Supplemental Digital Appendix 1
The University of Washington Internal Medicine (IM) Residency Program Quality Improvement and Patient Safety Curriculum Details, 2013-2018

APD and QI Chief Resident role descriptions

The two QI chief residents focus on involving residents in QIPS work, teaching QIPS to residents, and directly participating in institutional QIPS initiatives at their respective medical centers. They report to both medical center and residency program leadership, bridging the gap between the two while representing the interests of the residents. The APD role, while not formally integrated into medical center leadership structures, oversees all resident QIPS work (educational and operational) across the three medical centers.

Level 1 culture of patient safety training

Example of speaker narrative to aid in development of resident intrinsic motivation:

The speaker is a patient advocate and widow of a former liver transplant recipient who spent much of his last two years of life in the hospital. Their story is rich with patient safety concerns yet told with remarkable humanism, detailing the amazing care given despite these systems issues. The speaker develops one narrative related to her husbands' immunosuppression and repeated infections, her own focus on hygiene, and specific anxiety with over 100 different providers/staff entering his room before noon one day. We built off this narrative to introduce small group exercises starting with 2 questions used in high reliability organizations: how will the next patient be harmed, and what can we do to mitigate this harm? We guide the interns through a brainstorming session of what could go wrong with 100 providers entering a room (not limited to infection); modified hazard analysis to prioritize possible harms; selection of one issue to focus on; brainstorming possible interventions; and a modified impact/effort matrix to prioritize possible interventions. The patient advocate's presentation concludes with a description of many relevant local improvements in patient safety since her husband's death, many of which were suggested by interns in the exercise. Senior and chief residents then come to share recent care improvements stemming from resident-entered PSE reports. Together, the compelling patient narrative, the inclusion of patient safety successes, and the demonstration that trainees have valuable insights collectively appeal to their emotional side to help foster intrinsic motivation.

Level 2 patient safety event review training:

Description of process by which PSE cases are selected:

One month prior to the QIPS seminar series, the Patient Safety Office queries the database of PSE events using specified criteria (e.g. entered by trainee, occurred on a medical floor, occurred within the past 6 months, resulted in a certain harm score or higher) to filter out a pool of

possible events. The QI Chiefs, APD and Patient Safety Officer briefly independently review each case, then meet to decide on cases for use in the seminar, selecting those with high clinical relevance and educational value to learners, and which focus on high-priority medical center topics (and increasingly those with existing QI committees, thereby increasing likelihood of taking analysis/recommendations forward).

Description of QIPS didactics and breakout sessions: The authors would be glad to share slides and teaching materials with interested parties. Please email Anders Chen at andersch@uw.edu.

Level 4 quality improvement training:

Description of procces by which QI project topic is selected:

Four months prior to the elective rotation, the Assistant Administrator for Process Improvement collects priority improvement topics for the medical center, and meets with the QI Chief and APD to discuss. Collectively they select 2-3 of these high priority topics which also have high clinical relevance and educational value to learners. The Assistant Administrator, APD and Chief then conduct follow-up meetings with hospital leadership working in those specific topic areas, to further assess viability of a project (e.g. are baseline data available? Is there adequate faculty/staff leadership and engagement to suppor the project work? Is the scope and timing of the project appropriate?). A final topic is identified 2 months prior to the elective to allow for project preparation. A multidisciplinary team is identified, with time protected to participate in a rapid process improvement workshop which is held the first week of the resident rotation, in which the problem and background data are brought to the table. Institutional funds were generally not available for resident projects, however existing institutional resources were leveraged for resident-led project work (e.g. project management through the Assistant Administrator for Process Improvement's office; access to IT and data analysts)

Example projects:

Sepsis EHR-based screening: An EHR-based inpatient sepsis screening and notification system existed at Harborview previously. Updating and improving this program was identified asa need for the medical center. The existence of a supportive sepsis team (nurse and faculty physician dyad) and baseline data, but lack of an identified improvement strategy made this a strong project for mentored, resident-led multidisciplinary work.

Hypertension: Improving outpatient hypertension control across all Univerity of Washington clinics was identified by leadership as a priority, with the creation of population health tools and robust data tracking. Implementation strategies were left to each clinic site, including the safety-net clinic at Harborview. The existance of system-wide prioritization and creation of data tools, but the lack of an identified improvement strategy made this a strong project for resident-led multidisciplinary work.