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Recommended Curriculum Guidelines for Family Medicine Residents

# Practice Based Learning and Improvement

*This document was endorsed by the American Academy of Family Physicians (AAFP) and the Society of Teachers of Family Medicine (STFM), and was developed in cooperation with the Pensacola Naval Hospital Family Medicine Residency Program.*

## Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Attitudes, knowledge and skills that are critical to family medicine should be attained through longitudinal experience that promotes educational competencies defined by the Accreditation Council for Graduate Medical Education (ACGME) <http://www.acgme.org>. The curriculum must include structured experience in several specified areas. Most of the resident's knowledge will be gained by caring for ambulatory patients who visit the family medicine center. Structured didactic lectures, conferences, journal clubs and workshops must be included in the curriculum with an emphasis on outcomes-oriented, evidence-based studies that delineate common and chronic diseases affecting patients of all ages. Targeted techniques of health promotion and disease prevention are hallmarks of family medicine. Appropriate referral patterns and provision of cost-effective care should also be part of the curriculum.

Program requirements specific to family medicine residencies may be found on the ACGME Web site. Current AAFP Curriculum Guidelines may be found online at <http://www.aafp.org/cg>. These guidelines are periodically updated and endorsed by the AAFP and, in many instances, other specialty societies as indicated on each guideline.

Each residency program is responsible for its own curriculum. ***This guideline provides a useful strategy to help residency programs form their curricula for educating family physicians.***

## Preamble

Education and training in the methods and implementation of performance improvement (PI), systems-based practice (SBP), and evidenced-based medicine (EBM) are a vital part of the residency curriculum, regardless of the mode of practice or setting a resident chooses after graduation. PI is defined as the body of knowledge, attitudes and skills necessary to efficiently lead and continuously improve the multiple elements of care delivery within a medical practice. It encompasses the ability to analyze one's own practice for areas that need improvement *and* the ability to apply industrial work design techniques so that the highest quality patient outcomes are inherent in the processes themselves. EBM is defined as the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.

Both PI and EBM offer an approach and a set of tools to the physician faced with process problems in administrative office and clinical practice issues. Many nonmedical industries have embraced PI methodology with impressive results. Caring for patients and learning from the care provided are two very integrated and ongoing processes that continue well beyond residency training.

More and more, physicians are being asked to help improve the quality of health care as part of a team comprised of nonphysician health care providers and nonmedical support staff. Training and education in PI and EBM methodology will help physicians become effective members of those teams.

This curriculum complements two other AAFP curricula--Research and Scholarly Activity and Medical Information Technology. Many of the attitudes, knowledge, and competencies in those two documents are integrated into PI and EBM. Medical information systems, specifically, greatly enhances the ability of the clinician to measure and improve performance and access the best evidence available for medical decision-making.

## Competencies

At the completion of residency training, a family medicine resident should:

- Analyze past and current clinical practice to understand root causes of problems and to improve future care based on previous experiences.
- Participate in at least one team to improve a process or aspect of health care delivery within the residency.
- Demonstrate effective team participation (e.g., communication, conflict resolution and leadership).
- Be familiar with and be able to access information from the following EBM data sources:
  1. Cochrane Database
  2. Agency for Healthcare Research and Quality (AHRQ)
- Be familiar with study design and statistical methods to evaluate relevant clinical information.

## Attitudes

The resident should develop attitudes that encompass:

- A belief that PI tools and methods can and do improve patient care.
- A willingness to work on teams tasked with practice improvement initiatives.
- A commitment to improving health care delivery.
- An ongoing effort to identify the best evidence available for each clinical issue faced.
- An understanding that the available evidence often fails to directly answer clinical questions.
- A willingness to advocate for patients when colleagues recommend interventions that are not supported by evidence and may, in the long run, decrease quality of life while providing little long-term benefit.

## Knowledge

In the appropriate setting, the resident should demonstrate the ability to apply knowledge of:

1. Where Process Improvement theory originated.
2. Definition of a process and the outcomes produced by processes.
  - a. Type of outcomes
    - i. Physical - the measurable physical outcomes of the patient as a result of health care provided
    - ii. Service - access to care and patient satisfaction with care provided
    - iii. Cost - appropriate use of resources and subsequent effect on costs in the care provided
3. Definition of a customer - patients and their families
4. Definition of a stakeholder - which can be the patient or his or her family, office staff, physicians or anyone who plays a role in the delivery of health care
5. How practice variation affects the cost and quality of health care
  - a. Random variation
  - b. Assignable variation
  - c. Significance of clinical variation in the United States (e.g., *To Err is Human: Building a Safer Health System* [Institute of Medicine, 2000])
6. Teamwork concepts and effects of teamwork as a skill
  - a. How to form a team
  - b. Effective meeting management
  - c. Tools for generating ideas (e.g., brainstorming, multivoting, nominal group technique, etc.)

- d. Role of team leader and facilitator
7. Deming's Performance Improvement Methodology and Rapid Cycle Improvement, including the FOCUS-PDSA model
- a. Find, Organize, Clarify, Understand, Select (FOCUS)
    - i. *Find* a process in need of improvement by talking to customers and owners of clinical and administrative processes.
    - ii. *Organize* and select a team of stakeholders, and draft a mission statement.
    - iii. *Clarify* general team goals; establish key parameters that define the quality of the process.
    - iv. *Understand* what the team is trying to improve; identify measurable outcomes; study variance and perform root-cause analysis.
    - v. *Select* a part of the process to change, beginning with the most feasible intervention that is likely to lead to the biggest improvement in outcomes.
  - b. Plan, Do, Study, Act (PDSA)
    - i. *Plan* one small improvement to the process.
    - ii. *Do* - Implement changes.
    - iii. *Study* - Assess the impact of improvements.
    - iv. *Act* - If successful, implement the change on a broader scale. If not, reevaluate the process and changes made and determine whether to try a different approach.
8. The Toyota Production System and Lean Methodology: How it applies to complex organic systems like health care and how it takes Deming's model several steps forward
- a. Four philosophies and their underlying principles
    - i. Long-term thinking and goals
    - ii. The right process yields the right results: Eliminate waste; use pull systems, continuous flow, leveled workloads, visual controls, standardization, and reliable technology.
    - iii. People & partners: Respect and challenge them to grow.
    - iv. Problem Solving: genchi genbutsu, hansei, kaizen
  - b. Eight types of waste: overproduction; waiting; unnecessary transport; overprocessing; excess inventory; unnecessary movement; defects; unused employee creativity
  - c. Four rules of work design:
    - i. All pathways must be simple, direct and defined with no loops or forks.
    - ii. All communications must be highly specified, direct, with clear yes-no responses.
    - iii. All activities must be highly specified as to content, sequence, timing, location and expected outcome.
    - iv. All improvements constantly aim toward ideal outcomes. Improvements are made using a scientific method (e.g., FOCUS-PDSA) and with the guidance of a teacher or facilitator as familiar as possible with the actual work.

## 9. Performance improvement (PI) tools

- a. Traditional Deming-style tools:
  - i. Pareto diagrams, run charts, statistical process control (SPC) charts, scatter diagrams, flow charts, cause and effect (Ishikawa) diagrams, control charts, bar charts
- b. Toyota-style/ Lean tools:
  - i. Process maps
  - ii. A3 Diagrams
  - iii. 5 Whys
  - iv. Visual controls
    - 1) 5-S system (sort, straighten, shine, standardize, sustain)
    - 2) Kanbans

## 10. Medical errors and patient safety issues

- a. Medication errors and subsequent adverse drug events (ADE)
- b. Resources - Joint Commission on Accreditation of Health Care Organizations (JCAHO), Institute for Clinical Systems Improvement (ICSI), Institute for Health Care Delivery Research (IHC), Institute for Healthcare Improvement (IHI), American Academy of Family Physicians (AAFP), Institute of Medicine (IOM), Occupational Safety and Health Administration (OSHA)

## 11. Role of information systems and informatics in process improvement

- a. Sources of data/information
  - i. External organizations - National Committee for Quality Assurance (NCQA), Institute for Healthcare Improvement (IHI), Institute of Medicine (IOM), Joint Commission on Accreditation of Health Care Organizations (JCAHO)
  - ii. NCQA Healthcare Effectiveness Data and Information Set (HEDIS) criteria
  - iii. Center for Medicare and Medicaid Services (CMS, formerly Health Care Financing Administration [HCFA]) peer review organizations (PRO)
  - iv. Patient accounting systems
  - v. Health plan reports
  - vi. Hospital data systems
  - vii. External sources (e.g., County Health Departments, peer review organizations)
- b. Use of information systems in process redesign
  - i. Electronic health records that follow the four rules of work design
  - ii. Patient registries for chronic disease management

## 12. The principles of evidence-based medical decision-making.

- a. Patient-oriented evidence that matters vs. disease-oriented evidence

## 13. Various sources of medical literature

- a. Cochrane Library
- b. Other EBM collections: *The British Medical Journal* Clinical Evidence, *American Family Physician* POEMS, Family Physicians Inquiries Network (FPIN), American College of Physicians Journal Club, Bandolier, etc.

- c. Medline (Resident should know how to use OVID and PubMed to narrow searches appropriately and to limit Medline to higher quality references.)

## **Skills**

In the appropriate setting, the resident should demonstrate the ability to independently perform or appropriately refer:

1. Identify a clinical process to improve using PI methodology.
2. Identify the individual/group (stakeholders) that owns the process and ensure that the stakeholders participate in improving the process.
3. Collect data from a variety of sources to study the problem (current condition).
4. Analyze the collected data: perform root-cause analysis.
  - a. Use A3 diagrams, process mapping, graphs, etc.
5. Redesign the process using the Four Rules of Work Design.
6. Collect new data to demonstrate the effect of the new process.
7. Educate colleagues about process improvement and its results.
8. Demonstrate effective team participation.
9. Apply the principles of evidence-based medicine in clinical practice.
  - a. Identify a problem or area of uncertainty.
  - b. Formulate a relevant, focused, clinically important question that is likely to be answered.
  - c. Find and appraise the evidence.
  - d. Assess the clinical importance of the evidence (i.e., Is it a POEM?).
  - e. Assess the clinical applicability of any recommendations or conclusions.
  - f. Decide whether or not to act on the evidence.
  - g. Assess the outcome of actions.
  - h. Summarize and store the record for future reference.

## **Implementation**

The implementation of these core curriculum guidelines should be longitudinal throughout the residents' experience, with increasing emphasis in the latter half of the residency program. The schedule of conferences and other teaching activities should integrate the core curriculum guidelines. The resident should have hands-on experience

leading at least one performance improvement initiative during the three years of training.

Where possible, the resident should receive additional training such as exposure to local resources and experts. Partnership with outside organizations that might provide additional data is also encouraged.

## Resources

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Recommended Curriculum Guidelines for Family Medicine Residents, Medical Informatics and Computer Applications, AAFP Reprint No. 288. American Academy of Family Physicians Web site. Available online at <http://www.aafp.org/cg>.

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## Web Sites

Agency for Healthcare Research and Quality (includes links to public data, guidelines, research, etc.): <http://www.ahrq.gov>

American Academy of Family Physicians, Family Practice Management. (Find numerous articles on quality from 2000-2009. Search: "quality issues" to find an index.) <http://www.aafp.org/fpm/>

American Academy of Family Physicians Clinical Quality Improvement Web site (includes links to practice management tools, Transformed, METRIC, etc.): <http://www.aafp.org/quality>

American College of Physicians (ACP) Journal Club (requires ACP membership or subscription): <http://www.acpjc.org/>

Centre for Evidenced-Based Medicine: <http://www.cebm.net/>

Centre for Health Evidence. Users' Guides to the Medical Literature (multipart series) Journal of the American Medical Association (JAMA) 1993-2000: <http://www.cche.net/principles/main.asp>



Evidence-based Medicine Resource Center (New York Academy of Medicine & Evidence-based Medicine Committee of the American College of Physicians, New York Chapter with funding from the National Institutes of Health): <http://www.ebmny.org>

Institute for Healthcare Improvement: <http://www.ihl.org>

Joint Commission on Accreditation of Health Care Organizations: <http://www.jointcommission.org/>

Medline PubMed: <http://www.ncbi.nlm.nih.gov/PubMed>

National Association for Healthcare Quality: <http://www.nahq.org>

National Guideline Clearinghouse (public resource for evidence-based clinical practice guidelines): <http://www.guidelines.gov>

Pittsburgh Regional Health Initiative: <http://www.prhi.org>

SCHARR Netting the Evidence: <http://www.nettingtheevidence.org.uk/>

The Cochrane Library (subscription required): <http://www.thecochranelibrary.com>

The Leapfrog Group: <http://www.leapfroggroup.org>

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