

Integrating Population and Clinical Medicine: A New Third-Year Curriculum to Prepare Medical Students for the Care of Individuals, Panels, and Populations

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ABSTRACT

Population and Clinical Medicine (PCM) I & II constitute two of the nine courses established for the Warren Alpert Medical School of Brown University's (AMS) innovative dual-degree Primary Care-Population Medicine (PC-PM) program. The courses will run consecutively during students' third year in the program, in conjunction with the Longitudinal Integrated Clerkship (LIC). Throughout the courses, students will examine the intersection between population and clinical medicine with a focus on vulnerable populations, the social and community context of care, quality improvement, and leadership. In addition to attending class sessions in which students will engage with leaders in relevant fields, students will also draw from patient and population-level experiences in the LIC to plan and implement two projects: a community-based intervention to address a particular health issue, and a quality improvement project to change a small aspect of care delivery at a clinical site. Finally, leadership skills development sessions will be incorporated, and leadership practice will occur during implementation of student projects.

KEYWORDS: Undergraduate medical education; population medicine

INTRODUCTION

Traditionally, medical education focused on the training of physicians to take care of individual patients. The Flexner Report of 1910 established the biomedical model with basic and clinical science components as the basis for medical education in the United States: a focus on research to improve medical knowledge, combined with hands-on clinical training to gain experience in patient care, has served as the foundation for training physicians for nearly a century.¹ William Osler, too, noted that "the primary work of a professor of medicine in a medical school is in the wards, teaching his pupils how to deal with patients and their diseases." The term "clinical medicine" stems directly from these ideas, and is commonly used to refer to the "study and practice of medicine in relation to the care of patients."² This topic receives significant attention in medical education: interviewing and physical examination skills, building rapport with patients, developing differential diagnoses, and

other important clinical skills are covered extensively not only in the final two years of medical school during clinical clerkships, but also in the first two years during courses that prepare students to interact with actual patients. However, in a rapidly evolving healthcare system, physicians must be prepared to take care of populations in addition to the individual in front of them. This may include extended families, patient panels, neighborhoods, communities, or larger populations of people.

Various terms are used to describe measures that define the care of populations rather than individuals. Population medicine, a term developed by the Institute for Healthcare Improvement (IHI), refers to healthcare services designed to care for populations of people. Specifically, population medicine aims to improve the patient experience of care (both quality and satisfaction), improve the health of populations, and reduce healthcare associated costs. These three goals together define the Triple Aim, an IHI initiative to optimize health system performance.³ Population medicine differs from public health and population health in its focus on system design to improve outcomes (see **Table 1**).

The Primary Care-Population Medicine (PC-PM) program at the Warren Alpert Medical School of Brown University (AMS) was developed, in part, to address a deficit in training of physicians skilled in caring for populations. Care that attends to the needs of the community or population – in addition to those of the individual patient – is needed in order to improve the health of Americans, who are participants in a costly system that lags in terms of outcomes and experiences, compared to many other developed countries.⁶

Table 1. Definitions of Public Health, Population Health, and Population Medicine

Public Health	All organized measures (whether public or private) that prevent disease, promote health, and prolong life among the population as a whole ⁴
Population Health	The health outcomes of a group of individuals, including the distribution of such outcomes within the group ⁵
Population Medicine	The design, delivery, coordination, and payment of high-quality healthcare services to manage the Triple Aim for a population using the best resources we have available within the healthcare system ⁵

However, training that includes the necessary knowledge, attitudes, and skills is sorely lacking. Physician leaders who are “trained to understand and improve the community health context of their patients”⁷ should be able to more effectively address the needs of their individual patients during the traditional office visit, but also step outside of this model to understand and address the higher-level issues that result in poor health outcomes for certain groups of people. Physicians who develop programs that consider patterns of disease in their communities (for example, combating obesity by addressing the fact that some neighborhoods may lack safe walking space or be food deserts) will better impact the issues that affect the health of their individual patients. Intervening at both the individual and community levels may be part of the answer to many of the health disparities that plague our country, based as they are in systemic issues rather than individual ones. By practicing clinical and population medicine as two parallel processes that use different models to address health issues (see **Table 2**), physicians may most effectively meet the needs of their patients. This article describes the population and clinical medicine courses that make up two of the nine Master of Science in Population Medicine courses in the PC-PM program, and specifically address the integration of these two levels of care.

Table 2. Key Characteristics of Clinical and Population Medicine

Clinical Medicine	Population Medicine
One physician/team; one patient	One physician/team; one or more populations
History and physical	Patterns of diseases
Treatment plan individualized by patient	Programs “treat” groups
Monitor using symptoms, labs, etc	Monitor using population level data

WHY SHOULD POPULATION MEDICINE CONTENT BE TAUGHT IN MEDICAL SCHOOL?

As noted previously, traditional medical school training prepares students well for the practice of medicine. However, the principles of population health and systems improvement are less consistently integrated. The AAMC’s Medical School Objectives Project (MSOP) issued a report in 1998 which recognized population health to be one of two key areas where a growing need for physician education existed. The report noted that “in the future, physicians will be expected to be more committed to using systematic approaches for promoting and maintaining the health of both individuals and the populations of which those individuals are members” and called for the “population health perspective” to be included in medical training.⁸ For the physician workforce to be prepared to do so, these principles must be introduced *during medical training and in conjunction with clinical care*. Specific public health competencies for training

physicians have now been established, and should be incorporated into medical student education and evaluation.^{9,10} As noted in the MSOP report, students must also be prepared to be leaders beyond the walls of their individual practices, at the community, national, and global levels. While a number of training institutions have begun to incorporate innovative experiences into medical school,¹¹ there continue to be strong calls for more widespread adoption of these ideas.^{12,13}

POPULATION AND CLINICAL MEDICINE COURSE OVERVIEW

As such, two of the nine courses in the master’s degree program contained in the PC-PM program at AMS (Population and Clinical Medicine (PCM) I and II) will focus on the integration of population and clinical medicine, with the goal of preparing future physicians to excel in both areas. Given the importance of population-level interventions for impacting the health of vulnerable and underserved patients, the course will pay specific attention to these populations (see **Table 3**), as well as to creative measures by which our system may better care for those groups (see **Table 4**). Small group sessions on these population- and system-based topics will all be facilitated by experts in the relevant field and augmented by relevant required readings.¹⁴ We will address particular conditions that can lead to populations receiving inadequate care; the skills and approaches that can improve care for these groups, and the practical skills required for physicians to manage both individual and population level issues. Additionally, the course contains five case-based sessions, also used for students in the Family Medicine clerkship of the traditional program, which follow a family’s interaction with the medical system for various health-related problems.¹⁵ As with the course as a whole, these cases combine principles of caring for vulnerable individuals with specific medical problems such as diabetes, with population-level interventions such as the patient-centered medical home that address the same issue at a higher level.

Table 3. Population Based Topics in the Population and Clinical Medicine Course

Incarceration	Adolescent and Elderly Patients
Homelessness	Lesbian, Gay, Bisexual, Transgender Patients
Race	Patients with chronic pain
Immigrant Health Issues	Patients with substance abuse

Table 4. Systems Based Topics in the Population and Clinical Medicine Course

Group Visits	Behavior Change
Advocacy	Leadership
Quality Improvement	Patient-Centered Medical Home

Importantly, the PCM courses will run during the third year of medical training in conjunction with the Longitudinal Integrated Clerkship (LIC), described elsewhere in this issue of the *Rhode Island Medical Journal*. During the LIC, students will be developing longitudinal relationships not only with their patients and preceptors, but also with their communities. More so than during the two- to six-week time periods that third-year clerkship students typically spend at one site, PC-PM students will gain perspective on the health of the communities that their practices serve, and will be able to identify deficiencies in the system where improvements can be made to better the health of their patients. Students will draw from their experiences in the LIC to propose and implement quality improvement and community-based projects for the PCM courses; equally, they will gain perspective on individual, panel, and population level care during the courses, and use this insight to enhance their clinical experiences.

LONGITUDINAL COMPONENTS

In addition to the sessions focusing on specific populations or systems approaches to care, the course will contain three components that are integrated longitudinally throughout the year.

The Social and Community Context of Care (SACC): Education that improves future physicians' abilities to care for patients with backgrounds different from their own may reduce the health disparities seen in the United States: for example, physicians who better understand the sociocultural factors that impact their patients' health should be better able to provide appropriate, culturally competent, patient-centered care.¹⁶ In the standard Family Medicine clerkship, all students are required to consider the social and community context of a particular health issue affecting the population served by their clinical site, and propose a theoretical intervention to address that issue. As described previously,¹⁷ students first explore the communities surrounding their individual preceptor sites to investigate key resources such as service organizations. Students also use internet resources to understand the demographics and health statistics relevant to that community and to further understand the chosen health issue. They conduct a literature review to inform their intervention design, and compile information about the status, content and quality of existing community resources related to their target health problem. Students next conduct key informant interviews with patients/caregivers affected by the health problem and with non-physician community-based individuals who can provide them with information about the problem from differing perspectives. Finally, students propose a feasible, community-based intervention that is relevant to the needs and resources of their community, is informed by their key-informant interviews, and is targeted to the particular social and community context. During PCM I, students will be responsible for going through these same steps and proposing an intervention to

address their chosen health issue; during PCM II, they will actually implement their intervention and report on that experience at the end of the course.

Quality Improvement: Quality improvement (QI), which consists of "systematic and continuous actions that lead to measurable improvement in healthcare services and the health status of targeted patient groups,"¹⁸ is of critical importance for the future of our entire healthcare system, as well as for individual practices and smaller systems. To improve the care of both individual patients as well as populations, physicians, practices, and systems must be able to effectively monitor their own performance and quickly make changes to ensure that the best possible care is being provided. Interspersed throughout the two semesters of PCM, students will participate in active sessions designed to enhance their understanding of quality improvement, specifically how QI methodology can be used to affect the care of vulnerable populations. During these sessions, students will practice quality improvement through hands-on experience, become immersed in the use of data at the practitioner and practice level to inform practice processes and outcomes, and consider the model of the patient-centered medical home to impact the quality of care nationwide. As with the format of the SACC projects described above, during the first semester, students will observe their practice sites and identify an area in the clinical care of their patients in which an improvement could be made. They will then define an aim statement with measurable outcomes, collect baseline data, and identify key drivers to this process including critical team members. This information along with a proposal for a small test of change or plan-do-study-act (PDSA) cycle will be presented at the end of PCM I. During the second semester, students will act on that proposal and implement their proposed PDSA cycle to affect the quality of care for that particular issue at their site, reporting on the results at the end of the course.

Leadership: To fulfill its vision of preparing students to make societal impact through "leadership roles in healthcare on the local, state, or national level in areas ranging from primary care clinical service to research, education, and health policy,"¹⁷ the PC-PM program places an emphasis on longitudinal leadership development. *Leadership in Healthcare*, the first formal leadership curriculum at AMS, is designed to equip students with the skills to be effective in future leadership roles. As described in the accompanying article, students will gain foundational exposure to core leadership topics during their preclinical years. The initial course includes didactics, mentorship, and an experiential "Leadership Action Project." Subsequently, the PCM course will integrate leadership concepts with a more clinical focus, allowing students to explore change leadership as it applies to their SACC and QI projects. Written assignments will require application of Kotter's framework¹⁹ for leading change, as well as reflections on what it means to be an effective clinical leader. This model for longitudinal student

leadership training established for the PC-PM program may serve as a model for future leadership curricula and will give our students the skills they need to become the physician leaders of the future.

EVALUATION AND ASSESSMENT

Student evaluations for the course will be based upon the two projects and one writing assignment described above (SACC and QI projects; leadership paper) as well as participation in small group sessions. Assessment of the course will be ongoing via student feedback to the course directors (verbal and written) as well as, in the future, via more robust evaluation of educational and clinical outcomes.

CONCLUSIONS

It is imperative that students are trained to become facile in managing the health of patient panels, communities, and populations as well as excellent clinical physicians for individual patients. The PCM courses, as an integral piece of the overall PC-PM program, will help students learn to take care of their patients as well as the communities from which they come. As future leaders in our healthcare system, this training in integrated clinical and population medicine will serve them well as they seek to redefine the ways in which we care for all patients, especially those from vulnerable and underserved populations.

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