

# Virtual Mentor

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## MEDICAL EDUCATION

### **The Ambulatory Long Block: A Systems-Based Practice Innovation**

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Everyone in healthcare really has two jobs when they come to work every day: to do their work and to improve it [1].

—*Paul Batalden and Frank Davidoff*

The Accreditation Council for Graduate Medical Education (ACGME) has defined competency in systems-based practice as “an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care” [2]. Applying this definition, residents are expected to:

1. Work effectively in various delivery settings and systems relevant to their clinical specialty;
2. Coordinate patient care within the system relevant to their clinical specialty;
3. Incorporate cost awareness and risk-benefit analysis in patient care or population-based care, as appropriate;
4. Advocate for quality patient care and optimal patient-care systems;
5. Work in interprofessional teams to enhance patient safety and improve quality of care; and
6. Participate in identifying systems errors and in implementing potential systems solutions [2].

Many residency programs are located in complex, poorly coordinated medical centers that lack the tools, incentives, or freedom from regulatory pressure to address systems-based practice competency fully [3-5]. Over the past 3 years the University of Cincinnati Department of Internal Medicine has improved systems-based practice training in the ambulatory setting through our involvement with the Academic Chronic Care Collaborative (ACCC) [6] and ACGME’s Educational Innovations Project [7].

Our residency program consists of 108 residents (69 of whom are categorical, i.e., with the University of Cincinnati Department of Internal Medicine for the duration of their residency), based in a large academic health center. The categorical resident ambulatory setting is an urban safety-net practice with approximately 19,000 patient visits per year located next to the main teaching hospital. After our participation in the ACCC, we adopted the chronic care model—a primary care-based framework that identifies four essential interdependent components (self-management support, delivery-system design, decision support, and information technology) within the

broader context of the community and health care system [8-11]. We transformed our practice to incorporate these essential components by (1) instituting a disease registry to track process and outcome measures (information technology); (2) creating weekly interprofessional team meetings that include residents, faculty, nurses, social workers, pharmacists, administrators, office staff, and patients (delivery-system design); (3) imbedding evidence-based guidelines, such as insulin titration flowsheets, directly into daily workflow (decision support); (4) training our residents and staff to help patients make behavior changes (self-management support techniques); and (5) learning how to engage our leaders and the community to aggressively pursue scarce resources for patients who cannot do so themselves.

Initial results were promising but quickly reached a plateau. Although willing to participate in the improvement process, residents were effectively excluded from doing so due to the traditional demands of a heavy inpatient load. We believed it would benefit both their education and patient care to include them in a more meaningful way, so we redesigned our residency program as part of the ACGME's Educational Innovations Project (EIP) [7], a program that provides flexibility with traditional accreditation requirements to encourage the development of innovative training models.

The centerpiece of our EIP is a year-long ambulatory practice experience combined with elective and clinical research time called the "long-block." From November of their second year to October of their third year, residents move from working primarily on inpatient and ICU services to an expanded outpatient experience. During this long-block, residents see patients in the general medicine practice for three 4-hour clinic sessions per week, but they are expected to make an appearance (e.g., to answer messages, etc.) every day. One half-day per week is reserved for ambulatory education topics, a quality improvement curriculum, and the interprofessional team meetings. During quality improvement sessions, residents are instructed on how to enhance organizational performance by using improvement models [12] and learn how to run plan-do-study-act cycles. They also learn how to create a problem statement, construct a fishbone diagram of contributing causes, and prioritize problems and solutions.

At the team meetings, residents and staff track aggregate clinical process and outcome measures in reports generated from the disease registry database. Each resident receives a quarterly personal score and rank on each outcome measure, comparing his or her performance to that of peers and the group as a whole. The long-block format allows us to assign responsibility and accountability for a given population of patients to each resident. In this way residents begin to look beyond the simple dyad of the patient-doctor relationship to the broader realm of their patient population and the society surrounding them. Residents use clinical data to prioritize personal and group-wide improvement projects. Overall resident evaluations include personal quality data as well as participation levels in longitudinal improvement projects.

An example of such a project began when residents found that only 19.5 percent of eligible women over 65 had received a bone densitometry (DEXA) scan. It was also discovered that a prominent endocrinologist had recently set up a private DEXA scanner and had diverted much of the hospital's bone scan business. Residents and staff struck a deal with the hospital that allowed eligible women seen in the practice to go for same-day DEXA appointments in the hospital's radiology department. The DEXA scan rates increased quickly and significantly. The same technique was then used to arrange same-day mammograms.

In another example, residents reviewed the registry data on influenza vaccines and determined that, despite an equal offer rate, black patients accepted vaccinations at a lower rate than white patients. They also found that black nurses offered the vaccine less frequently than white nurses. Residents then designed projects (currently ongoing) to understand the reasons for patients' refusal of flu shots and nurses' neglect in offering them in hopes of designing interventions to close these gaps. Our influenza vaccination rate reached all-time highs this year with the coordinated efforts of our residents, staff, and hospital administration. We printed flu season educational materials in the fall, created and advertised special flu shot clinics for our patients, electronically called all of our patients in October and reminded them to get vaccinated, and in late January used the registry to identify patients who had not yet received vaccinations and called them personally to offer one. As of March 8, 82.9 percent of all patients with diabetes, and 74 percent of all patients over the age of 50 in our practice had received or been offered influenza vaccinations.

A third example of a longitudinal improvement project was instigated at one of our team meetings. Review of the disease registry showed that only 29 percent of our patients with diabetes had received a dilated eye exam in the past year. Residents had already reviewed this problem and, using a fishbone diagram, had developed an extensive list of reasons for the low rate. At first the problem seemed insurmountable because it appeared there were not enough ophthalmologic resources to serve our predominantly low-income patients. After learning of this at the team meeting, one of the nurses thought she could solve the problem. She called the benefits managers of Ohio Medicaid HMOs and created a list of eye care resources for our patients. We are now working on a specialized referral sheet that includes addresses and bus lines that our patients can use to arrange dilated eye exams.

At the beginning of the year each resident was assigned to follow one of our measures of process or outcome (e.g., eye and foot exams for those with diabetes, tetanus shots every 10 years) and then asked to perform an evidence-based literature search on that measure. Residents presented their findings to the group and argued to keep the measure the same, change it, or drop it all together. A group discussion followed, and consensus was reached regarding each measure.

These examples demonstrate the tremendous coordination and effort it takes for members of the health care team with different skills and expertise to change a system as complex as ours. We have seen significant improvement in many process

and outcome measures of care and in patient, resident, and staff satisfaction [13]. We believe our residents are succeeding with their systems-based practice competency because, rather than simply adding quality improvement to already busy schedules, we put the new curriculum “in the water.” Every day while they are on the long-block, residents assess and improve quality of care within a cohesive team.

Our specific model may not be generalizable to every residency program, but we believe important aspects of it may be. Good care requires interprofessional teams driven by clinical data. Residents must be an integral part of these teams to achieve optimal success, and they should be given protected time in which to learn systems-based practice skills. Finally, improvement efforts are best when they are continuous rather than intermittent or one-offs, and they should directly impact the patients for whom the residents care.

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