

## 314: Educating to improve care: Integrating the science of quality improvement in an undergraduate medical curriculum

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### Objective:

To design and integrate an undergraduate medical curriculum on Quality Improvement (QI) at Mayo Medical School (MMS).

### Method:

A curriculum focused on disease and the management of disease is no longer adequate for the training of physicians who are expected to practice in an environment where medical errors, system shortcomings, and physician / practice scorecards are the norm. To our knowledge, there is no published literature with a focus on the systematic introduction of QI in a medical school.

At MMS, we have designed a developmentally appropriate longitudinal curriculum that is being integrated into the existing curriculum from Years I through IV. The curriculum is being introduced throughout March to September 2004 through collaboration with thirteen different course and clerkship directors. A pilot QI elective of four weeks was introduced to the fourth year medical school class in October 2003, the curriculum was introduced in the realm of preventive medicine and taught through exercise based discussions, video sessions followed by debriefing, simulations, case based discussions, and didactics.

### Results:

The QI curriculum has been successfully designed and is being implemented in the medical school. All components of the curriculum will be mandatory and require full participation of the students across the medical school except for the QI elective and research. Two medical students (5% of the class) participated in the QI elective of 10/03. Based on the results and feedback from the same, a framework for integration of the QI curriculum into the existing curriculum was developed. The curriculum will be introduced through the following course/clerkships:

Year 1	Year II	Year III	Year IV
Orientation	Curriculum evaluation	Clerkship survival skills	Preventive Medicine and Public Health
Introduction to the patient	Family Medicine Clerkship	Internal Medicine Clerkship	Social Medicine
Continuity of care	Panel discussion with institutional leaders	QI research / QI elective	Emergency Medicine
		Objective structured Clinical Examination (OSCE)	

Based on the initial feedback, it was noted that exercises, simulation games and story telling are more effective than didactics in imparting QI knowledge, skills and practical experience. Active learning in QI was notably better in the context of meaningful clinical work. Students enjoyed learning about QI and were capable of translating it to practical problem solving when basic skills and knowledge were provided.

Knowledge, skills, and attitudes of medical students towards QI will be assessed through course examinations, online case-based modules, focus group discussions, and essays on QI projects. Since this is a work in progress, curricular outcome measurements will be completed by October 2004 and will include: a) the number of students successfully completing the curriculum b) assessment of student knowledge in QI through a quiz c) the ability of students to successfully perform root cause analysis and problem solve a complex process through team collaboration (this will be a small group class exercise) d) student satisfaction with the curriculum and e) the number of students participating in QI research and electives. Curricular revision will take place as appropriate following outcome analysis.

### Conclusions:

The QI curriculum at MMS has been well received by medical students. Student involvement in curriculum design is key. Based on initial experiences, it appears that to be most relevant, the QI curriculum must be made *integral* to the medical school curriculum. If basic skills and knowledge are provided, students are capable of practical problem solving in QI. In addition, our framework for the QI curriculum may be beneficial and reproducible in other medical schools.