

THE UCSF CODA PROGRAM

The Finishing Touches of Medical School

Hueylan Chern, MD, Bradley Monash, MD, and Courtney Green, MD

Among the numerous milestones in the life of a physician, for many the transition from medical student to resident physician perhaps remains the most daunting. Patients replace textbooks, treatment plans supplant examinations, and patient outcomes supersede grades. This challenging and stressful transition can be physically and emotionally exhausting. Filled with uncertainty and many new responsibilities, new interns experience a steep learning curve—from day one they need to navigate complex health systems and deliver competent, appropriate, and high-value patient care.

The “July phenomenon,” a perceived increase in the risk of medical errors that occurs in association with the beginning of residency, has been widely publicized and described in the medical literature. Educators have attempted to address many of these challenges by developing preparatory courses for the fourth year of medical school, aiming to bridge the gap between the clinical, professional, psychological and emotional demands of medical school and residency. Preparatory courses run the instructional design gamut, from boot camp experiences focusing on specific specialty training to more all-inclusive courses that cover more generic transition principles applicable to all specialties.

In 2001, the University of California, San Francisco (UCSF) School of Medicine responded to these needs with the development and implementation of a multidisciplinary, integrated, capstone course for all graduating medical students. Coda (as in the concluding passage of a piece or movement) takes place during the last three weeks of medical school. Designed to prepare students for residency and the demands of physician-hood, Coda cultivates a sophisticated, purposeful and holistic educational experience that consolidates core clinical and systems-based knowledge, hones critical resuscitative and procedural skills, and fosters innovative strategies to enhance personal well-being.

Insights from residency program directors, recent medical school graduates, and respected leaders in medical education formed the basis of a comprehensive list of competencies necessary for the successful transition to internship. These were further honed through cross-referencing with the six Accreditation Council for Graduate Medical Education (ACGME) core competencies, and more recently the ACMGE milestones. Through ongoing student feedback and bi-annual review from UCSF’s educational oversight committees, Coda has evolved into a celebrated and highly anticipated foundational component of UCSF medical student training.

The schedule consists of morning large group didactics and individualized afternoon small group sessions. Lectures cover

high-yield topics relevant to all providers, including clinical reasoning, medical liability, resident well-being, and the management of common and emergent medical conditions. The small group sessions consist of workshops, panel discussions, and simulation exercises that focus on clinical processes (e.g., medication reconciliation, family-centered rounds), procedural skills (e.g., central line placement, chest tube management), and anxiety provoking topics (e.g., making mistakes as an intern, top ten overnight calls for various disciplines). There are also sessions that focus on work-life balance, the political challenges of working in a hierarchy, planning and managing finances, and professional development in residency. The success of Coda is an exploratory analysis published in *Academic Medicine*, co-authored by the course originators.¹

Coda increasingly offers opportunities for individualized, specialty-focused content review and skills training. The small group sessions are offered as “selectives,” with student interest and participation based on their future residency training. The curriculum houses a parallel track for pediatrics-bound students. Students headed into the more procedurally oriented fields of obstetrics and gynecology, emergency medicine and surgery may enroll in their respective competency-based immersion experience (COBIE). These longitudinal “courses within a course” offer closely mentored break-out sessions hone the requisite knowledge and skills for students to hit the ground running on their first day of internship. The educational system has recognized the importance of such training, as demonstrated through a statement released by joint surgical organizations (American Board of Surgery; American College of Surgeons; Association of Program Directors in Surgery; Association for Surgical Education) that “all matriculates to surgery residency successfully complete a preparatory course . . . before the start of their training.”

Specialist medical educators developed their respective COBIEs with detailed attention to the core cognitive and technical skills required by trainees. Students receive focused instruction with close supervision and engagement from faculty mentors. For the surgery COBIE, interactive sessions cover an intensive review of technical skills, ward management and communication skills. Course facilitators teach ward management content through hands-on instruction involving mock pages that reflect common post-operative conditions.

These practical scenarios simulate urgent, potentially life threatening post-operative ward issues that the interns may face alone while other residents are scrubbed in the Operating Room and not readily available. They aim to highlight early recognition, immediate actions, when to request assistance, and how to

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NEW SCHOOL

Christine K. Cassel, MD, on Kaiser's Effort for a New Model of Education

Steve Heilig, MPH

Christine Cassel, MD, is a leading figure in geriatric medicine, medical ethics and quality of care and has been President of the National Quality Forum, American Board of Internal Medicine and American College of Physicians. She chaired Institute of Medicine reports on end-of-life care and public health and is author or co-author of fourteen books and more than two hundred journal articles. She edited four editions of Geriatric Medicine, a leading textbook, and completed a bioethics health policy fellowship program at the University of California, San Francisco (UCSF). Cassel is the Planning Dean for a new Kaiser Permanente School of Medicine opening in Los Angeles in 2019 and we asked her for a summary of this effort.

What was the impetus for this new medical school?

Kaiser Permanente (KP) has been training residents for over forty years, in many specialties, with collaborative relationships with medical schools. It's a different kind of experience here for residents because of our distinct system. The Kaiser board considered creating a medical school for some time, starting with the vision of a group of Kaiser physicians who worked on the idea for eight years. It's an organization devoted to delivering affordable quality care to members, and for some the idea of a medical school seemed a bit of a stretch. But as the country moves towards new models and using data to improve such care, the leadership saw the medical school as another way to create a useful model for our country when so much is changing.

Let's get this up front—some have surmised Kaiser is doing this mainly because they need more doctors trained in the Kaiser model and the school is to be a kind of "feeder" for KP.

Yes, that has been questioned. It does take time for new physicians to work best in our system and I could see how it might seem we are hoping to train our own. But that's not the case; it's actually to be a very small school, starting with 48 students per class for the first four years at least, and we have 22,000 Permanente physicians now, so this is a drop in the bucket and it would hardly be efficient to start a whole school for that reason. What we are doing is testing a hypothesis that we can improve care by embedding students in an integrated system of care.

There have been so many high-level efforts to reform and improve medical training, going back a century to Flexner and onward; are you using such reports to guide your new school?

We're part of the group called Beyond Flexner (beyondflexner.org); their focus is on social missions in health professional education. We do want to be very respectful of the tra-

ditional Flexnerian model, which was that students should be taught in a research university with more evidence-based focus than before, with students taught by those at the cutting edge of all areas of science and medicine, and multiple clinical relationships. The message students get is often dependent on where they are rotating, with varied strengths and frustrations, and with education competing with other missions such as research. So we join those who want to give more attention to best teaching, and elevate faculty who are the best teachers. That has been difficult in an NIH-funded research culture. Our students will be embedded in a clinical system where they have all the data available on each patient, where specialists are highly dependent on primary care and the patient also has electronic access to all their data—52 percent of KP interactions with members are done electronically already, so that is much more efficient for the patients who have to come into the office less. Teamwork is paramount too, with interdisciplinary teams of doctors, nurses, social workers, pharmacists involved in teaching as well.

So is this a refocus on primary care as so many have recommended?

This school will be focused entirely on primary care physicians. The training and system will be built on respect and the integral importance of primary care. Students who want to focus on molecular biology research should go to another school and we will make that clear. The research these students will do will be based on population data, as we have a very rich database there. Of course we will teach basic science, anatomy, physiology, etc, but we are hiring faculty there based mostly on their teaching expertise. Much will be done in small-group settings rather than large lectures. It is being shown that students learn better that way—in fact, it's harder to re-train faculty in some of these curriculum changes!

Do you see this as also an attempt to address future physician supply problems?

There is debate about exactly how many and what kind of new doctors are going to be needed, of course. I think nobody debates that we need new physicians equipped to practice in the rapidly-changing medicine we now live in. Our students are going to just be starting practice in 2030—how in the world can we know just what that will be like? So we need to equip them with the best understanding of technology, their communities, and the evolving roles of physicians and practice, especially as part of a team. That's what this effort is all about.

How about diversity concerns, voiced by so many?

Diversity in terms of social, ethnic and racial diversity but



also economic diversity, is something we are committed to addressing. Right now 60 percent of U.S. medical students come from the top 20 percent of income, and 3 percent from the bottom 20 percent. We will have not only scholarships but look at better pipelines for disadvantaged students.

Will the school seek to address high medical school debt?

We are opening in 2019, and the first two classes, for their whole four years, will be tuition-free. After that it will average 50 percent support and I suspect it will be more, as we haven't begun fundraising for these purposes.

This is a kind of a temporary, "consultant" role for you, correct?

Yes. I am not a Permanente physician, although I was on their board for over a decade and have long been an admirer of their system. I've been in academic medicine and was a Dean at Oregon Health and Sciences University. We'll be hiring a new founding Dean and board, and so forth. So credit should go to Kaiser leaders who conceived and will be following through on this very large project. The last time a medical school was developed without an affiliated university was Mayo over forty years ago, and their concept was similar, in that they wanted it to not be a university, research-oriented culture, but with a clinical focus and culture. Right after Kaiser made it's announcement in 2015, Geisinger announced it was merging with or acquiring a struggling medical school to train students in their model of care. So it's kind of interesting that with more integrated systems now, we may see other schools along these lines developing in the future.

For more information, see: <https://schoolofmedicine.kaiserpermanente.org/>

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accurately present patients in a concise manner. The technical sessions review preparation for operations, obtaining surgical consents, core operative principles, and basic surgical skills such as knot tying and suturing. These skills are further reinforced by an innovative home video curriculum made possible through shared research development and curricular collaboration between the UCSF Surgical Skills Center and Practice, an innovative technology company. The curriculum uses a mobile application with video capture to foster deliberate practice and self-reflection. Completed home video assignments are uploaded and reviewed by peers and faculty for individualized feedback. Early experience with the surgery COBIE has revealed improved student confidence and technical performance.²

As medical educators, we need to continue to innovate and creatively revise and revamp undergraduate medical curricula to meet the changing demands of medical education. The UCSF Coda course with its embedded flexible, individualized, and competency-based educational opportunities exemplifies such effort, and may serve as a template for other institutions. Through providing students with didactics and small-group sessions applicable to professional development and clinical training across disciplines, and further offering tailored longitudinal curricular experiences, we are able to deliver a compact and high-yield preparatory course and capstone medical school experience for all.

Hueylan Chern, MD, is a colorectal surgeon at UCSF Medical Center. She specializes in laparoscopic procedures for conditions such as colorectal cancer, inflammatory bowel disease and diverticular disease. Bradley Monash, MD, is Associate Chief of the Medicine Service, and Assistant Clinical Professor of Internal Medicine and Pediatrics at UCSF school of medicine. He also serves as the Site Director at Moffitt-Long Hospital for the UCSF Internal Medicine Residency, and as Co-Director of Coda. Courtney Green, MD, is a Resident Research Fellow in General Surgery at UCSF.

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