What Did We Learn about Early Clinical Experience?

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ABSTRACT

This article explores the lessons learned by ten demonstration schools regarding the early clinical experience (ECE) component of the Interdisciplinary Generalist Curriculum (IGC) Project. Students in ECE at these schools participated in longitudinal, one-to-one or two-on-one preceptorships with primary care physician preceptors in outpatient settings. Development of an ECE was a key component of curricular change at each of the IGC Project schools. Shattering the traditional barrier between preclinical and clinical years of the 2 + 2 medical curriculum model helped create a leading edge for innovation at each of the schools.

In this article, the authors incorporated evaluation information from several sources, including the external evaluation reports of the IGC Project, final annual reports from demonstration schools, and curriculum evaluations from the coauthors' schools (the University of Colorado School of Medicine, Nova Southeastern University College of Osteopathic Medicine, and the University of California, San Francisco School of Medicine).

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Traditional medical curricula have been based on the model of teaching that kept medical students in classrooms and laboratory settings for the first two years of their education, with an introduction to clinical medicine coming abruptly in the third year. Traditionally during the third year, students join clinical teams in tertiary care hospitals or are placed in other ambulatory sites. With the recent drive toward promoting selection of primary care as the preferred career choice, there has been a growing acknowledgment that "there are structural elements of modern medical education which may work against the development of our ideal physician." [1] The rapid pace of change in health care and medicine is giving rise to corresponding rapid changes in the content and process of medical education. As director of the Kellogg Foundation Dr. T. A. Bruce recently proposed, "perhaps it isn't so much the content of our educational programmes that is remiss, but the context in which they are carried out." [2]

It is now becoming more commonly recognized that the traditional structure of medical education created an almost impenetrable wall between the so-called preclinical basic sciences years and the clerkship years. Changes in health care have led to experimentation by medical schools, with the introduction of clinical experience into the otherwise didactic first two years. Most attempts at early clinical experiences (ECEs) have been confined to limited patient contact in an introductory course on patient interviewing, a beginning physical examination skills course, or elective opportunities. The Interdisciplinary Generalist Curriculum (IGC) Project was created specifically to assist schools in developing longitudinal generalist curricula that gain impetus from ECE components.

Students have long been concerned about the applicability of their education to the practice of medicine and clearly want greater clinical relevance in their basic science education. The IGC Project serves to enhance students' overall learning in the preclinical years by providing a clinical experience as a basis for applying/correlating a campus-based classroom education. An experiential education can help to motivate and sustain medical students through the seemingly endless first two years and helps to reinforce their initial interest and desire to be a physician. The opportunity to

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develop a student–mentor relationship with a clinician while going through the rigors of medical school may appear simple in concept, yet it took the IGC Project to convert the "obvious" into reality. As one Nova Southeastern University College of Osteopathic Medicine (hereafter Nova Southeastern) student said: "before IGC, students not only couldn't see the forest through the trees, they couldn't even see the trees." [3]

Content and Structure of ECEs

Owing to the diversity of strengths, resources, and challenges at the various demonstration schools, each program developed an ECE responsive to unique local needs. A common element across the schools was placement of students in community practice settings with generalist physicians (family medicine, general internal medicine, or general pediatrics) in their first and second years. Although the times spent in ECEs varied by school, the emphasis on a longitudinal clinical experience was maintained. At Nova Southeastern, for example, approximately 25% of the weekly half-day sessions for second-year students took place at, or through, a partner managed care organization. These rotations focused on the administrative aspects of managed care and were designed to educate students about the practices and principles of integrated health care delivery systems. They were also designed to help students apply this information to understanding the specific challenges and opportunities with which physicians are confronted in managed care environments.

In response to student and preceptor evaluations, many schools developed campus-based sessions for students that were offered prior to, or integrated with, their clinical sessions that introduced basic skills such as physical examination, history taking, communication, professionalism, and ethics. The schools also encouraged their students to work with the entire health care team in the practice, giving the students an opportunity to learn a broader range of skills and roles, including lab work, vital signs, community resource referral, and care coordination.

The primary curricular innovations at each demonstration site included the introduction of early clinical experiences with community-based generalist physicians and small-group experiences embodying psychosocial issues and clinical skills content designed to complement the preceptorship experiences. Most of these innovations were within otherwise traditional first-year and second-year course structures. The introduction of the IGC changes, especially the preceptorship, into existing curricula was a complex undertaking.

What changed dramatically at Nova Southeastern, in addition to the implementation of a community-based physician–mentor experience and a managed care experience, was the integration and correlation of the campus-based courses. For example, when the cardiac system was being studied in the second year Systems course, a cardiology case was discussed in the Clinical Correlations course; the cardiac system was emphasized in the Principles of Pharmacology and Principles of Pathology courses; and cardiac clinical procedures were being demonstrated in the Clinical Practicum and Clinical Procedure courses. In addition, there was an attempt by IGC preceptors to correlate the cardiac system into their clinical teaching (e.g., many preceptors made the effort to schedule patients with cardiac disorders during IGC sessions.)

Several schools implemented campus-based small groups designed to supplement learning in the ECE. The University of Colorado School of Medicine (hereafter Colorado) found that small-group learning was most valued when it had practical application and was related to or built upon experiences in preceptorship settings. As one student said of her small-group learning:

> You consider the art of medicine and relating to patients as individuals rather than as a disease state . . . I'm able to bring in my basic sciences to get a picture of both sides of the patient, the complaint for why they are in the doctor's office, as well as what does this mean to them and how it has affected their lives.[4]

Several schools, including the University of California, San Francisco, School of Medicine (hereafter UC–San Francisco), reported that one unanticipated outcome of the introduction of an experiential curriculum was the early identification of students' emotional issues surrounding entering the medical profession. Another unintended consequence was the earlier identification of students in need of remediation in clinical skills and/or around professionalism. Faculty members recognized the benefit of identifying student problems prior to the third year and the opportunity to develop new systems to deal with remediation.

Learner Experience in ECE

Given that the primary care setting constitutes a unique culture for medical student learning distinct from traditional inpatient and tertiary care settings, it is important to listen to and learn from student experience. Students from the demonstration schools consistently reported that the ECE had been a highlight of their first two years. Two positive aspects commented upon most frequently by students included the opportunity to contextualize their basic sciences learning and to "do what they came to medical school for"—see patients. Many students also described the ECE as important validation of their decisions to go to medical school.

In the first year, most students began the ECE by identifying with patients rather than with their physician preceptors. One Colorado student related:

> It was after my first time with my preceptor that I was talking to my sister over the phone. . . . I was making a joke, I'm going to be a doctor. . . . I had actually never articulated that, and it finally meant something . . . I just started crying.[5,p.93]

The preceptorship seemed to help smooth the transition process from layperson to student–physician, allowing students an opportunity to "try on" the role of physician in a safe, supportive setting while retaining a sense of self.

> It's made me able to see myself as a doctor. Because there is this idea of a doctor, this abstract idea of this person with this stethoscope and all this knowledge, and I just didn't know how I was going to be that. I thought I was going to have to change and become a totally different person to become a doctor.[5,p.93]

Students initially had concerns about patient contact and touching patients. Many believed that the preceptorship experience helped them to become more comfortable with their patients. A student who came to medical school from a profession unrelated to health care related:

> That was one of the things that I was real uncomfortable with. In every other job I had you'd never touch anybody. I mean, it's like this wall. . . . Just the fact of going over and touching somebody else, male or female, has been a hurdle I've had to get over, and I think that's one of the things that's been real beneficial about my preceptor.[5,p.108]

Students participating in IGC preceptorships began to view their afternoons away from the campus in the preceptors' offices as "an escape from the basic sciences routine" or even a "lifeline" that helped them stay focused on their studies. A first-year student said:

> I really think it keeps you grounded. It gets pretty grim in class and to be out there interacting with people, I mean it's the whole reason for being here. I could have been a researcher, I was there, I was doing it anyway . . . it makes it you put away those doubts of "gee, what am I doing here?" [5,p.109]

By the second year of the preceptorship, the students began to recognize that they were learning and became excited about incorporating knowledge from basic sciences courses:

> If it were possible to be even more encouraged and enthusiastic, that is the case now. Because finally little by little we've been adding some pieces where we'll feel a little more comfortable in a clinical setting to go a little further. And now we're into thinking clinically "What maybe is wrong with this person? What are the possible treatments?"[5,p.97]

Negotiating relationships with their preceptors was a key learning event for most students in ECEs. In their first year, many students recognized their preceptors as an important source of support in their development as physicians and personal well-being and survival in medical school.

> One thing that I really like is that my preceptor's really young and I feel like we have a lot in common and she always, always, always asks me how I am, not just what are you doing in school, but, what's going on. I appreciate that because it feels like she cares.[5,p.111]

The preceptors represented much more to students than just teachers of medicine. The students scrutinized the preceptors for clues about "life after medical school," how to "balance their lives," and "maintain their personal relationships." Preceptors who took the time to share their thoughts and sometimes parts of their lives with their students were seen by the students as "supportive," "great teachers," and "role models."

> Last year I used to think my preceptor walked on water. This year I know he walks on water. He's great about saying, if you're not getting something from this, let me know and we'll change whatever needs to be changed. And I take him seriously. If he thinks we're going too fast, if he thinks we're missing something, then he'll change that. So I really appreciate him for that.[5,p.109]

Developing a supportive, long-term relationship with a physician/preceptor was seen by the students as the most important element of the ECE curriculum. Students frequently spoke in dramatic terms of not being able to get through school without this relationship. The perception of students was that the success of this relationship had a positive impact on them professionally and personally.

The students also responded positively to the opportunity to establish a link between the basic sciences concepts they were learning and actual patient cases they were seeing.

> I am getting direct, hands-on experience with patients, which not only prepares me for the future but also facilitates my learning textbook material and actually applying it.

> This is the most important course you can take. Day in and day out we are stuffed with seemingly unimportant materials and it usually becomes overwhelming. This program brings the other half of medical education into focus.[3]

> In the systems-based second year of school, it was great to see cases that directly related to what I was studying as I was studying it.[3]
>
> It is a great experience to see clinical applications to what you are learning. To have this begin in the first year is ideal because it shows the relevance of every course.[3]

Faculty Experience in the ECE

The advice of one IGC Project director after two years of experience with changing curricula was to "involve as many full-time faculty in the planning of the program as you can." [6,p.9] The introduction of ECE required all schools to renegotiate basic assumptions about curricular time in the first two years. In most cases, this meant a loss of time for basic science courses. The schools reported that small but vocal groups of basic scientists resented the intrusion of ECE preceptorship time into the "basic sciences years." Some of their concerns were territorial issues; other concerns related to a perceived de-emphasis of academics as a result of an apprenticeship program. This view stands in direct contrast to the view of a majority of the IGC preceptors and clinical faculty, who can be viewed as advocates of apprenticeship models. The IGC model, which features early clinical exposure and one-on-one teaching, incorporates a more integrated approach to teaching basic science and clinical medicine.

Feedback from basic science faculty at the IGC schools was predominantly positive, with most viewing IGC-inspired curricula as an asset to students' education that has not encroached upon their needed curriculum time. At most IGC schools, basic scientists have been successfully incorporated into the planning and implementation of longitudinal curricula. Many basic sciences faculty have noticed the increased excitement for learning in their courses demonstrated by students who have participated in ECE:

> The students have very real enthusiasm for the material from their experiences in their preceptors' offices.[6,p.17]

Some basic science faculty noted better comprehension of basic science knowledge:

> I cannot help but adapt my teaching to what these students are bringing back to me. Because these are issues that they are experiencing in the real world . . . It's suddenly alive to them.[4,p.18]

On the other hand, one pharmacologist expressed the concern, voiced by other basic scientists, that some students had grown inpatient with the foundational basic sciences and displayed "premature interest" in the clinical applications.[7]

Generalist faculty experienced an unprecedented opportunity to collaborate across disciplines to create a truly interdisciplinary curriculum. Project faculty found it important to communicate the common elements of primary care medicine while maintaining the uniqueness of individual specialties.

Variability of Experience

The sheer number of practices and preceptors and the inherent diversity of the three generalist specialties involved led to significant variability in students' ECEs. Faculty began hearing about the variability early from the students, who naturally compared their clinical experiences with those of their classmates. Concerns about variability led the schools to attempt various means of controlling the ECE. These included creating detailed objectives for preceptors to follow and checklists of performance criteria.

One lesson learned from these experiences is to set broad but well-defined overall objectives for the ECE and then allow the experiences to unfold in their own ways at the various clinical sites. Attempting to gain tight control of the many variables involved in the multitude of practices, teachers, and learners involved is not time well spent. Instead, faculty have learned to calm student fears about "not getting what other students are getting" and reassure them that they will accomplish the overall objectives of the experience. It is, however, important to maintain the quality of preceptors and practices involved and constantly review whether students will be able to meet curriculum objectives and develop positive mentor relationships with the preceptors.

Challenge of Assessing Students

One of the IGC Project external evaluation team's annual reports noted, "where assessment is valued and utilized as part of the educational process, the learning and the innovation appear stronger." [6,p.26] Project schools typically lacked pre-IGC baseline data for comparison purposes. Most IGC Project schools have reported improvements in the students' performances on the United States Medical Licensure Examination Step I, and shelf examinations, as well as primary care residency match data, but questions arise as to whether these data accurately reflect the learning that occurs in ECE. In 1995, the University of Wisconsin surveyed third-year preceptors about the preparedness of students in the first clerkship rotation and found that the preceptors judged these students to be significantly ($p < .01$) better prepared than previous students.[8] Some schools have implemented objective structured clinical examinations (OSCEs) and/or clinical practice examinations with standardized patients to assess clinical skills in the first two years.

Developing and Maintaining a Community Faculty Network

Implementation of the ECE component of the IGC Project required the development and mobilization of an enormous network of community generalist preceptors. A conservative estimate of the number of community faculty involved annually in teaching students at the ten IGC Project schools exceeds 1,800. The necessity for large numbers of preceptors in primary care practice sites close to the medical school placed enormous pressure on staff and faculty who coordinate ECE programs. Competing demands for clinical sites from other health professions education programs have further stressed limited preceptor resources and required cooperation between disciplines.

The IGC-influenced curricular wave hit just as the managed care push intensified in many of the communities, leading one school to pose the question: "How do we emphasize primary care in medical education when those who teach it have insufficient time to devote to the task?" [9] A major stressor on community preceptors was the conflict between clinical productivity demands and the time needed for teaching students. This impact on the capability of schools to continue ECE cannot be underestimated. Several IGC schools were faced with diminished pools of preceptors for teaching as practices joined managed care organizations.

Preceptor development needs were recognized as an enormous responsibility with no easy answers at most schools.

Integrating ECE into the Curriculum

Final reports from the IGC Project schools conclude that the ECE will be retained as a required component of their curricula. After experiencing the positives and negatives involved in implementing ECE, the demonstration schools still believe that the experience strengthens student learning. All the schools report that participating in ECEs enhanced students' abilities to interact with patients.

The demonstration schools recommended strongly that other schools considering adding ECE to their curricula make a commitment to incorporate it into the curriculum entirely, rather than trying it as a limited demonstration project. They also recommend including students in planning and in the quality improvement process.

"Downstream" Effects

Many of the IGC schools reported an increased preference for primary care specialty choices among graduating students; however, the direct impact of ECE on specialty choice is difficult to assess. Students commented that early exposure to clinical care enabled them to begin to "rule in or rule out" primary care specialties as potential careers.

Considerable discussion among IGC Project faculty centered on whether it was more beneficial for students to remain with the same preceptor for the first two (and sometimes three) years to rotate to different primary care preceptors. Colorado reached a compromise by allowing time for a "preceptor switch," particularly between internal medicine and pediatrics practices. However, many faculty believe that the benefits of a longitudinal relationship with a preceptor and the primary care practice outweigh the need for a variety of experiences.

IGC-related developments have allowed the introduction of other content, teaching, and assessment innovations, including problem-based learning, the use of standardized patients, and coverage of managed care issues and ethics. At many schools, the ECEs led to comprehensive reviews of the entire medical curricula. Most schools found that their third-year clerkship curricula and evaluation standards were in need of revision due to the increased skills of students who had experienced two years of ECE. An increased emphasis on ambulatory care has also been added to the clerkships at several schools.

There have been other downstream effects, including the awareness that applicants to the ten medical schools consistently mention the ECE as a positive asset that attracted them to the IGC Project schools. In post-interview surveys at Eastern Virginia Medical School, the most frequently cited positive impression was the ECE component of the curriculum.[10] The schools also report that students are performing better on clinical skills assessments since the introduction of ECE. Several schools report improved performances on the National Board of Medical Examiners Step 1 examination and higher scores on shelf and mini-board examinations.[4]

Most schools report improvements in students' performances in clerkships. The University of Nebraska College of Medicine reported that clerkship directors of medicine, pediatrics, obstetrics–gynecology, and psychiatry found that these students were better prepared for rotations. Differences in student performances were especially notable early in the third year, but seemed to even out as the students progressed through their third-year clerkships.

Conclusion

Recent changes in health care financing and the delivery of medicine are influencing the need for dramatic changes in the content and process of medical education. In response to these changes, medical education is beginning to dismantle the longstanding traditional curriculum consisting of two years of preclinical didactic education in the classroom and

laboratory followed by two years of hospital-based clinical clerkships. This article describes the experiences of ten IGC Project demonstration medical schools that have incorporated early clinical experience programs as a fundamental part of their medical education and training models.

The introduction of early clinical experience facilitated by IGC Project funding comes at a propitious moment in the health care revolution. The ten demonstration schools dealt with the demands of their local environments to create innovative ECE solutions. ECE has led the way for broader curricular innovation at these schools and will be sustained as an essential curricular component. Further study of students in ECE curricula as they proceed to graduate education and practice will provide a clearer picture of the overall impact of these changes in preparing physicians for their future roles.

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