“We are only at the threshold of knowing about the usefulness of medical interventions”

(Barbara Starfield, 2008)
Health Outcomes of Care – Why?

- Goal of healthcare is to improve the health and well-being of the population;
- There is a growing need for information to understand the degree to which investments in health care and treatment interventions have a positive impact on health
  - make ever increasing investments in the health care system but generally lack information to assess effectiveness at the population level
  - Have good measures of “rare” outcomes – mortality, complications, readmission
  - Little information on outcomes for vast majority of patients – some benefit and some do not
- Purpose: Focus on data available to assess health outcomes of care
  - Definition: change in health status as a result of health care interventions
Health Outcomes of Care

Project #1: Focus on existing data

Objective – to use existing data to assess health outcomes of care in key clinical areas

Development of conceptual framework – recognized the importance of understanding health outcomes in the context of other factors

Case studies: depression and diabetes

Data bases: Linked CCHS/HMDB, CORR, CCRS

Finding – can’t do much with existing data due to lack of direct measures of health – general health related quality of life (HRQL) or disease specific!
Health Outcomes of Care – Conceptual Framework

A conceptual framework for health outcomes was developed to guide data development and analysis. It describes the complex interplay between the various factors that can influence health outcomes.

Statistics Canada, CIHI. Health Outcomes of Care. 2008
Health Outcomes of Care

Project #2: Focus on data development

Objectives:
• explore current trends contributing to a general shift in our thinking on the need for health outcome information;
• highlight various initiatives currently underway in Canada and internationally to collect and use of health outcome information;
• propose options for new data development/collection/enhancement
Health Outcomes of Care

• “Information gathering”:
  – Literature search
    • Conceptual – why important to report on health outcomes
    • Measurement – general HRQL vs disease specific
    • Examples of use of health outcome reporting
  – Internet search
    • Key organisations involved in health outcome collection/reporting and/or patient reported outcomes
    • Mostly focused on UK to date
  – Interviews with key contacts
    • Canadian contacts
    • UK contacts
Health Outcomes of Care – Why now is a good time?

• Current trends -
  – Greater emphasis on need to report on outcomes – population level (i.e. development of indicators);
  
  – Movement toward greater emphasis on patient reported outcomes (PROs);
    • acknowledgment of need to capture the patient’s perspective on the impact of illness and health care interventions including impact on health status

“Patient-reported data is a new technology of patient experience that can transform medical care and health services research.” (paraphrased from Paul Ellwood, 1988)
Health Outcomes of Care – Why now is a good time?

• Current trends (cont’d)-
  – Advances in measurement of HRQL –
    • HUI, SF-36, EQ-5D
    • Databanks:
      • Patient-Reported Outcomes Measurement Information System (PROMIS) (US);
      • Patient-Reported Outcome and Quality of Life Instruments Database (PROQOLID) (France)
  – Advances in data collection – IT developments (interactive voice response (IVR), touch screens, hand-held computer devices, mobile phones and web based applications)
Health Outcome Information: “Ideal” data structure

Starts with definition of a minimum data set

Source: Adapted from Wolfson and Alvarez (2002) and Frank (2008) and Erickson (2004) – incorporate element of time
Health Outcomes – Case Study
Heart Transplantation
(Edmonton, Alberta)

• Use: clinical care (pilot project)

• Measures: HRQL (HUI) and disease specific

• Data collection: (Outpatient clinic)
  – Pre-op measures (assessment clinics) – patients fill out HUI on laptop while waiting for clinician
  – Post-op – follow-up measures conducted each time patient visits the outpatient clinic
  – HUI report included in the patient medical record

• Reporting:
  – Clinical practice: HRQL information used by care team (physicians and nurses) in clinical care of patient
  – Patient also gets a copy prior to visit with physician – patient feels they better interaction with the physician as a result
Health Outcomes – Case Study
Heart Transplantation
(Edmonton, Alberta)

Source: Santana, Feeny (2008)
Health Outcomes – Case Study
Alberta Bone and Joint Institute
(Calgary, Alberta)

• Use: performance indicator – *Measurement Framework*

• Measures: HRQL (SF-36) and WOMAC

• Data collection:
  – Pre-op measures – patients fill out HRQL measures at assessment clinic
  – Post-op – follow-up measures at appropriate post-op time (i.e. 6 months, 1 year)
  – SF-36 and WOMAC part of comprehensive patient information system

• Reporting:
  – Report on the 6 dimensions of quality of care accessibility, efficiency, acceptability, safety, appropriateness and *effectiveness*
    • Improved physical and social function and reduced pain
### Health Outcomes – Case Study

Alberta Bone and Joint Institute  
(Calgary, Alberta)

<table>
<thead>
<tr>
<th>Effectiveness</th>
<th>Physical and Social Function and Pain Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Current Way</strong></td>
</tr>
<tr>
<td></td>
<td>• Improved physical function</td>
</tr>
<tr>
<td></td>
<td>• Improved social function (daily living activities)</td>
</tr>
<tr>
<td></td>
<td>• Reduced pain</td>
</tr>
</tbody>
</table>

**TARGET FOR NEW APPROACH:** Ongoing improvement in physical and social function and in pain reduction
Health Outcomes – Case Studies
Elective surgery
(Spirehealthcare, UK)

• Use: system performance (joint replacement, cataract)
  – Indicator: health improvement following surgery

• Measures:
  – HRQL (SF-36) and disease specific (Oxford Hip/Knee, Visual Functioning 14)

• Data collection:
  – Data collection conducted via patient surveys (Outcome Technologies)
  – Pre-op measures: at time of admission to hospital
  – Post-op measures: 4-6 months via mailed survey

• Reporting:
  – Performance reporting: results available on the web by hospital
  – Patient reported outcomes part of suite of performance indicators
## Health Outcomes – Case Study
### Spire Alexandra Hospital

<table>
<thead>
<tr>
<th>Performance indicator</th>
<th>Number of incidences in 2007</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSA blood infections</td>
<td>0</td>
<td>0 per 1,000 bed days</td>
</tr>
<tr>
<td><strong>How we keep our MRSA rate so low</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clostridium difficile infections</td>
<td>0</td>
<td>0 per 1,000 bed days</td>
</tr>
<tr>
<td><strong>How we keep our Clostridium difficile rate so low</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wound infection after hip replacement surgery</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td><strong>How we minimise the risk of wound infection after surgery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return to the operating theatre for an unplanned procedure</td>
<td>13</td>
<td>0.40%</td>
</tr>
<tr>
<td><strong>How we minimise the chance of a further unplanned procedure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unplanned re-admission to hospital within 31 days for further treatment of the same or a related condition</td>
<td>26</td>
<td>0.68%</td>
</tr>
<tr>
<td><strong>How we keep unplanned readmissions low</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health improvement following surgery</th>
<th>Overall health rating before surgery</th>
<th>Overall health rating after surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip replacement (after 6 months)</td>
<td>20</td>
<td>38 (maximum score is 48)</td>
</tr>
<tr>
<td><strong>How we measure health improvement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cataract surgery (after 4 months)</td>
<td>84%</td>
<td>95%</td>
</tr>
<tr>
<td><strong>How we measure visual health improvement</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Health Outcomes – Case Study
Select Elective Surgeries
National Health Service (NHS)

• Focus on Patient Reported Outcomes (PROMS) including health outcomes

  "While a surgeon may deem a hip replacement successful because the procedure has been performed perfectly on the day, the patient will rightly disagree if they are still in pain and continue to have a poor quality of life some months down the line. This programme is the first of its kind in the world and the information collected will empower patients to choose a hospital that achieves the best results for the operation they need."

  (Lord Darzi, Health Minister, Department of Health, England; June 2, 2009)
Health Outcomes – Case Study
Select Elective Surgeries
National Health Service (NHS)

• Pilot study: (LSHTM – Nick Black)
  – Small number of elective procedures with 2,400 patients at 24 sites, and demonstrated the feasibility of routine health outcomes measurement.
  – Developed surgery specific questionnaires – data collected at admission and 3/6 months post-op

• NHS: Royal College of Surgeons and LSHTM
  – Starting April 2009, mandatory health outcome data collection for NHS patients undergoing
    • Hip and Knee replacements,
    • Groin Hernia and
    • Varicose Vein surgeries
Health Outcomes – CIHI and STC efforts

- CIHI: Continuing Care Reporting System (CCRS)
  - Inter-RAI MDS clinical assessment tool – improvements in health and functional status
  - Captured at various point of care electronically
  - Used by nurses to assess status and plan care
- Statistics Canada: Data linkage
  - Linked hospital administrative data with health survey data (HUI)
  - Micro-simulation – bring together range of data sources to project effects of various types of care on outcomes – including health adjusted quality of life
CIHI and Stats Can will be co-hosting the annual Data User’s Conference.

The conference will be held Sept 20th – 21st in Ottawa.

This year’s theme is focused on measuring and monitoring health outcomes of care through data.
Thank-you!

Contact info:

Claudia Sanmartin, Statistics Canada
Claudia.sanmartin@statcan.gc.ca

Kira Leeb, CIHI
kleeb@cihi.ca