

**1. Name your curriculum development, instructional design and/or technology activity(ies)**

- 1) Internal medicine intern rotation in Procedures and Quality Improvement ("PQJ")
- 2) Internal medicine resident elective in Clinical Patient Safety and Quality Improvement

**2. Your role(s)**

- 1) The 1-month intern rotation includes 2 weeks of supervised training in bedside procedures and an integrated curriculum in quality improvement, patient safety, and high-value care. I direct the rotation and am responsible for selection of faculty for direct teaching for QI/PS didactics, monitoring and reviewing evaluations, and modifying the curriculum based on feedback and emerging trends in the QI/PS fields. I do not directly perform procedures, but work with the proceduralist faculty to coordinate teaching and resident assessment. Each month, I teach 1-2 of the 7 required QI/PS didactics, and mentor 1-2 interns on conducting a case review of a suspected adverse event in an inpatient. I mentor our Chief Resident, who does direct teaching and coordinates the rotation schedule.
- 2) I direct the elective and am responsible for the overall curriculum. I assist residents in preparation of systems-based morbidity and mortality conference, facilitate their attendance at key medical center QI and PS activities, and mentor them on specific QI/PS projects.

**3. Learners and amount of contact:**

- 1) All 60 internal medicine interns participate in the rotation each year (5 per month). I interact with the interns for approximately 8-10 hours per month (2-3 hours direct teaching and orientation, 1-2 hours chief resident mentoring, 3-4 hours case review mentoring).
- 2) Approximately 10-12 second- and third-year residents choose the Clinical Patient Safety elective each year. It is one of the top 3 electives in the Department of Medicine in terms of enrollment.

**4. Builds on best practice/evidence**

1) The intern rotation was originally developed in 2008 as part of the medicine resident's participation in the ACGME Educational Innovation Project. We conducted a needs assessment consisting of a literature search, discussion with other residency programs with existing curricula, and discussion with faculty leaders in QI and PS at UCSF and externally. The initial curriculum has been substantially revised to focus more on experiential learning and to ensure we meet the ACGME milestones for systems-based practice that were revised in 2010.

2) The resident elective was developed in 2011. We conducted a local needs assessment to evaluate which advanced QI and PS learning objectives were not being covered either in the intern rotation or in other aspects of our QI/PS curriculum.

For my professional development, I have completed the Teaching Scholars Program (in 2007-08) and the Stanford Faculty Development Course.

**5. Goals and learning objectives**

Selected QI/PS learning objectives for the intern rotation include:

- Recognize health system forces that increase the risk for error
- Identify, reflect on, and learn from critical incidents such as near misses and preventable errors
- Understand mechanisms for analysis and correction of systems errors

Selected learning objectives for the resident elective include:

- Describe strategies employed to measure patient safety in the inpatient and outpatient environment
- Prepare a systems-based morbidity and mortality conference on a patient who has experienced a near miss or preventable adverse event
- Define the structure/process/outcome triad for measuring healthcare quality
- Develop an Aim statement, a SMART objective, and a measurement strategy for a QI project
- Define elements of a PDSA (plan-do-study-act) cycle

## 6. Methods

1) The QI/PS component of the intern rotation blends small group teaching with experiential learning. Interns receive 7 small group didactics that cover core concepts in systems analysis of medical errors, diagnostic errors, quality improvement, cost awareness, and change management. Interns complete a structured case review of a patient who has suffered a suspected adverse event while hospitalized, with mentorship from a faculty hospitalist. The interns are responsible for reviewing the chart, interviewing the clinicians and multidisciplinary care team, identifying errors and adverse events and classifying them according to an established patient safety taxonomy, and proposing potential solutions. They present their findings to the Division of Hospital Medicine Case Review Committee, and these cases are used for subsequent Morbidity and Mortality conferences. We maintain all teaching materials on the residency program wiki site, allowing for frequent revision and updating.

2) The elective is individually tailored and project-based. I meet with elective residents in advance of the rotation to discuss their self-identified learning goals, and identify existing QI and PS projects that may help meet their goals. I maintain a reading list for the rotation that is updated quarterly, and meet weekly with the resident to discuss the readings and provide mentorship on specific projects. The Chief Resident for Quality and Safety mentors the resident (with my assistance) in preparing a M&M conference, and I provide them with feedback on their large group teaching. I also facilitate resident participation in UCSFMC and SFVAMC PS and QI committee meetings.

## 7. Results and impact

1) The intern rotation is one of the most valued educational experiences for our interns. For the current academic year, the  overall educational value  of the rotation (as rated on a 5-point scale) was 4.85 (both the QI/PS and procedures component of the rotation). The experience of performing a case review was rated at 4.65/5 and residents agreed that they would provide safer care to their patients as a result of completing the rotation (4.24/5). For comparison, the overall educational value of the UCSFMC ward rotation (which is traditionally one of the highest evaluated resident inpatient rotations) was rated as 4.55/5 for the past academic year.

2) The resident elective is highly rated as well, with the overall educational value rated at 5.0/5 over the past 2 academic years.

## 8. Dissemination

We have presented our intern curriculum in workshops at multiple national meetings, including the Society of Hospital Medicine, Society of General Internal Medicine, and Association of American Medical Colleges Medical Education annual meetings. The case review process has been adopted by the Department of Neurology as their core intern patient safety experience, and we have adapted the intern rotation curriculum to serve as the foundation for our medical student elective in QI/PS. Aspects of the intern curriculum are also being adapted for the Bridges curriculum.

## 9. Reflective critique

We have found that the experiential learning provided by performing a case review is extremely valuable for interns. However, experiential learning activities in quality improvement have been more difficult to construct within the limited time available, as QI is by its nature a longer-term endeavor. We have adapted both the intern and resident rotations to emphasize the importance of understanding quality improvement principles and how to structure a quality improvement project, but have chosen to deemphasize completion of a QI project during these rotations. (Instead, we have shifted this experience to resident primary care clinic, where they can participate in a QI project on a longitudinal basis). The more recent addition of high-value care to the intern curriculum has been extremely well received, and we will continue to explore the best methods of teaching this material in a clinically relevant fashion.