AMERICAN ACADEMY OF FAMILY PHYSICIANS

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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).

Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Attitudes, behaviors, 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), www.acgme.org. The family medicine curriculum must include structured experience in several specified areas. Much of the resident's knowledge will be gained by caring for ambulatory patients who visit the family medicine center, although additional experience gained in various other settings (e.g., an inpatient setting, a patient's home, a long-term care facility, the emergency department, the community) is critical for well-rounded residency training. The residents should be able to develop a skillset and apply their skills appropriately to all patient care settings.

Structured didactic lectures, conferences, journal clubs, and workshops must be included in the curriculum to supplement experiential learning, with an emphasis on outcomes-oriented, evidence-based studies that delineate common diseases affecting patients of all ages. Patient-centered care, and targeted techniques of health promotion and disease prevention are hallmarks of family medicine and should be integrated in all settings. Appropriate referral patterns, transitions of care, and the 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 website. Current AAFP Curriculum Guidelines may be found online at

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.

Please note that the term “manage” occurs frequently in AAFP Curriculum Guidelines. “Manage” is used in a broad sense to indicate that the family physician takes responsibility for ensuring that optimal, complete care is provided to the patient. This does not necessarily mean that all aspects of care need to be directly delivered personally by the family physician. Management may include appropriate referral to other health care providers, including other specialists, for evaluation and treatment.

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

Practice-based learning and improvement (PBLI) has been a competency for all physicians in training since 2002. PBLI includes components of evidence-based medicine (EBM), systems-based practice (SBP), and performance improvement (PI).

- EBM is the integration of best clinical evidence with clinical expertise and patient values.
- SBP teaches physicians to utilize resources and provide resources to individual patients and others.
- PI focuses on continuous improvement in health care delivery.

This curriculum in PBLI trains family medicine residents to improve their own patient care practices using EBM, SBP, and PI.

Both PI and EBM offer an approach and a set of tools to the physician interested in improving clinical or administrative practices. Caring for patients and learning from the care provided are two 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 non-physician health care professionals and non-medical support staff. Training and education in PI and EBM methodology will help physicians become effective members and leaders of those teams.

This Curriculum Guideline complements two other AAFP Curriculum Guidelines: Reprint No. 280–Scholarly Activity and Information Mastery and Reprint No. 288–Medical Informatics. Many of the attitudes, knowledge, and competencies in those two documents are integrated into PI and EBM. Medical information systems greatly

enhance the ability of the physician to measure and improve performance and to access the best evidence available for medical decision making.

Competencies

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

- Demonstrate the ability to investigate and evaluate his or her care of patients (Patient Care, Practice-based Learning and Improvement)
- Identify strengths, deficiencies, and limits in his or her medical knowledge and expertise (Medical Knowledge, Practice-based Learning and Improvement)
- Appraise and assimilate scientific evidence (Medical Knowledge, Practice-based Learning and Improvement)
- Continuously improve patient care on the basis of constant self-evaluation and lifelong learning (Systems-based Practice, Practice-based Learning and Improvement)

Attitudes and Behaviors

The resident should demonstrate attitudes and behaviors that encompass:

- Awareness that PI tools and methods improve patient care
- Valuing teamwork for PI initiatives
- Commitment to improving health care delivery
- Ongoing effort to identify the best evidence available for each clinical issue faced
- Understanding that the available evidence may not directly answer a clinical question
- Willingness to advocate for evidence-based care of patients

Knowledge

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

1. Principles of evidence-based medical decision making
    a. Methods of rating evidence
    b. Basic statistical measures
    c. Quality of clinical trials

d. Limitations of EBM

2. Sources of evidence-based medical literature
    a. Point-of-care tools providing filtered EBM information (e.g., Family Physicians Inquiries Network [FPIN] Clinical Inquiries, DynaMed, First Consult, UpToDate, Essential Evidence Plus)
    b. Tools providing unfiltered information (e.g., MEDLINE)
    c. Institutional resources and guidelines for quality improvement: The Joint Commission (TJC), Institute for Clinical Systems Improvement (ICSI), Institute for Healthcare Leadership, Institute for Healthcare Improvement (IHI), American Academy of Family Physicians (AAFP), Institute of Medicine (IOM), Occupational Safety and Health Administration (OSHA)

3. Systems-based practice (SBP)
    a. Teams: formation, management, role as leader and facilitator
    b. Care coordination
    c. Cost-benefit analysis
    d. Patient advocacy
    e. System consultant
    f. System evaluator

4. Collaboration in performance improvement efforts
    a. Participation in Practice-based Research Networks (PBRNs)
    b. Incorporation of Community-based Participatory Research (CBPR)
    c. Multidisciplinary involvement

5. Improving Patient Safety Across the Continuum of Care
    a. History of medical quality improvement
    b. Identification and evaluation of adverse events, errors, and harm
    c. Prevention of harm in inpatient and outpatient settings
    d. Prevention of diagnostic errors in inpatient and outpatient settings
    e. Coordination of care between care settings

6. Deming's PDSA (Plan-Do-Study-Act) Cycle of continuous quality improvement, including the FOCUS-PDSA model
    a. Find, Organize, Clarify, Understand, Select (FOCUS)

i. *Find* an opportunity for improvement through discussion with process participants
ii. *Organize* key players, select leader, and agree on a mission statement
iii. *Clarify* current understanding 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 strategy for continued improvement or a part of the process to change

b. Plan, Do, Study, Act (PDSA)
i. *Plan* – Identify one small improvement to the process; establish goals and intended outcomes
ii. *Do* – Implement the process and collect data for analysis
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.

7. Performance improvement (PI) tools

a. Traditional Deming-style tools
i. Pareto charts, run charts, statistical process control charts, scatter diagrams, flowcharts, 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) 5S system (sort, straighten, shine, standardize, sustain)
2) Kanbans

8. Role of information systems and informatics in performance improvement

a. Sources of data/information
i. External organizations: National Committee for Quality Assurance (NCQA), Institute for Healthcare Improvement (IHI), Institute of Medicine (IOM), The Joint Commission (TJC)
ii. NCQA Healthcare Effectiveness Data and Information Set (HEDIS) criteria
iii. Centers for Medicare & Medicaid Services (CMS, formerly Health Care Financing Administration [HCFA]) peer-review organizations [PRO])
iv. Patent accounting systems
v. Health plan reports
vi. Hospital data systems
vii. External sources (e.g., county health departments, PROs)
viii. Strengths and weakness of various data sources and variety in quality in metrics

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

Skills

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

1. Use PI methodology to identify a clinical process, analyze practice, and implement change, with a goal of performance improvement

2. Coordinate team-based care

3. Locate, appraise, and assimilate evidence from scientific studies in order to improve patient care

4. Utilize resources and provide resources to patients in clinical practice

5. Engage in transparent discussions addressing performance improvement

6. Solicit, assess, and incorporate feedback

Implementation

Implementation of this curriculum should include longitudinal experience throughout residency training. Increasing emphasis should come in the latter half of the residency program for this training. Conferences and other teaching activities should integrate the core PBLI topics. Residents must also gain an awareness of community/cultural resources needed for sustained improvement. Implementing the PBLI curriculum provides an opportunity for interdisciplinary work in both inpatient and outpatient settings. Residents may also partner with external resources to ensure that PBLI is valid to their own practice and to those with whom they are practicing. For resident quality improvement projects to be successful, barriers and strengths must be fully explored in order to best understand needs and move forward. With this background, the resident should have hands-on experience leading at least one performance improvement initiative during the three years of training. Improvement projects based in collaboration with clinic staff and quality management professionals in the community (e.g., family medicine center [FMC], hospital, community) will provide paths to PBLI competency.

Resources

Abbasi J. Headline-grabbing study brings attention back to medical errors. *JAMA*. 2016;316(7):698-700.

Accreditation Council for Graduate Medical Education. American Board of Family Medicine. The family medicine milestone project. 2015. www.acgme.org/acgmeweb/Portals/0/PDFs/Milestones/FamilyMedicineMilestones.pdf. Accessed May 10, 2017.

American Academy of Family Physicians. Curriculum guidelines reprint no. 288: Medical informatics. AAFP; 2012. www.aafp.org/dam/AAFP/documents/medical_education_residency/program_directors/Reprint288_Informatics.pdf. Accessed May 10, 2017.

American Academy of Family Physicians. Curriculum guidelines reprint no. 280: Scholarly activity and information mastery. AAFP; 2011. www.aafp.org/dam/AAFP/documents/medical_education_residency/program_directors/Reprint280_Scholarly.pdf. Accessed May 10, 2017.

Bien M, Simanton E. Evidence-based medicine at the point of care: student utilization and faculty implications, *S D Med*. 2012;65(4):137-139.

Chase SM, Miller WL, Shaw E, Looney A, Crabtree BF. Meeting the challenge of practice quality improvement: a study of seven family medicine residency training practices. *Acad Med*. 2011;86(12):1583-1589.

Committee on Quality of Health Care in America. Institute of Medicine. *Crossing the quality chasm: A new health system for the 21st century*. Institute of Medicine. Washington, DC. 2001. www.nap.edu/openbook.php?isbn=0309072808. Accessed May 10, 2017.

Erickson LK, Lyon T. How to fix a flawed process: the four rules of work design. *Fam Pract Manag*. 2008;15(6):29-33.

Gandhi TK, Berwick DM, Shojania KG. Patient safety at the crossroads. *JAMA*. 2016;315(17):1829-30.

Gorenflo G, Moran JW. The ABCs of PDCA. Public Health Foundation. 2010. www.phf.org/resourcestools/Documents/ABCs_of_PDCA.pdf. Accessed May 10, 2017.

Graham MJ, Naqvi Z, Encandela J, Harding KJ, Chatterji M. Systems-based practice defined: taxonomy development and role identification for competency assessment of residents. *J Grad Med Educ*. 2009;1(1):49-60.

Jha A, Pronovost P. Toward a safer health care system: The critical need to improve measurement. *JAMA*. 2016 May 3;315(17):1831-2.

Kohn LT, Corrigan JM, Donaldson MS, eds. To err is human: building a safer health system. Washington, DC. Committee of Quality of Health Care in America, Institute of Medicine. 2000. www.nap.edu/openbook.php?isbn=0309068371. Accessed May 10, 2017.

Lawrence RH, Tomolo AM. Development and preliminary evaluation of a practice-based learning and improvement tool for assessing resident competence and guiding curriculum development. *J Grad Med Educ*. 2011;3(1):41-48.

Nabors C, Peterson SJ, Weems R, et al. A multidisciplinary approach for teaching systems-based practice to internal medicine residents. *J Grad Med Educ*. 2011;3(1):75-80.

National Patient Safety Foundation. Free from harm: accelerating patient safety improvement fifteen years after to err is human. Boston, Mass. 2015. http://www.npsf.org/?page=freefromharm. Accessed May 10, 2017.

Patow CA, Karpovich K, Riesenberg LA, et al. Residents' engagement in quality improvement: a systematic review of the literature. *Acad Med*. 2009;84(12):1757-1764.

Rider EA, Nawotniak RH. *A Practical Guide to Teaching and Assessing the ACGME Core Competencies*. 2nd ed. Marblehead, Mass.: HCPro, Inc.; 2010.

Schmittdiel JA, Grumbach K, Selby JV. System-based participatory research in health care: an approach for sustainable translational research and quality improvement. *Ann Fam Med*. 2010;8(3):256-9.

Shaughnessy AF, Gupta PS, Erlich DR, Slawson DC. Ability of an information mastery curriculum to improve residents' skills and attitudes. *Fam Med*. 2012;44(4):259-264.

Slawson DC, Shaughnessy AF. Teaching evidence-based medicine: should we be teaching information mastery instead? *Acad Med*. 2005;80(7):685-689.

Slawson DC, Shaughnessy AF. Teaching information mastery: the case of baby Jeff and the importance of Bayes' Theorem. *Fam Med*. 2002;34(2):140-142.

Stratis Health. Focus - PDSA roadmap. Centers for Medicare and Medicaid Management. www.health.state.mn.us/divs/fpc/cww/B01_PDSA.pdf. Accessed May 10, 2017.

Taylor EF, Genevro J, et al. Building quality improvement capacity in primary care. U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality. Rockville, Md. http://www.ahrq.gov/professionals/prevention-chronic-care/improve/capacity-building/pcmhqi2.html. Accessed May 10, 2017.

Taylor EF, Peikes D, Genevro J, Meyers D. Creating capacity for improvement in primary care: the case for developing a quality improvement infrastructure. U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, Rockville, Md. http://www.ahrq.gov/professionals/prevention-chronic-care/improve/capacity-building/pcmhqi1.html. Accessed May 10, 2017.

Tomolo AM, Lawrence RH, Aron DC. A case study of translating ACGME practice-based learning and improvement requirements into reality: systems quality improvement

projects as the key component to a comprehensive curriculum. *Postgrad Med J.* 2009;85(1008):530-537.

Website Resources

Agency for Healthcare Research and Quality. www.ahrq.gov

American Academy of Family Physicians. The Patient-Centered Medical Home (PCMH). www.aafp.org/quality

American Board of Family Medicine. Performance Improvement. www.theabfm.org/moc/part4.aspx

Cochrane Library. www.thecochranelibrary.com

Dartmouth Biomedical Libraries. Evidence-Based Medicine (EBM) Resources. www.dartmouth.edu/~biomed/resources.htmld/guides/ebm_resources.shtml

Evidence Based Medicine Toolkit. www.ebm.med.ualberta.ca/

Family Practice Management. www.aafp.org/fpm/

Institute for Clinical Systems Improvement. www.icsi.org/

Institute for Healthcare Improvement. www.ihi.org

National Association for Healthcare Quality. www.nahq.org

National Guideline Clearinghouse. https://www.guideline.gov/

New York Academy of Medicine. http://www.nyam.org/

Occupational Safety and Health Administration. Safety and Health Topics. www.osha.gov/SLTC/

The Joint Commission. https://www.jointcommission.org/

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