Quality Based Procedures: Draft Clinical Pathways for Coronary Artery Disease and Aortic Valve Disease

April 4, 2014
Agenda

- Overview of CCN
- Overview of the development of Quality Based Procedures (QBP)
- Review of draft QBPs for Coronary Artery Disease and Aortic Valve Disease
- Review of proposed Quality Indicators
- Next steps
- Questions

CARDIAC CARE NETWORK

01/04/2014
Who We Are

Representing a dynamic partnership between health care providers, hospitals, clinicians, community, government and patients/caregivers, the Cardiac Care Network is an essential resource to ensure the delivery of high quality adult cardiovascular care in Ontario. CCN provides system support based on evidence, data and best practices to ensure the quality, effectiveness, efficiency, and safety of adult cardiovascular care in Ontario.
The Cardiac Care Network of Ontario

- CCN formally established in 1995 and has an Accountability Agreement with the Ministry of Health and Long-term care.
- All hospitals that provide adult cardiac procedures have participation agreements with CCN.
- Mandate to support the system of cardiac care in Ontario with focus on efficiency, effectiveness, safety, quality:
  - Maintain the cardiac registry of advanced adult services (expanding to include vascular);
  - Monitor and report on access / wait times for adult cardiac procedures;
  - Review and report on clinical outcomes;
  - Collect/report information relevant to quality, utilization and outcomes to support system-wide improvements; and
  - Focus on continuum of care and transition points within the system.
Creating a QBP for CAD and AVD
BACKGROUND
Health System Funding Reform has two funding components

- QBPs are clusters of patients with clinically related diagnoses/treatments that have been identified by an evidence-based framework as providing opportunity for:
  1. Aligning incentives to facilitate adoption of best clinical evidence-informed practices
  2. Appropriately reducing variation in costs and practice across the province while improving outcomes
  3. Ensuring we are advancing right care, at the right place, at the right time
Focus on ‘quality’ and ‘best practices’ in Quality-Based Procedures

- Development of best practices informed by clinical consensus, best available evidence and case costing data will drive quality and reduce inappropriate practice variation.

- Publishing best practices will allow Health Service Providers to review internal processes, engage in clinical process improvement/re-design and adopt best practices.

- Case Costing data will be used to identify case utilization and cost of the best practices; best practice pricing will help strengthen the linkage between quality and funding.

- Development of indicators to allow for the evaluation and monitoring of actual practice and support on-going quality improvement.

- As implementation evolves, QBPs will be further developed and expanded to strengthen the continuity of care to ensure every patient gets the right care, at the right place, at the right time.
## QBP List

<table>
<thead>
<tr>
<th>Year</th>
<th>QBPs</th>
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| **FY2012/13** | 1. Primary hip replacement  
2. Primary knee replacement  
3. Cataract  
4. Chronic kidney disease |
| **FY2013/14** | 1. Chronic obstructive pulmonary disease*  
2. Stroke*  
3. Congestive heart failure*  
4. Non-cardiac vascular  
5. Chemotherapy  
6. Gastrointestinal endoscopy |
| **FY2014/15** | **Wave 1**  
1. Hip fracture*  
2. Pneumonia  
3. Tonsillectomy  
4. Neonatal jaundice  
   • Primary hip replacement*  
   • Primary knee replacement*  
   5. Coronary artery disease  
   6. Aortic valve replacement  
   7. Cancer Surgery  
   8. Colposcopy  
   9. Knee Arthroscopy  
   10. Retinal Disease |

*These QBPs have or are being further developed and expanded to address transition to post-acute phase in Year 3.
Key Principles

- Handbooks are intended for a broad clinical and administrative audience
- They do not mandate health care providers to provide services in accordance with the recommendations
- The recommendations included are not intended to take the place of the professional skill and judgment of health care providers
- Recommended practices should reflect the best care possible, regardless of cost or barriers to access
- Recommended practices, supporting evidence, and policy applications will be reviewed and updated at least every two years
CCN Expert Panel Membership

- Broad membership including:
  - Cardiologists
  - Cardiac surgeons
  - Interventional cardiologists
  - Decision support
  - Hospital leadership
  - Health coders
Deliverables of the Expert Panels

- Define the inclusion/exclusion criteria
- Populate the QBP evidence-based framework
- Develop best practices
- Recommend performance indicators
- Provide advice on implementation strategies for the defined episode of care
- Compile these deliverables in a ‘QBP Clinical Handbook’
- For CCN- recommend costing methodology
THE CLINICAL PATHWAYS
Overview

- Based on acuity of coronary artery disease (CAD):
  - Acute coronary syndrome (ACS)
    - ST elevation myocardial infarction (STEMI)
    - Non-ST elevation myocardial infarction (NSTEMI)/Unstable angina (UA)
  - Stable CAD

- Pathways lead to invasive cardiac procedures:
  - Catheterization
  - Percutaneous coronary intervention (PCI)
  - Isolated coronary artery bypass graft (CABG)
Purpose of Pathways

- More descriptive; less prescriptive
  - Describe how most CAD and AVD patients are managed
  - Care based on evidence and best practice

- Illustrate major decision points
  - Certain decision nodes may become the basis for alterations in funding
  - Decision criteria may become the basis for meaningful quality indicators and for assessing appropriate use

- For reference only and not intended to function as an operational pathway that would be implemented at an organizational level

- Provides structure for mapping the majority of patients proceeding through each component of the pathway
Cardiac QBP Procedures

Inclusions

- Coronary Artery Disease
  - Catheterization
  - Percutaneous Coronary Intervention (PCI)
  - Isolated Coronary Artery Bypass Graft (CABG)

- Aortic Valve Disease
  - Isolated Surgical Aortic Valve Repair/ Replacement (AVR)
  - AVR with CABG
  - Transcatheter Aortic Valve Implantation (TAVI)
Draft CAD and AVD Clinical Pathways

Dr. Eric Cohen
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CAD Clinical Pathways

- Based on acuity of coronary artery disease (CAD):
  - Acute coronary syndrome (ACS)
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  - Stable CAD

- Pathways lead to invasive cardiac procedures:
  - Catheterization
  - Percutaneous coronary intervention (PCI)
  - Isolated coronary artery bypass graft (CABG)
ACS (STEMI) Pathway

1. Cath only
   - with or without FFR/IVUS/OCT
2. Staged PCI
   - with or without FFR/IVUS/OCT/Thrombectomy
3. SS PCI
   - with or without FFR/IVUS/OCT/Thrombectomy
4. Scheduled PCI
   - with or without FFR/IVUS/OCT/Thrombectomy
5. Patient may require CABG after cath or PCI, or medical management only after cath

Note: Includes post cardiac arrest and cardiogenic shock patients (with or without STEMI). STEMI is with or without event are admitted in ICU. Event is any cath/PCI with heart failure, cardiac arrest, cardiac tamponade, transfusion for bleeding, etc.; with or without IABP, ventilator, inotropes, temp pacer, mechanical circulatory support, dialysis, etc.
ACS (NSTEMI/UA) Pathway

1. Cath Only
   - with or without FFR/IVUS/OCT
2. SS PCI
   - with or without FFR/IVUS/OCT
3. Staged PCI
   - with or without FFR/IVUS/OCT
4. Scheduled PCI
   - with or without FFR/IVUS/OCT
5. Non-invasive ischemic testing or coronary CTA + cath +/- PCI or medical management
6. Non-invasive ischemic testing or coronary CTA only
7. Patient may require CABG after cath or PCI, or medical management only after cath

Note: NSTEMI/UA may be admitted directly to CICU or ward depending on hemodynamic status. Event is any cath/PCI with heart failure, cardiac arrest, cardiac tamponade, transfusion for bleeding, etc.; with or without IABP, ventilator, inotropes, temp pacer, mechanical circulatory support, dialysis, etc.
Non-invasive cardiac testing*

Cardiac SSU/OP or IP Ward

Cath Lab for cath

OR

Coronary CTA

Positive test?

6. No

7. Yes

1. Cath only/medical management – with or without FFR/IVUS/OCT
2. Cath only/CABG – with or without FFR/IVUS/OCT; See separate CABG Pathway
3. PCI (Elective, SSPCI, CTO, or Staged) – with or without FFR/IVUS/OCT/Rotablation
4. Patient may require CABG after PCI
5. Includes CTO PCI
6. Coronary CTA only
7. Coronary CTA + cath +/- PCI

Note: Event is any cath/PCI with heart failure, cardiac arrest, cardiac tamponade, transfusion for bleeding, etc.; with or without IABP, ventilator, inotropes, temp pacer, mechanical circulatory support, dialysis, etc.

*While majority undergo cardiac testing, not all require pre-testing prior to cath (i.e., patients with recent PCI)
1. New CABG Off CPB (cardio-pulmonary bypass) with or without IABP, dialysis, inotropes, etc.
2. Re-CABG On CPB (cardio-pulmonary bypass) with or without IABP, dialysis, inotropes, etc.
3. New CABG On CPB (cardio-pulmonary bypass) with or without IABP, dialysis, inotropes, etc.
4. Patient may require transfer to a convalescent or long-term care facility

*OP/IP: Outpatient or inpatient
AVD Clinical Pathways

- Based on treatment of aortic valve disease (AVD):
  - Isolated AVR
  - AVR with CABG
  - TAVI

- Major decision points for AVR:
  - Type of procedure (open vs minimally invasive)
  - Use of prosthetic valves

- Major decision points for TAVI:
  - Eligibility
  - Type of access (transfemoral vs alternative)
Isolated Surgical AVR Pathway

1. Includes small number of aortic valve repairs
2. Open AVR with mechanical, biological, or sutureless valve
3. Minimally Invasive AVR with mechanical, biological, or sutureless valve
4. Patient may need long-term anticoagulation requiring longer hospital stay
5. Patient may require transfer to a convalescent or long-term care facility
6. See TAVI pathway

* BAV=Balloon aortic valvuloplasty; AS= Aortic Stenosis; OP/IP=Outpatient or inpatient

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Surgical AVR with CABG Pathway

CAD Patient Referred for AVR

Echo and cath

Cardiac surgeon assesses patient eligibility

Cardiac surgeon assesses patient eligibility

Accept for AVR with CABG?

Yes

OP/IP* (day surgery unit, ward or ICU)

OR Date Set

CVICU

Cardiac surgery ward

Refer to cardiac rehab

Inpatient cardiac rehab

No

For Isolated AVR or CABG

OR for AVR with CABG

Bioprosthethic valve?

Yes

3. AVR (biological or sutureless) with CABG

No

2. AVR (mechanical) with CABG

Home

Outpatient cardiac rehab

1. Includes small number of aortic valve repairs
2. AVR (mechanical) with CABG; may need long-term anticoagulation
3. AVR (biological or sutureless) with CABG; may need long-term anticoagulation
4. Patient may require transfer to a convalescent or long-term care facility
5. See Isolated AVR Pathway
6. See Isolated CABG Pathway
7. *OP/IP: Outpatient or inpatient

01/04/2014
TAVI Pathway

1. Patient may require percutaneous coronary intervention (PCI) and/or BAV while waiting for TAVI
2. TAVI- Transfemoral
3. TAVI- Other Access (Apical, Direct Aortic or Subclavian)
4. Patient may require transfer to a convalescent or long-term care facility

*OP/IP=Outpatient or Inpatient; AS=Aortic Stenosis

CARDIAC CARE NETWORK

01/04/2014
Draft CAD and AVD Quality Indicators
The purpose of the QBP integrated scorecard approach is to have measures in place that will:

1. Support monitoring and evaluation of the impact (intended and unintended) of the introduction of QBPs

2. Provide benchmark information for clinicians and administrators that will enable mutual learning and promote on-going quality improvement at local, regional and system levels

3. Provide performance-based information back to Expert Panels to evaluate the impact of their work and update as required in real time

4. Measures from the scorecard can feed into future policy levers (e.g. accountability agreements, funding, Quality Improvement Plans)
Developing, measuring and reporting QBP indicators is a collaborative process involving experts, ministry partners and the ministry.

**WHAT**

**DEVELOP INDICATORS**

QBP Specific Clinical Expert Advisory Group

**MEASURE & ANALYSIS**

Respective Agency and/or the Ministry of Health and Long-Term Care

**REPORT**

Ministry of Health and Long-Term Care*

**OUTCOME/ACTIVITIES**

1. A set of indicators that are meaningful and feasible (incl. technical details)
2. Propose indicators that should be collected for monitoring and improvement purpose but aren’t feasible yet i.e. ‘wish list’

1. Collect data
2. Calculate indicators (at provider, LHIN and provincial level)
3. Conduct analysis (e.g. trends, variation)
4. Calculate provincial summary indicators

1. QBP baseline report
2. Share indicator results with clinicians and health care organizations

* The Ministry is currently exploring options regarding who will be responsible for this work in future

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MOHLTC provide: Integrated Scorecard & Template for Indicator Development

01/04/2014
Cardiac QBP Indicator Development Process

• Environmental scan of available process and outcome indicators in clinical area
• Discuss appropriate indicators based on clinical pathways
• Create draft list of QIs
• Classify indicators as:
  • Measured
  • Measurable
  • Developmental

Based on best practices and recommendations from the clinical care pathway:
• Stakeholder engagement on the QIs
• Prioritize indicators
• Create the final list of indicators
• Define indicators
• Determine data source for each indicator

• Review and approval of prioritized indicator set
• Finalize indicator document

Cardiac QBP Clinical WG meeting

Draft List distributed to members of working groups

Cardiac QBP Clinical WG meeting

CARDIAC CARE NETWORK

01/04/2014
# Draft List of CAD QIs

<table>
<thead>
<tr>
<th>Quality Domain</th>
<th>What is Being Measured?</th>
<th>Draft Indicators</th>
</tr>
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</table>
| **Effectiveness**  | What are the results of care received by patients and do the results vary across providers that cannot be explained by population characteristics as well as is care provided without harm?                                                                                                                                                       | • Revascularization rate  
  • Post-procedural stroke (within episode of care, within 14-days, within 30-days, or within 1-year)  
  • Risk-adjusted in-hospital, 30-day, and 1-year mortality rates  
  • Rate of readmission to ICU (from ward) post-surgery  
  • Readmission rates (All-Cause, Heart Failure, Vascular Site Complications)  
  • Rate of surgical site infection  
  • Post-procedural length of stay (LOS)                                                                                     |
| **Appropriateness** | Is patient care being provided according to scientific knowledge and in a way that avoids overuse, underuse or misuse?                                                                                                                                                                                                                  | • Pre-procedure or surgery renal function assessment (creatinine/eGFR measurement)  
  • Rate of FFR use in multivessel CAD to guide PCI  
  • Percentage of patients with normal anatomy or non-significant CAD post-Cath                                                                                                                   |
| **Integration**    | Are all parts of the health system organized, connected and work with another to provide high quality care?                                                                                                                                                                                                                             | • Percentage of patients referred to cardiac rehabilitation upon discharge  
  • Percentage of identified smokers offered smoking cessation education                                                                                                           |
# Draft List of CAD QIs

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<tbody>
<tr>
<td>Efficiency</td>
<td>Does the system make best use of available resources to yield maximum benefit ensuring that the system is sustainable for the long term?</td>
<td>• Blood product (red blood cells and plasma or platelets) transfusion rates within episode of care</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rate of abandoned interventions or surgeries</td>
</tr>
<tr>
<td>Access</td>
<td>Are those in need of care able to access services when needed?</td>
<td>• Door-to-Needle time for STEMI Fibrinolysis</td>
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<tr>
<td></td>
<td></td>
<td>• Door-to-Balloon time for PPCI</td>
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<td></td>
<td></td>
<td>• 50\textsuperscript{th} and 90\textsuperscript{th} percentile wait times in days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Percentage of cardiac procedures completed within the recommended wait time</td>
</tr>
<tr>
<td>Patient-Centeredness</td>
<td>Is the patient/user at the center of the care delivery and is there respect for and involvement of patients’ values, preferences and expressed needs in the care they receive?</td>
<td>• Under development</td>
</tr>
<tr>
<td>(to be further developed)</td>
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**Cardiac Care Network**
# Draft List of AVD QIs

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</table>
| Effectiveness         | What are the results of care received by patients and do the results vary across providers that cannot be explained by population characteristics as well as is care provided without harm? | • Post-procedural stroke (within episode of care, within 30-days, or within 1-year)  
• Mortality rate on wait list  
• Rate of vascular access site complications (requiring separate procedure)  
• Risk-adjusted in-hospital, 30-day, and 1-year mortality rates  
• Rate of renal failure within episode of care and 30 days  
• Readmission rates (All-Cause, Heart Failure, Vascular Site Complications)  
• Rate of permanent pacemaker implants during episode of care  
• Post-procedural length of stay (LOS)  
• Surgical site infection rate |
| Appropriateness       | Is patient care being provided according to scientific knowledge and in a way that avoids overuse, underuse or misuse? | • Rate of moderate to severe (i.e., >2) paravalvular aortic insufficiency (AI) at 30 days  
• Pre-procedure renal function assessment (creatinine/eGFR measurement) |
# Draft List of AVD QIs

<table>
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<tbody>
<tr>
<td><strong>Integration</strong></td>
<td>Are all parts of the health system organized, connected and work with another to provide high quality care?</td>
<td>• Percentage of patients referred to cardiac rehabilitation upon discharge&lt;br&gt;• Rate of 30-day follow-up with TAVI or Heart team&lt;br&gt;• Percentage of identified smokers offered smoking cessation education</td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td>Does the system make best use of available resources to yield maximum benefit ensuring that the system is sustainable for the long term?</td>
<td>• Blood product (red blood cells and plasma or platelets) transfusion rates&lt;br&gt;• Rate of abandoned interventions or surgeries</td>
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<td><strong>Access</strong></td>
<td>Are those in need of care able to access services when needed?</td>
<td>• 50th and 90th percentile wait times in days&lt;br&gt;• Percentage of cardiac procedure or surgery completed within the recommended wait time</td>
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**Cardiac Care Network**
Next Steps

- Finalize handbook and submit by middle of April
- Submit quality indicators by May
- Finalize work on the costing and have additional webcast in the late Spring to review with the field
- Costing recommendations due in the Spring
- CCN will hold an additional webcast to discuss costing recommendations.
Questions