Integrating Genetics Throughout the Medical School Curriculum

Lynne Taylor Bemis PhD, University of Minnesota

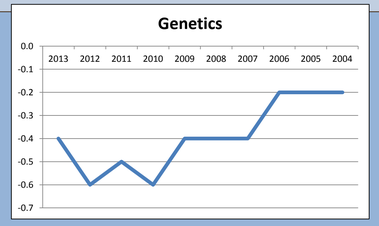
Collaborators: Jeannette Lang, Robin Michaels, Nancy Raymond

Background Challenge: Integration of basic science in the undergraduate medical education curriculum poses a significant challenge when it comes to maintaining threaded content.

Purpose: This project seeks to develop methods to monitor threaded basic science content to prevent curriculum drift and loss of thread components.

Approach: Genetics was chosen as a thread that needed monitoring in our UME curriculum. We identified National Trends and objectives. We held a focus group of course directors and conducted a pilot project.

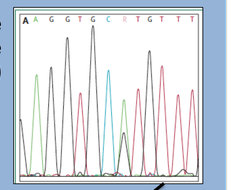
Outcomes: Course directors identified the problem as not enough reinforcement of genetic objectives throughout the curriculum and identified active learning components as a place to reinforce critical objectives.



General Needs Assessment

Monitoring STEP 1 scores

hereditary cancer syndrome
Li-Fraumeni Syndrome
(p53 mutation)



Evaluation and Feedback

Yearly follow up with National Practice Boards, monitoring STEP 1

Targeted Needs Assessment

Spreadsheet of Objectives pertaining to genetics

Pre and Post test questions on genetics in Foundations of Medicine and again in a second year course.

Catching up with Curriculum Drift

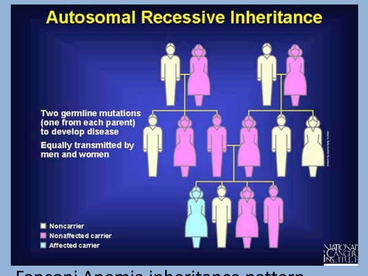
A	B	C	D
Medical Genetics Core Curriculum			
Objective	Faculty Member	Course	Year 1 or 2, fall or spring
3. Recognize the manifestations of common hereditary cancer syndromes.		Foundations of Medicine	Year 1, Fall
D. Reproductive and Prenatal Genetics Recognize and describe indications for a genetics referral for diagnosis, testing and counseling specifically related to prenatal diagnosis.		HRM	Year 2, Spring
1. Recognize the indications for preconception and prenatal carrier testing for genetic disorders depending on family history and specific ethnic background.			

Implementation

Following up on Course Director suggestions by implementing in active learning components in years 1 and 2.

Goals and Objectives

Ensuring critical genetic concepts are threaded throughout the curriculum



Fanconi Anemia inheritance pattern

Educational Strategies

Reinforcing concenpts through active learning components

- Problem based learning
- CPC -cases
- Jigsaw

Future Plans

Implement an assessment plan tracking the integrated content for basic science in years one and two on an annual rotation to prevent curriculum drift.

Presented at the 2014 ELAM ® Leaders Forum

References: Curriculum Development for Medical Education: A Six-Step Approach. Kern D.E. et al. 2009 Johns Hopkins Press.
Autosomal recessive genetic info from www.cancer.gov. Li Fraumeni sequence analysis from Bemis et al Lancet Oncol. 2007;8(6):559-60.

ABSTRACT: 2014 ELAM Institutional Action Project Poster Symposium

Project Title: Integrating Genetics Throughout the Medical School Curriculum

Name and Institution: Lynne Taylor Bemis PhD, University of Minnesota

Collaborators: Jeannette Lang, Robin Michaels and Nancy Raymond

Background, Challenge or Opportunity: The regional campus of the University of Minnesota School of Medicine provides the first two years of a comprehensive undergraduate medical education, which is equivalent to that provided by the main campus. Needs assessment to maintain equivalent curriculum between the two campuses is based on outcome from the STEP1 Board and is continually monitored. The outcome on the STEP1 board has consistently shown a decrease in scores by our regional campus students in genetics. We hypothesized that this was due to the loss of the genetics thread following the integration of the curriculum.

Purpose/Objectives: The overall purpose of this project is to examine the threading and integration of basic science content throughout the first two years of the medical school curriculum. The analysis of the genetics content is meant to model basic science content curricular evaluation in general and it is expected to be an ongoing process necessary to maintain integration of all threaded content critical to undergraduate medical education.

Methods/Approach: Analysis of the integration of human genetics in the curriculum was chosen for study because it is a content area where our students have not performed as well as expected. We conducted a targeted assessment by examining the genetics content currently offered in our curriculum and compared that to content recommended by the Association of Professors of Human and Medical Genetics and the AAMC. Our approach was to first compile the recommended objectives into a spreadsheet and then ask all course directors to indicate which objectives were covered in their courses. Once the data was compiled we organized a focus group of the course directors to discuss their understanding of how the genetics thread and content was currently presented to the students and to ask for suggestions of places that content could be implemented and improved.

Outcomes and Evaluation Strategy: Specific outcomes from our study confirm that we cover most of the recommended objectives, however, the course directors felt we were not effectively reinforcing critical objectives throughout the curriculum. Course directors recommended that we reinforce genetics content by adding it to our active learning components. We were able to pilot this approach during our PBL activities and are planning to add genetics content to our case based learning sessions as well. In addition, the National Board of Medical Examiners Faculty Review on Genetics is now being scheduled for all faculty who contribute genetics content. Our longer term evaluation includes a required yearly content review test for students and in the following years we will monitor their success on the genetics components of the STEP1 Board. Our study confirmed that curricular review needs to be scheduled, monitored and funded on an ongoing basis to stay abreast of the national trends in medical education and to diligently reinforce threaded content in an integrated curriculum.