SCAI Quality Improvement Toolkit

Working on QUALITY, One Cath Lab at a Time
The SCAI Quality Improvement Toolkit was developed with support from Daiichi Sankyo and Lilly. The Society gratefully acknowledges this support, while taking sole responsibility for all content developed and disseminated through this effort.

Daiichi-Sankyo  

Lilly
“We have talked for a number of years about the need for interventionalists to “own” the QI process in the cath lab.

SCAI QIT offers a unique opportunity for SCAI members to demonstrate their commitment to improving quality of care and to reassure our patients that their expectations of receiving the highest quality of care in the cath lab are being met.

It’s time for you to get involved. It’s time for you to get to work.”

– Christopher J. White, MD, MSCAI
Outline

- Defining Quality in the Cath Lab
- Operator and Staff Requirements
- **Procedural Quality**
- 2016 Cath Lab Best Practices
- Facility and Environmental Issues
- Care Coordination with Referring Physicians
Procedural Quality
**Why Benchmark?**

- Benchmark – “something that serves as a standard by which others may be measured or judged”

- Using external benchmarks allows you to see how your CCL performs relative to:
  - Absolute standards include:
    - The Joint Commission Sentinel Events:
      - Wrong patient; wrong body part
      - Fluoroscopy dose >1,500 rads to a single field
  - Other CCLs in your region, nation, and worldwide
Caveats About Benchmarks

- One size does not fit all!
  - Is your institution comparable to the benchmarked population?
  - Care must be individualized for each specific patient
    - Example - Radiation safety: ALARA (As Low As Reasonably Achievable) principle:
      - You should use as little radiation as possible
      - Use as much as necessary to get adequate images
      - Some patients are sicker and some cases more complex, so more fluoroscopy time and radiation will be necessary
Step #1: Measure What Matters!

Step #2: Collect information on every CCL procedure using standardized definitions
- Preferred: Prospective data collection
- Acceptable: Retrospective chart reviews

Step #3: Create a culture of continuous improvement that allows the team to ID and implement sustainable changes that lead to more engaged staff dedicated to improving patient care
Use your spreadsheet to generate a histogram
Different cases would be expected to have different fluoro times! One size does not fit all!

<table>
<thead>
<tr>
<th>Fluoro Time (minutes)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>2</td>
</tr>
<tr>
<td>5.1-10</td>
<td>5</td>
</tr>
<tr>
<td>10.1-15</td>
<td>3</td>
</tr>
<tr>
<td>15.1-20</td>
<td>3</td>
</tr>
<tr>
<td>20.1-25</td>
<td>1</td>
</tr>
<tr>
<td>25.1-30</td>
<td>1</td>
</tr>
<tr>
<td>30.1-35</td>
<td>1</td>
</tr>
<tr>
<td>35.1-40</td>
<td>1</td>
</tr>
<tr>
<td>40.1-45</td>
<td>1</td>
</tr>
</tbody>
</table>

- **Planned PCI**
- **Cor Angio + ad hoc PCI**
- **Coronary Angio**
- **Isolated RHC**

* Coronary and graft angiography in patient with unknown graft anatomy
† Hemodynamic assessment: aortic stenosis+hypertrophic cardiomyopathy
General QI Principles

- Comparison to a benchmark will give you a sense of whether your typical results are similar to the comparison population.

- Outlier values are opportunities to learn!
  - They might represent errors in data collection or data entry.
  - They might represent “bad” performance, or …
  - They might reflect unusual cases.

- Can improve quality by …
  - Moving outliers closer to the median.
  - Shifting the curve by improving performance on every case by a little bit.
  - Reviewing unusual behavior, e.g., performing elective PCI on a lesion with 40-70% diameter stenosis without establishing ischemia.
Look at Data by Subgroups

- Compare “apples-to-apples”
- Divide your data into subgroups:
  - PCIs
    - Planned PCIs without diagnostic angiography vs. Ad hoc PCIs
    - STEMIs vs. all others
  - Diagnostic coronary angiography
    - Diagnostic coronary angiography only
    - Diagnostic coronary angiography with ad hoc PCI
    - Coronary angiography with adjunctive procedures (e.g., lower extremity angiography, RHC)
  - Special procedures without coronary angiography
    - RHC, IABP insertion, temporary RV pacing
    - Valvuloplasty
Fluoroscopy Time (minutes)

- A crude measure of radiation exposure
  - Doesn’t include exposure from “cine”
  - Doesn’t account for higher radiation doses per minute necessary for larger patients
  - Doesn’t account for collimation and protective filters

2016 Benchmarks from CathPCI Registry:

<table>
<thead>
<tr>
<th>Cases</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Cath (with &amp; without PCI)</td>
<td>9.3</td>
<td>6.2</td>
</tr>
<tr>
<td>Without prior CABG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With prior CABG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With prior CABG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCI</td>
<td>14.9</td>
<td>11.8</td>
</tr>
<tr>
<td>Without prior CABG: 1 lesion</td>
<td></td>
<td>10.0</td>
</tr>
<tr>
<td>Without prior CABG: &gt;1 lesion</td>
<td></td>
<td>15.3</td>
</tr>
<tr>
<td>With prior CABG: 1 lesion</td>
<td></td>
<td>14.0</td>
</tr>
<tr>
<td>With prior CABG: &gt;1 lesion</td>
<td></td>
<td>19.5</td>
</tr>
</tbody>
</table>
In-Hospital Risk-Adjusted Mortality

- Ideally adjust expected risk of death for each patient based on his/her severity of illness
- 2016 CathPCI Post-PCI Risk Adjusted Mortality Rate (RAM):
  - Median: 1.83
  - 10th percentile: 3.17
  - 25th percentile: 2.47
  - 75th percentile: 1.37
  - 90th percentile: 1.01

<table>
<thead>
<tr>
<th>Cases</th>
<th>Observed Death Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic cath (excluding organ donors, PCI, CABG, other major surgery)</td>
<td>0.6%</td>
</tr>
<tr>
<td>PCI</td>
<td></td>
</tr>
<tr>
<td>STEMI patients</td>
<td>1.39%</td>
</tr>
<tr>
<td>Patients without STEMI</td>
<td>5.38%</td>
</tr>
<tr>
<td></td>
<td>0.65%</td>
</tr>
</tbody>
</table>
Thresholds for Concern

- Observed unadjusted event rate > the 10th percentile of event rate in the CathPCI Registry
- Post-PCI observed in-hospital all-cause mortality thresholds for concern:
  - All PCIs: >3.17%
  - PCIs for STEMIs: >11.65%
  - PCIs for patients without STEMI: >1.95%
Stents per PCI admission: mean 1.45

No obstructive CAD (proportion of elective coronary angiograms without a major coronary artery with a stenosis ≥ 50%. (excludes patients with prior CABG, cardiac transplant donor, pre-op evaluation for non-cardiac surgery, need for valve surgery or ICDs)
- Median: 42.6%
- 10th percentile: 55.2%
- 25th percentile: 48.7%
- 75th percentile: 36.5%
- 90th percentile: 30.4%

If > 50% of your diagnostic coronary angiograms do not have flow-limiting CAD, the non-invasive testing algorithm used to select patients for angiography should be re-evaluated.
What Are Key Conferences?

- Invasive Cardiology Morbidity and Mortality (CCL M&M)
  - Separate from clinical cardiology M&M
  - *Open review and assessment* of CCL complications and in-hospital events following invasive cardiovascular procedures

- Invasive Case Review Conference (Angio Review)
  - *Open review* of random sample of cases
  - Diagnostic and interventional cases

- Catheterization Laboratory Educational Conference (Cath Conf)
  - Regular, frequent (weekly), *formal educational events*
  - Focus on CCL practice and issues
Why Have Key Conferences?

- Essential to link your current practices to best practices
- Foster interdisciplinary collaboration, process improvement
- Helpful in maintaining CME
- Required by The Joint Commission
- Needed for Ongoing Professional Performance Evaluations (OPPEs), a The Joint Commission requirement to assess operator performance
- Required by ACGME if a fellowship training program
- Must be independent – no vendor sponsorship

1 http://www.jointcommission.org/standards_information/jcfaqdetails.aspx?StandardsFaqId=31&ProgramId=1; accessed April 17, 2016
Why Have Cath Lab M&M?

- Essential to achieve meaningful practice improvement
- Opportunity to review adverse events with peers
- Opportunity for collaborative process improvement
- Engages multiple stakeholders: physicians, allied health, other disciplines
- Non-punitive: *the aim is process improvement*
Case selection based on complications

- All deaths within 30 days of the procedure are reviewed at the next conference
- All major complications, defined by ACCF/SCAI and/or state reporting requirements, are reviewed
- Prospectively select other complications, aligned with process/quality improvement projects

**Responsible MD must be present when case reviewed**

Keep sign in sheet, case review forms with response/action plans

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2. ACC/AHA/SCAI 2005 Guideline Update for Percutaneous Coronary Intervention J Am Coll Cardiol 2006;47:e1-e121
Why Have Angio Review?

- Assure indications for invasive procedures and intra-procedure decision-making conform to guidelines
- Permits learning from others’ routine cases, not just complication cases
- Independent criteria provide objective quality measures
  - ACCF/SCAI Cath Indications
  - PCI Appropriateness Criteria
- For questionable or inappropriate case selection or procedures this is the venue to discuss openly and develop collaborative action plan
- Non-punitive: *the aim is process improvement*

1 A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on Coronary Angiography) developed in collaboration with SCAI. Circulation, 1999; 99:2345-57
2 ACCF/SCAI/STS/AATS/AHA/ASNC 2009 Appropriateness Criteria for Coronary Revascularization. JACC, 2009; 53:530-553
Angio Review: How To Make It Happen

- Designate responsible MD (CCL Director) or CCL manager, Quality Officer to select random cases for review
- Cases presented by a fellow if possible
- Cases reviewed openly, in group, with discussion
- *Never review a case when responsible MD away*
- Keep track of progress (e.g., appropriate indication, number of “normal coronary” cases, use of FFR) and update the group on progress
Why Have Cath Conference?

- Provides for continued professional development
- Required by The Joint Commission
- Can help meet ACGME core curriculum requirements for fellows
- Venue for faculty and fellow development
Cath Conference: How To Make it Happen

- Designate responsible MD (eg. CCL Director, Fellowship Program Director)
- Regular event: hold each week, same time and place
- Use fellowship core curriculum to structure calendar of topics
- Run by fellows if possible
- Encourage attendance by non-cath lab MDs – especially cardiac surgeons – to inform all care providers, stimulate discussions
- Sign-in sheets for attendance
- Consider CME credit application

1For information, contact Accreditation Council for Continuing Medical Education: www.accme.org
Summary

- Key conferences required by The Joint Commission, facilitate practice improvements, continuing medical education, professional development

- To be successful, they must be:
  - Regular
  - Inclusive
  - Non-punitive
  - Focused on practice improvement
Why Have A Process To Assess Performance Issues?

- CCL director ultimately answers for quality...
  - Physicians
  - Nurses
  - Technicians
  - Other allied health staff

- Mechanism for process improvement
- Quality remediation practices, policies, and records reviewed by The Joint Commission
- Required by ACGME if a fellowship training program
- Robust policies important if legal action

...but everyone is responsible for quality
Effective Remediation Begins With Clear Expectations

- Fair and rational quality assessment policies
  - Transparent assessment processes
  - Independent adjudication process if necessary (e.g., review by Quality Officer or Chief Medical Officer)
- Independent/objective benchmarking
  - NCDR™ CathPCI Registry
  - HealthGrades
- Public/aggregate performance reporting
- Private counseling of serious/persistent outliers
- Clear probation and termination policies
Effective Remediation Begins With Clear Expectations

- Engage all team members in quality goals and expectations
- Clear definitions of “complications”
  - Definitions maintained by CCL director, aligned with independent sources/references
  - NCDR CathPCI Registry, The Joint Commission provide standards\(^1,2\)
- Independent chart abstractors collect and collate complications information
- Clear definitions of “performance issues”


Performance Issues

- Criteria for “performance issue”\(^1\)
  - Admissions/procedures that raise questions of competence
  - Patients with lengths of stay longer than other practitioners
  - Patterns of unnecessary diagnostic testing/treatments
  - Failure to follow clinical practice guidelines
  - Frequent readmission → inadequate initial treatment
  - Inadequacies identified during Ongoing Professional Performance Evaluations (OPPE)

- Will trigger a Focused Professional Performance Evaluation (FPPE)

\(^1\) [Link to Joint Commission FAQ](http://www.jointcommission.org/standards_information/jcfaqdetails.aspx?StandardsFAQId=76&StandardsFAQChapterId=25); accessed April 17, 2016
Ongoing Professional Practice Evaluation (OPPE)

- Ongoing assessment of MD competencies
- Conducted by: CCL director or Quality Officer
- The Joint Commission requirement\(^1\)
- Must be frequent i.e. more than once per year
- CCL select their own measurement criteria
  - Door-to-balloon time, hematomas, urgent CABG, readmissions, conference attendance, etc.
- Information used to determine whether to renew, limit, or revoke privileges

Focused Professional Practice Evaluation (FPPE)

- Process to evaluate and remediate an individual MD’s performance issue
- The Joint Commission requirement¹
- Process must define four components:
  1. Criteria for conducting an evaluation
  2. Method of establishing a monitoring plan specific to the area of concern
  3. Method of determining the duration of performance monitoring
  4. Circumstances under which monitoring by an external source is required

Information may be collected for FPPE through:

- Chart review
- Direct observation
- Monitoring of diagnostic and therapeutic techniques
- Discussion with others involved in the care of patients (consultant physicians, nurses, assistants, administration personnel)

Evaluation for new privileges: similar process

Resources & Support

- SCAI QI Committee Assistance: Info@scai.org

- SCAI QIT Updates: http://www.scai.org/QIT/default.aspx

- SCAI QIT Tip of the Month: http://www.scai.org/QITTTip/default.aspx
Acknowledgments

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