

Background

Entrustable Professional Activity (EPA) opportunities are moving into the formally-assessed curriculum in undergraduate medical education at the same point in medical education history that the integration of basic science with clinical science is being further evaluated and sought.

The marriage of these distinct, yet related, curricular innovations may be simultaneously accomplished by having students perform a urinalysis on simulated urine as a clinical skill, diagnose a case of cystitis based on basic microbiological, immunological, and physiological factors that are detectable in the urine, and evaluate the use of Osteopathic Principles and Practice (OPPP) in treating back pain associated with a diagnosed urinary tract infection (UTI).

Objectives

1. Incorporation of basic science microbiology content into a clinical skill and clinical context
2. Incorporation of lecture- and lab-based concepts of innervation and somatic dysfunction originating from OPP Department instruction

Design & Methods

It is envisioned the Division of Microbiology (within the Department of Biomedical Sciences) will be able to curricularly integrate with the Department of OPP in formulating a diagnosis based on the results of performing clinical skills involved in obtaining a history, physical exam, and laboratory test (UA) and evaluating treatment options incorporating OMM lecture- and lab- based concepts of musculoskeletal diagnosis including viscerosomatic reflex levels that may be causing somatic dysfunction. This innovation is aimed at developing and implementing a formally-assessed activity during years 1 and 2 of preclinical education, thus allowing for students to achieve proficiency (periodically assessed in a summative manner) of potentially multiple EPAs by clustering numerous milestones into one meaningful activity.



Results

Our proposed curricular innovation would involve students performing a history and physical as a differential diagnosis is sought. After a differential is established, the students will follow-through with the concept of ordering and then conducting the clinical skill of conducting a UA utilizing simulated urine (but describing the steps of a "clean catch method" as part of the formatively assessed element of this activity) that has been chemically constructed and appropriately impregnated ahead of time by faculty to represent a positive UA for a uropathogenic *E. coli* bladder infection (using a nonpathogenic BSU-1 strain of *E. coli*). Students would be provided with a patient case vignette ahead of time that included classic UTI presentation, inclusive of back pain, and then be required to complete a chemical analysis of the simulated urine sample for protein content and specific gravity, as well as a Gram stain procedure for microbial analysis. After obtaining positive biochemical and microscopic results followed by students making a subsequent diagnosis of cystitis, students will then be required in this activity to incorporate the use of appropriate OMM treatment options for back pain resulting from cystitis-induced somatic dysfunction.

Significance

- Integration of clinical skills with basic microbiology and OPP
- Incorporation of lecture- and lab-based concepts of innervation and somatic dysfunction originating from OPP Department instruction
- Generation of science translational activity a measurable and observable unit of work completed by the student that allows for assessment of multiple EPA milestones into one well-defined basic science – to – clinical

Discussion/Conclusion

EPAs are intended to represent clear and concise skills that graduating medical students should be entrusted to complete on the first day of residency, without direct supervision, upon graduation from an undergraduate medical education. It is envisioned that the proposed cross-discipline activity would allow for practice and achievement of the following EPAs:

- 01: Gather a history and perform a physical examination
- 02: Prioritize a differential diagnosis following a clinical encounter
- 03: Recommend and interpret common diagnostic and screening tests
- 07: Form Clinical Questions and retrieve evidence to advance patient care
- 012: Perform general procedures of a physician

References

- Chen, H. Carin MD, PhD; Mufson, Margaret MD, PhD; Aronow HD, MD. (2014) Use of Urinary Microbes to Develop Entrustable Professional Activities for Entry into Outpatient Academic Medicine. *BMJ Open* 8(1):e001556. doi: 10.1136/bmjopen-2013-001556
- Chen, H. Carin MD, MEd; van den Broek, WJ; Sprijin MS, MD; Lutz, GSt PhD. The Case for Use of Entrustable Professional Activities in Undergraduate Medical Education. *Academic Medicine*. 2015;90(4):416-420. doi: 10.1097/ACM.0000000000000088
- Edgarson, Nicholas Miklos; Martensson, Maria Ulrica PhD; Magnusson, Hilarie PhD; Björkstrand, Cynthia R. MS, PhD; Winkle, B. PhD. Cognitive-Behavioral Correction: Rethinking the Accredited Month 18-2011. *Integration of Basic Science and Clinical Learning, Academic Medicine*. 2012;87(10):1270-1281. doi: 10.1093/aculap/akr014
- Osteopathic Collaboration for Care Entrustable Professional Activities (EPAs) for History, Physical, <http://www.pnwu.edu/healthsciences/colleges/collegeofosteopathicmedicine/epas/>

Author Contact Information

James R. Keene, Ph.D., D.O. – PNWU-OM
jkeene@pnwu.edu
Kimberly J. Taylor, Ph.D. – PNWU-OM
ktaylor@pnwu.edu

LEARN. CARE. COMMUNITY.

PNWU.edu