

Advanced Diagnostics Course

Course: Diagnostic Medicine

Department: Pathology and Radiology

Faculty Coordinator: Joanna Chan, MD

Hospital: Thomas Jefferson University Hospital

Length: 2 weeks

Max no. of students: 20

First Day Contact: Joanna.chan@jefferson.edu

Prerequisites: First 3 years of medical school

I. Course Description:

A two week online case-based course on diagnostic medicine including aspects of pathology, radiology, and laboratory medicine given as a medicine elective in December of 2019 to MS4 students in the class of 2020.

This proposal is for a single time pilot of an elective which if successful will be offered during JeffMD Phase 3 starting with the class of 2021. This course is structured around four cases given over the course of two weeks using online discussion boards and survey tools, specifically addressing the SKMC competencies designated for JeffMD Phase 3. Besides the diagnostic component, each case will also have an overarching "theme", including critical evaluation of literature, barriers to diagnosis, and financial cost of diagnosis.

II. Course Goals and Objectives:

- A. The goal of the curriculum is to help students develop an algorithmic approach to diagnostic medicine. This includes principles of pathology, radiology and laboratory medicine. After completing this rotation, the medical student should be able to apply their knowledge of disease mechanisms, organ systems, and hospital systems to achieve efficient and effective use of diagnostic tests as well as know the proper use of blood products.

B. Objectives

Competency #1-Patient Care: Physicians should provide patient-centered care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health, specifically
-Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgement

Objective: Students are expected to:

1. Choose the correct test to make a diagnosis enabling treatment selection
2. Employ appropriate testing paradigm to monitor patients with chronic diseases

Competency #2-Knowledge for practice: Physicians should demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care, specifically

-Demonstrate and investigatory and analytic approach to clinical situations
-Apply established and emerging biomedical scientific principles fundamental to health care for patients and population

-Apply established and emerging principles of clinical sciences to diagnostic and therapeutic decision making, clinical problem solving, and other aspects of evidence based health care

- Apply principles of epidemiological sciences to the identification of health problems, risk factors, treatment strategies, resources, and disease prevention/health promotion efforts for patients and populations

Objectives: Students are expected to:

1. Be able to determine the utility of a test in making a diagnosis and in monitoring disease management
2. Recognize role and limitation of most commonly ordered diagnostic tests in both laboratory medicine and radiology

Competency #3-Practice based learning and improvement: *Physicians demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care, specifically:*

-Locate, appraise, and assimilate and apply evidence from timely scientific studies related to patients' health problems.

Objectives: Students are expected to:

1. Use current medical literature and guidelines to correctly order diagnostic test
2. Use current medical literature and guidelines to explore options for personalized medicine in diagnostics
3. Select diagnostic tests that support clinical decision-making and avoid ordering tests that add cost without affecting clinical outcome, as exemplified by the "Choose Wisely" Campaign

Competency #4-Interpersonal and communication skills: *Physicians should demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.*

Objective: Students are expected to:

1. Show sensitivity to and communicate effectively with all members of the health care team and the patient, i.e. receiving "critical value" calls
2. Recognize and appropriately communicate diagnostic results

Competency #5-Professionalism: *Physicians should demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles*

Objectives: Students are expected to:

1. Demonstrate a professional attitude in interacting with colleagues and facilitators

Competency #6-System-based practice: *Physicians should demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care, specifically*

-Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population based care.

Objectives: Students are expected to:

1. Recognize the financial cost to both the patient and the healthcare system of diagnostic tests
2. Incorporate considerations of cost awareness and risk-benefit analysis in patient care.

Competency #7-Interprofessional collaboration: *Physicians should demonstrate the ability to engage in an interprofessional team in a manner that optimizes safe, effective patient and population-centered care*
- *Work to ensure common understanding of information, treatment, and health/healthcare decisions by listening actively, communicating effectively, encouraging ideas and opinions of other team members and expressing one's knowledge and opinions with confidence, clarity and respect*

Objectives: Students are expected to:

1. Recognize the role of diagnostic clinicians in providing patient care
2. Recognize the chain of information in relaying critical diagnostic results

Competency #8-Personal and professional development: *Physicians should demonstrate the qualities required to sustain lifelong personal and professional growth, specifically*
-*Recognize that ambiguity is part of clinical health care and respond by using appropriate resources in dealing with uncertainty*

Objectives: Students are expected to:

1. Recognize limitations in diagnostic test and procedures

III. Methods of Instruction

- A. Case-based learning:** Four cases will be presented over the two weeks. A bolus of information with appropriate question prompts will be given each day which they will be expected to respond to appropriately. In addition to responding to the prompts, they will be expected to react and respond to each other's responses. A faculty facilitator will assist in guiding the discussion as well as evaluating quality of responses.
- B. Short-answer questions:** Each case is associated with two short answer questions <250 words, of which there are defined answers in the literature
- C. Theoretical discussion:** Each case is associated with a theoretical question that requires a more in-depth understanding of the topic. Students are asked to submit a substantial post and respond to their peers
- D. Evidence based review:** At the beginning of the course, the students are presented with four clinical questions of which there is no clear-cut recommendation. At the end of the two weeks, each student submits a 500 word evidence based clinical recommendation with references.
- E. Self-Study:** Each case will have multiple prompts for the students to answer and discuss with their peer groups. In addition, the cases will have assigned readings, including reviews and primary articles to critically assess and evaluate.

IV. Student Responsibilities

1. Read assigned self-study materials

2. Participate in case-based learning in a timely fashion

V. Methods of Evaluation of Students:

1. Faculty evaluations of the student by the faculty will be based on participation, and achievement of the stated objectives of the course
2. Graded short answer and literature review