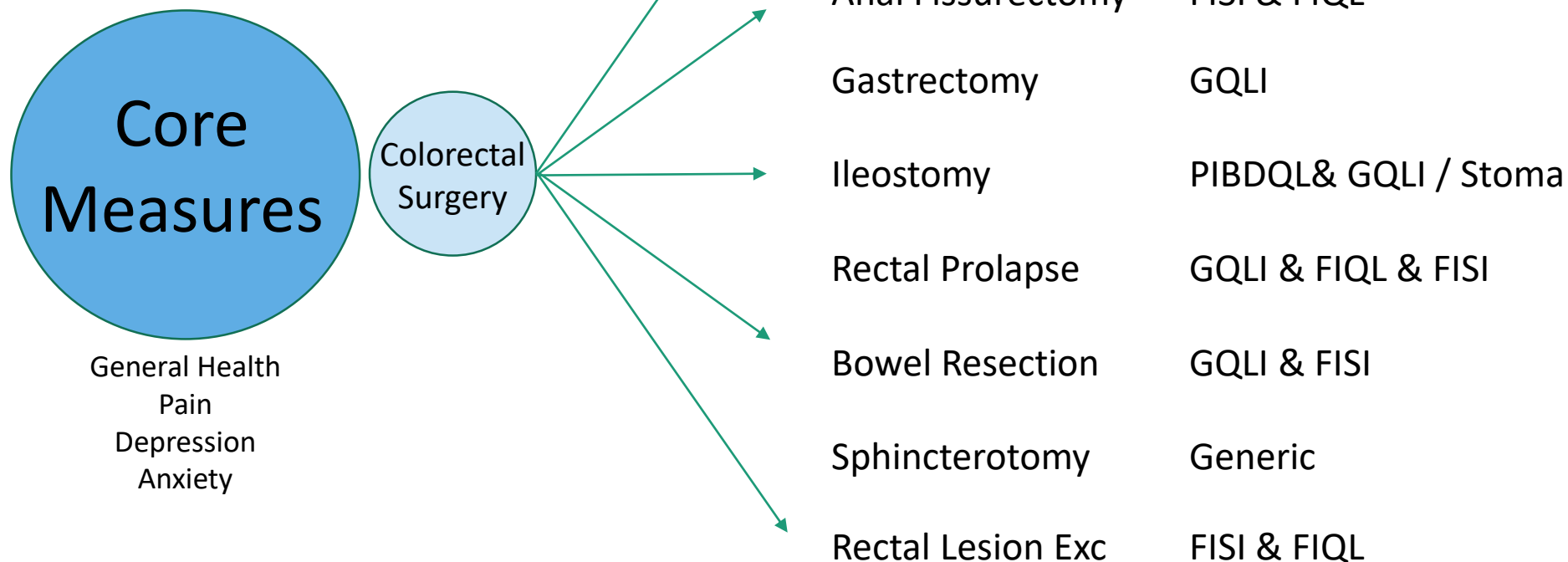
Surgery



# Measurement and patient-reported outcomes

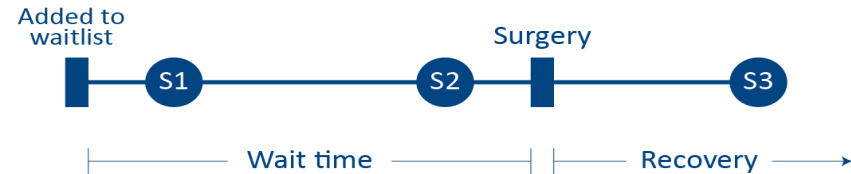
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Example:

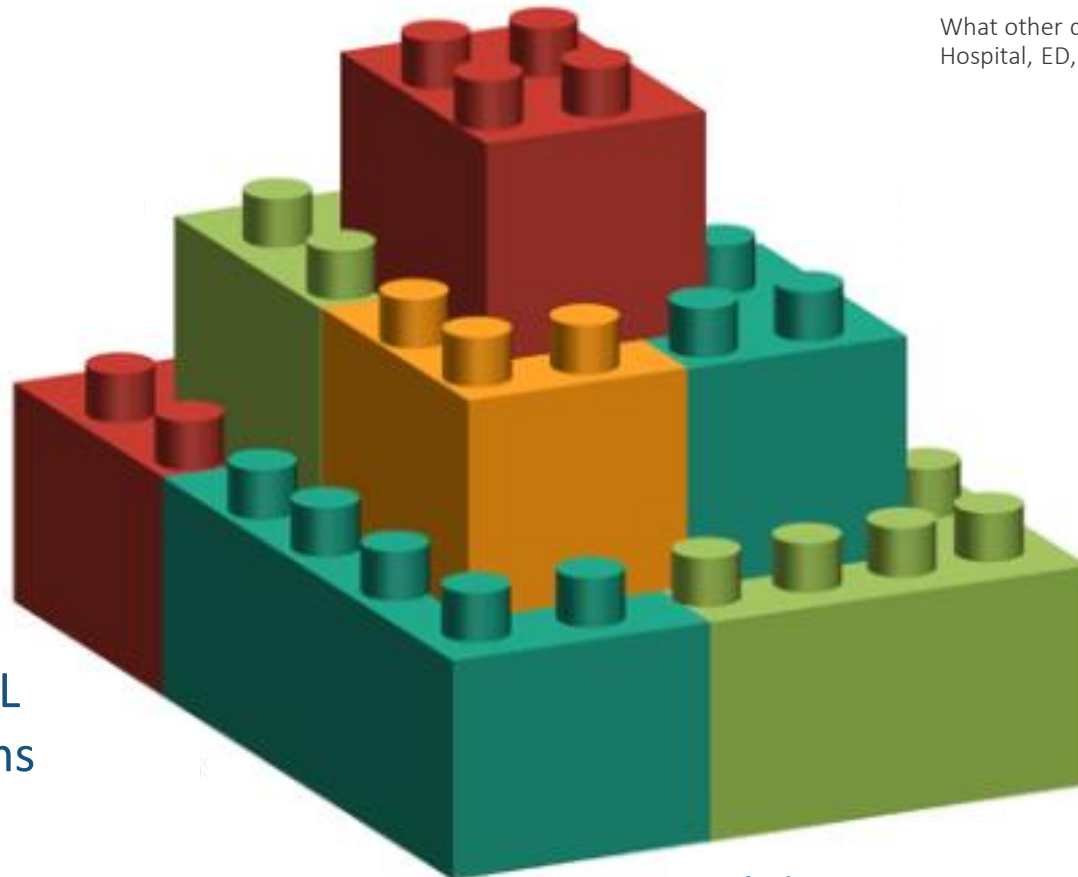


# Measurement and patient-reported outcomes

Example:



What other data are important?  
Hospital, ED, drug, home care



Patients' QoL  
and symptoms

Determine  
MID

Select PROs

Validate PROs

# Measurement and patient-reported outcomes

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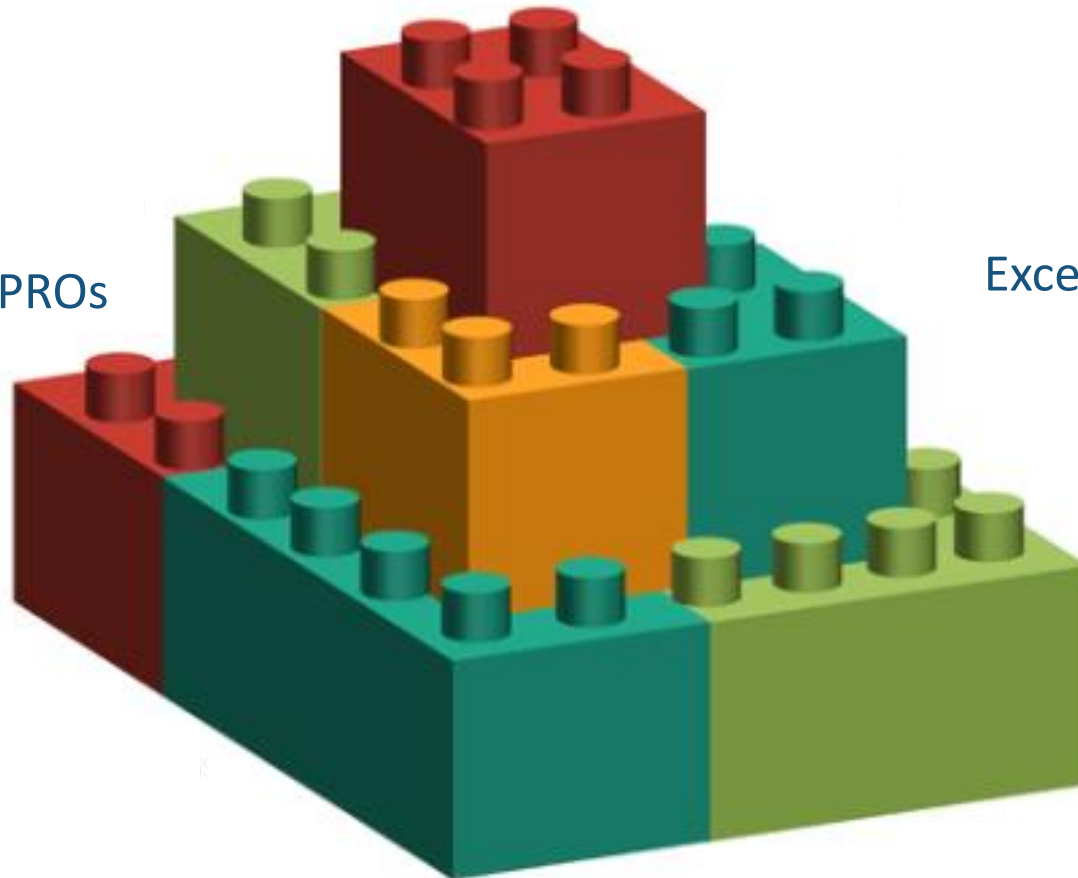
Example:

Improvement in  
performance

Change in PROs

Exceed MID

Improvement



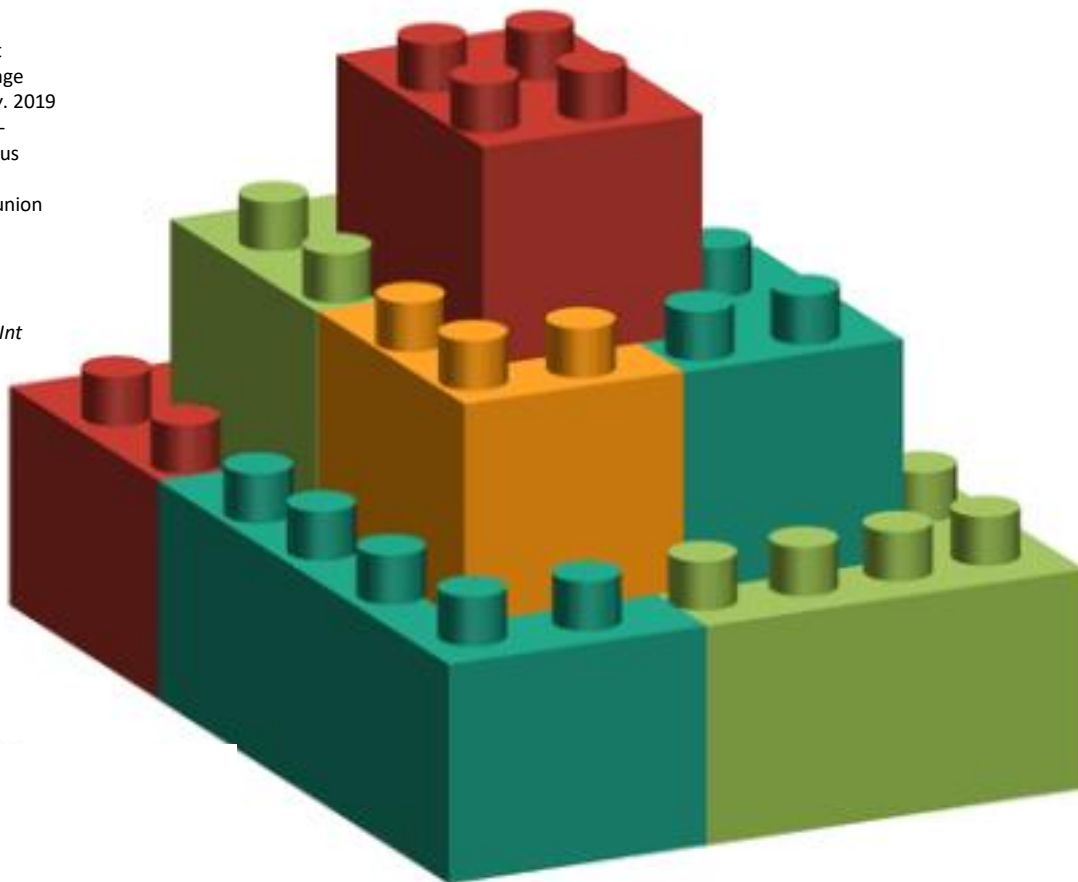
# Measurement and patient-reported outcomes

## Example:

- Relationship between pre-operative patient-reported outcomes and hospital length of stay: A prospective cohort study of general surgery patients in Canada. *Health Services Research and Policy*. 2018
- Cost-utility study of the economics of bunion surgery. *Foot and Ankle International*. 2018
- Health of Patients on the Waiting List: Opportunity to Improve Health in Canada? *Health Policy*. 2016
- Patient-reported outcomes and surgical triage: A gap in patient-centered care? *Quality of Life Research*. 2016

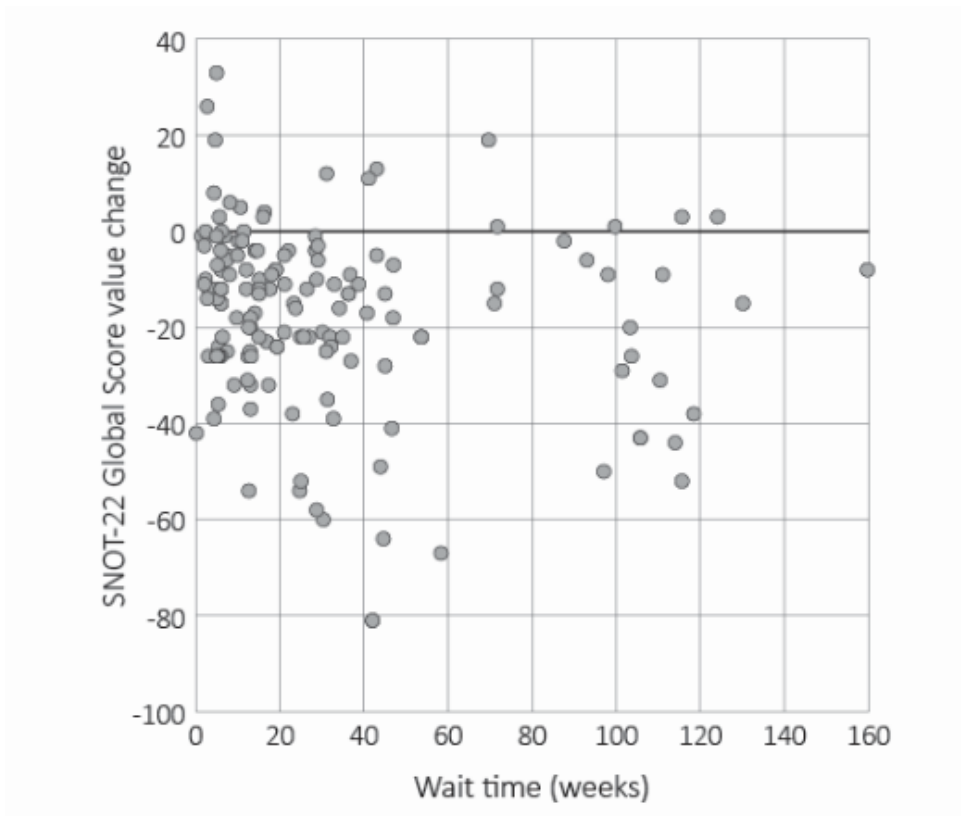
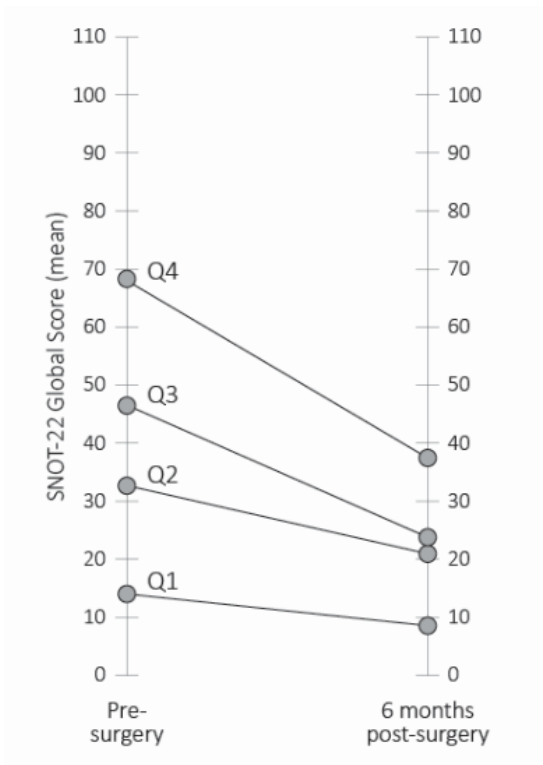
- Do Pre-operative Patient-reported Outcomes Predict Hospital Length of Stay for Surgically-treated End-Stage Ankle Osteoarthritis Patients. *Foot and Ankle Surgery*. 2019
- Relationship of duration of wait for surgery and post-operative patient-reported outcomes for Hallux Valgus surgery *Foot and Ankle International*. 2018
- Quantifying disability and health while waiting for bunion surgery. *Foot and Ankle International*. 2018
- Waiting for Surgery: Is Waiting Bad for Anyone or Everyone? *Hernia*. 2017
- The impact of surgical wait time on patient reported outcomes in sinus surgery for chronic rhinosinusitis. *Int Forum Allergy Rhinol*. 2017

- Determining the minimally important difference for the foot and ankle outcome score instrument in patients undergoing bunion correction surgery. *Foot and Ankle International (2019; In press)*.
- Validation of the Ankle Osteoarthritis Scale Instrument for Preoperative Evaluation of end-stage ankle arthritis patients using item response theory. *Foot and Ankle International*. 2018
- Psychometric evaluation of the Stoma-QoL questionnaire in a Canadian cross-sectional sample of colostomy and ileostomy patients
- The Fecal Incontinence Quality of Life Scale (FIQL) using item response theory reveals limitations and suggests revisions. 2018
- Measuring quality of life in patients with stress urinary incontinence: Is the ICIQ-UI-SF adequate? *Quality of Life Research*. 2018
- Evaluating the 8-item Overactive Bladder Questionnaire (OAB-v8) using item response theory. *Neurourology and Urodynamics*. 2018
- Establishing utility values for the SNOT-22 using a crosswalk to the EQ-5D-3L. *International Forum of Allergy & Rhinology*. 2017
- Analyzing the 22 item SNOT using item response theory. *International Forum of Allergy & Rhinology*. 2016



# Measurement and patient-reported outcomes

## Example: Change in PRO





# Measurement and patient-reported outcomes

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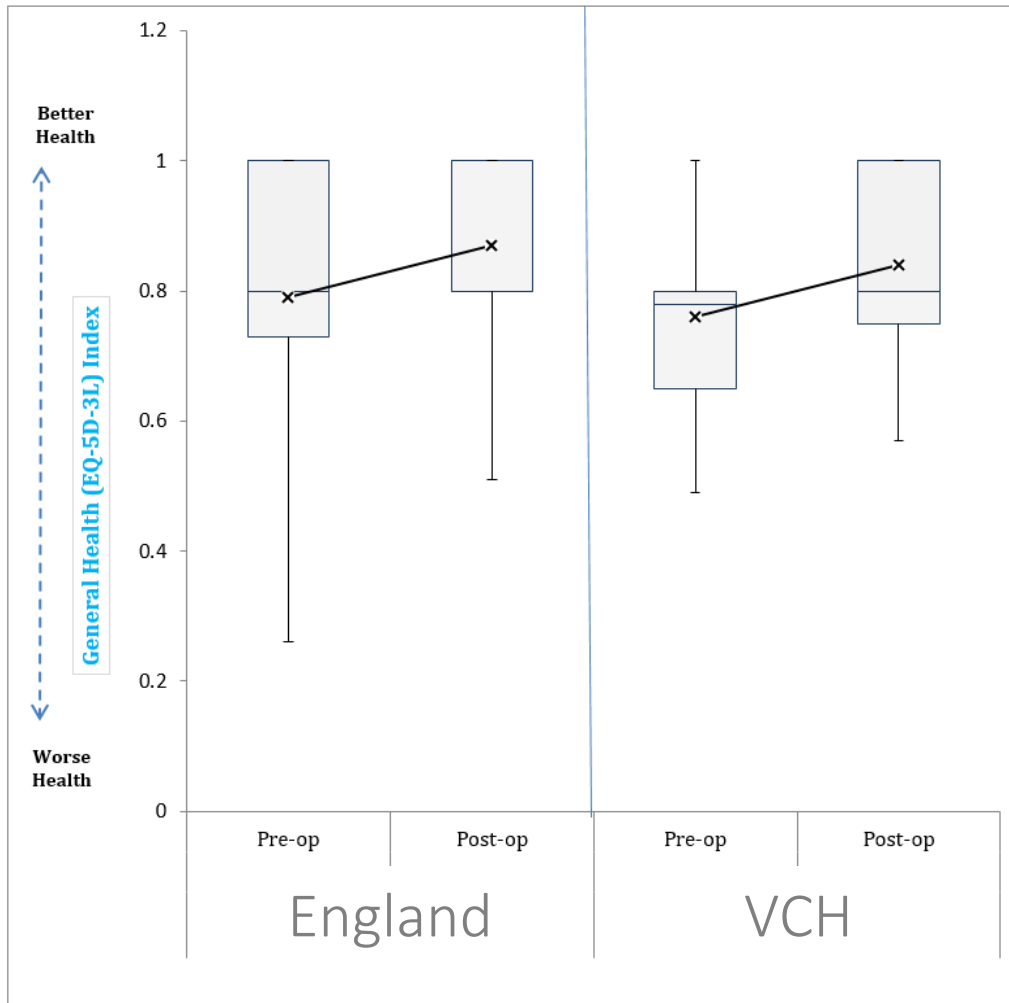
Example: Cost-utility (bunion correction).  
Understanding who gains from surgery the most.

Table 3. Patients' mean gain in QALYs, assuming benefits from surgery accrue to age 82. Cost per QALY statistics shown for the entire sample and the demographic categories.

Period of Health Gain	Mean (SD) Gain in QALYs	Hospital and Surgeon Cost (\$)	Cost per QALY (\$)	95% Confidence Interval (\$)
Overall	1.5421 (2.3001)	5497 (2478)	3565	(3413, 3721)
Sex				
Male	2.0500 (2.3809)	7042 (3600)	3435	(3181, 3706)
Female	1.4151 (2.2620)	5111 (1922)	3612	(3415, 3824)
Age Category				
≤ 50	3.0483 (4.1460)	6503 (3584)	2133	(1936, 2349)
51 – 60	1.0244 (1.4778)	4808 (2075)	4693	(4384, 5074)
61 – 70	1.7479 (1.4857)	5774 (2292)	3303	(3170, 3476)
70 +	0.4912 (0.5869)	5399 (1267)	10992	(9884, 12141)

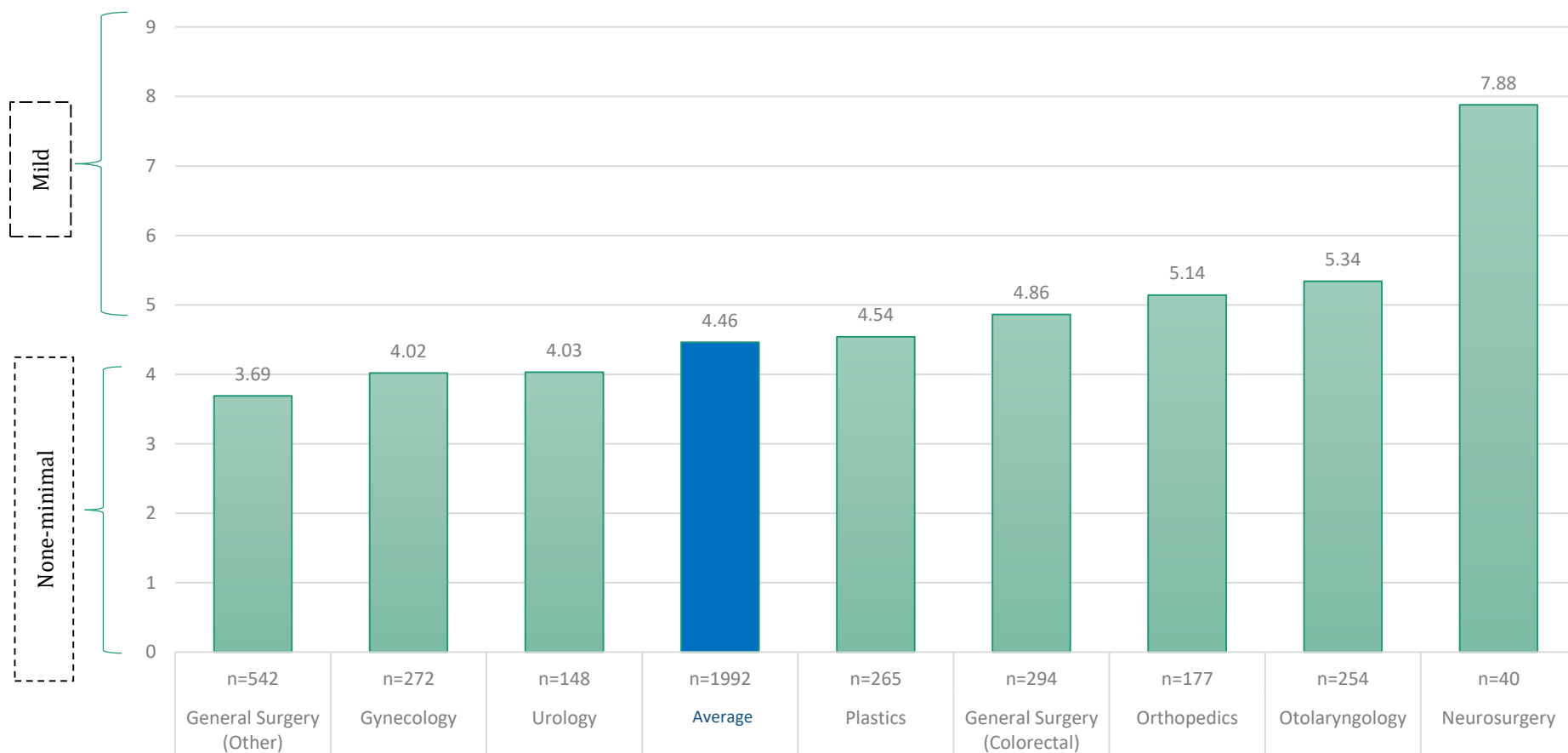
# Measurement and patient-reported outcomes

Example: International comparisons. Groin Hernia.



# Measurement and patient-reported outcomes

- Example: Registered for elective surgery in VCH. Depression (PHQ-9)



# Measurement and patient-reported outcomes

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- Important quality improvement questions:
  - Equity of access:
    - Unequal access/wait times and symptom burden
    - SES and wait times/non-insured services burden in the pre-operative period (e.g., drugs)
  - Equity of outcomes:
    - Outcomes and non-insured services across the peri-operative period (e.g., physical therapy)
    - Unequal distribution of gains in health or function among subgroups (e.g., low SES)
    - Prediction of surgical outcomes
  - Equity of spending (cost-efficiency)
    - Interpreting unequal cost-utility between and within surgeries

# Summary

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- Tips for surgeons and their research teams:
  - Keep the outcome in mind – improving outcomes
    - Key questions that drive interest in HRQoL?
    - How do you get there? Start at the bottom and build the base of evidence
    - Where/when possible, align with hospital, HA and Ministry direction
    - Education – residents and fellows
    - Partnership model – find researchers that want to partner and share same vision for improving outcomes
- Good luck!

# Questions and discussion

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