Putting Data in the Hands of Providers:
Using Personalized Reports to Fuel Quality Care
Presenter Disclosure

• **Presenters:** Mark Dobrow, Nancy Lefebre, Sharon Straus, Tim Jackson, Michelle Greiver

• **Relationships with commercial interests:** None
  - Grants/Research support
  - Speakers Bureau/Honoraria
  - Consulting fees
  - Other
Disclosure of Commercial Support

• This session has received no commercial support
Mitigating Potential Bias

• Not applicable
Learning Objectives

1. Learn how providers from all sectors are leveraging data to inform quality improvement initiatives in order to improve outcomes

2. Discover how personalized reports can be optimized to improve their usability and increase their impact on quality of care
Welcome and Speaker Introductions

• Dr. Mark Dobrow – Health Quality Ontario
• Ms. Nancy Lefebre – Saint Elizabeth Health Care
• Dr. Sharon Straus – Li Ka Shing Knowledge Institute
• Dr. Tim Jackson – University Health Network
• Dr. Michelle Greiver – North York Family Health Team
HQO Personalized Reporting Activities

• Primary Care Practice Report: over 275 physicians have signed up since April 2014
  – Joint HQO/ICES effort in partnership with the Association of Family Health Team Organizations and Ontario College of Family Physicians
  – Re-design of the report to better reflect evidence (e.g., more guidance on guidance) and the needs of physicians currently underway

• Exploration of other personalized report topic areas underway
Primary Care Practice Report Content

- 8 semi-annual data points
- Physician report containing
  - Physician
  - Group
  - LHIN
  - Province
- Group report containing
  - Group
  - LHIN
  - Province
- 12 demographic indicators
- 16 health service utilization indicators
- 13 chronic disease prevention and management indicators

To consent, go to: http://www.hqontario.ca/pcreport
Evidence Overview on Audit and Feedback

- Good evidence that audit and feedback is an effective intervention\(^1\), especially if:
  - Feedback comes from supervisor or respected colleague
  - Feedback is provided frequently (i.e., weekly better than monthly, better than quarterly…
  - Action plan and measurement target are provided
  - Aim is to decrease behavior
  - Baseline performance is lower

\(^1\) Ivers et al., “Growing Literature, Stagnant Science? Systematic Review, Meta-Regression and Cumulative Analysis of Audit and Feedback Interventions in Health Care.”
Context

• Lessons from one sector may apply to others

• Many quality improvement initiatives in Ontario
  – Personalized reporting one additional support

• Many organizations are active in personalized reporting
Accessing and using data to improve care in Family Health Teams

Michelle Greiver, MD CCFP
North York Family Health Team
EMRs in primary care

• EMRs are now used by the majority of primary care physicians.
• $$$ and time spend on subsidizing, buying, implementing, certifying EMRs.

• Evidence that this has made difference in care or outcomes for patients?
• Meaningful use of EMRs or of EMR data?
• Measurement and use of information in primary care teams?
EMR vs paper charts: MSc thesis

- Was there a **difference** in the change in **preventive services** targeted by Ontario’s P4P incentives between community-based family physicians implementing **EMRs** and those using paper-based records?

- **0.7% less increase** in services in EMR group (p=0.55, 95% CI -2.8 , 3.9)

- **NO difference** between EMR and paper

Changes in primary care

• **Before year 2000:**
  – Mainly **solo** family doctors
  – Earnings largely from **Fee for service**
  – **Paper** based

• **Today:**
  – Organized in **groups**
  – Significant proportion of earnings from **Capitation** (a set fee for each patient enrolled in the practice)
  – Over 80% on **EMR**
  – 25% interprofessional Family Health Teams (FHTs)
North York FHT

- 71 physicians
- 40 Allied Health Providers
- Over 220 EMR users
- 70,000 patients

- Individual cases of Excellent Care in some practices, BUT:
  Nearly every physician had their own way of entering data and doing things:
  - No consistent reminders or alerts across many offices;
  - Very difficult to build disease registries (example, diabetes).

- Allied Health Providers had to learn different ways of doing the same thing:
  - Difficult to plan consistent programs or implement consistent approaches to care.
From Individuals to Teams

- QI traditionally targeted at **individual physician**.
- Need **Team-based** standardized data and processes to obtain larger, systematic, sustained improvement.
- Six sigma: minimize variability, improve processes
Using data from HQO’s personalized reporting

• “Our Group’s Diabetics get less ACEIs or ARBs than others in LHIN or province; can we do something about this?”
From contemplation to action: DPT
Return the data to physicians

• “We found that 33% of diabetics in our Team with high ACR may not be on appropriate medications”
• We will return your list to you; you know your patients best
• Please indicate which patients need the Rx
• Please return the list to our Team’s Data Manager
• We will add alerts to EMR for all those patients: “High ACR, discuss ACEI / ARB”
• Change being measured now
“Team-based data, combined with the thoughtful use of evidence, can be used to inform population-based clinical care, monitor quality improvement efforts, and plan programs in primary care using standards agreed upon by the team.”

Team based Improvement

• **Start where you are**
  – Use HQO reports to identify areas for improvement for your Team
  – Contemplation

• **Use what you have**
  – Return of cleaned data, data mining tools like DPT and Team Analytics
  – Preparation

• **Do what you can**
  – Standardize and improve what is possible for you using tools at hand
  – Action
Using Data to Drive Quality Improvement in Surgery

Timothy Jackson BSc, MD, MPH, FRCSC, FACS
University Health Network, Toronto
Presenter Disclosure

• Presenter: Timothy Jackson

• Relationships with commercial interests: None
What is the National Surgery Quality Improvement Program (NSQIP)?

- ACS-NSQIP is a data-driven, risk-adjusted, outcomes-based program to measure and improve the quality of surgical care.

- Benefits include:
  - Improved patient care and outcomes
  - Decreased healthcare costs
Getting Started.... Get Good Data

Data is a Quality Diagnostic Tool
Good Data: Allows for meaningful comparisons of surgical outcomes

Different: Hospitals, Patients, Surgeries

Statistical Model
- Risk Adjustment for patient and case mix
- Shrinkage Adjustment

Site Level Quality Metrics
Define the Problem... know how you are performing

Benchmarking → High quality data allows for risk adjustment and comparison of observed-to-expected (O/E) ratios for each hospital:

- **Low Outlier**: If the upper bound of the O/E confidence interval is < 1.0, the hospital’s outcomes are statistically **better** than expected.
- **High Outlier**: If the lower bound of the O/E ratio is > 1.0, the hospital’s outcomes are statistically **worse** than expected.

Benchmarking can identify areas for targeted quality improvement.
Continuous Quality Improvement

Targeted Quality Improvement

Collection of High Quality Data

Feedback/Action

Risk Adjustment

Benchmarking to other Hospitals

Risk Adjustment to other Hospitals
Designing and Testing Change... “Continuous QI”

Measurable Improvements in Care: Bariatric Morbidity & SSI:

Q3/4 2012

Q1/2 2013

Q3/4 2013
**Custom Cost Reports: Applying Behavioral Economics to Cost Containment**

**Reporting Parameters**

**Thresholds**
- **Green**: less than group average
- **Black**: equal to group average
- **Yellow**: up to 5% greater
- **Red**: up to 10% greater

**Frequency**
- Every 2 weeks

**Mechanism**
- Receipt-tracked email message

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**Surgeon Cost Report Card**

01-Jan-14 to 31-Mar-14

Hello Dr. X,

Here’s how you performed between January-01-14 and March-31-14:

LAP GASTRIC BYPASS ROUX-EN-Y BARIATRIC
GROUP BEST: $2609.98 (Dr. Y)

<table>
<thead>
<tr>
<th>Your Average</th>
<th>Group Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3296.09 (N = 18)</td>
<td>$3070.93 (N = 75)</td>
</tr>
</tbody>
</table>

**COST (N)**

<table>
<thead>
<tr>
<th></th>
<th>TYPE</th>
<th>(N) COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1755.91 (7.3)</td>
<td>STAPLER RELOADS</td>
<td>1718.28</td>
</tr>
<tr>
<td>679.17 (1.0)</td>
<td>SHEARS</td>
<td>163.00</td>
</tr>
<tr>
<td>343.13 (11.3)</td>
<td>SUTURES</td>
<td>97.39</td>
</tr>
<tr>
<td>207.97 (1.0)</td>
<td>STAPLERS</td>
<td>202.23</td>
</tr>
<tr>
<td>193.92 (2.0)</td>
<td>TROCARS</td>
<td>256.89</td>
</tr>
<tr>
<td>95.50 (34.1)</td>
<td>MISC</td>
<td>100.21</td>
</tr>
<tr>
<td>5.42 (1.1)</td>
<td>CLIPS</td>
<td>24.99</td>
</tr>
<tr>
<td>0.00 (0.0)</td>
<td>LIGATION DEVICES</td>
<td>481.20</td>
</tr>
</tbody>
</table>

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Surgeon Cost Reports: Data Driven Cost Containment

Average Cost Per Operation

*All error bars are SD
Summary – Lesson Learned

1. Surgical quality is measureable

2. High quality data that provides meaningful, timely, actionable information can be used to improve surgical care.

3. Data driven QI represents a “Triple Win”
   – Patients → decrease complications
   – Providers → opportunity to improve care
   – Payers → potential to reduce cost

4. An opportunity to prepare for and inform future health policy
Fueling Quality Care
Putting Data in the Hands of Home Care Clinicians

Nancy Lefebre
Chief Clinical Executive
SVP, Knowledge and Practice
Saint Elizabeth
Over 8000 staff
18,000 visits per day
40,000 km’s travelled
Responding to the Context

Built on Strengths

Incorporated Technology
Cannot Lead with Data

Infatuated with Data
Cannot Lead with Data

Wedded to Uptake
“The Power of One”
How is Data Used?

• Presented at the right level for our various stakeholders
  – at the client level for front line practitioners to allow them to action individual care plans to improve outcomes
  – Summary data is provided to our mid and senior leadership teams to understand outcomes at the aggregate and better understand how programs of improvement can be created to benefit as needed
Data presented within our dashboards allows the viewer to look at key measures trended over different timeframes.
Data is Presented in Context: The Clinical Matrix

• To better understand outcomes like wound healing, it is viewed within the context of associated data such as:
  • Visit frequency
  • Pain management
  • Overall client satisfaction
  • LOS
  • Hand washing (client perception)
  • Risks / Occurrences
Embedding the process for sustainability

• It takes a village to raise a child......
Quality Process

1. Define Indicators
2. Evaluate / Collect Data
3. Research Opportunities
4. Implement Improvements
5. Analyze Results
6. Define Improvement Opportunities
7. Disseminate Results

START
Key Learnings

- Importance of Understanding the Context
- You cannot lead with data
- The Power of One
- It takes a Village
Thank you!

Nancy Lefebre
Senior Vice President, Chief Clinical Executive
Saint Elizabeth

knowledge@saintelizabeth.com
Health Quality Transformation 2014
Partnering to accelerate best care, best health, best value

Sharon Straus
Director, Knowledge Translation Program

St. Michael’s
Inspired Care. Inspiring Science.
Summary
## Tentative ‘Best Practices’ for A and F

### Audit components
- Data are valid
- Data is based on recent performance
- Data are about the individual/team’s own behavior(s)
- Audit cycles are repeated, with new data presented over time

### Feedback components
- Presentation is multi-modal including either text and talking or text and graphical materials
- Delivery comes from a trusted source
- Feedback includes comparison data with relevant others

### Nature of the behaviour change required
- Targeted behavior is likely to be amenable to feedback
- Recipients are capable and responsible for improvement

### Targets, goals, and action plan
- The target performance is provided
- Goals set for the target behaviour are aligned with personal and organizational priorities
- Goals for target behaviour are specific, measurable, achievable, relevant, time-bound
- A clear action plan is provided when discrepancies are evident

Ivers et al Impl Sci 2014;9:14
Feedback components: Is there an actionable message?

• Lack of knowledge isn’t the most significant barrier to implementation

• Message should include how the advice should be prioritized
Lack of knowledge is not the most significant barrier to KT

• Systematic review of barriers to guideline implementation by physicians
  – 76 trials
  – 293 barriers
    • Including:
      – Lack of awareness of the guideline,
      – Lack of awareness of the recommendations,
      – Lack of agreement with the recommendations
      – Lack of belief that can implement recommendations
      – Presence of external barriers
        • JAMA 1999;282:1458-65
Lack of knowledge is not the most significant barrier

• Providing preventative services to a typical roster of patients would require 7.4 hours per working day
  – 3.5 hours per day required to manage top 10 chronic diseases in primary care

• Implementing the top 8 chronic disease guidelines in Canada would take more than 266 days to implement
  » Kerr et al. CGS 2013,
Recipient for intervention: Clinicians should not be the only target

• To examine the influence of KT/QI interventions on the following:
  – glycemic control
  – vascular risk factor management
  – microvascular complication monitoring
  – smoking cessation
  – harms

## Quality Improvement Strategy

<table>
<thead>
<tr>
<th>Quality Improvement Strategy</th>
<th># RCTs</th>
<th>MD</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion of Self-management</td>
<td>60</td>
<td>0.57</td>
<td>0.31, 0.83</td>
</tr>
<tr>
<td>Team Changes</td>
<td>48</td>
<td>0.57</td>
<td>0.42, 0.71</td>
</tr>
<tr>
<td>Case Management</td>
<td>57</td>
<td>0.50</td>
<td>0.36, 0.65</td>
</tr>
<tr>
<td>Team Changes</td>
<td>48</td>
<td>0.57</td>
<td>0.42, 0.71</td>
</tr>
<tr>
<td>Patient Education</td>
<td>52</td>
<td>0.48</td>
<td>0.34, 0.61</td>
</tr>
<tr>
<td>Facilitated Relay</td>
<td>32</td>
<td>0.46</td>
<td>0.33, 0.60</td>
</tr>
<tr>
<td>Case Management</td>
<td>57</td>
<td>0.50</td>
<td>0.36, 0.65</td>
</tr>
<tr>
<td>Electronic Patient Register</td>
<td>27</td>
<td>0.42</td>
<td>0.24, 0.61</td>
</tr>
<tr>
<td>Patient Reminders</td>
<td>21</td>
<td>0.39</td>
<td>0.12, 0.65</td>
</tr>
<tr>
<td>Audit and Feedback</td>
<td>8</td>
<td>0.26</td>
<td>0.08, 0.44</td>
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<tr>
<td>Clinician Education</td>
<td>15</td>
<td>0.19</td>
<td>0.03, 0.35</td>
</tr>
<tr>
<td>Clinician Reminders</td>
<td>18</td>
<td>0.16</td>
<td>0.02, 0.31</td>
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<tr>
<td>Financial Incentives</td>
<td>1</td>
<td>0.10</td>
<td>-0.24, 0.44</td>
</tr>
<tr>
<td>Continuous Quality Improvements</td>
<td>2</td>
<td>-0.23</td>
<td>-0.41, -0.05</td>
</tr>
<tr>
<td><strong>All Interventions</strong></td>
<td>120</td>
<td>0.37</td>
<td>0.28, 0.45</td>
</tr>
</tbody>
</table>

**Results: Glycemic - HbA1c meta-analysis**

Favours Control | Favours Intervention

PLUS health systems/provider intervention

Interpretation – HbA1c meta-regression

- All categories of QI/KT interventions appeared effective but larger effects observed for:
  - Team changes
  - Facilitated relay
  - Promotion of self management
  - Case management
  - Patient education
  - Electronic patient register
  - Patient reminders
Frequent Users of the Health Care System

<table>
<thead>
<tr>
<th>Author(s) and Year</th>
<th>Treatment (n)</th>
<th>Control (n)</th>
<th>Relative Risk [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beck 1997</td>
<td>160</td>
<td>161</td>
<td>0.75 [0.51, 1.09]</td>
</tr>
<tr>
<td>Botha 2014</td>
<td>32</td>
<td>24</td>
<td>0.54 [0.34, 0.87]</td>
</tr>
<tr>
<td>Burns 1999</td>
<td>353</td>
<td>355</td>
<td>0.93 [0.82, 1.04]</td>
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<tr>
<td>Franklin 1997</td>
<td>213</td>
<td>204</td>
<td>1.56 [1.10, 2.23]</td>
</tr>
<tr>
<td>Lafave 1998</td>
<td>24</td>
<td>41</td>
<td>0.60 [0.41, 0.88]</td>
</tr>
<tr>
<td>Puschner 2011</td>
<td>241</td>
<td>250</td>
<td>1.09 [0.89, 1.33]</td>
</tr>
<tr>
<td>Rich 1995</td>
<td>142</td>
<td>140</td>
<td>0.68 [0.60, 0.76]</td>
</tr>
<tr>
<td>Salkever 1999</td>
<td>91</td>
<td>93</td>
<td>0.63 [0.41, 0.96]</td>
</tr>
<tr>
<td>Rich 1993</td>
<td>83</td>
<td>83</td>
<td>0.73 [0.44, 1.20]</td>
</tr>
<tr>
<td>Kasper 2002</td>
<td>102</td>
<td>98</td>
<td>0.82 [0.62, 1.08]</td>
</tr>
<tr>
<td>Courtey 2009</td>
<td>49</td>
<td>53</td>
<td>0.57 [0.33, 0.98]</td>
</tr>
<tr>
<td>Castro 2003</td>
<td>59</td>
<td>46</td>
<td>0.74 [0.48, 1.13]</td>
</tr>
<tr>
<td>Burns 2014</td>
<td>110</td>
<td>313</td>
<td>0.86 [0.53, 1.42]</td>
</tr>
<tr>
<td>Koehler 2009</td>
<td>20</td>
<td>21</td>
<td>0.70 [0.30, 1.61]</td>
</tr>
<tr>
<td>Ruchlewiska</td>
<td>70</td>
<td>73</td>
<td>0.76 [0.50, 1.14]</td>
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<tr>
<td>Laramee</td>
<td>131</td>
<td>125</td>
<td>1.02 [0.74, 1.40]</td>
</tr>
<tr>
<td>Stewart</td>
<td>49</td>
<td>48</td>
<td>0.76 [0.53, 1.08]</td>
</tr>
<tr>
<td>Lichtenberg 2008</td>
<td>122</td>
<td>95</td>
<td>0.76 [0.62, 0.90]</td>
</tr>
</tbody>
</table>

RE Model

Relative Risk (Log scale)
Consideration of sustainability of the intervention shouldn’t be left until the end

• Systematic review of the diffusion of innovations in health services organizations noted that only two of 1000 sources screened mentioned the term sustainability

Discussion and Q&A
Vision for the Road Ahead…

• Continue to strengthen knowledge exchange and translation/ quality improvement supports for personalized reports

• Streamline personalized reports across the province to ease access to information, whenever reasonable

• Develop an online ecosystem for personalized reports (e.g., standard dashboards with ability for users to customize reports)

• Inclusion of non-administrative data (EMR, patient experience) into reports