Engaging Residents in QI and Patient Safety

Lisa Shieh, MD, PhD
Clinical Professor, Department of Medicine
Director of Graduate Medical Education, QI Programs
Associate Chief Quality Officer
Stanford University School of Medicine
CLER visit 12/17 and 12/18

- Accreditation Council for Graduate Medical Education establishes Clinical Learning Environment Review (ACGME CLER) program in 2012

- Highlights the importance of patient safety and quality improvement training

- 2016 report
  - Trainees lacked clarity and awareness of the range of conditions that define patient safety events
  - Unaware of the use of reporting of adverse events and near misses/close calls to improve systems of care
  - Limited knowledge of QI concepts and the specific methods and approaches to QI (e.g., PDSA cycles)
  - Opportunities for experiential learning
Preliminary results from CLER visit

1. Few residents said they were involved in interdisciplinary projects in their departments. They’re mostly doing projects alone, but not involving other staff.

2. Few residents had basic knowledge of basic terminology for quality and safety.

3. There were 20 RCA evaluations over the past year. Residents were usually not involved. We had a following discussion that this often was because faculty were not sure if Residents would want to be engaged, as the possibility of guilt may be an issue. We also discussed that faculty often don’t want to join either. The question is how we can engage residents in a safe way in these processes.
FY20 Domain Elements for Building Improvement Capability

<table>
<thead>
<tr>
<th>Trainee Engagement</th>
<th>Phases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beginning (Beginning phase met, plus:)</td>
</tr>
<tr>
<td>QI Curriculum</td>
<td>Identify faculty interested in teaching QI</td>
</tr>
<tr>
<td></td>
<td>Begin developing QI curriculum (e.g. Use of SafetyQuest)</td>
</tr>
<tr>
<td></td>
<td>&gt;50% trainees complete a QI curriculum</td>
</tr>
<tr>
<td></td>
<td>All trainees complete QI curriculum</td>
</tr>
<tr>
<td>Trainee Involvement in QI</td>
<td>Identify trainee leaders in QI (e.g. Resident Safety Champions) and have them represented on quality councils</td>
</tr>
<tr>
<td></td>
<td>Involve trainees in QI projects</td>
</tr>
<tr>
<td></td>
<td>Trainees lead QI projects</td>
</tr>
<tr>
<td>Safety Culture</td>
<td>Give trainees time to fill out safety culture survey</td>
</tr>
<tr>
<td></td>
<td>Identify trainees interested in teamwork training</td>
</tr>
<tr>
<td></td>
<td>Greater than 60% of trainees complete safety culture survey</td>
</tr>
<tr>
<td></td>
<td>Trainees engage in multi-disciplinary teamwork training/use of simulation</td>
</tr>
<tr>
<td></td>
<td>Trainee safety culture survey scores are in 80% percentile</td>
</tr>
<tr>
<td></td>
<td>Trainees lead and teach problem solving and role model teamwork behavior</td>
</tr>
</tbody>
</table>
Safety Quest

- **Online game: QI/PS curriculum**

  **Faculty:** Lisa Shieh, Kambria Evans, Anu Phadke, Laura Mazer, Nita Srinivas, Larry Katznelson

  - Partnership with GME; Available for CME
  - 20 cases: 10 general medicine, 5 pediatrics, 5 surgery
  - Interactive with immediate feedback
  - Patients falling to harm

  - Safety actions (CRM principles) to increase patient’s safety level

  - Game points = future lives saved
  - Dr. QI and Safety teach throughout
  - Earn QI problem solving tools (e.g. PDCA, A3, RCA, etc.) and medals

- **http://safetyquest.stanford.edu**
Learning Objectives

- 1) Increasing knowledge of safety actions such as event reporting, error disclosure, and debriefing

- 2) Introducing learners to quality improvement and patient safety tools including root cause analysis, A3 thinking, and error reporting and

- 3) Reviewing high level safety concepts, such as systems engineering, reliability levels, and human factors.

http://safetyquest.stanford.edu
Tutorial introduces objectives and safety actions

- Player meets Dr. QI
- Learner learns about the magnitude of medical error and IOM Crossing Quality Chasm Report
- Learner reviews game functionality
- Learner reviews definition of each “safety action”
Earn problem solving tools and save future lives!

- Tutorial followed by 20 cases across 4 levels
- Each case has clinical theme and QI/patient safety tool
- Upon completion of each case, learner earns a tool
- Points earned = future lives saved

http://safetyquest.stanford.edu
Dr. Qi says, “Let’s go back to the A3. The Root Cause Analysis comes in between setting a goal and developing solutions. It is a way of understanding your problem so that you can develop targeted solutions to test during the Countermeasures step.”

QI MODE to teach problem-solving tools

Fishbone

5 Why’s

http://safetyquest.stanford.edu
High value care - bonus round

Drag and drop the medication into the correct cost range.

Acetaminophen 1000 mg

Oral

Less than 90 cents

50 cents - 99 cents

$1 - $10

$11 - $50

$51 - $150

Greater Than $151

10 +100! The actual price is $28

When your answer is within 10% of perfect, you get double points.

$20

Prices that your colleagues guessed

Fellow

Resident

Medical Student

$250.00

$1.00

$100.00

Case complete! +3000!

You can improve value in medical care and the system by switching from IV to oral equivalent medications when appropriate (e.g., the patient is able to take, eat, and absorb medications) or using the hospital formulary.

This improves value not only to the patient (as some IV medications are painful during infusion), but to nursing and pharmacy staff as well (IV medications are more labor intensive to administer).

Future lives saved

3380

You have earned the following QI Tool:

High Value Medications

Problem Solving Toolkit

High Value Care
Learners improve in knowledge and prefer Safety Quest to other modalities

- June 2016: Randomized 47 medicine interns into two groups
  - The control group (n=19) played “Septris” a sepsis educational game while the intervention group (n=26) played “Safety Quest.”
  - In paired t-test analysis of pre and post-test data, improvement in learner knowledge about PS concepts (p <0.0001) in the intervention group but not for those in the control group.

- June 2017: 45 medicine interns played SafetyQuest.
  - In pre/post testing: statistically significant improvements in attitudes towards QI/PS and medical knowledge in key QI concepts (eg “what is a PDCA cycle”).

- March 2018: 1470 incoming residents/fellows across all GME programs
  - Played case 4 of Safety Quest (instead of healthstream module)
  - Safety Quest was top ranked learning modality followed by video, powerpoint, healthstream module and articles.
Quotes from our learners

Creative and engaging
Appreciate you for trying to make teaching QI fun

Well-designed, interactive
More palatable than other modules, keep it!

Much better than reading or video. Holds my attention longer
Surprised how much I enjoyed

Fun!!
Thank you!
I learned a lot

Like the quick hit concepts With testing and knowledge

Easy to use, stimulating, efficient

All modules should adopt this
Safety Quest Awards

Top 5 Innovation Abstract Presentation at Society of Hospital Medicine 2018

Regional American College of Physicians (ACP) QI Award Winner 2019 with presentation at National ACP Meeting

Attitudes of medical trainees towards Safety Quest: a novel, online, gamified Quality Improvement course

Methods

1. 190 residents from three general pediatrics and internal medicine residency programs participated (50% response rate).
2. Both resident and faculty resident modules were completed.
3. Each comment was coded as critical, unclear, or positive, with unclear responses not coded as either critical or positive. From comments, the number of critical comments was calculated as either positive or negative, at a median rate of 6.6% of the total module, and inter-rater reliability was excellent.

Discussion

"The interactive nature of the game and the feedback mechanisms were well-received. Participants found the use of real-life scenarios and interactive elements engaging and effective in enhancing learning.

"The gamification strategy helped residents to better understand the importance of safety QI and their role in improving patient outcomes. The interactive nature of the game was highly appreciated, especially by residents who found it challenging to participate in traditional teaching methods.

"The integration of multimedia elements and the storyline helped to maintain engagement and motivation. Participants reported that the game made learning more enjoyable and less daunting, which is crucial in a training environment where learning can be overwhelming.

"The feedback received was positive, with most participants indicating that the game was beneficial in teaching them about safety QI. The open-ended questions and reflective components helped residents to think critically about their own practice and identify areas for improvement.

"The success of the Safety Quest intervention highlights the potential of gamification and interactive learning methods in medical education. This approach can be adapted to other QI initiatives and can be used to engage residents and faculty in a more active and meaningful way.

"In conclusion, Safety Quest is a promising tool for teaching and enhancing the understanding of QI in medical education. Further research is needed to evaluate its sustainability and scalability in different training settings.

Results

- 10% of residents and 80% of medical students viewed Safety Quest.
- 90% of residents and 50% of medical students engaged with the game.
- 80% of residents and 40% of medical students recommended Safety Quest to their peers.
- 60% of residents and 30% of medical students found the game enjoyable and engaging.
- 90% of residents and 60% of medical students reported increased motivation and engagement in QI.
- 80% of residents and 40% of medical students reported improved understanding of QI concepts and strategies.
- 70% of residents and 30% of medical students reported increased confidence in their ability to implement QI interventions in practice.

"The Safety Quest intervention is an effective tool for teaching and enhancing the understanding of QI in medical education. The interactive and gamified approach is appealing to residents and medical students and can be adapted to other training settings.

"In conclusion, Safety Quest is a promising tool for teaching and enhancing the understanding of QI in medical education. Further research is needed to evaluate its sustainability and scalability in different training settings.

"The success of the Safety Quest intervention highlights the potential of gamification and interactive learning methods in medical education. This approach can be adapted to other QI initiatives and can be used to engage residents and faculty in a more active and meaningful way.

"In conclusion, Safety Quest is a promising tool for teaching and enhancing the understanding of QI in medical education. The interactive and gamified approach is appealing to residents and medical students and can be adapted to other training settings.

"The Safety Quest intervention is an effective tool for teaching and enhancing the understanding of QI in medical education. The interactive and gamified approach is appealing to residents and medical students and can be adapted to other training settings.

"In conclusion, Safety Quest is a promising tool for teaching and enhancing the understanding of QI in medical education. The interactive and gamified approach is appealing to residents and medical students and can be adapted to other training settings.

"The Safety Quest intervention is an effective tool for teaching and enhancing the understanding of QI in medical education. The interactive and gamified approach is appealing to residents and medical students and can be adapted to other training settings.
Safety Quest available for free and CME

- https://med.stanford.edu/cme/courses/online/safetyquest.html

From Nov 2018-April 2019: >500 learners have played from CME site
Get report of learners who have played

- **https://stanford-qig-analytics.appspot.com/reports**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Stanford</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program</td>
<td>Orthopaedic Surgery</td>
</tr>
<tr>
<td>Training Level</td>
<td>Intern</td>
</tr>
<tr>
<td>Case Name</td>
<td>case4</td>
</tr>
<tr>
<td>Score</td>
<td>1525</td>
</tr>
<tr>
<td>% Correct</td>
<td>88</td>
</tr>
<tr>
<td>Time</td>
<td>06/14/2019 5:20:13</td>
</tr>
</tbody>
</table>

**Actions Taken**

<table>
<thead>
<tr>
<th>Action taken</th>
<th>Correct</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove Catheter</td>
<td>correct</td>
<td>06/14/2019 5:02:32</td>
</tr>
<tr>
<td>File Event Report</td>
<td>correct</td>
<td>06/14/2019 5:02:39</td>
</tr>
<tr>
<td>Disclose Error</td>
<td>correct</td>
<td>06/14/2019 5:02:43</td>
</tr>
<tr>
<td>Debrief</td>
<td>correct</td>
<td>06/14/2019 5:02:46</td>
</tr>
</tbody>
</table>

- **Qualtrics knowledge links also available**

  - Pre-test link: **https://stanforduniversity.qualtrics.com/jfe/form/SV_8bS3DzgMWrrsINT**
  - Post-test link: **https://stanforduniversity.qualtrics.com/jfe/form/SV_8xdgCPyvGEub48J**
Engaging Residents in QI and Patient Safety
The **Stanford Resident Safety Council (RSC)** is an institution-wide, interdepartmental council run by residents/fellows who lead QI projects throughout Stanford Health Care and Stanford Medicine.

- Created by Laurence Katznelson in 2013.
- Bring resident physicians of all disciplines to develop solutions to important system challenges on an institutional level.
- Work directly with hospital administration and patient-safety leadership to strive to improve health care quality for all stakeholders.
- Place residents on important hospital-level committees and projects, so that the voice of the residents may be heard institution-wide.
- Collaborate with nursing and other members of the healthcare team.
- Projects are chosen to align with SHC priorities.
New in 2018: Resident Safety Champions

- Act as liaison between RSC and SHC/SOM
  - Be a resource for RSC projects
  - QI ambassador to their departments

- Work with department Physician Improvement Leader to provide input towards and become involved in department ICDP QI initiatives

- Creation of Resident Advisory Council with RSC safety champions to provide resident input to current SHC projects
FY 2019 RSC updates

- >50 residents/fellows apply to RSC projects
- Nurse co-leads on QI projects
- Four projects
  - Goals of Care (POLST completion)
  - Improving Safety Culture (SAFE reports)
  - Communication before critical event (Voalte)
  - Patient Experience (Medication side effects)
- Three RSC members became Master TeamStepps trainers
- Workshops
  - How to publish QI (David Larson)
  - Innovation (Rusty Hoffman and Mike Turken)
- RSC newsletter
- QI symposium in May 2019
Record Breaking 82 Abstracts!

Please join us for the 5th annual 2019 Resident Quality Improvement/Patient Safety Symposium

The 5th Annual Resident Quality Improvement/Patient Safety Symposium is an opportunity for Stanford Healthcare and Stanford Children’s Hospital residents, students, and fellows to share their safety and healthcare improvement projects with other trainees, faculty and leadership.

Date: Monday May 13, 2019 at 3:30pm-5pm
Location: SHC Atrium & Breezeway
Refreshments will be served.
1st Annual Recognition Night

On Behalf of David Entwistle & SHC Leadership
You are cordially invited to the

First Annual
Resident Safety & Quality
Recognition Night

June 17, 2019  5:30PM
Bing Dining Room
Refreshments to be provided
Promoting Scholarship

- **Current RSC program**
  - Poster at IHI Annual Meeting
    - BMJ asked her to submit a manuscript!

- **RSC projects**
  - MD/RN Communication
  - Journal of Hospital Medicine

- **Safety Quest**
  - Winner of regional ACP medical student
  - >2500 trainees played during onboarding
  - >400 enrolled in CME since Nov 2018

- **Publications from mini QI grant awards**
  - Adam MacLellan: AHA Quality of Care and Outcomes Research
  - Justin Slade: American College of Cardiology
Engagement of students

- QI Interest Group (Med 210)
  - Kickoff with Karen Frush
  - Involvement in hospital projects
    - Neurology, medicine and primary care
    - Two publications and top 10 abstract in QI symposium
  - Fall kickoff: noon time career QI leadership lecture series

- Student Healthcare Consulting Course (Med 278/279)
  - Faculty include David Svec, Jason Hom, Ed Sheen, Lisa Shieh
  - 40 students enrolled in 3 quarters
  - Projects on improving patient experience, O:E mortality and cost
  - Collaboration with Value Improvement team
    - Margaret Smith, Amelia French, Hurley Smith
New in FY20

- RSC leadership
  - Co-chairs: Swati Yanamada and Haley Manella
  - Associate co-chairs: Erna Forgo and Joshua Jaramillo
  - Education/teamSTEPPS Chair: Hilary Wang
  - Communications/Public Relations: Tiffany Lee

- Add nurse leadership to executive team
  - Barbara Mayer

- Quarterly sponsor check-ins
  - David Entwistle and Karen Frush

- Cost Savings innovation Challenge in Fall 2019
  - Consider those with enough faculty support for the CSRP program
Smart goals for projects of FY20

- **Inpatient MyHealth**
  - Increase Inpatient MyHealth active use among inpatients in the Medicine units from 30% to 50% by the end of calendar year 2021.

- **Voalte**
  - By April 2020, establish a universal etiquette for hospital-wide Voalte communication to reduce the number of calls and texts received by providers from an average of (current data) to an average of 10 calls per day and 15 texts per day.

- **Teamwork**
  - Improve physician documentation rates of RRT events by 50% over baseline by July 2020 and improve role clarify during RRT

- **Goals of care**
  - By March 2020, create a new code status ordering system for SHC that decreases rates of physician discordance by 50% in: a) code status ordering and b) code status interpretation Patient Experience
## 2019 Patient Safety Champions

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesia</td>
<td>Alix Baycroft</td>
</tr>
<tr>
<td>Anesthesia</td>
<td>Christine Stypula</td>
</tr>
<tr>
<td>Anesthesia</td>
<td>Lindsay Grabek</td>
</tr>
<tr>
<td>Anesthesia</td>
<td>Mae Gillespie</td>
</tr>
<tr>
<td>Anesthesia</td>
<td>Sarah Joo</td>
</tr>
<tr>
<td>CT Surgery</td>
<td>AJ Pedroza</td>
</tr>
<tr>
<td>Dermatology</td>
<td>Joanna Tu</td>
</tr>
<tr>
<td>Dermatology</td>
<td>Maggie Moses</td>
</tr>
<tr>
<td>Diagnostic Radiology</td>
<td>Alexander Khalaf</td>
</tr>
<tr>
<td>Diagnostic Radiology</td>
<td>Maria O’Malley</td>
</tr>
<tr>
<td>Diagnostic Radiology</td>
<td>Michael Pohlen</td>
</tr>
<tr>
<td>Diagnostic Radiology</td>
<td>Sarah Cheng</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>Jason Teng</td>
</tr>
<tr>
<td>ENT</td>
<td>Jared Shenson</td>
</tr>
<tr>
<td>ENT</td>
<td>Tyler Okland</td>
</tr>
<tr>
<td>General Surgery</td>
<td>Ashley Titan</td>
</tr>
<tr>
<td>Medicine</td>
<td>Aditya Ullal</td>
</tr>
<tr>
<td>Medicine</td>
<td>Benjamin Weia</td>
</tr>
<tr>
<td>Medicine</td>
<td>Neel Chari</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>Paras Fatemi</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>Zack Medress</td>
</tr>
<tr>
<td>OB/GYN</td>
<td>Paige Bates</td>
</tr>
<tr>
<td>OB/GYN</td>
<td>Anne Waldrop</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>Cassie Ludwig</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>Lauren Shapiro</td>
</tr>
<tr>
<td>Pathology</td>
<td>Iny Jhun</td>
</tr>
<tr>
<td>Pathology</td>
<td>Simon Chen</td>
</tr>
<tr>
<td>Plastic Surgery</td>
<td>Lawrence Cal</td>
</tr>
<tr>
<td>Plastic Surgery</td>
<td>Zeshan Mann</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td>Erik Blomain</td>
</tr>
<tr>
<td>Urology</td>
<td>Alex Kasman</td>
</tr>
<tr>
<td>Urology</td>
<td>Kyla Velear</td>
</tr>
</tbody>
</table>
Safety Champion projects: Teaching ARCC

- TeamStepps training
  - Hilary Wang leading WebEx sessions with safety champions on ARCC training

TeamSTEPPS ARCC Training

In an effort to improve communication across multidisciplinary teams, RSC has launched its training program on ARCC, the first TeamSTEPPS tool implemented at SHC. Employees throughout the hospital are receiving training on this topic, and our goal has been to introduce the concept to residents, who will likely be encountering its use in various clinical settings. Our TeamSTEPPS Vice Chair Hilary Wang has launched several interactive WebEx training sessions for RSC members and Safety Champions, who will then be able to bring their knowledge on this new communication tool to their respective programs. Be on the lookout for a specialty-specific training on ARCC within your residency program in the coming months to learn more!
Safety Champion Projects: Using ARCC

- Move to 500 P safety concerns
  - Erna Forgo created SBAR template for safety champions and members to fill out concerns after move and working with Quality safety team (Sam Shen and Amelia French) to close the loop
  - Examples of concerns submitted

- Yelling at employees entering through main entrance
- Badge access in stainwell locked
- Confusing pediatric zone name
- Confusing/Lack of detailed paging regarding ED in 300P vs 500P
- No/Limited access to ED doors
- Lack of OR preparation for overnight emergent cases
- Limited 300P and 500P OR Pharmacy hours
- OR barcode scanner malfunction
- Lack of "coach" availability for patient transport
- Lack of containers for esophageal temp probe resulting in no available probe found
- Lack of curved mirrors in blind spots at hallway intersection in Interventional Platform
- Unclear workflow for return of dirty/used detachable vital signs monitor after transport to ICU
- Lack of availability of CG8+ iSTAT cartridges in OR30
- Lack of frozen tissue sample processing at 300P (when from 300P OR)
- Lack of GYN equipment in 500P OR during surgery
- Lack of communication with anesthesia tech
- OR thermostat cannot be adjusted/Regulating OR room temperatures
- Unacceptable patient transport times from hospital rooms to interventional platform
- Lack of IV poles in preop/PACU area of interventional platform
- Designated trauma elevator to get from 1st floor to the 7th floor without stopping at every floor during time sensitive traumas
- Lack of WiFi in elevators, several areas with poor internet coverage
ARCC Mealcards are here!

- ARCC Mealcards
- $25 to start
- We will be adding $$ throughout the year for accomplishments TBD
High Value Care Innovation Challenge

- RSC executive team exploring use of high cost imaging and creating dashboard
- Round #1 of high value care innovation challenge
Resident teamwork training and culture

- Align teamwork training and safety culture debriefing
  - Neurosurgery resident workshops
  - Partner with Edgar and Peter Schein
    - Culture change leadership
    - Relationship building
    - Teamwork and group dynamics
    - RSC in person meetings
- Scholarship
Chief Resident Council QI project

- Problem: Consult efficiency leads to delays in discharge and increase LOS

- Current state: Communication breakdowns lead to delays in consultation and recommendations. Also consult requests sometimes lack key information needed for the consultant

- Proposed intervention
  - Epic consult order to include key information needed for consulting team
  - Epic consult order to Autopage the consult team
  - Having consult orders will allow us to measure consult efficiency
1. **Education Requirement**: Candidates must complete the Safety Quest curriculum:
   1) Safety Quest Pre-Test
   2) Safety Quest Curriculum
   3) Safety Quest Post-Test

2. **Project Requirement**: Submit a one paragraph description of your contributions to a QI project, and the name of your faculty mentor who can attest to your work on the project. Projects that meet the requirements include:
   1) RSC team project
   2) RSC safety champion project
   3) Other QI project that meets at least a 2.5 on the project progress scale

3. **Candidates must present their QI work in one of the following forums**:
   1) RSC in person meeting
   2) Resident/Fellow QI symposium
   3) Poster or podium presentation at a conference
   4) Presentation at a department QI conference

Led by Swati Yanamada
Stanford Quality Improvement and Patient Safety Symposium:

May 18th, 2020

ALL RSC TEAMS WILL PRESENT
Take Home Messages

- Consider using Safety Quest to start or augment your QI Curriculum
- Please meet with your RSC Safety Champion
- Involve residents and fellows in your department QI structure and projects
  - M&M and root cause analysis
- Encourage residents to join RSC to work with nurses and colleagues in other departments
- Support a resident/fellow in the high value innovation challenge
- Encourage your residents to submit abstracts to the QI symposium
- Model ARCC and a positive safety culture
  - Encourage SAFE reporting