

Getting to the Root of It: A Study of Resident Teachers for Quality Improvement Curriculum

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Background

Both the Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Internal Medicine (ABIM) have stressed quality and safety (QS) as important components of resident education. Examples of QS resident education curricula include role-playing, lectures, and root cause analyses (RCA) with the most successful initiatives involving peer-teaching and hands-on experiences.

Aims and Objectives

- Design a novel, two-part QS curriculum that included a resident-taught seminar of QS concepts and an immersion activity to reinforce them
- Measure learners in knowledge, skills, attitudes, satisfaction, and outcomes to elucidate improvement attributable to the seminar and/or the immersion activity
- Develop a tool for cultivating high-level skills in a resident teacher who can serve as a local content expert for peers

Methods

Setting and Participants: Each seminar included medical students, physician assistant students, interns, and residents rotating through a General Medicine inpatient service at Yale-New Haven Hospital. Six groups with 43 eligible learners experienced the curriculum from January 2015 to June 2015.

Study Design:

Seminar

- Each seminar was 40 minutes and used Prezi © software.
- Based on past learner experiences, the resident teacher developed a hypothetical case of a pulmonary embolus (PE).
- Learners were taught key QS principles while the case unfolded to the inpatient setting, where the patient developed a PE.
 - Definitions were derived and scripted from the Institute of Medicine (IOM) and the Institute for Healthcare Improvement (IHI) reports and modules.
- From the adverse event, learners performed a RCA and created a fishbone diagram before brainstorming QS opportunities.

Immersion Activity

- Two to four days later, residents experienced a 30-minute, guided tour of the inpatient pharmacy or the blood bank.

Data:

- Type: mixed-methods, qualitative and quantitative
- Collection: anonymous, online, pre- and post-intervention surveys of Likert scale and open-ended (OE) questions
- Grading: based on the same IOM and IHI definitions from the lecture script, two reviewers developed criteria and assigned full, partial or no credit.
 - Disputes were settled by 3rd party adjudicator.
- Analysis: Mann Whitney U Test through SPSS software

Intervention

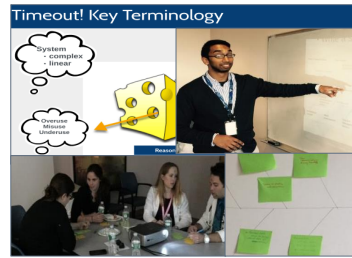


Figure 1. QS Seminar

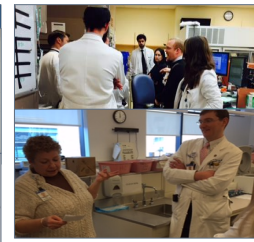


Figure 2. Immersion Activities (Inpatient Pharmacy, Blood Bank)

Results

Prior to the Seminar (n = 23)...

- ...very few learners endorsed sufficient QS experience
- ...learners were "neutral" in their satisfaction with QS experience

After the Seminar (n = 19)...

Please rate your...	Pre	Post	p-value
...ability to perform a RCA	1.52	1.11	0.01
*1 (Yes), 2 (No)			
...familiarity with QS concepts	2.70	3.37	0.01
*1 (well below average), 3 (average), 5 (well above average)			

After the Seminar (n = 19)...

Term	p-value
Adverse Event	0.07
Active vs. Latent Error (AL)	0.01
Underuse, Misuse, Overuse	0.24
Fishbone Diagram (FD)	<0.01
Forcing Function (FF)	<0.01

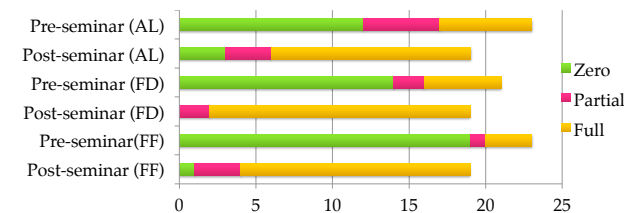


Table 1: Statistically Significant Pre-seminar and Post-seminar Results

After the Immersion (n = 11)...

Learners verbally provided positive feedback during the experience, but did not rate its utility highly enough on the survey for statistical significance

Discussion

Our study accomplished its primary goal to develop a novel QS curriculum, the first to incorporate both resident teachers and an immersion activity with a similar number of learners as past successful QS curricular innovations.

Strengths:

- Learner buy-in: in addition to having a roughly 50% survey participation of initial eligible learners, there was active participation in both parts of the curriculum.
- High teaching fidelity: having a single instructor teaching from a single lecture script maintained inter-rater reliability.
- Reproducible teaching tool: resident teacher was able to independently guide learners to meaningful educational outcomes of knowledge (definitions) and skills (RCA).

Limitations

- Time: with only two to four days in between the seminar and the immersion activity, it was difficult to measure long-term retention of information.
- Attrition: survey completion was much lower post-immersion activity, most likely due to survey fatigue, rotating off service, and clinical requirements.

Future Directions

In further exploring this topic, we might consider evaluating long-term knowledge of learners two to four weeks after the seminar. We might also consider a more rigorous study of an immersion activity, possibly with qualitative instead of quantitative data.

Conclusion

- A resident-led, faculty-sponsored, paired lecture-immersion curriculum shows potential in effective student and housestaff education for QS principles while also developing local content experts.
- Although experiential activity shows promise for future QS curricula, its role needs further elucidation.

References & Acknowledgements

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