

The Family Medicine Curriculum Resource Project Structural Framework

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Background: *In the original contract for the Family Medicine Curricular Resource Project (FMCRP), the Health Resources and Services Administration (HRSA), Division of Medicine and Dentistry, charged the FMCRP executive committee with reviewing recent medical education reform proposals and relevant recent curricula to develop an analytical framework for the project. **Methods:** The FMCRP executive and advisory committees engaged in a review and analysis of a variety of curricular reform proposals generated during the last decade of the 20th century. At the same time, in a separate and parallel process, representative individuals from all the family medicine organizations, all levels of learners, internal medicine and pediatric faculty, and the national associations of medical and osteopathic colleges (Association of American Medical Colleges and the American Association of Colleges of Osteopathic Medicine) were involved in group discussions to identify educational needs for physicians practicing in the 21st century. **Results:** After deliberation, a theoretical framework was chosen for this undergraduate medical education resource that mirrors the Accreditation Council for Graduate Medical Education (ACGME) competencies, a conceptual design originated for graduate medical education. **Discussion:** In addition to reflecting the current environment calling for change and greater accountability in medical education, use of the ACGME competencies as the theoretical framework for the FMCR provides a continuum of focus between the two major segments of physician education: medical school and residency.*

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In its original request for proposals, the US Health Resources and Services Administration (HRSA), Division of Medicine and Dentistry, charged the Family Medicine Curricular Resource Project (FMCRP) to develop a document that would provide medical school faculty with a resource designed to assist them in improving curricula to better train 21st century physicians, while addressing important national health and societal issues. This charge called for a critical examination of current primary care curricula, including a review of recent calls for curricular reform. The contractor, the Society of Teachers of Family Medicine (STFM), was asked to propose an analytic framework on which to

base the training of physicians that would provide them with competencies required to meet the challenges that medical school graduates will face in their careers.

Developing the FMCRP Theoretical Framework

As the 100th anniversary of the Flexner report¹ approaches, it is important to recognize that the education of physicians has been a constantly evolving process attuned to the needs of society.² Understanding curricular reform requires understanding its history. Many reports prior to 1990 (eg, Rappleye,³ GPEP,⁴ and Macy Foundation⁵) commented on the process as well as the content and structure of medical education. Several reports have noted the reform process has moved at a slow pace. More recently, in the 1990s, the breadth of involved stakeholders has widened as many entities, beyond the medical schools, have identified significant shortcomings and new needs in the physician training process. These needs reflect not only the explosion of

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medical knowledge and the changing demographics of the population but also the broader societal and health care system changes that are affecting the environment in which medicine is practiced. In the last 10 years, significant, collaborative projects, funded by medical education associations, the federal government, and private foundations have outlined curricular reform strategies. In an effort to focus the work of the FMCRP and appropriately frame the creation of this resource document, an educational needs assessment was conducted by reviewing the literature describing the various reform initiatives.

Literature reviews, including several methodologically excellent ones, such as that done by Irby in 1995, revealed thousands of citations.⁶ Following a broad review of these references, the FMCRP executive and advisory committees chose to focus on recent reform recommendations as well as the primary care curricular documents generated during the final decade of the 20th century to inform the process of creating a curricular framework for the FMCR. Table 1 summarizes these major medical education reform proposals. Among the common threads that run through these proposals are calls for competency-based education and assessment;

integration of medicine and public health perspectives; promoting an understanding of health care policy, systems, and financing; integration of basic and clinical science education; and increased emphasis on ethics and moral reasoning, cultural competency, communication skills, informatics, team approaches to health care, and health promotion.

Simultaneously with the review of recent reform proposals, the FMCRP executive and advisory committees undertook several large- and small-group exercises addressing the core challenge—development of a theoretical framework on which to create this new curricular resource. Involved in the group processes were representative individuals from all the family medicine organizations; general internal medicine and pediatrics faculty representatives; all levels of learners, including resident and student; and individuals from the Association of American Medical Colleges (AAMC) and the American Association of Colleges of Osteopathic Medicine (AACOM.) As an independent, parallel process, the suggestions of these representatives, when collated, bore remarkable similarity to the results of the review of reform proposals.

Table 1

Medical Education Reform Reports (1992–2000) Utilized to Develop Theoretical Framework for the Family Medicine Curriculum Resource

<i>Report Name/Year Issued</i>	<i>Organization</i>	<i>Key Recommendations</i>
(1) <i>Educating Medical Students: Assessing Change in Medical Education—The Road to Implementation (ACME-TRI Report)</i> , 1992. ¹	Association of American Medical Colleges	<ul style="list-style-type: none"> • Documents deficiencies in medical education. • Medical schools surveyed to identify strategies for overcoming barriers and developing action plans for change.
(2) <i>An Educational Blueprint for the Brown University School of Medicine</i> , 1993. ²	Brown University School of Medicine	<ul style="list-style-type: none"> • Competency-based curricula consists of a prescribed knowledge base and nine abilities: (1) effective communication, (2) basic clinical skills, (3) using basic science to guide therapy, (4) diagnosis, management, and prevention, (5) lifelong learning, (6) self-awareness, self-care, and personal growth, (7) the social and community contexts of health care, (8) moral reasoning and ethical judgment, and (9) problem solving. • Explicitly delineates criteria for assessment and levels of achievement.
(3) <i>General Pediatric Clerkship Curriculum and Resource Manual</i> , 1995. ³ Revised in 2000. ⁴	Ambulatory Pediatric Association/Health Resources and Services Administration (HRSA)	<ul style="list-style-type: none"> • Outlines specific knowledge, attitude, and skill competencies for core pediatric clerkship. Addresses competencies required of all graduating medical students.
(4) <i>Core Medicine Clerkship Curriculum Guide: A Manual for Faculty</i> , 1995. ⁵ Revised 1998. ⁶	Society of General Internal Medicine and Clerkship Directors in Internal Medicine/HRSA	<ul style="list-style-type: none"> • Outlines specific knowledge, attitude, and skill competencies for core internal medicine clerkship. Addresses competencies required of all graduating medical students.
(5) <i>Medicine and Public Health: The Power of Collaboration</i> , 1998. ⁷	American Medical Association and American Public Health Association	<ul style="list-style-type: none"> • Establishes need for collaboration between medicine and public health and the form of six “synergies”: (1) improving health care by coordinating services for individuals, (2) improving access to care by establishing frameworks to provide care for the uninsured and underinsured, (3) improving the quality and cost-effectiveness of care by applying a population perspective to medical practice, (4) using clinical practice to identify and address community health problems, (5) strengthening health promotion and health protection by mobilizing community campaigns, and (6) shaping the future direction of the health system by collaborating around policy, training, and research.

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Table 1
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<i>Report Name/Year Issued</i>	<i>Organization</i>	<i>Key Recommendations</i>
(6) Three Pew Health Professions Commission Reports, including <i>Recreating Health Professional Practice for a New Century</i> , 1998. ⁸	Pew Health Professions Commission	<ul style="list-style-type: none"> • Delineates 21 competencies for successful practice in the 21st century. (Table 2)
(7) <i>Interdisciplinary Generalist Curriculum Project (IGC)</i> , 1998. ⁹	Funded by HRSA at multiple sites	<ul style="list-style-type: none"> • Integration of basic and clinical science curricula in both preclinical and clinical years. • Takes on challenge of defining critical competencies for health care providers.
(8) <i>Medical Student Objectives Project (MSOP): Learning Objectives for Medical Student Education</i> , January 1998; ¹⁰ <i>Contemporary Issues in Medicine: Medical Informatics and Population Health</i> , June 1998; ¹¹ and <i>Contemporary Issues in Medicine: Communication in Medicine</i> , October 1999 ¹²	Association of American Medical Colleges	<ul style="list-style-type: none"> • Report I sets forth four attributes all students should have upon graduation: altruistic, knowledgeable, skillful, and dutiful and outlined specific competencies for each attribute. (Table 3) • Report II outlines curricular objectives and implementation strategies related to medical informatics and population health. • Report III details the scope of communication, its importance to medicine, and an action plan for improving communication skills education.
(9) <i>Thirteenth COGME Report: Physician Education for a Changing Health Care Environment</i> , 1999. ¹³	Council on Graduate Medical Education	<ul style="list-style-type: none"> • Emphasis on understanding the system in which health care is delivered (ie, health care policy and systems, financing, integrated delivery systems, team approaches to care, care of the individual patient in the context of population). • Recommends incorporation of epidemiology, population-based care, disease prevention and wellness, cultural competency, informatics, ethics, and advanced communication skills in curricula.
(10) <i>ACGME Outcomes Project</i> , 1999. ¹⁴	Accreditation Council for Graduate Medical Education	<ul style="list-style-type: none"> • Defines general competencies for graduate medical education: (1) patient care, (2) medical knowledge, (3) practice-based learning and improvement, (4) interpersonal communication skills, (5) professionalism, and (6) systems-based practice. (Table 4)
(11) <i>Graduate Medical Education Core Curriculum</i> , 2000. ¹⁵	Core Curriculum Group, Association of American Medical Colleges.	<ul style="list-style-type: none"> • Defines five “domains” of learning common to specialty disciplines: (1) biomedical ethics, (2) scholarly medical practice, (3) communication in medicine, (4) medical professionalism, and (5) the health care system.
(12) <i>The AAMC Project on the Clinical Education of Medical Students</i> , 2000. ¹⁶	Association of American Medical Colleges	<ul style="list-style-type: none"> • Points to lack of adequate teaching of fundamental clinical skills, need for more formative assessment of student performance, and need to integrate contemporary issues into the clinical experiences.

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Table 2

Twenty-one Competencies for the 21st Century

- Embrace a personal ethic of social responsibility and appropriately.
- Exhibit ethical behavior in all professional activities.
- Provide evidence-based, clinically competent care.
- Incorporate the multiple determinants of health in clinical care.
- Apply knowledge of the new sciences.
- Demonstrate critical thinking, reflection, and problem-solving skills.
- Understand the role of primary care.
- Rigorously practice preventive health care.
- Integrate population-based care and services into practice.
- Improve access to health care for those with unmet health needs.
- Practice relationship-centered care with individuals and families.
- Provide culturally sensitive care to a diverse society.
- Partner with communities in health care decisions.
- Use communication and information technology effectively
- Work in interdisciplinary teams.
- Ensure care that balances individual, professional, system, and societal needs.
- Practice leadership.
- Take responsibility for quality of care and health outcomes at all levels.
- Contribute to continuous improvement of the health care system.
- Advocate for public policy that promotes and protects the health of the public.
- Continue to learn and help others learn.

Having gone through this research, review, and discussion process by mid-2001, the FMCRP executive committee reached consensus, deciding that the competency structure developed by the ACGME included all of the multiple competencies for physicians in the 21st century recommended by the reform reports, and at the same time, reflected the perspectives on the FMCRP advisory committee. Further, by using the ACGME conceptual framework, the medical student education curricular resource would provide a critical link between undergraduate and graduate medical education.

Discussion

As work on the FMCRP proceeded, additional curricular reform articles and reports surfaced.⁷⁻¹¹ These served to confirm the decision to use the ACGME competencies as the organizational framework for the curricular resource. These reports all stressed the importance of skill or competency development throughout the course of medical education. And, the emphasis on patient-centered, evidence-based practice; interdisciplinary collaboration; disease prevention and health promotion; health care quality and population-based care; doctor-patient communication; informatics; and lifelong learning skills was consistent in all these reports. The importance of linking educational outcomes to health care quality was made explicit. The ACGME competency conceptual framework addresses all of these recurring themes, and the FMCRP

continued to work in an environment supportive and affirming of the theoretical framework.

Simultaneously with the FMCR contract, the American Academy of Family Physicians, the Society of Teachers of Family Medicine, and other family medicine organizations undertook a substantial study of the needs of patients in the changing health care environment and generated the Future of Family Medicine project.¹² The goal of the project was to develop a strategy to transform and renew the discipline of family medicine to meet these needs. The project identified core values, a New Model of practice, and a process for development, research, education, partnership, and change to improve the health care of the nation. The characteristics of the New Model are consistent with the competencies called for by the ACGME, as well as the curricular structure recommended in the FMCR.

The Institute of Medicine (IOM) report, *Health Professions Education: A Bridge to Quality*, creates an overarching vision for health professions education defined by integrating five core competencies. The report states that: "All health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics."¹³

The Institute of Medicine calls for the development of a common language and adoption of core competencies, as well as the integration of these competencies into oversight processes (accreditation, licensure, and certification). A similar vision directed the work of the FMCRP.

Conclusions

The decision in 2001 to use the ACGME competency structure provided the FMCRP with an analytic framework that was relevant to the needs of the evolving health care environment, as documented by the consistency in the calls for reform. It also provided an opportunity to logically link the levels of medical education. Across the country, medical schools are evolving curricula to link with this dominant driver in residency education, and those in the continuing medical education enterprise are beginning to address the need for continuing support of physicians in these same competency domains. Developing curricula around these defined competencies guarantees that learning expectations are explicitly defined and can be measured by observing behaviors that demonstrate acquisition of specific skills, knowledge, and attitudes. Further, constructing curricula for use in pre-clerkship courses, clinical clerkships, post-clerkship electives, and in specific curricular topic areas using the ACGME competencies has provided a unifying structure, one which also enforces the need to address competencies beyond those embodied in the domain of medical knowledge.

Table 3

Medical School Objectives Project, Report I. Physician Attributes

Physicians must be altruistic—before graduation students will have demonstrated:

- Knowledge of the theories and principles that govern ethical decision making, and of the major ethical dilemmas in medicine, particularly those that arise at the beginning and end of life and those that arise from the rapid expansion of knowledge of genetics.
- Compassionate treatment of patients and respect for their privacy and dignity.
- Honesty and integrity in all interactions with patients' families, colleagues, and others with whom physicians must interact in their professional lives.
- An understanding of, and respect for, the roles of other health care professionals and of the need to collaborate with others in caring for individual patients and in promoting the health of defined populations.
- A commitment to advocate at all times the interests of one's patients over one's own interests.
- An understanding of the threats to medical professionalism posed by the conflicts of interest inherent in various financial and organizational arrangements for the practice of medicine.
- The capacity to recognize and accept limitations in one's knowledge and clinical skills and a commitment to continuously improve one's knowledge and ability.

Physicians must be knowledgeable—students will have demonstrated:

- Knowledge of the normal structure and function of the body (as an intact organism) and of each of its major organ systems.
- Knowledge of the molecular, biochemical, and cellular mechanisms that are important in maintaining the body's homeostasis.
- Knowledge of the various causes (genetic, developmental, metabolic, toxic, microbiologic, autoimmune, neoplastic, degenerative, and traumatic) of maladies and the ways in which they operate on the body (pathogenesis).
- Knowledge of the altered structure and function (pathology and pathophysiology) of the body and its major organ systems that are seen in various disease and conditions.
- An understanding of the power of the scientific method in establishing the causation of disease and efficacy of traditional and nontraditional therapies.
- An understanding of the need to engage in lifelong learning to stay abreast of relevant scientific advances, especially in the disciplines of genetics and molecular biology.

Physicians must be skillful—students will have demonstrated:

- The ability to obtain an accurate medical history that covers all essential aspects of the history, including issues related to age, gender, and socioeconomic status.
- The ability to perform both a complete and an organ system-specific examination, including a mental status examination.
- The ability to perform routine technical procedures including at a minimum venipuncture, inserting an intravenous catheter, arterial puncture, thoracenteses, lumbar puncture, inserting a nasogastric tube, inserting a foley catheter, and suturing lacerations.
- The ability to interpret the results of commonly used diagnostic procedures.
- Knowledge of the most frequent clinical, laboratory, roentgenologic, and pathologic manifestation of common maladies.
- The ability to reason deductively in solving clinical problems.
- The ability to construct appropriate management strategies (both diagnostic and therapeutic) for patients with common conditions, both acute and chronic, including medical, psychiatric, and surgical conditions and those requiring short- and long-term rehabilitation.
- The ability to recognize patients with immediately life-threatening cardiac, pulmonary, or neurological conditions regardless of etiology and to institute appropriate initial therapy.
- The ability to recognize and outline an initial course of management for patients with serious conditions requiring critical care.
- Knowledge about relieving pain and ameliorating the suffering of patients.
- The ability to communicate effectively, both orally and in writing, with patients and patients' families, colleagues, and others with whom physicians must exchange information in carrying out their responsibilities.

Physicians must be dutiful—students will have demonstrated:

- Knowledge of the important non-biological determinants of poor health and of the economic, psychological, social, and cultural factors that contribute to the development and/or continuation of maladies.
- Knowledge of the epidemiology of common maladies within a defined population and the systematic approaches useful in reducing the incidence and prevalence of those maladies.
- The ability to identify factors that place individuals at risk for disease or injury, to select appropriate tests for detecting patients at risk for specific disease or in the early stage of disease, and to determine strategies for responding appropriately.
- The ability to retrieve (from electronic databases and other resources), manage, and utilize biomedical information for solving problems and making decisions that are relevant to the care of individuals and populations.
- Knowledge of various approaches to the organization, financing, and delivery of health care.
- A commitment to provide care to patients who are unable to pay and to advocate for access to health care for members of traditionally underserved populations.

Table 4

 Accreditation Council for Graduate Medical Education (ACGME) Outcome Competencies

I. PATIENT CARE

Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Students are expected to:

- A. communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families.
- B. gather essential and accurate information about their patients.
- C. make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment.
- D. develop and carry out patient management plans.
- E. counsel and educate patients and their families.
- F. use information technology to support patient care decisions and patient education.
- G. perform competently all medical and invasive procedures considered essential for the area of practice.
- H. provide health care services aimed at preventing health problems or maintaining health.
- I. work with health care professionals, including those from other disciplines, to provide patient-focused care.

II. MEDICAL KNOWLEDGE

Residents must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (eg, epidemiological and social-behavioral) sciences and the application of this knowledge to patient care. Students are expected to:

- A. demonstrate an investigatory and analytic thinking approach to clinical situations.
- B. know and apply the basic and clinically supportive sciences that are appropriate to their discipline.

III. PRACTICE-BASED LEARNING AND IMPROVEMENT

Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. Students are expected to:

- A. analyze practice experience and perform practice-based improvement activities using a systematic methodology.
- B. locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems.
- C. obtain and use information about their own population of patients and the larger population from which their patients are drawn.
- D. apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.
- E. use information technology to manage information, access on-line medical information, and support their own education.
- F. facilitate the learning of students and other health care professionals.

IV. INTERPERSONAL AND COMMUNICATION SKILLS

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patients' families, and professional associates. Students are expected to:

- A. create and sustain a therapeutic and ethically sound relationship with patients.
- B. use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.
- C. work effectively with others as a member or leader of a health care team or other professional group.

V. PROFESSIONALISM

Residents must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. Students are expected to:

- A. demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and ongoing professional development.
- B. demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.
- C. demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.

VI. SYSTEMS-BASED PRACTICE

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value. Students are expected to:

- A. understand how their patient care and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice.
 - B. know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources.
 - C. practice cost-effective health care and resource allocation that does not compromise quality of care.
 - D. advocate for quality patient care and assist patients in dealing with system complexities.
 - E. know how to partner with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance.
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As the curricular resource is disseminated, the increasingly dominant educational structure provided by the ACGME competencies will serve as a bridge between the 4 years of medical school education and residency training.

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