

CURRICULUM ON PRACTICE-BASED LEARNING AND IMPROVEMENT MSU INTERNAL MEDICINE RESIDENCY PROGRAM

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Revision date: March 2015 TEC Approval: March 2015

I. Educational Purpose and Goals

Residents must evaluate their patient care practice, appraise and assimilate scientific evidence, and improve their patient care practice. In addition, residents must develop and maintain a willingness to learn from error and to use errors to improve systems and processes of care. This curriculum assists residents in their efforts to locate, critically appraise, and assimilate evidence from scientific studies and apply this evidence to improve their own practice.

II. Principal Teaching Methods

- a. Supervised Direct Patient Care:
 - i. Training in Practice Based Learning and Improvement (PBL&I) occurs with faculty supervision across all inpatient and outpatient experiences.
 - ii. Residents are taught how to efficiently use consulting services to improve both patient care and self-knowledge.
- b. Didactics:
 - i. R1 trainees participate in conferences with the use of internet and other information technology to manage and access information, including use of hand held computers to enhance and support their own education.
 - ii. Monthly morbidity and mortality conferences (M&M) review cases of mortality, medical error, and adverse outcome. All deaths are reviewed by the program and selected cases are presented at M&M conference. Improvement opportunities are assessed. M&M is sometimes co-hosted with quality improvement and risk management personnel, and includes introductory root cause analysis at least once per year.
 - iii. Quality improvement and treatment guidelines didactics are scheduled during Grand Rounds, Core Curriculum conference, and Critical Care Conference.
- c. Small Group Discussions:
 - i. The fundamentals of Evidence-Based Medicine are taught during the journal club sessions. Residents study research designs, evidence-based medicine interpretive skills, and application of population-based findings to individual patients.
- d. Required Improvement Project:
 - i. Residents participate in selection and performance of a quality improvement project that focuses on improving patient care.
 1. Continuity Clinic: The clinic's EHR, Centricity will be used to support quality improvement efforts. Quality improvement projects are developed by the residents and faculty and involve data from the resident's own continuity clinic patient panel. Didactic sessions are provided on key aspects of the QI topic and QI goals. QI results and progress are presented and discussed at core curriculum conference and flexible time during continuity

clinic.

- e. Independent Investigative and Reflective Learning:
 - i. All residents continually prepare academic portfolios for semi-annual review. During semi-annual reviews, residents must perform a self-assessment of their strengths, weaknesses, and personal learning objectives. They must also work with their evaluator to reflect on their current CV and their progress towards their career goals.
 - ii. R3 residents must provide a didactic presentation for their peers, researching and presenting an evidence-based approach to a topic of interest.
 - iii. All residents independently research and present small content topics in preparation for Morning Report, Morbidity and Mortality, and Interesting Case Conferences.
 - iv. Morbidity and Mortality Reflection Exercise: At the conclusion of each M&M session, residents will complete a brief form, describing what they learned and how they will change their patient care as a result. Each resident will complete at least one sheet per quarter, or four per year. The forms will be reviewed with an attending physician during either a mentor meeting or semi annual review. At that time, the resident will also document how they applied the information to another patient. All forms will be compiled within the resident portfolio in the residency office.

III. Educational Content

- a. Topic Mix
 - i. EBM and Critical Appraisal of the medical literature
 - ii. Information Technology and accessing information
 - iii. Patient Safety
 - iv. Quality Assessment and Quality Improvement
 - v. Self assessment and critical self awareness
- b. Learning Venues:
 - i. MSU Clinical Center: An ambulatory Electronic Health Record (EHR) provides continuous wireless access, enabling use of information technology to manage patient information, support patient care decisions, and enhance patient education. Residents can contrast their care patterns with relevant guidelines to improve their quality of care.
 - ii. Hospital: Full service 24-hour library is present, and EHR has been implemented.

IV. Principal Ancillary Educational Materials

- a. The ambulatory EHR provides patient care resources including support documents for patient education and clinical guidelines.
- b. Residents participate in web-based Yale-curriculum for ambulatory rotations.
- c. 24-hour access to the extensive electronic library of the Michigan State University and Sparrow Hospital (on-campus only) is available to all residents. Medical librarians are available at the hospital.
- d. Optional use of <http://webmm.ahrq.gov/> cases and forum for error prevention and health care quality improvement is encouraged.

V. Methods of Evaluation

- a. Resident Performance
 - i. *Global evaluations – faculty, peers, nurses.* Faculty, nursing staff and peers complete resident rotation evaluations and quarterly continuity clinic

evaluations, including assessment of competency in Patient Care. The evaluations are shared with the resident, are available for on-line review by the resident at their convenience, and are available to the residency office for internal review. Evaluations are part of the resident file and are incorporated into the semiannual performance review for directed resident feedback.

- ii. *Quality improvement.* Residents review individual and group-level QI data regularly and receive formative feedback on their care and engagement in quality improvement.
 - iii. *PICO Literature Searches.* The faculty member overseeing the EBM Journal Club and Interesting Case Conference series evaluates participating residents' ability to formulate a PICO question, complete a literature review, select and apply articles. The evaluation is available on-line and is reviewed with the resident as part of the semi-annual review.
 - iv. *Self reflection.*
 1. Residents complete 4 M&M reflections per academic year, as previously described in this curriculum. Each resident receives formative feedback from an attending physician on this exercise, and the worksheets are included in the portfolios.
 2. Residents complete self-evaluations for semi annual reviews. These evaluations include performance on the core competencies, areas of strength and weakness, and educational goals. The evaluations are reviewed with the program director or her designee during the semi annual review, and included within the portfolios.
- b. Program and Faculty Performance
- i. *Resident global evaluations.* Residents complete rotation evaluations of faculty, facilities, and service experience. They comment on faculty modeling and teaching of PBL&I skills. These evaluations are sent to the residency office for review and attending faculty physician feedback. The Training and Evaluation Committee reviews results annually.
 - ii. *Ad hoc work groups.* Residents participate in ad hoc work groups to address areas of need within the program, including but not limited to; hospital-based committees, residency committees for curricular revisions, patient satisfaction, etc. Resident input is actively sought by the program director, associate program director, chief resident, and other faculty members.
 - iii. *Graduate Surveys.* The program sends surveys to recent graduates and their employers for global evaluation of preparation across the spectrum of patient care disciplines and settings. Results are shared with the core faculty and Training and Evaluation Committee and used for process improvement.

VI. Institutional Resources: Strengths and Limitations

- a. Strengths: The outpatient clinic and inpatient setting have fully functioning Electronic Health Record. M&M conference provides excellent review of processes including issues of medical error and practice improvement. Journal Club focuses on critical appraisal skills. Semi-annual resident reviews encompass full academic portfolios, self assessment reflection, and 360-degree evaluations.
- b. Limitations: Residents do not currently engage in large QI projects at Sparrow Hospital, although they do receive ad hoc feedback regarding their compliance with the JCAHO core measures (pneumonia, DVT prophylaxis, CHF, etc).

VII. Practice Based Learning and Improvement Competency Objectives: Objectives should be attained by the end of each training year.

- a. Evidence Based Medicine:
 - i. R1 residents should:
 - 1. Demonstrate self-motivation to acquire knowledge.
 - 2. Locate scientific literature to support decision-making.
 - ii. R2 residents should also:
 - 1. Appraise and assimilate scientific literature.
 - 2. Demonstrate understanding and use of an evidence-based approach in providing patient care.
 - 3. Quickly access appropriate reference material for patients in the hospital (general medicine, ICU) and ambulatory settings (ER, continuity clinic).
 - 4. Voluntarily discuss and research relevant literature to support decisions.
 - iii. R3 residents should also:
 - 1. Effectively and efficiently use consulting services to improve both patient care and self-knowledge, appropriately integrating evidence based medicine with expert opinion and professional judgment .
 - 2. Acquire and use appropriate evidence-based information when acting as a consultant.
 - 3. Research and learn other aspects o patient care (ie, dermatology, ophthalmology, non-operative orthopedics, neurology, etc.)
 - 4. Apply knowledge of study design and statistics to critical appraisal of relevant literature.
 - 5. Respond to critical problems in a manner reflecting more than rote learning and protocol management. S/he should be able to utilize and suggest data-driven modification of protocols.
- b. Continuous Quality Improvement and Quality Assurance:
 - i. R1 residents should:
 - 1. Understand his or her limitations of knowledge, ask for help when needed, admit to medical errors, and seek help in remedying them
 - 2. Seek and accept formative feedback, and develop reflective plans for personal improvement.
 - 3. Deliver care that reflects learning from previous experiences, and demonstrate improvement in clinical management on progressive rotations.
 - 4. Assess patient adherence to ambulatory regimens and accordingly modify prescribing practices.
 - 5. Participate actively in quality improvement practices pertaining to patient care (e.g., M&M conferences).
 - 6. Review autopsy findings to understand illness and the care of critically ill patients.
 - ii. R2 residents should also:
 - 1. Use self-assessments of knowledge, skills and attitudes to develop plans with insight and initiative for addressing areas for improvement.
 - 2. Voluntarily plan learning experiences in procedures not yet mastered.
 - 3. Use unique cases seen in a rotation to self-assess performance patterns.
 - iii. R3 residents should also:

1. Analyze personal practice patterns systematically, and seek to improve patient care.
 2. Utilize practice data to actively improve practice and patient management, comparing personal practice patterns to larger populations and seeking to improve personal practice disparities.
- c. Information Technology:
- i. R1 residents should:
 1. Use the EHR, web-based curricular modules, handheld computers, and web-based resources to access medical literature and data to support and enhance patient care.
 2. Utilize EHR chronic care support templates to manage complex patient care.
 - ii. R2 residents should also:
 1. Independently use PubMed or Ovid and other EBM resources to enhance patient care.
- d. Teaching:
- i. R1 residents should:
 1. Facilitate learning of students and other R1 residents.
 - ii. R2 residents should also:
 1. Facilitate education of other health care professionals.
 2. Use evidence-based resources when teaching.
 3. Use interactions with nursing staff and other professionals as two-way educational opportunities.
 - iii. R3 residents should also:
 1. When acting as a consultant, identify the questions and wishes of the referring physician, and respond to these issues.
 2. Present a formal didactic session for resident peers, lasting approximately 45 minutes with additional time to respond to questions and answers. The didactic should reflect significant independent reading of evidence-based literature, and will occur during standard resident teaching conferences.