

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

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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 rotations.
 - 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 on 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 outcomes. 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. Evidence-Based Medicine fundamentals are taught during the first 4 journal club sessions annually
 - ii. Weekly journal club: residents study research designs, evidence-based medicine interpretive skills, and application of population-based findings to individual patients.
- d. Required Improvement Project
 - i. All residents participate in selection and performance of a quality improvement project that focuses on improving patient care. Projects are selected and implemented for all continuity clinic resident groups.
- 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 toward 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 Teaching Attending rounds.

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. Hospitals: Full service 24-hour libraries are present.

IV. Principal Ancillary Educational Materials

- a. The ambulatory EHR provides patient care resources including support documents for patient education and clinical guidelines.
- b. Each resident is provided a handheld computer and support software.
- c. Residents participate in web-based learning through the ambulatory medicine curriculum.
- d. 24-hour access to the extensive electronic library of the Michigan State University is available online to all residents. Medical librarians are available at the teaching hospitals
- e. Journal Club uses The Users Guide to the Medical Literature published through JAMA.
- f. 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. Faculty, peers, allied staff, students, and patients complete resident evaluations. Evaluations are competency-based, and form complete 360-degree formative feedback for resident review and self assessment. Evaluations are available for on-line review by the resident at their convenience and are included in semi-annual resident reviews for resident feedback.
- b. Program and Faculty Performance
 - i. Upon completion of each rotation, residents complete competency evaluation forms commenting on faculty modeling of PBL&I skills.

These evaluations are sent to the residency office for review. Faculty physicians receive anonymous annual summative data from completed evaluations. The Training and Evaluation Committee reviews results annually.

VI. Institutional Resources: Strengths and Limitations

- a. Strengths: The outpatient clinic has a 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: none identified

VII. Practice Based Learning and Improvement Competency Objectives

- a. Evidence Based Medicine: Locate, appraise, and assimilate evidence from scientific studies related to patients' health problems. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.
 - 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 ICU
 - 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 non-medicine patient care
 - 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: Analysis of practice experience and performance of practice-based improvement activities using a systematic methodology. Obtaining and using information about their own population of patients and the larger population from which their patients are drawn.
 - 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: Using information technology to manage information, access on-line medical information, and support education
- 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 Pub med or Ovid and other EBM resources to enhance patient care
- d. Teaching: Facilitation of learning of students, resident colleagues, and other health care professionals
- i. R1 residents should:
1. Facilitate learning of students and R1s
- 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 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.