Quality and Safety Educators Academy (QSEA)

Resource Toolkit

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Section 1: General References in QI, Safety and Education

Quality Improvement: Principles, Methods and Measurement

Agency for Healthcare Research and Quality (AHRQ).Annual National Quality Reports.http://www.ahrq.gov/qual/measurix.htm.

AHRQ publishes annual reports on the status and progress of healthcare quality in the U.S.

Berwick D,Nolan T. Physicians as leaders in improving health care: anew series in Annals of Internal Medicine.*Ann Intern Med*. 1998;128:289-92.

This article and the several that follow (as part of this series) introduce key concepts in quality improvement and measurement. They cover topics such as the role of physicians, the value of measurement and tests of change in medicine.

Donabedian A. The quality of care. How can it be assessed? *JAMA*. 1988;260:1743-48.

This is Donabedian's classic article describing the structure, process and outcome framework we still use for quality measures.

Gawande A.The Bell Curve.*The New Yorker*.Dec. 6, 2004.

This piece is a nice introduction to the value of measurement and its impact on provider behavior and improvement.Using the example of cystic fibrosis and patient anecdotes at low- and high-performing centers, the author skillfully lays out the inherent value in measurement and then reacting to the numbers.This article is well written and is a useful introductory or "hook" for novice learners.

Graban M. Lean Hospitals: Improving Quality, Patient Safety, and Employee Satisfaction. CRC Press. 2009.

This book provides a basic introduction to Lean methodology, and the principles behind the Toyota Production System.It can be used as a primer for how to apply this methodology to the healthcare setting, and includes many useful examples. Easy to read.

Jha A, et al. Effect of the transformation of the Veterans Affairs health care system on the quality of care.*N Engl J Med.* 2003;348(22):2218-27.

This article is a concrete example of published outcomes after on-going performance evaluation in the VA health system.Authors compare outcomes with national Medicare data and show improvement in several metrics. This is useful as an example of impact of QI across national healthcare systems.

Kurtin PS,Stucky ER. Standardize to excellence:improving the quality and safety of care with clinical pathways.*PediatrClin N Am*.2009 Aug;56(4):893-904.

This article reviews both the process of evidence-based pathway creation and itsvalue to quality outcomes and standardizing care across a population.

McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med*. 2003;348:2635-45.

In thisclassic study, the investigators obtained medical records for more than6,000 outpatients across the United States.Record reviews identified whether patients had received recommended care. The study's conclusion was that Americans received ~1/2 of recommended care. The findings held true regardless of whether measures were separated out as for acute, chronic or preventative care.

National Quality Forum (NQF).http://www.qualityforum.org/.

NQF is a nonprofit organization that aims to improve quality by setting national priorities and goals, endorsing consensus standards for measurement, and promoting attainment of goals through education and outreach programs.

Performance Measurement. Accelerating Improvement (Pathways to Quality Health Care Series) / Edition 1 Pub Date June 2006 National Academies Press. Institute of Medicine.

This book offers a comprehensive review of available measures and introduces a new framework to examine these measures against the six aims of the healthcare system as articulated in earlier IOM studies: healthcare should be safe, effective, patient centered, timely, efficient and equitable. This book also addresses the gaps in performance measurement and introduces the need for measures that are longitudinal, comprehensive, population based and patient centered.

Pronovost P, et al. An intervention to decrease catheter-related bloodstream infections in the intensive care unit.*N Engl J Med*. 2006;355:2725-32.

This article is a concrete example of published outcomes in critical care quality.Authors describe their implementation of a bundled approach to improving the process of care and discuss dissemination across multiple hospitals in Michigan.This is useful as an example of published outcomes in the literature.

***The Improvement Guide*.Langley G, et al. Jossey-Bass publishing (a Wiley Co.).San Francisco, CA. 1996.**

This basic textbook is an accessible introduction to QI principles and methods. Authors review theory and then provide examples of how to identify a question, design a project plan and use PDSA cycles to achieve outcome change.It is written in readable language and is useful at all levels of learners — undergraduate medical to faculty.Although most of the examples are non-medical, the information is very transferrable.It is considered by some to be the best textbook to learn how to systematically improve a process.

Patient Safety Principles and Methods

AHRQ Web M and M:Morbidity and Mortality Rounds on the Web.
http://webmm.ahrq.gov/.

One of the best online resources for learning and teaching patient safety. A few highlights include:
> *1) New cases of medical error solicited from across the country are published monthly along with invited commentary thatdescribes the underlying error mechanisms and offers suggestions for improvement. PowerPoints are included that can be downloaded for teaching purposes.*
> *2) A glossary that includes standard definitions for terms commonly used in patient safety and adverse event analysis.*
> *3) Patient Safety Primers, which are a compilation of primers on topics related to patient safety. Webpages are useful for background or introductory readings for learners.*
> *4) Patient Safety Network, which is a catalogued reference library of all published healthcare articles on patient safety topics. Articles can be viewed by topic or by week of publication. There is also a feature in which you can subscribe to receive biweekly emails of all new published articles, books and monographs in patient safety. This feature is highly useful.*

VA Patient Safety Curriculum.*http://www.patientsafety.gov/curriculum/.*
Another great website resource for teachers of patient safety. Created by the VA National Center for Patient Safety, this website contains teacher guides and teaching materials including slide sets that can be downloaded for immediate use. It covers the topics of introduction to patient safety, human factors engineering, evidence-based patient safety, root cause analysis and failure mode effects analysis. It also contains ready-to-use curriculum ideas in different educational formats for faculty.

***Human Error in Medicine.*Edited by Marilyn Sue Bogner. Lawrence Erlbaum Associates,Hillsdale, NJ. 1994.**

This book is a compendium of essays on a variety of topics that relate to patient safety. It is a useful textbook for faculty who need to teach the material but may be too detailed for novice learners.Bringing together a group of diverse experts, the book covers a wide range of topics from errors in the use of medical equipment including radiology, errors from poor or fatigued decision making, latent surgical errors, both efforts and failures to learn from mistakes, and error reduction through technical advancement and improved facility design.

***Understanding Patient Safety*. 2nd Edition. Robert Wachter.Lange Publishers.2012.**

A very comprehensive and extremely readable book for the novice learner or teacher in patient safety. The chapters are well referenced, illustrated and provide clinical examples highly relevant for the clinician-educator or healthcare student in patient safety.

The Field Guide to Understanding Human Error Investigation. Sidney Dekker. Ashgate Publishers. 2006.

This is a great book for anyone who will be leading medical error investigations or root cause analyses. It compares and contrasts the old and new view of safety and helps you to understand how to identify and draw out latent failure and human factors in error investigations and discussions.It is not writtensolely for a medical audience and contains many non-medical examples, but is highly applicable to healthcare safety and very easy to read.

Reason J. Human error: models and management. *BMJ.* 2000;320:768-70.
This is a short, highly readable article that is a great primer to introduce beginning students to the principles of error and safety. It is written by James Reason, who first described the Swiss cheese model of error. Reason is a cognitive psychologist who has written many books on the topic of error, including the book "Human Error," which is considered the classic textbook in the cognitive psychology literature on the subject.

Miller MR, Takata G, Stucky ER, Neuspiel DR.Principles of Pediatric Patient Safety: Reducing Harm Due to Medical Care. Steering Committee on Quality Improvement and Management and Committee on Hospital Care. *Pediatrics*. 2011;127:1199-1211.

This article reviewsthe epidemiology and science behind pediatric medical errors and offer strategies for improvements. Appendices include a glossary, tools and links to sites and agencies involved in pediatric error recognition and abatement.

Shojania KG, et al. Understanding medical error and improving patient safety in the inpatient setting.*Med Clin N Am*. 2002;847-67.

This article provides a succinct review of the two different roles physicians can play in improving patient safety. The first role involves participating in the qualitative methods for anticipating errors and performing analysis in a culture of safety.The second approach involves performing and applying the outcomes from clinical research to reduce the risks of hospitalization.

Vincent C. Understanding and responding to adverse events.*N Engl J Med*. 2003;348:1051-56.

This article details how to perform an analysis of a clinical incident using a contributing factor analysis. Several tables show useful examples of latent factors from the frontline through large organizational processes.

Leape LL, Brennan TA, Laird N, Lawthers AG, Localio AR, Barnes BA, et al. The nature of adverse events in hospitalized patients. Results of the Harvard Medical Practice Study II.*N Engl J Med***. 1991;324(6):377-84.**

This is the infamous "Harvard Medical Malpractice Study" thatquantified the number of preventable adverse events in hospitals through extensive chart review. This study and a few others that followed provided quantitative data for the IOM report claim that 44-98,000 deaths per year occur from preventable medical error.

Leape L. Error in medicine.*JAMA.* **1994;272:1852-57.**

Written by Lucian Leape, who has been one of the premier figures in the patient safety movement, this is <u>THE</u> classic article that introduced the topic of medical error to the healthcare industry. It provides a framework for the movement and carefully details the common mechanisms of error from the cognitive psychology literature, relates them directly to medical practice and offers prevention strategies. Although it is now almost 20 years old, it is still widely applicableand the content remains relevant for patient safety teachers and learners.

Quality Grand Rounds

This is a series of 13 articles published sequentially in Annals of Internal Medicine from 2002-2006.Each article uses a case-based approach to describe a quality issue or medical error. Each case has a commentary running throughout the article to highlight and teach important quality and safety principles. The articles are very well written and readable. One of the articles is referenced below.

Special Topics in QI/PS and Education

Diagnostic Error and Cognitive Bias

Groopman J. *How Doctors Think*. Houghton-Mifflin Company, NY, NY, 2007.

In this now classic book, Jerome Groopman, a physician, describes the thought processes behind the decisions doctors make. He explores why doctors err and shows when and how they can avoid snap judgments, embrace uncertainty and communicate effectively. This book is full of stories of his own practice, his own mistakes and the mistakes of other doctors. It is a compelling read that most physicians find they cannot put down.

Croskerry P. The importance of cognitive errors in diagnosis and strategies to minimize them.*Acad Med.* 2003;78(8):775-80.

This is one of the first articles in the medical literature to identify and describe the various cognitive biases that affect the diagnostic process of healthcare professionals. A good introduction to the field for novice teachers of this work,it includesa very useful table that contains a comprehensive list of potential biases.

Trowbridge RL.Twelve tips for teaching avoidance of diagnostic errors. *Med Teach.* 2008;30:496-500.

From Medical Teacher's *classic "12 Tips" series, this article provides an approach to teaching students and residents about diagnostic errors and clinical reasoning using several different methodologies.*

Reilly JB, Ogdie AR, VonFeldt JM, Myers JS. Teaching about how doctors think:A longitudinal curriculum in cognitive bias and diagnostic error.*BMJ QualSaf*. 2013;22(12):1044-50.

The authors describe how they implemented a curriculum on cognitive bias and diagnostic errors into an internal medicine residency program using multiple educational methods.

Croskerry P. From mindless to mindful practice--cognitive bias and clinical decision making.*N Engl J Med*. 2013;368(26):2445-8.

Recent perspective from the New England Journal of Medicine *on this topic by a national expert in the field.*

<u>Handoffs</u>

Wohlauer et al. The patient handoff: a comprehensive curricular blueprint for resident education to improve continuity of care. *Acad Med*. 2012 Apr;87(4):411-18.

This article summarizes published handoff education programs as a resource for educators in designing handoff programs that fit their local needs.

Garment AR, Lee WW, Harris C, Phillips-Caesar E. Development of a structured year-end sign-out program in an outpatient continuity practice. *J Gen Intern Med*. 2013 Jan;28(1):114-20.

This article describes one program's development, implantation and evaluation of an outpatient handoff tool for year-end clinic transitions.

Riesenberg L, Leitzsch J, Massucci JL, et al. Residents and attending physicians' handoffs: a systematic review of the literature. *Acad Med*. 2009;84:1775-87.

This is a systematic review of articles focused on physicians' handoffs. It contains a qualitative review of barriers and strategies and identifies features of structured handoffs that have been effective. It is a good place to start for anyone thinking about beginning or improving upon their handoff process or curriculum. Do not start from scratch! Much has been written on this topic.

Farnan JM, Paro JAM, Rodriguez RM, et al. Hand-off education and evaluation: Piloting the observed simulated hand-off experience (OSHE). *J Gen Intern Med*. 2010 Feb;25(2):129-34.

This article contains the first published assessment tool for handoff skills. It also describes one institution's approach to introducing medical students to the topic.

Arora V, Johnson J. A model for building a standardized handoff protocol.*Joint Comm J Qual P Safety*. 2006;32:646-55.

A primer for how any training program or clinical department can use process improvement tools to understand, standardize and improve their hand-off processes. Also provides some helpful tips fornovices in QI on how to design a process map.

DeRienzo CM, Frush K, Barfield ME, et al. Handoffs in the era of duty hours reform: A focused review and strategy to address changes in the Accreditation Council for Graduate Medical Education Common Program Requirements. *Acad Med*. 2012;87(4):403-10.

This article provides an overview of the handoff literature and how one institution's (Duke) resident-led quality and safety council developed a comprehensive curriculum and addressed handoff education at the institutional and program level.

Gakhar B, Spencer AL. Using direct observation, formal evaluation, and an interactive curriculum to improve the sign-out practices of internal medicine interns.*Acad Med.* 2010;Jul;85(7):1182-88.

One of the more recent studies that describes one residency program's approach to improving, teaching and evaluating inpatient handoffs.

Myers JS, Jaipaul CK, Kogan JR, Krekun S, Bellini LM, Shea JA. Are discharge summaries teachable? The effects of a discharge summary curriculum on the quality of discharge summaries in an internal medicine residency program.*Acad Med*. 2006;Oct;81(10 Suppl):S5-8.

First study to describe a discharge summary curriculum and discharge summary assessment tool. Many programs are now teaching discharge summary creation as a skill given the intense focus on safe discharge transitions.

Teamwork

Brinkman WB, Geraghty SR, Lanphear BP, et al. Effect of multisource feedback on resident communication skills and professionalism: a randomized controlled trial. *Arch PediatrAdolesc Med.* 2007;161:44-49.

This study used multisource feedback (a.k.a., 360 degree assessment) to improve pediatric residents' communication skills with nurses and parents.

Chakraborti C, Boonyasai RT, Wright SM, Kern DE. A systematic review of teamwork training interventions in medical student and resident education. *JGen Intern Med*. 2008;23(6):846-53.

A systematic review of team training interventions. The authors conclude that team training programs use sound educational principles and show short-term improvement in knowledge and skills. The authors encourage additional research evaluating patient outcomes and long-term effects on training participants.

O'Leary KJ, Buck R, Fligiel HM, et al. Structured interdisciplinary rounds in a medical teaching unit: improving patient safety. *Arch Intern Med.* 2011;171:678-84.

This study reports on the implementation of daily interprofessional rounds. A checklist was used for new patients, and rounds were facilitated by the unit nurse manager and medical director.The intervention resulted in a significant reduction in the rate of adverse events.

Rudolph JW, Simon R, Raemer DB, Eppich WJ. Debriefing as formative assessment: closing performance gaps in medical education. *AcadEmerg Med*. 2008;15:1010-16.

This article provides a useful framework for debriefing, a key component of simulation-based training.

Team Strategies and Tools to Enhance Performance and Patient Safety. http://teamstepps.ahrq.gov/.

AHRQ and the Department of Defense (DoD) have partnered in offering the Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) program, designed to improve teamwork skills for healthcare professionals.

Core Competencies for Interprofessional Collaborative Practice.
http://www.aacn.nche.edu/education-resources/IPECReport.pdf.

This is a summary of a report of an expert panel recently convened by several leading medical organizations such as the AAMC and AACN. It defines each healthcare profession's expected disciplinary competencies andcompetencies for interprofessional collaborative practice.

Change Principles

Hafferty FW, Franks R. The hidden curriculum, ethics teaching, and the structure of medical education.*Acad Med*.Nov 1994;69(11):861-71.

This classic article first described the 'hidden curriculum' in medical education in which the authors propose that the critical determinants of character that medical learners adopt during medical school come not from the formal curriculum, but instead a hidden curriculum based within the prevailing medical culture. These authors go further stating the process of moral enculturation is geared toward simple replication of the culture, and may lead to progressive moral degradation over time. A must read for any medical educator.

Hafferty FW, Castellani B.The increasing complexities of professionalism.*Acad Med*. 2010;85:288-301.

Hafferty expands on his earlier work by first reviewing organized medicine's professionalism movement, and then introduces the concept of complexity into

the professionalism discussion. He describes a seven-part typology of professionalism that explores how conflicts between these differing views of medical work play out.Understanding these conflicts on many levels (micro, meso, macro) gives insight into why intractable arguments seem to arise between differing groups of healthcare providers, and may point a way to avoid these conflicts in the future.

Heath C, Heath D. *Switch: How to Change Things when Change is Hard*. Broadway Books, New York, 2010.

In this easy-to-read book, the Heath brothers describe the conflict we all have between our rational minds, and our emotional minds. They create a framework of a rider (rational mind), elephant (emotional mind) and path that change-makers should understand in order to best facilitate change. They describe several surprising truths about change, and suggest how knowing these truths can accelerate improvement. The chapters are narrative driven and clear, and incorporate several examples from the medical field, including Don Berwick's seminal work at IHI.

Kotter JP. Leading Change: Why Transformation Efforts Fail. *Harvard Business Review*. January 2007.
In this article (and book by the same title), Kotter argues that change is a process and not an event, and people who fail at leading change skip or poorly order important steps in this process. He describes eight steps that if done correctly give a transformation effort the best chance at succeeding (establish urgency, form a powerful guiding coalition, create a vision, communicate the vision, empower others to act on the vision, plan for and create short-term wins, consolidate improvements and produce still more change, institutionalize new approaches).

Lesser CS, et al. A behavioral and systems view of professionalism. *JAMA*. 2010;304(24):2732-7.

This article suggests that personal attention to professionalism may not be sufficient to drive the changes needed to improve healthcare, and proposes a behavioral and systems view of professionalism for physicians and organizations. The authors argue that professional behaviors are directly tied to context, and ignoring this may hamper improvement efforts. The authors describe how this perspective on professionalism could contribute to system-level reform.

Sklar DP, Lee R. Commentary: what if high-quality care drove medical education? A multiattribute approach.*Acad Med*. 2010 Sep;85(9):1401-4. doi: 10.1097/ACM.0b013e3181eaaca6. PubMed PMID: 20736666.

In this commentary, the authors suggest another approach to developing medical school curricula. Starting with the major desired outcome of medical education,

which they suggest should be high-quality medical care, educators can work backward using the attributes of quality as the basis for developing new medical curricula.

Morbidity and Mortality Conferences

Kravet SJ, Howell E, Wright SM.Morbidity and mortality conference, grand rounds, and the ACGME's core competencies. *J Gen Intern Med*. 2006 Nov;21(11):1192-4.

There are many other articles on this topic, mostly in the surgical education literature.

Gonzalo J, Yang J, Huang G. Systems-based content in medical morbidity and mortality conferences: adecade of change. *JGrad Med Educ*. 2012; 4(4):438-44.

This article reviews the change in systems-based practice (SBP) content and showcases one example of how M and M can be structured in internal medicine.

Combining QI/PS with Milestones and EPAs

Green E, Aagaard EM, Caverzargie K, et al. Charting the road to competence: developmental milestones for internal medicine residency training. *J Grad Med Educ*. 2009;1:5-20.

Hicks PJ, Schumacher DJ, Benson BJ, Burke AE, Englander R, Guralnick S, Ludwig S, Carraccio C. The pediatrics milestones: conceptual framework, guiding principles, and approach to development. *J Grad Med Educ*. 2010 Sep;2(3):410-8. doi: 10.4300/JGME-D-10-00126.

ten Cate described Entrustable Professional Activities (EPAs) and these three key articles describe how EPAs fit into the framework of competency-based education:

ten Cate O, Scheele F. Viewpoint: Competency-Based Postgraduate Training: Can We Bridge the Gap between Theory and Clinical Practice? *Acad Med.* 2007;82:542-47.

ten Cate O, Snell L, Carrachio C. Medical competence: The interplay between individual ability and the health care environment.*Med Teach.* 2010;32:669-75.

ten Cate O. Entrustability of professional activities and competency-based training. *Med Educ.*2005;39:1176-77.

Cost -Conscious Care

American College of Physicians.http://hvc.acponline.org/.
ACP's home for resources.There are clinical recommendations, clinician resources (online cases, publications, performance measurement and ethics), curriculum, patient-specific resources and policy.

Choosing Wisely®. *http://www.choosingwisely.org/doctor-patient-lists/.*

Choosing Wisely® is an initiative by the ABIM Foundation.United States specialty societies developed lists of Five Things Physicians and Patients Should Question in recognition of the importance of physician and patient conversations to improve care and eliminate unnecessary tests and procedures.

Costs of Care.*http://teachingvalue.org/study.aspx?which=lg.*

The Teaching Value Project, an initiative of Costs of Care funded by the ABIM Foundation, brings together a multidisciplinary group of medical educators to teach clinicians how to deflate medical bills.The site is free and only requires registration.Resources include online modules and short videos on strategies to decrease overutilization and medication costs.There is an assessment at the end that results in a "Teaching Value Certificate."

Weinberger SE. Ideas and Opinions: Providing High-Value, Cost-Conscious Care: A Critical Seventh General Competency for Physicians. *Ann Intern Med.* 2012;155(6):386-88.

Editorial that reviews the ACGME six competencies and poses the question of whether the delivery of high-value care should be added as a seventh competency.

Marconi GP, Nager AL. Teaching residents established guidelines and standards of care to strengthen their cost-containment practices: aprogram that outlined the concepts of evidence-based medicine improved residents' knowledge about treatment costs. *Managed Care.* 2010;(May):46-51.

Small study to enhance medical residents' knowledge of costs.Intervention was a one-hour didactic.Study showed that knowledge of test costs did increase from pre-intervention to post-intervention.

Sommers BD, Desai N, Fiskio J, et al. An educational intervention to improve cost-effective care among medicine housestaff: arandomized

controlled trial. *Acad Med.* **2012;87(6):719-28.doi:10.1097/ACM.0b013e31825373b3.**

Another educational research paper on teaching high-value care.Medical residents were randomized in this trial.Intervention was again short (45-minute teaching session).However in this case patient outcomes were measured including mortality, readmission rate and total hospital costs.Intervention group had $163 lower in costs but no other patient differences.

Owens DK, Qaseem A, Chou R, Shekelle P. Clinical Guideline: High-Value, Cost-Conscious Health Care: Concepts for Clinicians to Evaluate the Benefits, Harms, and Costs of Medical Interventions. *Ann Intern Med*. **2011;154(3):174-80.**

Good background paper discussing the challenge of shifting toward high-value cost-conscious care.

National Policy and Position Papers Directly Relating to Quality and Safety Education

Accreditation Council on Graduate Medical Education.http://www.acgme.org

This link directs you to a PDF of the ACGME competencies and sub-bullets among which you can find content related to PS/QI. This is the language that program directors are trying to meet.In addition, information regarding Clinical Learning Environment Review (CLER) visits and useful webinars are posted for review.

CLER Pathways to Excellence (PDF). http://www.acgme.org/acgmeweb/tabid/436/ProgramandInstitutionalAccreditation/NextAccreditationSystem/ClinicalLearningEnvironmentReviewProgram.aspx.

This link directs you to the newest expectations of institutions as they relate to the six focus areas of CLER.Each focus area (Safety, Quality, Transitions, Duty Hours [fatigue management], Professionalism and Supervision) is divided into three to seven pathways. Each pathway has specific properties that highlight the focus of the CLER assessment.There are 89 properties in total.This document can help QIE prepare for visits and perform self-assessments of integration of residents into the learning environment.

Institute of Medicine; Committee on Health Professions Education Summit. Health Professions Education: A Bridge to Quality. Washington, DC: National Academy Press. 2003:45-96.

This report was written in response to Crossing the Quality Chasm's *call for change in training health professionals.It is available through the National Academy Press and though the whole report is interesting, the Executive Summary and Chapter 3 are most useful for those planning QI teaching programs (and can be purchased individually).*

Institute of Medicine. To Err is Human: Building a Safer Health System. Washington DC:National Academy Press. 2000.

This report was the initial national call to action for change in the way we view healthcare and risk to patients in both the inpatient and outpatient settings.Based on initial studies from the 1990s it is this report that publicized the 98,000 preventable deaths per year in the United States.It sparked much of the quality movement in the U.S. and internationally.It is available through the National Academy Press in print and PDF form. The Executive Summary is useful for establishing background and is available separately.

Institute of Medicine. Crossing the Quality Chasm: A New Health System for the 21st Century. Washington DC:National Academy Press. 2001.

This report was the follow-up to To Err is Human *with an eye toward study and intervention.It called for a new framework for viewing all care that is provided and first defined the six dimensions of quality:Safe, Timely, Effective, Efficient, Equitable and Patient-centered.It is available through the National Academy Press in print and PDF form.*

Nasca T, Philibert I, Brigham T, Flynn T.The next GME accreditation system — rationale and benefits.*N Engl J Med*. 2012;366:1051-56.

This article outlines the next accreditation system with new requirements and areas of focus for graduate medical education regulation.Sixcore areas are outlined for CLER visits including Safety, Quality, Transitions, Duty Hours, Professionalism and Supervision.

Nasca T, Weiss K, Baigan J. Improving clinical learning environments for tomorrow's physicians. *N Engl J Med.*2014;370:991-93.

This article outlines the early work of the CLER visits and announces the "CLER Pathways to Excellence" document.It is a call for institutions to meet educators in training the next generation of physicians.

Resident Duty Hours: Enhancing Sleep, Supervision, and Safety. Ulmer C, Wolman DM, Johns MME, eds. Committee on Optimizing Graduate Medical Trainee (Resident) Hours and Work Schedule to Improve Patient Safety.Institute of Medicine. Washington, DC: The National Academies Press; 2008.
http://iom.edu/Reports/2008/Resident-Duty-Hours-Enhancing-Sleep-Supervision-and-Safety.aspx.

This report was commissioned to be written by the IOM and published in 2008. It asserts that revisions to medical residents' workloads and duty hours are necessary to protect patients against fatigue-related errors and to enhance the learning environment. It makes recommendations for the ACGME on topics such as duty hours, supervision and the handoff process. This report heavily influenced the new duty hour requirements put forth by the ACGME in 2011. The full report and an executive summary can be downloaded for free from the website above.

Leape L. Unmet needs; teaching physicians to provide safe patient care. Report of the Lucian Leape Institute roundtable on reforming medical education.National Patient Safety Foundation.2010.

This is the most recent call to action from quality and safety thought leaders in the U.S. identifying the need to overhaul our educational systems with an eye toward faculty development, integration of quality and safety curricula at all levels, and changing the mindset of educational leaders toward more interprofessional learning.This white paper will provide useful background and justification for your new program development.

Weiss K,Wagner R, Nasca T. Development, testing, and implementation of the ACGME Clinical Learning Environment Review (CLER) program.*JGrad Med Educ.* **September 2012;4(3):396-98.**

This article reviews key components of the CLER visit as part of accreditation, along with examples of how core requirements can be demonstrated within programs.

Quality and Safety Education

Bingham J, Quinn D, Richardson M, Miles P, Gabbe S. Using a healthcare matrix to assess patient care in terms of aims for improvement and core competencies.*Joint Commission Journal on Quality and Patient Safety.* 2005; 31(2):98-105.

This paper describes the healthcare matrix which cross-matches the ACGME competencies with the six dimensions of healthcare quality.The resulting table provides a framework to use in analyzing clinical care at the bedside with an eye toward improving outcomes.The authors provide examples of how it has been used to set learning plans for residents.The framework is a useful way to deconstruct clinical performance and set goals for a team or individual.

Boonyasai R,Windish D,Chakraborti C, Feldman L, Rubin H, Bass E. Effectiveness of teaching quality improvement to clinicians: asystematic review. *JAMA*. 2007;298(9):1023-37.

This review provides a balanced and comprehensive analysis of published teaching programs and their effectiveness both as educational endeavors and as quality improvement programs.The analysis only included studies that evaluated for change in learning or clinical outcomes. Results include a description of curricula for trainees and non-trainees andcollaboratives in QI education (Breakthrough IHI Series and the IDEAL and IMPROVE curricula).The reference list is also useful for collecting examples of existing programs, both at academic medical centers and community hospitals. The supplemental tables describe the connection between adult learning principles and highlighted programs, as well as the detailed clinical outcomes.

Ogrinc G et al. A framework for teaching medical students and residents about practice-based learning and improvement, synthesized from a literature review.*AcadMed.* 2003;78:748-56.

This paper is an early review of existing programs in PS/QI. These authors make a connection between the importance of active learning and QI education, and break it down by level of learner using the Dreyfus model.The paper ends with recommendations for development of new programs.

Ogrinc G, Headrick LA, Morrison LJ, Foster T. Teaching and assessing resident competence in practice-based learning and improvement.*J Gen Intern Med.* 2004 May;19(5 Pt 2):496-500.

This paper provides useful information and a tool on how to assess knowledge in quality improvement.

***WHO Patient Safety Curriculum Guide for Medical Schools.* World Health Organization.Switzerland: World Health Organization Press. 2008.** *http://www.who.int/patientsafety/education/curriculum/download/en/index.html.*
This curriculum is currently available free of charge from the World Health Organization website in exchange for registering yourself as a user. It provides an outline of topics that are teachable and useful for program development.For front-line teachers each topic has content for teaching, a section entitled "How to Teach this Topic" with examples of what to do in different teaching settings, and cases that may be relevant (or spark ideas for your own cases). Each topic also has teaching slides for the 11 different topics that you can incorporate into attending rounds or large group settings.

Walton M, et al. The WHOpatient safetycurriculumguide for medical schools. *QualSaf Health Care.* **2010;19(6):542-46.**

A summary of the methodology, topics and potential uses of the WHO curriculum guide mentioned above. We would recommend reading this short overview before diving into the website.

Wong BM, Etchells EE, Kuper A, Levinson W, Shojania KG. Teaching quality improvement and patient safety to trainees: a systematic review. *AcadMed.***2010;85(9):1425-39.**

This review provides a balanced and comprehensive analysis of existing teaching programs and their process in developing new curricula.It will be useful as a resource to understand what has been successful and what barriers exist in designing new programs.

Curriculum Development and Assessment

Kaufman D. ABCs of learning and teaching: applying educational theory in practice. *BMJ*.2003;326:213-16.

The author summarizes five major educational approaches or theories (adult learning theory, self-directed learning, constructivism, reflective practice and self-efficacy) and distills them into seven guiding principles for teaching.These principles provide a practical framework within which faculty can design learning experiences in the clinical setting, regardless of specific content.The principles also emphasize the importance of self-assessment and feedback as part of the learning process.

KernD et al. *Curriculum Development for Medical Education*. Baltimore MD: The John Hopkins University Press, 1998.

The authors from the Department of Medicine at Johns Hopkins University School of Medicine provide a practical, yet theoretically sound, approach to curriculum development in medicine. Short, realistic and generic in its approach, the book describes a six-step curriculum development model: problem identification; targeted needs assessment; goals and objectives; educational strategies; implementation; and evaluation and feedback. It provides excellent guidelines for program directors and others responsible for educating students, residents and practitioners.

Mager RF.*Preparing Instructional Objectives*. Belmont: Pitman Learning Inc, 1984.

This book is considered a first resource for those learning how to write instructional objectives.The author uses repetition and anecdotes to develop the reader's skills in writing performance-based objectives that delineate action, conditions and criterion for evaluation. This book is part of a six-book series on instructional design.

Miller G. The assessment of clinical skills/competence/performance.*AcadMed.*1990;65:S63-67.

This is the sentinel article describing the Miller pyramid for learner assessment.In five short pages, Dr. Miller reviews his framework for clinical assessment, beginning at the level of knowledge and moving up to action.

Kirkpatrick D. Great ideas revisited. *Training and Development*. Jan 1996;50(1):54-59.

This is a revisiting of the initial articles written by Donald Kirkpatrick in 1959 introducing his classic four-level model of program evaluation.It is accompanied

by a new article by the author reflecting on the system and its utility.It reviews all four levels, including their strengths and weaknesses.

***Constructing Written Test Questions for the Basic and Clinical Sciences. 3rd edition.** National Board of Medical Examiners.Philadelphia PA. 2002.*

This manual is available as a PDF and describes in detail how to write test questions effectively.It is considered one of the best references for how to avoid the common problems most people encounter.Printed copies of this publication are not available from the National Board of Medical Examiners (NBME). Copies can be obtained by downloading the manual from NBME's website.

Multimedia Resources for Faculty Training or Independent Learning for Students and Residents

Institute of Healthcare Improvement – IHI Open School
http://www.ihi.org/offerings/IHIOpenSchool/overview/Pages/default.aspx

From their website: "The mission of the IHI Open School is to advance health care improvement and patient safety competencies in the next generation of health professionals worldwide."(Accessed Apr. 17, 2014.) Membership is free to students from all health professions and the faculty responsible for teaching them.The website has several online courses in safety, quality and change leadership.These courses can be combined to complete a certificate program. There is also a database of cases, videos and teaching resources.Students have the option to join networks of other learners and form chapters.

Risk Management Foundation
http://www.rmfcme.com/

Created by a malpractice insurer to support and train faculty at Harvard Medical School, this series offers modules in safety basics, systems theory and best practices in a variety of clinical settings. The modules are interactive, and use a variety of media to teach lessons.

Society of Hospital Medicine – Hospital Quality and Patient Safety (HQPS) Online Academy
http://www.hospitalmedicine.org/Content/NavigationMenu/Education/HQPS/Hospital_Quality_Pat.htm
Many hospitalists and other hospital-based professionals feel inadequately prepared to engage in efforts to improve quality because training programs have not traditionally included healthcare quality and patient safety in their curricula. The Society of Hospital Medicine's Quality Improvement Education subcommittee developed the Hospital Quality and Patient Safety Online Academy to help meet this need. The HQPS Online Academy consists of Internet-based modules, which emphasize high-yield learning points presented in an efficient manner. Module topics and learning objectives are based on the HQPS Competencies. Three (3) AMA PRA Category 1 Credits™ are offered for each module.

Web M and M - AHRQ
http://webmm.ahrq.gov/

This website is a compilation of cases that highlight key issues in patient safety. These are submitted by providers and include a case, commentary from an expert and supporting references.The cases are organized and searchable by type of error, patient care setting and target audience.

Other Resources for Teaching Quality and Safety

<u>Films</u>

Atul Gawande: How do we heal medicine?<u>http://www.ted.com/talks/atul_gawande_how_do_we_heal_medicine.html</u>

Atul Gawande is a surgeon and author of Better, Complications _and_ The Checklist Manifesto._He was the opening speaker at TED2012 and during his 20-minute talk gives a poignant call to action while describing the successes he has had through the use of checklists to improve the safety of surgery._

The Faces of Medical Error: From Tears to Transparency Video Series
<u>http://www.transparentlearning.com/index.html</u>

An award-winning, multi-part educational video series produced by Transparent Health®. The website currently offers two videos for purchase which contain teaching guides. Each video depicts a story of a real medical error along with commentary from patient safety experts.

First, Do No Harm®

First, Do No Harm _details the story of a young pregnant couple who suffer a tragic outcome as a result of a series of medical errors, teamwork and system failures. It is more thana decade old, but can be used to teach a variety of topics within the areas of safety, communication and handoffs.It is available through the Partnership for Patient Safety website at_
http://www.p4ps.net/guides/p4psbrochure.pdf.

When Things Go Wrong: Voices of Patients and Families [DVD package]

Available through the Risk Management Foundation, www.rmf.harvard.edu, this educational DVD package focuses on error from the patient's perspective and includes the feature film (26 minutes), six theme-based vignettes, five patient narratives, A Guide for Learners and Facilitators, and an annotated bibliography.

Professional Development

Portfolio Development and Scholarship

The Educator Portfolio: A Tool for Career Development.Constance D. Baldwin, Ph.D., Maryellen Gusic, M.D. and Latha Chandran, M.D., M.P.H. https://www.aamc.org/members/gfa/faculty_vitae/148574/educator_portfolio .html (accessed April 17, 2014).

This online article under the AAMC's "Leadership Lessons" series is a concise review of the components of an educator's portfolio, its purpose and differences of various forms of documentation, and includes examples and links to relevant articles and resources.

Glassick CE.Boyer's expanded definitions of scholarship, the standards for assessing scholarship, and the elusiveness of the scholarship of teaching. *AcadMed*.2000;75(9):877-80.

This article expands on Boyer's four areas of scholarship and describes the qualities used to define excellence employingsix standards.Scholars whose work is published or rewarded must have clear goals, be adequately prepared, use appropriate methods, achieve outstanding results, communicate effectively and then reflectively critique their work.

Beckman TJ, Cook DA. Developing scholarly projects in education: a primer for medical teachers. *Med Teach*. 2007;29:210-18.

A nice primer article for anyone designing an educational program or curriculum that they intend to research and publish. In this article, a three-step approach to developing medical education projects is proposed: refine the scholarly question, identify appropriate designs and methods, and select outcomes. They also review common study designs, methods and an approach to educational outcome assessment.

Gusic M, Chandran L, Balmer D, D'Alessandro D, Baldwin C. Educator Portfolio Template of the Academic Pediatric Association's Educational Scholars Program. MedEdPORTAL; 2007. Available from: www.mededportal.org/publication/626.

These are guidelines and a template for educator portfolios developed by faculty from the Educational Scholars Program of the Academic Pediatric Association (APA).It can be downloaded and adapted to match the unique mission and goals of your home institution.It contains both quantitative and qualitative components to promote reflective self-assessment by users. There are questions throughout the template to stimulate users to provide thoughtful answers, and the

instructions embedded in each section discuss important underlying educational principles to be considered during the development of portfolios.

SGIM Quality Portfolio
http://www.sgim.org/file%20library/aclgim/tools%20and%20resources/qualityportfoliotemplate.pdf

The Academic Hospitalist Task Force (AHTF) of the Society of General Internal Medicine (SGIM) has created the Quality Portfolio as a tool to formally organize and document scholarly activities in quality improvement to support career development and promotion.

SGIM Educator's Career Tools
http://www.sgim.org/communities/education/resources/educator-tools

This website has links for resources on CV preparation, mentoring, scholarship, negotiation and the educator's portfolio.

Teaching for Quality (Te4Q): Integrating Quality Improvement and Patient Safety across the Continuum of Medical Education.
https://www.aamc.org/initiatives/cei/te4q/

Established by the AAMC to help integrate quality and safety education across medical schools, institutions and other key stakeholders, this website has published an executive summary with key recommendations, competencies for safety and quality, and will be a site for teaching resources in the future.

Career Development

Levinson W, Linzer M. What is an academic general internist? Career options and training pathways.*JAMA*. 2002;288:2045-48.

This article describes the typical job description, training pathway and rewards and challenges for the paths of clinical educator, clinical researcher and hospitalist in academic general Internal Medicine.

Morahan P, Fleetwood J. The double helix of activity and scholarship: building a medical education career with limited resources. *Med Educ*. 2008;42:34-44.

This article provides useful examples of scholarship based on an international search of the Internet and published literature.The authors summarize venues for publication and dissemination of academic work. They also propose a unique model (double helix) for representing academic productivity.

Shojania K, Levinson W. Clinicians in quality improvement: a new career pathway in academic medicine. *JAMA*. 2009;301:766-68.

This article discusses the need for QI trained faculty, barriers to publication and the need to measure and document academic activity.

Taylor R. *Academic Medicine: A Guide for Clinicians*.Springer Publishing, NY. 2006.

Designed as a guide for new faculty or those transferring from non-academic clinical positions, this book offers practical information for those less familiar with the terms and aphorisms unique to this role.Sample chapters include finding the academic job you want; basic academic skills; advanced academic skills: doing research, getting grants and writing for publication; academic medicine success skills; how to manage your career and your life; and planning for the future.

Venues for Scholarship

List of Journals/Links for Publishing QI/PSand/or Education

Many journals are interested in publishing QI/PS programs as well as related curricula or educational endeavors. Impact factors vary and some journals only publish QI- or education-related work in specific series or issues. Exploring the journal website and reviewing recent issues can be useful in choosing the journal. Factors to consider include impact factor and turnaround time. Impact factors are released annually by Thomson Reuters in Journal Citation Reports *and are easily found on the Web. Aiming for high-impact journals is important but lengthy review times can delay publication since you can only submit to one journal at a time.*

QI/PS
American Journal of Medicine
http://www.amjmed.com

American Journal of Medical Quality: The Official Journal of the American College of Medical Quality
http://ajm.sagepub.com

International Journal for Quality in Health Care
http://intqhc.oxfordjournals.org

Joint Commission Journal on Quality and Patient Safety
http://www.jcrinc.com/The-Joint-Commission-Journal-on-Quality-and-Patient-Safety

Journal of General Internal Medicine
http://www.springer.com/medicine/internal/journal/11606

Journal for Healthcare Quality
http://www3.interscience.wiley.com/journal/122585946

Quality &Safety in Health Care
http://qshc.bmj.com

Education

Academic Medicine
http://www.aamc.org

BMJ ("ABCs of Teaching & Learning")
http://bmj.bmjjournals.com

Clinical Teacher
http://www.theclinicalteacher.com

Education for Health: Change in Learning & Practice
http://www.educationforhealth.net

Journal of General Internal Medicine
http://www.blackwellpublishing.com/journal.asp?ref=0884-8734

Journal of Hospital Medicine
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1553-5606

Medical Education
http://www.mededuc.com

Medical Teacher
http://www.medicalteacher.org

Seminars in Medical Practice
http://www.turner-white.com/smp

Teaching and Learning in Medicine
www.leaonline.com/loi/tlm

Venues/National Meetings Interested in QI/Safety Education Work

These national organizations are interested in both workshops and posters/abstracts related to QI education. They can serve as resources for new program development, opportunities for networking or possible venues for scholarship.

American Association of Medical Colleges: Integrating Quality (AAMC IQ)
www.aamc.org

American College of Graduate Medical Education (ACGME)
www.acgme.org

Alliance for Academic Internal Medicine (AAIM)
www.im.org

Society for General Internal Medicine
www.sgim.org

Society of Hospital Medicine
www.hospitalmedicine.org

General References

Association of Pediatric Program Directors Meeting (APPD)
Annual meeting: information at https://www.appd.org

These organizations are interested in improving the quality and safety of healthcare. Since educating providers is part of that mission, they also will accept posters and workshops on QI/PS education:

University Healthsystem Consortium
https://www.uhc.edu/

Institute for Healthcare Improvement
http://www.ihi.org/Pages/default.aspx

National Patient Safety Foundation
http://www.npsf.org/

Training Opportunities in Quality and Safety

There are multiple opportunities to further advance your skills in safety and quality.These are available either in person or remotely via online courses. Below is a list of selected programs along with website information.

Masters Programs:

A few institutions offer a Masters in Quality and Safety. Most have an online curriculum option to allow for long-distance learning.

Patient Safety and Quality Graduate Degree Programs

Northwestern University Feinberg School of Medicine
Institute for Healthcare Studies
Degree: Master of Science in Healthcare Quality and Safety
http://www.feinberg.northwestern.edu/chs/education/healthcarequality/hqps_masters.html
Program Director: Donna Wood
Contact:IHS@northwestern.edu

Jefferson School of Population Health
Degree: Master of Science in Healthcare Quality and Safety
http://www.jefferson.edu/population_health/academic_programs/quality_safety.html
Program Director: James Pelegano, MD, MS
Contact: James.Pelegano@jefferson.edu

George Washington University Health Sciences Programs
Degree(s): Master of Science in Nursing, Healthcare Quality
       Master of Science in Health Sciences, Healthcare Quality
http://www.gwumc.edu/healthsci/program_list_results.cfm?discId=17
Contact: hsphora@gwu.edu

University of Illinois College of Medicine at Chicago
Degree: Master of Science in Patient Safety Leadership
http://uic.edu/orgs/online/programs/master-of-science-in-patient-safety-leadership/index.shtml
Contact: info@online.uic.edu

University of Toronto MSc in Quality and Safety
http://www.ihpme.utoronto.ca/about/rp/qips.htm

This is a new MSc concentration in Quality Improvement and Patient Safety offered by the University of Toronto's Centre for Patient Safety and Institute of Health Policy Management and Evaluation. From their website: "one of the

first graduate programs in English Canada to offer a specific focus on quality improvement and patient safety.
"The new concentration in Quality Improvement and Patient Safety provides MSc students with the opportunity to focus their research and learning on all aspects of improvement science, current issues in healthcare quality and safety and relevant leadership and influencing skills.The new MSc concentration in Quality Improvement and Patient Safety is offered in a modular format to allow individuals to earn this research degree in one year without interrupting their careers."

Certificate Programs:

Institute of Healthcare Improvement – IHI Open School
http://www.ihi.org/offerings/IHIOpenSchool/overview/Pages/default.aspx

From their website: "The mission of the IHI Open School is to advance health care improvement and patient safety competencies in the next generation of health professionals worldwide."(Accessed Apr. 17, 2014.) Membership is free to students from all health professions and the faculty responsible for teaching them.The website has several online courses in safety, quality and change leadership.These courses can be combined to complete a certificate program. There is also a database of cases, videos and teaching resources.Students have the option to join networks of other learners and form chapters.

Intermountain HealthCare Advanced Training Programs
http://intermountainhealthcare.org/qualityandresearch/institute/courses/atp/Pages/home.aspx

This is a very well-respected and long-running training program for healthcare professionals who need to teach, implement and investigate quality improvement and outcome measurement. They offer both a 20-day training program in week-long sessions over the course of four months and a shorter program that occurs on weekends. All courses take place at Intermountain HealthCare in Salt Lake City, Utah.

Institute for Healthcare Improvement Seminars and Training Programs
http://www.ihi.org/offerings/Training/Pages/default.aspx

The IHI offers a number of training programs for different needs. Some are two-day seminars, others are longer training programs. Their Improvement Advisor program is a well-respected year long program for individuals interested in learning improvement tools and teaching them to others. It requires institutional support, several short trips to the IHI in Boston, webinars and an action learning project at your home institution.

The National Patient Safety Foundation Patient Safety Leadership Fellowship Program

"*Comprehensive Patient Safety Leadership Fellowship is designed to prepare the next generation of patient safety, quality, and performance improvement leaders.The Fellowship consists of four in-person learning sessions, periodic teleconferences, various self and organizational assessments and individual coaching. The yearlong program culminates with the completion of an Action Learning Project (ALP) demonstrating the Fellow's ability to apply the concepts learned.*"

National Patient Safety Curriculum from the National Patient Safety Foundation (NPSF)
http://www.npsf.org/online-learning-center/patient-safety-curriculum-2/

[from their website]: "The NPSF Patient Safety Curriculum is a 10-module, online course intended to equip the learner with the foundational knowledge necessary to understand the context, key principles, and competencies associated with the discipline of patient safety, and how these tenets and skills are applied in everyday practice."

VA Quality Scholars Program
http://vaqs.org/

The Mission of this program is to train scholars who can accomplish the following: apply knowledge and methods of healthcare improvement to the care of veterans; innovate and continually improve healthcare; teach health professionals about healthcare improvement; andperform research and develop new knowledge for the ongoing improvement of the quality and value of healthcare services.

QSEA: Models for QI and Safety Curricula Within Residency/Fellowship Programs

Site: Beth Israel Deaconess Medical Center: Quality and Safety Curriculum

➢ Total Years in Existence: 12

➢ Current Logistics:

- All interns receive a QI/PS module in ambulatory curriculum.
- All housestaff participate in longitudinal projects in ambulatory mentored by Chief Resident
- All residents take a three-week elective in PS and QI (Stoneman Rotation)
    1. Didactics
    2. Hands-on adverse event review which is presented at Department Committee
    3. Hands-on QI group project
    4. Attendance at departmental and hospital committees
- Primary Care Track Residents engage in QI projects within residency practice
- Seniors volunteer for weeklong QI retreat focused on Lean improvement

➢ Resources:

- 0.8 FTE divided among eight core faculty who mentortwice/year (total 50 residents/year); started with three volunteer faculty (10-12 residents/year)
- Tight links with healthcare quality department and residency practice leadership ensure projects align with departmental and hospital goals
- Support of department chair, residency program director and healthcare quality

➢ What has worked well:

- Very limited didactic and mostly hands-on learning keeps them engaged
- Committee attendance opens their eyes to the hospital as an organization
- Having residents work on specific projects has increased buy-in on frontlines when trying to make programmatic changes
- We now have grads who are taking on leadership roles in PS/QI around the country

- ➢ What we struggle with:

  - Finding projects that are doable in three weeks. Often have to link groups
  - Initial QI project selection (completely open vs. very prescriptive)

- ➢ Future directions: expansion to fellowships underway, have incorporated students as well

  *For more information, the curriculum has been published in two articles referenced below or email Anjala Tess at*atess@bidmc.harvard.edu.

  1. Weingart SN et al.Creating a quality improvement elective for medical house officers.*J Gen Intern Med* 2004;19:861-67.
  2. Tess AV et al. Combining clinical microsystems and an experiential quality improvement curriculum to improve residency education in internal medicine.*AcadMed*. 2009 Mar;84(3):326-34.

General References

Site: University of Pennsylvania Quality and Safety Curriculum

- ➢ Total Years in Existence: 8(started very small; has grown each year)

- ➢ Quality and Safety Curriculum:

  - All interns receive three hours of patient safety and QI teaching during intern ambulatory block. In addition to the didactic teaching, each intern practices QI skills by identifying a problem in their clinic setting and doing a process map and fishbone diagram and suggesting a possible solution.Our safety event reporting system and RCA process is reviewed at our safety session
  - All 2nd and 3rd year residents participate in a clinic-based QI project mentored by faculty
  - A high-value/cost-conscious care curriculum was recently introduced
  - All residents participate in M&M conferences at all three sites where both systems and diagnostic errors are routinely discussed

- ➢ Transitions Curriculum:

  - All interns participate in a handoff simulation during orientation and then five to eight individual assessments of their handoff skills in the clinical environment.Both intern peers and upper-year residents perform the assessments

  - All interns receive an interdisciplinary orientation to care transitions during orientation and then a lecture and a visit with home care and to a SNF. Reflection papers are done on the home visit and SNF

- ➢ Resources:

  - 0.60 FTE divided among three core faculty members. One is based in the ambulatory practice; one is based in the inpatient setting; another leads our Healthcare Leadership in Quality Track. Additional faculty members are funded to lead our handoff/transitions curriculum and new Health IT/EMR curriculum

- ➢ What has worked well:

  - Embedding core content that we want to be sure is received by all interns into the ambulatory curriculum
  - Identifying residents with an affinity for this work and offering them a longitudinal pathway (see Penn's Healthcare Leadership in Quality Track Summary)

- ➢ What we struggle with:

- Embedding residents into QI/PS committees due to resident schedules
- Communicating ever-changing QI/PS initiatives to busy residents

For more information, contact Jennifer Myers, MD,
jennifer.myers@uphs.upenn.edu

<u>Site: University of California San Diego: QI Track for Pediatric Residents</u>
The INQUIRY Program: Innovative Quality Improvement Research in Residency

➢ Years in Existence: 6

➢ Logistics:

 – Mandatory (to level 2) for pediatric residents and pediatric subspecialty fellows; voluntary for pediatric subspecialty surgical fellows

 – Three levels:

 – 1. Level one: completion of five-course training covering topics such as methods, aims, project management and more. Each course has a test completed at the end of each session. This level is typically completed during the internship/F1 year.

 – 2. Level two: participation in a mentored QI project and brief presentation at the end of the academic year at end-of-year Resident meeting. This level is typically completed in the R2-4/F2-3 years.

 – 3. Level three: leader of a mentored QI project

➢ Resources:

 - Support of chair, TPD, Vice Chair for Education, GMEC
 - Modest budget for food for Level one sessions
 - Data analyst from quality department
 - Key faculty and project mentors: QM department staff – Patient safety officer, QM Medical director; Hospital medicine leaders – Pharmacy and Therapeutics Committee Chair, two hospital medicine members
 - Content experts: many, project specific
 - Program Director: Pediatric Hospital Medicinewho is the QM Medical Director

➢ What has worked well:

 Mandatory participation; multiple opportunities to participate in meaningful clinical quality pathways that are relevant and used by the trainees; ability to flex to support projects that are off site (community clinic work); street credibility after the first few years, having presented to GMEC and leveraging trainees who are enthusiastic as presenters

➢ What we struggle with:

 Number of project mentors remains too few for the number of trainees/projects that are ongoing; resident sustained attention given

> the periodicity of rotation blocks; data analyst work on projects that are not hospital priority often get lowest priority

➤ Future directions: expand to surgical subspecialty fellows

Site:University of Cincinnati: Ambulatory Long Block
➤ Years in Existence: 8
➤ Logistics:
  - Year-long ambulatory block (part of an ACGME Educational Innovations Project) during second and third year of residency
  - Ambulatory group practice consisting of residents, attendings, nurses (mostly RN), social worker, pharmacists and administrators (NCQA Level III Patient-Centered Medical Home)
  - Entire team has yearly retreat at start of Long Block focusing on QI/PS
    o Residents learn basic tools, and common approach to QI/PS
  - Entire team (including all Long Block residents) meets weekly to review performance (patient care outcomes, satisfaction, throughput, financial)
  - Residents receive monthly data reports drilled down to their specific patients with relative rankings and measurement of change over time; data is compared to team as a whole and national benchmarks
  - Data is used as part of resident formative and summative evaluation
  - Core interprofessional improvement teams meet weekly (current teams: Improving chronic non-malignant pain, reducing unnecessary variation in the practice, increasing patient engagement and activation, and improving hand-overs)
➤ Resources:
  - 0.30 FTE divided among two faculty co-directors plus ambulatory chief resident
  - Faculty member in IT department assists with gathering data as part of larger data warehouse grant
  - Support of department chair, residency program director, and health system CMO
➤ What has worked well:
  - Weekly team meetings – most transformative feature of practice
  - Involving nursing and other allied health staff to share in accountability for resident care and education
  - Having 'friend in IT' as we developed our registry
  - Tying clinical performance to resident formative and summative evaluation
  - Having a core improvement team
  - Faculty trained in QI/PS
➤ What we struggle with:
  - Not every resident likes QI/PS, and morale can lag when it seems to be 'forced'
  - Getting consistent data streams as information systems constantly change
  - Choosing too many things to measure, and getting lost in the data

- Prioritizing projects
➢ Future directions:
Expand to include transitions of care measures (interfacing with in-hospital improvement teams for unplanned readmissions and ED visits etc.)

The following paper detailing our eight years of work has been accepted by *Academic Medicine*, and will be published some time in 2014. For more information contact Eric Warm at warmej@ucmail.uc.edu.

Zafar MA, Diers T, Schauer DP, Warm, EJ. **Connecting Resident Education to Patient Outcomes — The Evolution of Quality Improvement Curricula in an Internal Medicine Residency**, *Academic Medicine*, accepted for publication.

Site: Banner Good Samaritan Medical Center/Phoenix VA IM Residency Program
➢ Years in Existence: 2
➢ Logistics:
  o Revisedour previous month-long research rotation into four individual one-week blocks throughout the PGY2 and 3 years.These weeks are scheduled during months that would have otherwise been five weeks long.
  o During the designated weeks, individual residents are expected to work on and complete at least one formal quality improvement project (defined as one PDSA cycle) for a project of their choice.
  o Faculty mentors have completed some training and follow structured expectations for the project and a timeline for completion.Additional didactics provided throughout the weeks come from graduate surveys and included ethics, billing and coding, error disclosure, humanities, career development and conflict resolution.
  o All residents and faculty complete the Institute for Healthcare Improvement open-school modules for quality improvement during the weeks and these are a key component of the curriculum.
➢ Resources:
  - Program administrator schedules rooms
  - Faculty member who are able to block their clinical schedules for the section they teach and the mentoring meetings
  - Residency program director and Director of GME research already had protected non-clinical time
➢ What has worked well:
  - Use established resource (IHI) for independent learning of background material by completing modules at their pace and come together for further discussion
  - Adding a final conclusion/deadline for project wrap-up
  - Having a "chunk" of time without clinical responsibilities
  - Short frequent meetings with a particular goal

- - Incorporating some project work during "didactic" presentations to make the concepts relevant
  - Group mentoring with several faculty and several residents→ learn together AND share perspectives
  - Coordinated efforts of many faculty during concentrated curricular blocks
  - Increased numbers of completed resident projects, especially quality improvement
  - Addition of didactic contentthat wasn't previously covered
- ➢ What we struggle with:
  - - Creating a structure when we were changing in real time to adjust to what was working and not
    - Timing of the sessions→ for AY 2014 going to split into three days at start and two days at the end of the month to keep residents focused on progress
- ➢ Future directions: Adjust timing, new housestaff quality and safety day (posters and oral presentation)

For more information please contact Cheryl O'Malley at Cheryl.OMalley@bannerhealth.com.

Site: Northwestern University Feinberg School of Medicine: Academy for Quality and Safety Improvement (AQSI)

- ➢ Years in Existence: 2
- ➢ Logistics:
  - o AQSI is a six-month professional development program to equip healthcare professionals with the knowledge and skills needed to effectively lead quality improvement.
  - o AQSI combines didactic training with team-based, experiential learning, requiring participants to execute a quality improvement project and apply the concepts and methods learned.
  - o Class work: Eleven 90-minute interactive classes.Four sessions are dedicated to Six-Sigma (DMAIC) training and five are dedicated to core topics in healthcare quality. Each session is videotaped so that those with schedule conflicts can view at their convenience. One session is dedicated to mid-program report out.
  - o Project work:Each team completes a project during the program and receives assistance from a Process Improvement Coach and a Clinical Mentor. Teams present project updates twice during the program to the hospital's improvement council and twice to one another during class time.
  - o First class completed the program in the spring of 2013 and included five teams (22 individuals) including 11 attending physicians, six fellows, two residents, one nurse practitioner, one nurse and one health services researcher (non-clinician)

- o Second class completed the program in spring of 2014 and included seven teams (26 individuals) including eight attending physicians, nine residents, threenurses, three administrators, two pharmacists and one social worker.
  - o We conduct a pre- and post-program knowledge test, evaluate each class session and conduct a post-program survey to identify areas in need of improvement.
- ➤ Resources:
  - o Program administratorto post content on course management system, schedule rooms, order food, administer pre- and post-program evaluations, etc.
  - o Each team is assigned a Process Improvement Coach (meet every other week)
  - o Each team is assigned a Clinical Mentor (meet monthly)
  - o 30 percent data analyst time is assigned for AQSI
- ➤ What has worked well:
  - o Competitive application process ensures that engaged teams with feasible, important projects are selected
  - o High-quality local teachers of the content
  - o Videotaping of sessions so that people unable to attend a session can keep up
  - o Accountability structure through improvement council and class report outs
  - o Supplementary sessions on scholarship in QI, excel for QI, project management
  - o AQSI teams present at annual hospital Improvement Day and annual Department Research Day
- ➤ What we struggle with:
  - o Teams struggle to advance their project.This seems multi-factorial including:
    - o Little prior training in basic project management skills
    - o Sometimes large scope of projects
    - o Teams choosing relatively challenging (but important) problems
    - o Class work and project work not being out of synch with one another
    - o Slow implementation of IT solutions
- ➤ Future directions:
  - o Adjust timing of DMAIC class sessions and spacing of sessions to synchronize with expected progress with project work
  - o We added an IT staff member to our steering committee this past year
  - o Introduce IT session into class work
  - o Creation, distribution and explanation of a timeline with expected milestones for project work

For more information, contact Kevin O'Leary at keoleary@nmh.org.