QUALITY IMPROVEMENT IN PEDIATRIC RESIDENCY PROGRAMS

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Disclosures

Both presenters have nothing to disclose...
Why Quality Improvement?

• A gap exists between the quality of care that is possible and the actual quality of care delivered to persons living in the United States

• Due to the seriousness of these shortcomings, there is increasing importance that residents and medical students learn and use modern quality improvement methods and tools
Pediatric Residency Review Committee

• The Pediatric Residency Review Committee (RRC) now requires that all residents learn QI methods and participate in a QI project during their residency.

"residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-assessment and life-long learning. Residents are expected to develop skills and habits to be able to systematically analyze practice using QI methods, and implement changes with the goal of practice improvement; residents are expected to participate in a QI project."

• The American Board of Pediatrics now requires all board certified pediatricians to participate in quality improvement activities as part of their maintenance of certification every five years.
NC Children’s Center for Clinical Excellence

- **Created** May 2008 building on multiple successful QI projects in Children's Hospital.

- **Mission**
  - To optimize the health and well-being of patients and families, modeling how to dramatically improve health care by continuously measuring and improving the processes and outcomes of care in N.C. Children's Hospital and UNC Health Care – ensuring they are excellent in terms of being patient-centered, effective, timely, efficient, equitable and safe.

- **Personnel**
  - Center Co-Directors
  - 3 staff members
  - 21-member Core Faculty
  - 9-member Board of Directors
Residency QI History

• Began involving residents in existing QI projects from 2001 - 2006
• Piloted in 2007 with 15 third-year Pediatrics residents
  – Requirement for Pediatrics residents from 2008-present
  – Discussion around making the program a requirement for Medicine/Pediatrics Residents (currently optional)
• Projects usually completed in residents’ 3rd year; working towards shifting this earlier in a resident’s career
• Personnel
  – Eight member Steering Committee (including Pediatrics Chief Residents)
  – Program Coordinator
  – Center for Clinical Excellence Co-Director
Residency QI Goals

- Participate in at least one QI project during residency
- Have access to a knowledgeable QI faculty advisor to assist with project requirements
- Understand the important role of physician leadership in QI efforts
- Understand and perform the basic steps of a QI project
- Use project outcomes and related data for presentations, manuscripts, etc.
Curriculum

Tasks to be completed by July of 3rd year of residency:

1. Select a Project and Contact a QI Faculty Advisor
   - Projects selected may either create a new project or work on an existing QI project
   - Residents may choose a QI faculty advisor from a list of faculty involved in QI work

2. Completing a "Determination Whether Research or Similar Activities Require IRB Approval" form to determine if full IRB approval is needed
   - Human Ethics Training must be completed if full IRB approval is needed
Tasks to be completed by August of 3rd year of residency:

1. Complete Pre-Assessment Survey
   - This survey assesses residents’ knowledge of QI methods and tools prior to beginning QI project activities
2. Read Required Materials
   - Provide a basic understanding of QI methods and tools. Materials include:
3. Optional on line modules (IHI.org) and videos
4. Participate in Didactic Sessions throughout year
Tasks to be completed from September – November of 3rd year of residency:

If an existing project is chosen:

- Understand project background
- Attend QI project team meetings
- Execute At Least one change being tested in your QI project

If a new project is created:

- Create project background/charter
- Schedule regular meetings with QI Advisor
- Conduct QI project
Curriculum

Tasks to be completed by December of 3rd year of residency:

1. Complete Final Report
   – Includes information on project background, project aim, methods, results, conclusions, and how to sustain improvements

2. Take Post-Assessment Survey
   – Responses used to assess residents’ knowledge of QI methods and tools in addition to helping to evaluate the effectiveness of the QI program.

3. Attend Closeout Meeting with QI Faculty Advisor
   – The resident and faculty advisor review project learning and the results of the pre-and post-assessment surveys.
   – Feedback to improve the program
Results

- Resident QI Project Completion:
  - 2007-08: 46% (n=15)
  - 2008-09: 100% (n=13)
  - 2009-10: ~20

- Resident QI Project Presentations:
  - 2007-08: 46% (n=15)
  - 2008-09: 62% (n=13)

- Faculty Participation:
  - 13 Faculty Advisors
  - 14 Clinical Content Advisors
2007-08 Pre/Post Results

- Ability to use fishbone diagram
- Leading a QI Project
- Ability to use pareto chart
- Testing/Implementing changes
- Defining measurable goals
- Ability to use run chart
- Ability to use scatterplot
- Selecting a priority area
- Ability to use histogram
- Ability to use flow charts
- Ability to use data collection sheet

Average Self-Efficacy Score

Pre (n=10) vs. Post (n=7)
2008-09 Pre/Post Results

- Using a Pareto chart
- Using a fishbone diagram
- Using a run chart
- Using a histogram
- Using a scatterplot
- Leading a QI Project
- Using a flow chart
- Testing/Implementing process (system)
- Changes
- Defining measurable goals for a project
- Using a data collection sheet (check sheet)
- Selecting a priority area for improvement

Average Self-Efficacy Score

- Pre (n=13)  Post (n=13)
Residency QI project:

“Family Centered Rounds The Beginning of a Revolution”

Lisa Mills, MD
**Project Aim**

To ensure that residents are active participants in the Children’s Hospital new family-centered rounds (FCR) by improving resident education around the resident’s role in FCR and how to address common barriers to FCR. The goal is a 50% increase in FCRs being resident’s preferred method for rounds.
PDSA

PLAN

• Question: Will residents find a noon conference on family-centered rounds a useful way to learn about expectations for and challenges of FCR?
• Prediction: Residents will find a noon conference helpful and will prefer a conference to other methods of instruction.
• Plan for change or test: Conduct a pre-presentation survey to assess the major concerns of residents regarding FCR and will incorporate these into the presentation. Use a lunch conference session to discuss the expectations of resident involvement in FCR as well as address common problems with FCR. I plan to use part of the presentation for audience interaction/participation.

DO

• Noon conference on Family-Centered Rounds given 12/18/08
In the post-presentation survey, 72% of residents reported bedside family-centered rounds was their preferred method (in contrast to conference room or outside the room). This was compared to only 37% in pre-assessment survey.

83% agreed or strongly agreed that the presentation was an effective way to clarify expectations for resident involvement in FCR.

83% agreed or strongly agreed that the presentation enhanced their ability to manage challenges/obstacles of FCR.

When asked about future ways to discuss FCR with residents, 14 preferred a conference similar to my presentation, 8 preferred an intro by faculty member for general inpatient team members at the start of each inpatient month (the overlap was that 4 thought both would be useful). No one preferred a computer module as a way to learn about FCR.
ACT

- A noon conference seems to be the method preferred by most pediatric residents to teach expectations and discuss challenges of FCR – will implement as standard noon conference curriculum
- Other areas with need for improving FCR include:
  - Interpreter roles in FCR (should they interpret entire patient presentation vs summarize)
  - Address resident’s concerns about FCR with attendings present and ensure the expectations for attendings are also well defined and understood
  - Introducing families to FCR when initially hospitalized
Lessons Learned

• Resident Engagement
  – Steering committee’s leadership crucial – esp., Chiefs and Assoc. Program Director
  – Reach residents from day 1 (orientation) and keep up the contact (noon conferences, cohort meetings and retreats)
  – Our residents strongly prefer doing their own projects
  – Communication between residents, faculty advisors, and Project Coordinator a constant learning process
  – Allowing residents to start their projects earlier does not necessarily translate to residents finishing projects earlier

• Sustaining Residents’ QI Projects After Completion
  – Sustaining changes requires leadership involvement (Medical Directors)
  – “Passing off” projects to rising 2nd and 3rd year residents
Lessons Learned

- Faculty Engagement
  - Greater than expected interest amongst our faculty
  - Residents tend to engage faculty that they are in communication with more (e.g., at the continuity clinic)
  - Need to increase in opportunities for interaction between faculty advisors and residents
    - Residents can learn more about faculty projects and faculty can become more familiar with residents’ interests
- Faculty Development
  - QI training for faculty critical (e.g., QI 101, IHI modules, peer mentoring)
Levine Children’s Hospital
Center for Advancing Pediatric Excellence
CAPE History

The Center for Advancing Pediatric Excellence (CAPE) at Levine Children’s Hospital (LCH) developed as the Department of Pediatrics embraced an industry shift toward providing better patient care. This shift has been driven by the Institute of Medicine’s 2003 improvement aims: safety, timeliness, effectiveness, efficiency, patient centeredness, and equitability.

Leadership in the LCH Department of Pediatrics determined that long-term success of QI initiatives depended on the development of an infrastructure to support ongoing improvement efforts. Residents needed dedicated resources to fully implement QI practice. CAPE resulted from this vision.

- Inspired by the ACGME pediatric residency requirements
- Formed in late 2008 with curriculum sponsorship from a Duke Endowment Grant
- Developed 3-year QI curriculum, using UNC-CH Pediatrics curriculum as foundation
- Began staffing and operations in the spring of 2009
- Curriculum launch in July 2009, followed by immediate application
CAPE Team Members

- **Program Directors**: Provide leadership for program’s core services and infrastructure; Lead initiatives in institution and community that incorporate CAPE resources; Responsible for strategic design and implementation
- **Program Manager**: Responsible for budget and grant deliverables, business development, and operations; Supervises staff and monitors resident and faculty QI activity; Leads communications activities
- **Program Coordinator**: Coordinates curriculum materials, academic events, and the development, implementation, and evaluation of projects; Serves as liaison to other areas of organization for new initiatives; Manages documentation flow and presentation
- **QI Coach**: Educates residents about QI methodology and channels residents through CAPE curriculum; Directly facilitates QI teams and projects; Collaborates with system Performance Improvement departments and staff
- **Data Analyst**: Guides teams in data collection, display, and analysis; Responsible for creating data management plans
Our program is unique in that it...

- Utilizes a multi-faceted approach to teach QI
  - Didactic lectures
  - Self-instruction via reading and online modules
  - Experiential learning through actual projects
  - Reflective practice
  - One-on-one coaching
  - Faculty mentoring
  - Data management coaching

- Employs a progressive 3-year curriculum

- Provides a dedicated staff to guide QI endeavors including a QI Coach and support from a Data Analyst

- Materials
  - Resident guide
  - QI book

- Faculty Development
  - Faculty guide
  - Grand Rounds
  - Coaching
  - ERVUs
Curriculum

- Didactic Learning
  - Online Modules
  - Self Learning
  - Required Reading
  - Project Physician Champion
  - QI Faculty Mentor
- 1:1 QI Mentoring
  - Data Coordinator
  - QI Coach
  - QI Teams
- Experiential Learning
  - Noon Conference
  - QI Courses
  - Publications
  - Presentations
  - Posters
  - Workshops
- Scholarly Presenting
  - Publications
- Reflective Practice Project
- Personal Improvement Project
- QI Teams
- Journal Club
- Physician Champion
- Faculty Mentor
- QI Coach
- Reflective Practice Project
PGY-1 Introduction to the Model for Improvement

- Complete pre-assessment QI knowledge survey
- Mandatory QI readings
- Mandatory IHI online modules
- Participation in QI didactic lectures
- Personal Improvement Project (PIP)
- Short Ambulatory QI Project
PGY-2 Experiential learning within a QI team

- Mandatory QI readings
- Mandatory IHI online modules
- Participation in QI didactic lectures
- Identify a Faculty QI Mentor
- Joins an existing multi-disciplinary QI project, or starts own project
PGY-3  Building leadership and sustainability

- Mandatory QI readings and IHI online modules
- Participation in QI didactic lectures
- Work with Faculty QI Mentor
- Functions as a Physician Champion of a multi-disciplinary QI project
- Present QI project to broad LCH audience, including Department of Pediatrics faculty
- Plans for sustainability of project
- Complete post-assessment QI knowledge survey
## Center for Advancing Pediatric Excellence

### Resident Curriculum Timeline  PGY 2009-2010

<table>
<thead>
<tr>
<th>Activities</th>
<th>1st Year</th>
<th>2nd Year</th>
<th>3rd Year</th>
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<tbody>
<tr>
<td>Complete assessment survey</td>
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<td>Complete required readings</td>
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<tr>
<td>Complete IHI Open School Modules</td>
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<td>Attend required lectures</td>
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<td>Conduct personal improvement project</td>
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<td>Conduct short project</td>
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<td>Attend QI Quarterly Meetings</td>
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<td>Participate as team member on active QI project, or own project</td>
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<tr>
<td>Participate as a physician champion/leader on a project</td>
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<tr>
<td>Present results of project at various meetings, including Quarterly QI Meeting</td>
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<td>Submit final report about experience</td>
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<td>Complete plan for sustainability and/or handoff</td>
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<tr>
<td>Attend Close-Out Meeting</td>
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### Additional Information

- **UNC North Carolina Children’s Hospital**
- **Levine Children’s Hospital**
  - Our world revolves around children.
Center for Advancing Pediatric Excellence
Resident Curriculum Activity PGY 2009

- Didactics: 5%
- Presentations: 10%
- Self-Learning: 25%
- Projects: 60%
Purpose: Residents were introduced to the basics of the Model for Improvement in a way that was personally meaningful for them, and without the distraction of the clinical aspects of a hospital project

Learning Objectives:
• Narrow the scope of a project to a reasonable endeavor
• Write a concise Aim Statement with a rationale, goal, target population, and time frame
• Create a Measurement Family with outcome, process, and balancing measures that contains numeric goals
• Test ideas using rapid, small-scale PDSA cycles
• Utilize a data collection tool to facilitate easy data collection
• Practice synthesizing project and presenting in a scholarly forum
Results:

• Residents selected projects such as increasing exercise, finding a quicker route to work, decreasing spending on food, and streamlining children’s bedtime routine.
• 11 of 12 PGY-1 residents completed and presented their PIP at the 12/3/09 noon conference.

Lessons Learned:

• The amount of learning noted in the residents was significant, and we will continue this activity next year.
• We discovered it is most efficient for the QI Coach to schedule time with the residents individually during their clinical rotation.
• Residents had difficulty budgeting their time over the 6-month longitudinal project. We are considering a more intensive 3-month experience next year.
Personal Improvement Project:

“DADDY, READ ME A STORY…”

Tim Larsen
Consistently reading aloud is known to have so many benefits for children. I will significantly enhance the quality and quantity of time spent reading with my children Allison, age 5, and Elizabeth, age 2, by 11/30/09.
Measures

**Process measures**
1. Number of books read per night. Goal: 3+ books
2. Number of developmentally appropriate books available at key places. Goal: 10+ books for each girl
3. Amount of time available during bedtime routine for book reading. Goal: Decrease amount of TV watching by at least 50%. Read at least 10 minutes/night with each girl.

**Outcome measures**
1. Child engagement scale (1 through 5). Goal: 4/5 or more for each girl.
2. Child resistance scale (1 through 5) Goal: 2/5 or less for each girl.
3. Parent satisfaction scale (1 through 5). Goal: 4/5 or more.

**Balancing measures**
1. Amount of time spent per night on bedtime routine.
Changes made to reach my goals:

1. Streamline other stages of bed time routine to maximize energy and time available for reading. *(PDSA Cycle #1)*

2. Strategically position girls on bed, with reader on chair facing them, to enhance interaction, minimize distractions. *(PDSA Cycle #2)*

3. Engage disparate developmental levels (2 years and 5 years) by only one parent. Use more expressive and interactive reading techniques to make readings more interesting and developmentally enhancing. *(PDSA Cycle #3)*

4. Make developmentally appropriate books available on a bookshelf for easy “advertising” and selection, allow girls to choose which books to read. *(PDSA Cycle #4)*
Process Changes

• Cutting the fat out of our bedtime routine allowed the girls more energy to pay attention/engage in reading, and gave me more time and energy to devote to reading. This led to less resistance on their part and more satisfaction on my part.

• Positioning the children was one of the most effective methods of eliminating distractions so I could better engage both girls at once.

• Making reading time oriented to their different developmental levels really required giving them individual reading time
  – Stage 1: short picture books to both of them focusing on colors, vocabulary etc. (around 10 minutes)
  – Stage 2: longer story books to 5 year old alone focusing on recognizing letters, sounding out words. (around 10 minutes)

• Using a bookshelf to display the books for the girls to see sounds like a good idea, but it changed our positioning and because of that I lost a little bit of Lizzie’s attention.
PDSA 1: "Streamline Other Phases of Bedtime Routine to Maximize Time/Energy for Books"
PDSA Cycles 2 through 4
Lizzie (age 2): Engagement and Resistance by month
(on scale of 1 to 5)
PDSA Cycles #2 through #4
Alli (age 5): Engagement and Resistance by month
(on scale of 1 to 5)
Key Accomplishments

Positive Outcomes:

1. I now read to my girls every night I am home.

2. I was able to better engage my 2 year old daughter Lizzie in reading, in addition to Allison my 5 year old.

3. They are both more engaged with the books we read and enjoy reading more.

4. Reading is more developmentally oriented: Lizzie is learning her colors and increasing her vocabulary and Alli is recognizing letters and starting to sound out words.

5. I enjoy reading to them much more, which gives me more motivation to read to them and lowers my stress and frustration.
Lesson Learned/
Future Recommendations

About Reading:
“The Read-Aloud Handbook” is an excellent resource for parents and pediatricians.

About QI:
Pick a problem you are passionate about and you will have more motivation and success in fixing it.

Define what it is about solving the problem that is the most important to you. This will help you narrow your focus.
CAPE has developed multiple methods for learner assessment and curriculum evaluation. In addition to addressing immediate ACGME requirements, CAPE seeks to ensure the program is a valuable resource for life-long learning and quality patient care.

Resident progress is being assessed through a 360-evaluation process. Pre- and post-program knowledge surveys are expected to demonstrate needed program adjustments, as well as feedback on the value of QI knowledge to physicians in the field.

To guarantee that CAPE provides the finest programming, the staff conducts ongoing PDSA cycles and continually refines the curriculum. At the conclusion of the first year, CAPE will collect a mixed-response-style evaluation from residents.

Measurement tools are also used to assess the program’s benefit to other parts of LCH, such as participant evaluation forms for training courses.
Third Year Residents QI Activities - July 2009
8 Residents PGY 2009-2010

- QI Orientation: 88%
- Competency Survey: 63%
- Participated in QI Project: 100%
- Select Faculty Mentor: 100%
- Some IHI Modules: 25%
Second Year Residents QI Activities - 2009
12 Residents PGY 2009-2010

- QI Orientation: 100%
- Competency Survey: 83%
- Select QI Faculty Mentor: 100%
- Participated in a QI Project: 100%
- Some IHI Modules: 17%
- Self Report Required Readings Complete: 0%
- Faculty Mentor 3 Times: 0%
- Received IRB Approval: 0%
First Year Residents QI Activities - 2009
12 Residents PGY 2009-2010

- QI Orientation: 100%
- Competency Survey: 90%
- QI Coach: 100%
- Personal Improvement Project: 100%
- Short QI Project: 100%
- Some IHI Modules: 67%
- Self Report-Required Readings: 100%
Residents Participating in Quality Improvement Projects
2006-2009

Program Year

Number

2006 2007 2008 2009

0 1 2 23
Lessons Learned

• Residents use technology differently than their “older” colleagues. We are developing creative ways to communicate and share information.

• Residents are very “now” oriented, and have difficulty with long-term assignments. They need our help breaking the task down.

• We need to build accountability into the program.

• We obtained buy-in from the PGY-1 residents at a much deeper level than the PGY-2/3s. We anticipate that as the PGY-1 class advances through the program, they will help pull new residents into QI and it will become the new “way we do things.”

• Faculty engagement: ERVUs, Available coaching, QI didactics
Discussion

1. Select one of the following as a topic for your group:
   1. Resident engagement
   2. Faculty engagement
   3. Faculty development
   4. Sustaining resident projects

2. Share successful strategies and lessons learned from your program in the selected area (select a reporter for your group)

3. Discuss some of the best ideas you heard in the didactic and in your group

4. Report out 1-2 of the key points from your discussion to all
Planning

• Individually (or with your colleagues present) write out a plan for one change you want to test (on a small scale) in your program
  – Write out some details: what will be tested, who will test, how you will go about it, by when, where
  – How will you know the change is an improvement: qualitative information to be gathered, quantitative measures of success, measures of potential unintended consequences
QUESTIONS?
Resources: Curricula

http://www.med.unc.edu/cce/education-training

http://www.lchcape.org/