Faculty Development For Fostering Clinical Reasoning Skills in Early Medical Students

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OBJECTIVES
The main objective of this project was to provide faculty development on an innovative approach to teach clinical reasoning to medical students. Secondary aims were to gather and analyze the in-depth perceptions of faculty participating in this experience, and obtain the students’ feedback on the effectiveness of this method of teaching.

BACKGROUND
Clinical reasoning refers to the mechanism by which clinicians gather and process information to generate a diagnosis and plan of management. Two main forms of clinical reasoning have been described: analytic/conscious (hypothesis-based) and non-analytic/heuristic (pattern recognition). Expert clinicians are able to balance those two processes to solve clinical cases and minimize the risk of errors. It is a process that is often subconscious and acquired through years of experience. Recent literature suggests that clinical reasoning can be taught in medical education by making the process explicit to the student.

At Yale, we have been using a modified Bayesian method to teach clinical reasoning to medical students. According to Bayes’ theorem, the pre-test probability of a diagnosis affects its post-test probability. First, we give the students a short clinical vignette to brainstorm possible diagnoses and assign probabilities. Subsequent data are obtained through the case, unfolding with the physical exam and laboratory results. At each step, the students reassign probabilities to their diagnoses until they arrive at a single possibility.

METHODS
A qualitative research design using a case study approach was implemented. Study Design: A qualitative research design using a case study approach was implemented. Sample: Eight faculty who led workshops for the Reproductive Medicine Module for 2nd-year medical students in Winter of 2015 were invited to participate.

Data were collected using face-to-face faculty interviews, videos of one teaching session for each faculty member, and student survey data.

Pre-Interviews & Demographics Survey: Prior to the faculty development experience, 5 of the 8 faculty leading small group workshops volunteered to participate in the study. During a 20-30 minute semi-structured interview, we gathered their perceptions on teaching clinical reasoning in general, as well as in the module’s small group workshops. Participants completed a brief demographic questionnaire prior to the interviews. All interviews were audio-recorded.

Faculty Development in Teaching Clinical Reasoning: Prior to teaching, all faculty participated in a required 1.5-hour session focused on how to teach clinical reasoning skills using our modified Bayesian method.

Classroom Video Recordings: One teaching session was video-recorded for each of the 5 participants.

Post-Interviews: All of the faculty members were re-interviewed. They were asked about their experiences teaching clinical reasoning in the module. They were also asked to describe their perceptions on how the professional development opportunities might influence their teaching. Faculty were given the option to watch the recorded video of their teaching.

Student Evaluations: Feedback from students on the effectiveness of the method used in the workshop in developing their clinical reasoning skills was obtained by electronic survey at the end of the last workshop.

FINDINGS
Face-to-face interviews were transcribed verbatim. A thematic analysis was performed to extract the major themes from the interviews.

FINDINGS (cont.)

CONCLUSIONS
Faculty gained enhanced understanding of teaching clinical reasoning through faculty development. There was value in the teaching and learning of clinical reasoning through our structured, modified Bayesian method.

LIMITATIONS
Small numbers of faculty were involved in this intervention, but rich, descriptive data were obtained from the participants. Analyses relied on faculty and student perceptions versus direct observation or assessment of teaching and clinical reasoning skills.

FUTURE WORK
Examine the impact of faculty development and the teaching of the modified Bayesian method on students’ clinical reasoning skills through direct observation and/or assessment.

Investigate faculty transfer of this teaching method to other contexts or levels (e.g., clerkship and/or resident education, in hospital bedside versus didactic, etc.).

REFERENCES