AMERICAN ACADEMY OF FAMILY PHYSICIANS

Recommended Curriculum Guidelines for Family Medicine Residents

Practice-Based Learning and Improvement

This document was endorsed by the American Academy of Family Physicians.

Introduction

Each family medicine residency program is responsible for its own curriculum. The AAFP Commission on Education's Subcommittee on Graduate Curriculum has created this guide as an outline for curriculum development, and it should be tailored to the needs of the program. Through a series of structured and/or longitudinal experiences, the curricula below will support the overall achievement of the core educational competencies defined by the Accreditation Council for Graduate Medical Education and provide guideposts to program requirements specific to family medicine. For updates and details, please refer to the ACGME website at www.acgme.org. 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.

Preamble

Practice-based learning and improvement has been a competency for all physicians-in-training since 2002. PBLI includes components of evidence-informed decision-making, systems-based practice and quality and performance improvement.

1. EIDM is the integration of the best clinical evidence from available medical research with clinical expertise and patient values.
2. SBP teaches physicians to utilize and provide resources to help individual patients and others.
3. QI/PI focuses on quality and continuous improvement in health care delivery.

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

Both EIDM and QI/PI offer an approach and a set of tools to physicians 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 provided to patients. They are often part of a team of physicians, non-physician health care professionals and medical and non-medical support staff. Training and education in QI/PI and EIDM methodology will help physicians become effective members and leaders of the varied health care teams they are on.

This Curriculum Guideline complements two other AAFP Curriculum Guidelines: Scholarly Activity and Information Mastery and Medical Informatics. Many of the attitudes, knowledge and competencies in those two documents are integrated into QI/PI and EIDM. Medical information systems greatly enhance the ability of the physician to measure and improve performance and access the best evidence available for medical decision making.

Patient Care

At the completion of residency, residents should be able to:

1. Utilize self-assessment to recognize areas of strength and limitation in medical knowledge and expertise and actively apply this insight to enhance patient care
2. Demonstrate commitment to improving health care delivery using EIDM and/or evidence-based medicine
3. Continuously seek and apply the best available evidence for clinical decision-making
4. Integrate scientific evidence into patient care plans and decision-making processes at the point of care
5. Deliver care that prioritizes patients' preferences, needs and values
6. Implement targeted health promotion and disease prevention strategies

Medical Knowledge

Family medicine residents should demonstrate the ability to apply knowledge of the following:

1. Understanding of medical quality improvement and its history
2. QI/PI tools and methods that improve patient care
    a. Deming's Plan-Do-Study-Act cycle of continuous quality improvement, including the Find-Organize-Clarify-Understand-Select-PDSA model
        i. FOCUS

1. **F**ind an opportunity for improvement through discussion with process participants
2. **O**rganize key players, select a leader and agree on a mission statement
3. **C**larify current understanding of the process
4. **U**nderstand what the team is trying to improve; identify measurable outcomes; study variance and perform root-cause analysis
5. **S**elect a strategy for continued improvement or a part of the process to change

ii. PDSA

1. **P**lan – Identify one small improvement to the process; establish goals and intended outcomes
2. **D**o – Implement the process and collect data for analysis
3. **S**tudy – Assess the impact of improvements
4. **A**ct – 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

b. PI tools

i. Traditional Deming-style tools

1. Pareto charts
2. Run charts
3. Statistical process control charts
4. Scatter diagrams
5. Flowcharts
6. Cause-and-effect (Ishikawa) diagrams
7. Control charts
8. Bar charts

ii. Toyota-style/lean tools

1. Process maps
2. A3 diagrams
3. Root-cause analysis (fish bone diagram, 5 why's)
4. Visual controls
   a) 5S system (**S**ort, **S**traighten, **S**hine, **S**tandardize, **S**ustain)
   b) Kanban planning tool

c. Information systems and informatics in performance improvement

i. Sources of data/information

1) External organizations: National Committee for Quality Assurance, Institute for Healthcare Improvement, Institute of Medicine, The Joint Commission
2) National Committee for Quality Assurance Healthcare Effectiveness Data and Information Set criteria
3) Centers for Medicare & Medicaid Services (formerly Health Care Financing Administration) peer review organizations
4) Patient accounting systems
5) Health plan reports
6) Hospital data systems

7) External sources (e.g., county health departments, peer review organizations)
ii. Strengths and weaknesses of various data sources and variety in quality in metrics
iii. Use of emerging technologies for information acquisition, such as artificial intelligence
iv. Use of information systems in process redesign
1) Electronic health records that follow the four rules of work design
2) Patient registries for chronic disease management
v. Leveraging informatics for coding, billing and reimbursement
1) Value-based purchasing
2) Merit-based Incentive Payment system
3. Appropriate coding, billing and documentation
4. Core principles of evidence-informed decision making
a. Hierarchy of evidence
b. Basic statistical measures
i. Sensitivity/specificity
ii. Positive/negative predictive values
iii. Likelihood ratios
iv. Number needed to treat/number needed to harm
c. Limitations of EBM
5. Differences between disease-oriented evidence and patient-oriented evidence
6. Primary literature sources (e.g., randomized controlled trials, cohort studies, etc.)
7. Validity of clinical practice guidelines using standardized tools, such as the Guideline Trustworthiness, Relevance and Utility Scoring Tool, etc.
8. Limitations of the available evidence, such as not directly answering a clinical question, requiring interpretation and individualized application
9. Potential for unintentional harms in screening, such as false positives, incidental findings and overdiagnosis and implementation of strategies to reduce overuse
10. The role of family physicians in advocating for evidence-based care of patients from all socioeconomic and cultural backgrounds
11. Health care disparities and the impact of social drivers of health on patient care

Interpersonal Communication

At the completion of residency, residents should be able to:

1. Demonstrate effective patient-centered communication skills to address health disparities, ensuring clarity, empathy and responsiveness to patient needs
2. Engage in shared decision-making conversations with patients and families, clearly outlining the potential benefits, risks and level of evidence supporting the intervention
3. Exhibit cultural humility and respect while addressing diverse cultural, sexual orientation and gender-specific issues, including LGBTQIA+ designations
4. Develop and demonstrate communication skills necessary for effective leadership and collaboration within interdisciplinary health care teams

5. Develop conflict resolution skills to manage disagreements and conflicts effectively within health care teams and with patients
6. Demonstrate the ability to solicit, assess and incorporate feedback from patients, peers and supervisors to improve communication and clinical practice
7. Use technology effectively to engage with patients and colleagues, including telemedicine and electronic communication tools
8. Promote a safe environment where patients and others involved in their care can actively engage in care decisions
9. Assist patients and others involved in their care in locating reputable medical information on the internet and other sources
10. Discuss internet safety and protection of health information

Systems-Based Practice

At the completion of residency, residents should be able to:

1. Understand team dynamics and leadership
    a. Demonstrate the ability to form and manage interdisciplinary health care teams, effectively leading and facilitating to enhance patient outcomes
    b. Use frameworks, such as Tuckman's Five Stages of Teaming (forming, storming, norming, performing, transforming/adjourning), to optimize team performance and adaptability in both inpatient and outpatient settings
    c. Engage in teaming activities across various clinical environments to enhance collaborative care delivery
        i. Participate in mock codes and other simulation sessions
        ii. Serve as "doctor of the day"
2. Promote teamwork in QI/PI initiatives
    a. Use PI methodology to identify clinical processes, analyze practice and implement changes with the goal of performance improvement
    b. Foster open communication regarding performance improvement efforts and actively participate in QI discussions
3. Coordinate care across multiple settings to ensure seamless transitions and comprehensive care delivery
4. Assess how health care economics affect clinical decisions and patient care and apply this understanding to optimize resource allocation
5. Conduct cost-benefit analyses to provide cost-effective care without compromising quality
6. Advocate for patients by addressing barriers to care and ensuring equitable access to health care services
7. Improve patient safety across the continuum of care through:
    a. Identification and evaluation of adverse events, errors and harm
    b. Prevention of diagnostic error and other harms in inpatient and outpatient settings
    c. Participation in the disclosure of patient safety events in real and/or simulated interprofessional clinical patient safety activities

d. Improvements in transitions in patient care (e.g., handoff process, team communication)

Practice-Based Learning

At the completion of residency, residents should be able to:

1. Utilize sources of evidence-based medical literature
   a. Point-of-care tools providing filtered EBM information (e.g., Family Physicians Inquiries Network Clinical Inquiries, DynaMed, First Consult, UpToDate, Essential Evidence Plus)
   b. Tools providing unfiltered information (e.g., MEDLINE, PubMed)
   c. Foraging tools to facilitate awareness of new relevant medical evidence (e.g., patient-oriented evidence that matters)
   d. Institutional resources and guidelines for quality improvement: TJC, Institute for Clinical Systems Improvement, Institute for Healthcare Leadership, IHI, AAFP, IOM, Occupational Safety and Health Administration
2. Collaborate in performance improvement efforts
   a. Participate in practice-based research networks
   b. Incorporate community-based participatory research
   c. Seek multidisciplinary involvement of physicians and non-physician health professionals in both family medicine and other disciplines
3. Demonstrate the ability to investigate and evaluate one's own care of patients
4. Demonstrate a commitment to lifelong learning about the various local, regional and national health systems to improve the delivery of care to patients
5. Continuously improve patient care based on constant self-evaluation and integrative lifelong learning

Professionalism

At the completion of residency, residents should be able to:

1. Demonstrate appropriate behavior in their interactions with colleagues, patients, families and members of the health care team
2. Use methods of communication appropriate to the individual situation and respond to communication in an effective and timely manner
3. Display accountability and responsibility for their role within the health care team, both in leadership and as a team member
4. Demonstrate sensitivity to differences among people, including but not limited to differences in gender, race, age, ethnicity, religion, sexuality and culture
5. Demonstrate awareness of implicit bias, particularly in relation to race and ethnicity

Implementation

1. Implementation of this PBLI Curriculum Guideline should be longitudinal throughout the resident's training experience, with increasing emphasis in the latter half of the residency program.
2. Conferences and other formal educational activities should integrate the core PBLI topics.
3. Residents must also gain an awareness of the community/cultural resources needed for sustained improvement.
4. The PBLI curriculum provides an opportunity for interdisciplinary work in both inpatient and outpatient settings.
5. Residents may also partner with external resources to ensure that PBLI applies to their own practice and those with whom they are practicing.
6. For resident QI projects to succeed, barriers and strengths must be fully explored to best understand the needs, challenges and resources needed to move forward.
7. With this background, the resident should have hands-on experience leading at least one QI/PI initiative during their three years of training.
8. Improvement projects in collaboration with clinic staff and quality management professionals in the community (e.g., family medicine center, hospital, community at large) will provide paths to PBLI competency.
9. QI activities should include activities aimed at identifying pertinent social drivers of health and reducing health care disparities.

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. Family Medicine Milestone. www.acgme.org/globalassets/PDFs/Milestones/FamilyMedicineMilestones.pdf

ACGME Board. Program Requirements for Graduate Medical Education in Family Medicine. www.acgme.org/globalassets/pfassets/programrequirements/2024-prs/120_familymedicine_2024.pdf

AAFP. Curriculum Guidelines. Medical informatics. www.aafp.org/dam/AAFP/documents/medical_education_residency/program_directors/reprint288-medical-informatics-2023.pdf

AAFP. Curriculum Guidelines. Scholarly Activity and Information Mastery. www.aafp.org/dam/AAFP/documents/medical_education_residency/program_directors/Reprint280_Scholarly.pdf

Barry HC, Cosgrove L, Slawson DC. Where clinical practice guidelines go wrong. *Am Fam Physician*. 2022;105(4):350-352.

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.

Bonnes SL, Ratelle JT, Halvorsen AJ, et al. Flipping the quality improvement classroom in residency education. *Acad Med.* 2017;92:101-107.

Taylor EF, Genevro J, et al. Building quality improvement capacity in primary care. Rockville, MD. U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality. www.ahrq.gov/sites/default/files/publications/files/pcmhqi2.pdf

Chase SM, Miller WL, Shaw E, et al. 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*. Washington, DC: National Academy Press; 2001. https://nap.nationalacademies.org/read/10027/chapter/1

Taylor EF, Peikes D, et al. Creating capacity for improvement in primary care: the case for developing a quality improvement infrastructure. Rockville, MD. U.S. HHS, AHRQ. www.ahrq.gov/sites/default/files/publications/files/pcmhqi1.pdf

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. www.phf.org/resourcestools/Documents/ABCs_of_PDCA.pdf

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

Jacobs C, Seehaver A, Skiold-Hanlin S. A longitudinal underserved community curriculum for family medicine residents. *Fam Med***.** 2019;51(1):48-54.

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

Kohn LT, Corrigan JM, Donaldson MS, eds. To err is human: building a safer health system. Committee of Quality of Health Care in America, Institute of Medicine. Washington, DC: National Academy Press; 2000. https://nap.nationalacademies.org/read/9728/chapter/1

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. National Patient Safety Foundation. Boston, MA; 2015.

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.

Rule ARL, Reynolds K, Sucharew H, et al. Perceived cultural competency skills and deficiencies among pediatric residents and faculty at a large teaching hospital. *Hosp Pediatr*. 2018;8(9):554-569.

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):256-259

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

Slawson D, Shaughnessy AF. Reducing overuse by recognizing the unintended harms of good intentions. *BMJ Evid Based Med*. 2021;26(2):46-48.

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.

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/

AAFP. Medical Home. www.aafp.org/about/policies/all/medical-home.html

Cochrane Library (subscription required). www.cochranelibrary.com/

Dartmouth Biomedical Libraries. EBM Resources. www.dartmouth.edu/library/biomed/guides/research/ebm-teach.html

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

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

Institute for Healthcare Improvement. www.ihi.org/

National Association for Healthcare Quality. https://nahq.org/

New York Academy of Medicine. Evidence Based Health Care. www.nyam.org/fellows-grants/sections/evidence-based-health-care/

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

The Joint Commission. www.jointcommission.org/

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