Methods in Completing Performance Quality Improvement (PQI)

Jennifer L. Johnson, Karen Brown, Geoffrey Ibbott, Todd Pawlicki

AAPM 54th Annual Meeting
Charlotte, NC
Professional Symposium
4:30 PM - 6:00 PM

Disclosures

• None of the presenters have conflicts of interest to disclose.

PQI

• After this course attendees will be better able to
  – Identify and define a PQI project
  – Identify and select measurement methods/techniques for use in the PQI project
  – Describe example(s) of completed projects

Outline

• Introduction and the ABR
• PDSA
• Resources and Tools
  – Incident learning systems, RCA
  – FMEA
  – Control Chart
  – Fishbone
  – Process Map
  – Pareto
WHO IS ABMS?

- ABMS sets the standards for the certification process to enable the delivery of safe, quality patient care
- ABMS is the authoritative resource and voice for issues surrounding physician certification
- The public can visit certificationmatters.org to determine if their doctor is board certified by an ABMS Member Board

WHAT IS ABMS MOC™?

- A process designed to document that physician specialists, certified by one of the Member Boards of ABMS, maintain the necessary competencies to provide quality patient care
- ABMS MOC promotes continuous lifelong learning for better patient care
ABMS of the Future

- More robust
- More legislatively active
- Continuous MOC rather than 10 year cycles
- Involvement and promotion of institutional MOC
- Significant presence of primary care boards in ABMS governance
- Competition from rogue organizations for stature

MOC Components

Part I: Professional Standing
  ✓ State Medical Licensure

Part II: Lifelong Learning and Self-Assessment
  ✓ Category 1 CME and Self Assessment Modules (SAMs)

Part III: Cognitive Expertise
  ✓ Proctored, secure exam

Part IV: Practice Performance
  ✓ Practice Quality Improvement (PQI)

Topics

1. MOC At-A-Glance
2. Practice Quality Improvement
3. Public Reporting and Continuous Certification

PQI Evolution

✓ I don’t understand what it is.
✓ Explain to me why I am doing this.
✓ Tell me what you want me to do.
✓ Show me how to do it.
PQI Essential Elements

✓ Select project, metric(s), and goal
✓ Collect baseline data
✓ Analyze data
✓ Create and implement improvement plan
✓ Re-measure
✓ Self-reflection

The Quality Improvement Process

- Identify area needing improvement
- Devise a measure
- Set a goal
- Carry out the measurement
- Collect data

- Develop an improvement plan
- Implement for cycle #2
- Analyze the data
- Compare to goal
- Root Cause Analysis

Group PQI Criteria

✓ Group consists of 2 or more ABR diplomates
✓ Group Project Team Leader designated
  - Team organization, meetings and record keeping
  - Must document team participation
✓ Project may be group designed, society-sponsored, or involve a registry
✓ Requires at least 3 team meetings:
  - Project organization meeting
  - Data and root cause analysis meeting
  - Improvement plan development

ABR Individual and Group PQI Templates*

*Templates include all essential elements needed to comply with ABR “meaningful participation” requirements

American Board of Radiology
MOC Part 4: Practice Quality Improvement (PQI)
Individual Participant PDSA (Plan-Do-Study-Act) Checklist & Summary Record®

BASELINE PDSA CYCLE (Cycle #1)
In cycle #1, a topic is selected, and baseline data are gathered to compare with post-improvement plan data (in cycle #2).

Step 1: PLAN, Identify and describe the Project (Self-Designed)
- Topic area of interest: This visual address a part of your practice that you would like to improve, or an observed gap in service or patient care.
- Define a measurement to be obtained.
- Establish a desired measurement to a goal. What do you want the measurement to be in order to achieve an appropriate standard of performance and/or patient care?
- Predicted baseline measurement result. What do you think the measurement will be?

Step 2: DO, Baseline Measurement Summary
- Number of data points collected:
- Baseline measurement value calculated:

Step 3: STUDY, Data analysis
- How did the baseline measurement results compare to the predicted measurement result?
- How did the results compare to the desired target goal?

*If baseline results did not meet the target, the potential contributing factors and root causes:
Individual Participant: “Meaningful Participation”

- Individual diplomate MOC PQI credit requires:
  - Documented attendance at > 3 team meetings
  - Preparation of a personal self-reflection statement describing the impact of the project on the group practice and patient care
  - Attestation on ABR Personal Database (PDB)
  - Access to project records in the event of an ABR MOC audit

Attestation continued…
Topics

1. MOC At-A-Glance
2. Practice Quality Improvement
3. Public Reporting and Continuous Certification

Changing Landscape

✓ Relevance of ABMS/ABR certification must be demonstrated to the public, payers and the government

✓ Medicine is experiencing a fusion of economics, quality, safety and reimbursement, so we must work together to effectively project and promote our specialty for the benefit of our patients

✓ Accountability and transparency remain the watchwords for the new millennium
Timeline Leading to ABMS Public Reporting

- March 2009: ABMS BOD adopted a standards document that included a call for ABMS to make info about certificate status dates and MOC participation status available to the public
- June of 2010: ABMS BOD approved a two-part resolution:
  1. approved public display of MOC participation by ABMS starting Aug 2011
  2. MOC participation status reported using three primary designations:
     - “Meeting the Requirements” of MOC
     - “Not Meeting the Requirements” of MOC
     - “Not Required to Participate” in MOC (Lifetime Certificates)

ABMS Public Reporting cont...

- May 2011: ABMS MOC Meeting: National Credentialers appeared as guests and stated interest in some way to verify MOC participation through ABMS.
- It was recognized that the boards needed time to create communications and reach out to their diplomats, some of whom would likely want to enroll in MOC.
- June 2011: ABMS offered extensions of one year to boards who wanted more time to for communication
- ABR’s request for the maximum one-year extension was granted.

About Public Reporting

ABR Response to ABMS Public Reporting Requirements

- ABR online verification of board eligibility and MOC participation statuses in coordination with ABMS reporting
- Link from ABMS site to ABR site for further clarification on various statuses
- Diplomate look-up tool
- Immediate, current verification status
Continuous Certification

✓ Certificate will no longer have “valid through” date – instead continuing certification will be contingent on meeting MOC requirements
✓ Annual look-back used to determine MOC participation status.
✓ No change in MOC requirements or fees

How does it work?

<table>
<thead>
<tr>
<th>MOC Year</th>
<th>Look-back date</th>
<th>Element(s) Checked¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>3/15/2014</td>
<td>Licensure</td>
</tr>
<tr>
<td>2014</td>
<td>3/15/2015</td>
<td>Licensure</td>
</tr>
<tr>
<td>2015</td>
<td>3/15/2016</td>
<td>Licensure, CME, SAMs, Exam, and PQI</td>
</tr>
<tr>
<td>2016</td>
<td>3/15/2017</td>
<td>Licensure, CME, SAMs, Exam, and PQI</td>
</tr>
<tr>
<td>2017</td>
<td>3/15/2018</td>
<td>Licensure, CME, SAMs, Exam, and PQI</td>
</tr>
<tr>
<td>2018</td>
<td>3/15/2019</td>
<td>Licensure, CME, SAMs, Exam, and PQI</td>
</tr>
<tr>
<td>20XX</td>
<td>3/15/20XX</td>
<td>Licensure, CME, SAMs, Exam, and PQI</td>
</tr>
</tbody>
</table>

¹ Status Check for “Meeting Requirements”

<table>
<thead>
<tr>
<th>Element</th>
<th>Compliance Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensure</td>
<td>At least one valid state medical license</td>
</tr>
<tr>
<td>CME</td>
<td>At least 75 Category 1 CME in previous 3 years</td>
</tr>
<tr>
<td>SAMs</td>
<td>At least 6 SAMs in previous 3 years</td>
</tr>
<tr>
<td>Exam</td>
<td>Passed any ABR Certifying or MOC exam in previous 10 years</td>
</tr>
<tr>
<td>PQI</td>
<td>Completed at least 1 PQI project in previous 3 years</td>
</tr>
</tbody>
</table>

Advantages of Continuous Certification

✓ If you have two or more time-limited certificates, they are synchronized.
✓ The number of CME and SAMs you can count per year is unlimited
✓ You may take the MOC exam at any time, as long as the previous MOC exam was passed no more than 10 years ago
✓ Built-in “catch-up” period of one year – still certified
✓ Aligns reporting more closely with CMS, TJC, credentialing and state licensing boards

Thank You!

Questions?
PDSA
Quality Improvement Methodology
Powerful

Versatile

Simple
Identify a project
Plan:

- Ask questions
- Make predictions
- Set goals
- Identify data to be collected
Do

Carry out the plan
Study

Analyze

Compare

Summarize
What **changes** will be made?
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MOC Part 4: Practice Quality Improvement (PQI)
Individual Participant PDSA (Plan-Do-Study-Act) Checklist & Summary Record*

BASELINE PDSA CYCLE (Cycle #1)

(In Cycle #1, a topic is selected, and baseline data are gathered to compare with post-improvement plan data in Cycle #2.)

☐ Step 1: PLAN. Identify and Describe the Project (Self-Designed)
  o Topic (area of interest). This should address a part of your practice that you would like to improve, or an observed gap in service or patient care:

  ____________________________________________________________

  o Define a measurement to be obtained: __________________________________________

  o Establish a desired measurement target/goal. What do you want the measurement to be in order to achieve an appropriate standard of performance and/or patient care? __________________________________________________________

  o Predicted baseline measurement result. What do you think the measurement will be? __________________________________________________________

☐ Step 2: DO. Baseline Measurement Summary
  o Number of data points collected: __________
  o Baseline measurement value calculated: __________
Group Projects

• Individual participation
• Access to project materials
• Group structure
• Meeting minutes
...to be successful at improvement, it takes the will to improve, ideas for improvement, and the skills to execute the changes.

The Improvement Guide: A Practical Approach to Enhancing Organizational Performance
Contact Information

Karen Brown, MHP, CHP, DABR
Penn State College of Medicine
Milton S. Hershey Medical Center

Email: kbrown4@hmc.psu.edu
P: 717-531-5027
Resources


Image Resources

- iStockphoto  [www.istockphoto.com](http://www.istockphoto.com)
- photoXpress  [www.photoxpress.com](http://www.photoxpress.com)
- Everystockphoto  [www.everystockphoto.com](http://www.everystockphoto.com)
PQI – Control Charts, Event Reporting, and FMEA

Todd Pawlicki

Elements of PQI Projects

- Relevance to patient care
- Relevance to diplomate's practice
- Identifiable metrics and/or measurable endpoints
- Practice guidelines and technical standards
- An action plan to address areas for improvement
  - Subsequent remeasurement to assess progress and/or improvement

http://www.theabr.org/moc-ro-comp4

Error Management

- Three approaches to error management
  - Reactive, Proactive, Prospective
    - Incident learning systems
      • Reactive & Proactive
    - Failure Modes & Effects Analysis
      • Prospective

Basis for Understanding Statistical Process Control

- Tolerance Limits
- Action Limits
- Accept
- Target
Control Charts: Individual Values

XmR chart

mR chart

Sample number or Time

Individual values

Moving Range

Two Example Control Charts

- Clinical specifications
  - Set process requirements
- Control chart limits
  - Quantify process performance

XmR Chart

\[ \bar{X} = \frac{1}{N} \sum x \]

\[ UNPL = \bar{X} + 3 \cdot \frac{\bar{mR}}{1.128} \]

\[ LNPL = \bar{X} - 3 \cdot \frac{\bar{mR}}{1.128} \]

(n = 1, and use \( d_2 \) for \( n = 2 \))

Event Reporting System

Investigation

- All incidents are investigated
- Depth and priority of investigation depends on
  - Severity of incident
  - Frequency of occurrence
- Assessment
  - Impact and process domain(s)
- Report
  - Causal analysis, corrective actions, and follow-up

Corrective Action

- Actions to address causes
  - Target to improve system performance
- Integrate with other business processes
  - Capital budgeting
  - Change management
  - Training
- Assign to individuals
- Follow up reports / data

Choosing A Project From Events

- By type
  - Clinical, occupational, operational, environmental, security/other
- By impact
  - Critical, major, serious, minor
  - Near miss
- By domain
  - Where in the Radiation Treatment process did the incident occur?

Learning

- Lessons learned are distilled and communicated
- Supervisor responsible for communication
- Quality Assurance Committee responsible for overall review of incident patterns
- Communication requirements depending on incident severity
  - Stop the press vs. Dept email
Example: Forgetting bolus

FMEA

• Failure Modes and Effects Analysis
  – Provides a structured way of prioritizing risk reduction strategies.
  – Helps to focus efforts aimed at minimizing adverse outcomes.

FMEA – Background

• History
  – Developed by the Aerospace industry (~1960s)
    • In the electromechanical age
  – Widely applied in automotive and airline industries

• Use
  – Most effective when applied before a design is constructed
  – Primarily a prospective tool

Control Chart
FMEA – Vocabulary

- **Failure Mode**: How a part or process can fail to meet specifications.
- **Cause**: A deficiency that results in a failure mode; sources of variation.
- **Effect**: Impact on customer if the failure mode is not prevented or corrected.

FMEA – Metrics

- **Occurrence (O)**
  - Probability that the failure mode occurs
- **Severity (S)**
  - Severity of the effect on the final outcome resulting from the failure mode if it is not detected
- **Lack of Detectability (D)**
  - Probability that the failure will NOT be detected

Risk Priority Number (RPN)

Risk Priority Number =

- **Severity**
  \[ \times \]
- **Probability of Occurrence**
  \[ \times \]
- **Probability of NOT being detected**

Processes leading to LDR Implant

No input/control \hspace{1cm} Responsible for operation

1) MD consult 13) Calibration check 14) Assembly 15) Sterilization
2) H&P 16) Plaque insert 17) Patient survey 18) Room survey
3) Database entry
4) Prescription dictated

Initial Patient Consult → Source Acquisition → Implant → Successful LDR Implant

Slide courtesy of Dan Scanderbeg
**Example of Analysis**

- Over 3 weeks – physics brachy schedule was logged using Google Documents

- Results
  - 20 of 26 (77%) of cases finished later than scheduled
  - Cases finished later than scheduled time
    - Max = 78 min
    - Ave = 31.5 min
  - 8 occurrences of cases booked back-to-back
  - 4 occurrences of cases doubled booked
Next Steps

• Create intervention to improve processes
• Document results

Summary

• Control charts for analysis and deciding when to act
• Event Recording System to identify issues
• FMEA to prioritize effort
PQI – Fishbone, Process Maps and Pareto Charts

Jennifer L. Johnson, MS, MBA

Fishbone Diagram

• Cause-and-effect diagram, Ishikawa diagram
• Identifies many possible causes for an effect or problem
  – Brainstorming
  – Sorts ideas into useful categories

Tague, N. R. *The Quality Toolbox* 2005
Process Maps

- Graphical representation of sequence of tasks and activities from start to finish
  - Flow of inputs, resources, steps, and processes to create an output
  - May be color-coded by participant(s)
  - Value-added vs. nonvalue-added steps
- Single diagram or hierarchy of diagrams

Tague, N. R. The Quality Toolbox 2005

Process Maps

- “As-is” – depicts actual, current process in place
- “To-be” – depicts future after changes and improvements
- Difference: value-added vs. nonvalue-added steps

Tague, N. R. The Quality Toolbox 2005

Perks et al. JORP 83(4) 2012

Dilts D. M., Sandler A. B. JCO 2006;24:4545-4552
©2006 by American Society of Clinical Oncology
Pareto Chart

• Bar graph
  – Length of bars represent frequency or cost (money or time)
  – Arranged from longest (left) to shortest (right)

• Analyze frequency of causes or problems
  – Visually shows which situations are more significant

Tague, N R. The Quality Toolbox 2005

Pareto Chart

• Decide categories to group items
• Decide appropriate measurement
  – Frequency, quantity, cost, or time
• Decide period of time
• Collect data, recording category or assemble existing data

Tague, N R. The Quality Toolbox 2005

Pareto Chart

• Subtotal measurements in each category
• Determine appropriate scale (y-axis)
• Construct, label bars for each category

Optional
• Calculate percentage (%) for each category
  – (right vertical axis)
• Calculate, draw cumulative sums (%)

Tague, N R. The Quality Toolbox 2005

Pareto Chart

• Pareto Principle: 80% of effect comes from 20% of the causes
• Measurement choice
  – Reflective of costs preferred (dollars, time, etc.)
  – If causes equal weighting in costs – use frequency
• Weighted Pareto chart (to normalize equal opportunities)

Tague, N R. The Quality Toolbox 2005
**AIM Statement**

To increase the rate of patient-specific quality assurance (PSQA) prior to the first treatment to 100% by July 2011

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**Cause Analysis**

- Create & evaluate process flow
- Identify potential causes of failures
- Create & evaluate tracking data (times, bottlenecks)
- ID & examine cases in which QA was not completed
Interventions

- Division Grand Rounds (Jan 2011)
  - Communicated importance of QA
  - Discussed ACR accreditation
  - Developed support from faculty and staff
- Division Guidelines (Apr 1, 2011)
  - Eliminate late approvals for IMRT
  - Eliminate early patient start times for IMRT
  - IMRT QA and physics chart check prior to first treatment now required
After Intervention IMRT

Acknowledgments

• CS&E team
  – Prajnan Das
  – Lei Dong
  – James Kanke
  – Michael Kantor
  – Beverly Riley
  – Tatiana Hmar-Lagroun

• MDACC faculty & staff
  – Thomas Buchholz
  – Liao
  – Geoffrey Ibbott
  – Michael Gillin
  – Rajat Kudchadker
  – John Bingham

• Q&S Council members

References