Preparing for Change: The Plan, the Promise, and the Parachute

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Abstract

The University of California's (UC's) medical education programs are on the brink of change. In January 2007, the UC system completed a multiyear health sciences planning effort that is the most comprehensive undertaken in decades. For medical student education, the plan calls for an approximately one-third increase in enrollment across the system—from approximately 650 current medical school graduates per year to a projected 920 graduates annually by the year 2020. During the same period, California's population is expected to increase in size and diversity in ways unmatched by any other state in the nation.

The plan calls for development of new programs that will increase enrollment in unique and unprecedented ways. The first phase of this growth is under way and is planned to continue through a series of programs that seek to address the needs of California's medically underserved communities. Areas of focus include rural health and telemedicine (Davis); the Spanish-speaking Latino community (Irvine); diverse, disadvantaged communities (Los Angeles); health disparities and health equity (San Diego); and the urban underserved (San Francisco and Berkeley). In November 2006, UC medical schools received $200 million in bond funding to support this growth and to create new telemedicine programs to increase access to services provided by faculty physicians. In the coming years, UC medical schools will face demographic and budgetary challenges that will require perseverance, creativity, and certain leaps of faith. Public expectations are high.

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The University of California (UC) health sciences system is on the brink of change and is preparing to make a leap of faith. For the past several years, UC medical schools have worked with one another and together with the university's system-wide office of the president to plan for the future. In January 2007, the UC system completed a multiyear health sciences planning effort that is the most comprehensive undertaken by the system in decades. The recommendations resulting from this effort are contained in a recent report, *A Compelling Case for Growth: Special Report of the Advisory Council on Future Growth in the Health Professions*.[1] This report builds on an in-depth review of California's health workforce needs, and it provides a strong rationale for growth in UC's medical education programs and in four other health professions (nursing, pharmacy, public health, and veterinary medicine).

For medical education, the report's recommendations are based on several considerations, including awareness that California's existing shortages of physicians are likely to increase in future years, belief that educational opportunities for California students are not sufficient for meeting future needs, recognition of the responsibilities of UC campuses for providing access to public higher education in medicine (delegated in state law exclusively to UC), and consideration of the interests of UC's medical school chancellors, deans, and faculty. In view of these and other findings, the new plan recommends substantial enrollment growth at each of UC's five medical schools for the first time in nearly 30 years. The plan also contains advice about how growth should occur:

> In recommending substantial growth in five professions, the Council urges that these new expansions be viewed as opportunities for innovation. New educational models involving interdisciplinary training and team-based approaches to patient care should be developed. . . . Efforts to significantly increase the diversity of all UC health professions faculty and students should be vigorously pursued. . . . Innovative approaches to teaching, including telemedicine, distance learning, and use of new technologies should be utilized and supported. . . . In identifying priorities for growth, campuses should demonstrate that each adds new value for students, the people of California, and the professions themselves.[1]

About California: Considerations for Medical Education

The people. California is the most populous state in the nation, with one in eight Americans living here.[1] The population currently totals 37 million and is expected to grow at a rate that is twice the national average, to an estimated 42 million by 2020.[2] Future growth will occur across the state and will vary enormously by region, from an estimated 10% increase in Los Angeles County to an approximate 40% increase in the Inland Empire (i.e., Riverside and San Bernardino counties).[1]

California is racially, ethnically, and culturally diverse. One in four Californians was born outside the United States—more than twice the national average of 1 in 10.[1] Currently, the majority of Californians are non-Latino whites, yet by 2015 approximately 57% will be nonwhite. Of that group, 37% will be of

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Latino origin, approximately 14% will be of Asian or Pacific Islander heritage, and 6% will be African American.[1] Millions of Californians are non-English speaking; more than 300 languages are spoken here.[3]

The geography. Twenty-nine of California's 58 counties are rural. These counties contain nearly 92% of the state's land mass, but only 8% of the population.[4] By contrast, more than half of all Californians live in several large urban areas: Los Angeles County, San Diego County, and the San Francisco Bay Area.[5] By 2015, approximately 23 million people will live in these three areas alone.[5]

Geographic maldistribution of physicians is frequently seen as a problem for only rural communities. Many of California's urban areas, however, also lack access to the full spectrum of health services. San Francisco, for example, has one of the highest numbers of physicians per capita in the nation, but it also has six federally designated primary care Health Professional Shortage Areas (HPSAs).[6] California's rural communities face even bigger challenges because they often have higher percentages of individuals ages 65 and older, higher rates of chronic illnesses and occupational injuries, and higher percentages of residents covered by Medi-Cal (California's Medicaid program) than do their urban counterparts.[7]

Inadequate access. Gaps in access to care and health outcomes are widening across California, with rural, minority, and low-income communities known to be disproportionately underserved. Approximately 23% of Californians who are between 19 and 64 years of age lack any form of health insurance, and 25% of California children live below the federal poverty line ($15,577 annual income for a family of three).[8] Fifty-one of the 58 California counties have at least one federally designated HPSA; two counties report no physicians in residence at all, and still greater numbers report regional and/or specialty-specific shortages.[9]

Health care disparities. Disparities in health status between Caucasian people and various racial and ethnic minority groups are well documented. Nationwide, death rates from diabetes are 151% higher among African Americans and 113% higher among Latinos than among Caucasians. Latina women have the highest risk of any group for developing cervical cancer, accounting for one third of all invasive cervical cancers diagnosed each year.[9] Compared with non-Latino Caucasians, Latinos have higher age-adjusted years of potential life lost before age 75 from stroke, chronic liver disease and cirrhosis, diabetes, HIV, and homicide; African American women have significantly higher rates of colon/rectal, pancreatic, and stomach cancers.[10] Studies show that racial and ethnic minorities generally receive lower-quality health care and less intensive diagnostic services than do Caucasian patients, even when their income, insurance, and medical conditions are similar.[11]

The overall picture. In urban and rural settings, equitable access to quality health services remains an elusive goal. Long-standing disparities in health status and inadequate access to care affect millions of Californians. These realities stem from multiple causes, including geographic maldistribution of health professionals, lack of health insurance, low socioeconomic status, limited English proficiency, and low health literacy.[11] To improve the overall health of the state, and to improve outcomes for underserved groups in particular, California's health providers must acquire better understanding of the nature and causes of health disparities, and better understanding of the cultural and socioeconomic factors, health practices, and environmental risks that affect health outcomes. To acquire these skills, new strategies and educational programs are needed.

The UC health sciences system. UC operates the largest health sciences instructional program in the nation, annually enrolling more than 13,000 students in 15 schools on seven health sciences campuses. In medicine, this includes more than 2,600 medical students and 4,400 residents and fellows in the full array of medical and surgical specialties and subspecialties. Within the 10-campus system, UC operates five schools of medicine located on the Davis, Irvine, Los Angeles, San Diego, and San Francisco campuses, and four smaller medical education programs in Berkeley, Fresno, Riverside, and at the Charles R. Drew University of Medicine and Science. Together, these programs enroll approximately half of all California medical students, with the remaining half enrolled in three private allopathic medical schools (Loma Linda University School of Medicine, Stanford University School of Medicine, and the Keck School of Medicine at the University of Southern California) and two osteopathic medical schools (Touro University College of Osteopathic Medicine and Western University of Health Sciences College of Osteopathic Medicine).

The Plan

Persuaded by evidence that the California population will continue to grow, age, and increase in diversity, and aware that shortages of physicians and other health professionals already exist, UC faculty, clinicians, administrators, and policy makers, including the present authors, worked across campus, professional, and administrative lines and conferred with deans, chancellors, faculty colleagues, and others. Together, we crafted a new health sciences enrollment plan[1] that calls for growth in medical education and four other health professions (nursing, pharmacy, public health, and veterinary medicine) across eight campuses, through the year 2020. Each step of this growth will be contingent on adequate state and nonstate financial support for meeting teaching and capital needs. Development of the campus-specific, profession-specific, and system-wide plans took place during a four-year period. This work involved significant effort by the university's long-standing, system-wide health sciences committee, a subsequent special advisory council appointed by the UC president, and a series of smaller subcommittees organized for various purposes. Beginning with a series of workforce studies, and followed by discussions with leaders on UC campuses, new enrollment plans were drafted and finalized. Once complete, the overall system-wide plan was presented to, and endorsed by, the university's board of regents in November 2006. The university's office of health affairs was responsible for leading and organizing this major initiative.

Quantitatively. For medical student education, the plan calls for an approximately one-third increase in enrollments across the system between 2005–2006 (the base year for the plan) and 2020. This is equivalent to an increase from UC's current 2,564

medical students to approximately 3,429 students by 2020. If achieved, this would translate, for workforce purposes, from approximately 650 current UC graduates per year to about 920 graduates annually (an increase of 270) by the year 2020. During the same period, California's population is expected to grow by 5 million people, and increasing numbers of practicing physicians and medical school faculty will retire.

Programmatically. The first phase of growth for all UC medical schools will occur through the development of new Programs in Medical Education (PRIME). Individually and collectively, these programs seek to address the needs of California's underserved populations in both rural communities and urban areas. Each program has (or will have) an area of focus that is selected on the basis of faculty expertise, the populations served by each school and its medical center, and other local considerations. Each is developing new guidelines for admission and recruitment of students, and a new curriculum to prepare students as future leaders, clinicians, and advocates for the communities they will serve. Although each campus will design and implement individualized evaluation programs, all are also working together to develop a comprehensive, system-wide evaluation plan for PRIME. Additional growth beyond the PRIME programs is planned for later years.

The Promise

As described earlier, over the past several years, we have worked together to develop the new multiyear plan that addresses the needs of our campuses, our students, and the public. The university's long-standing, system-wide health sciences committee, a special advisory council appointed by the president, and leaders within the UC office of the president staff embarked on these efforts mindful of the Institute of Medicine's work documenting existing health disparities and its recommendations for new and innovative educational programs to ensure that physicians are better prepared to work with increasingly diverse populations.[11,12] We reviewed accreditation standards that emphasize curricular changes to ensure that physicians understand the importance of socioeconomic factors and cultural competence in clinical practice.[13] We also reviewed reports from the Sullivan Commission on Diversity in the Health Care Workforce and other groups that call for new efforts to increase the diversity of the medical workforce.[14,15]

Nowhere in the United States could these reports and recommendations be more relevant for medical education and the delivery of health services than in California. In viewing medical education as a *public good*, we carefully considered the needs of the state and the public that we help to serve. We endorsed the need to create new teaching models, and we agreed to jointly explore new roles for technology, both regionally and across the UC system. In preparing for change, we understood that the future is not certain, and we promised to go forward.

New PRIME programs

The UC medical education system is growing and changing through the creation of new programs that will increase medical student enrollment in new and unprecedented ways. UC's PRIME programs will begin as five-year (MD and master's degree) programs offering specialized education, training, and support for students who wish to acquire added skill and expertise as they pursue careers caring for people who suffer disproportionate disease burdens.

Focusing on the growing needs of California's Latino communities, UC Irvine launched the first UC PRIME program in 2004 and admitted their fourth class of 12 students in July 2007. Three other UC schools (Davis, San Diego, and San Francisco) and the UCSF–UC Berkeley Joint Medical Education Program (JMP) have received campus and system-wide approvals for their programs and are preparing to admit their first classes in fall 2007. These programs, described more fully below, will focus on rural health and telemedicine (Davis), the urban underserved (San Francisco and the UC San Francisco–UC Berkeley JMP), and health equity (San Diego). In 2008, UC Los Angeles intends to launch its PRIME program, with planning now underway in coordination with their long-standing partners, UC Riverside and the Charles R. Drew University of Medicine and Science (Drew).

The Latino community (UC Irvine). In the summer of 2004, UC Irvine started its new Program in Medical Education for the Latino Community, referred to as PRIME-LC. The first in the PRIME series, this program is the product of an intensive, multiyear planning effort at the UC Irvine School of Medicine and the UC Office of the President. Funding to support planning and start-up costs of the program was provided through a generous grant from The California Endowment, a private, nonprofit foundation dedicated to improving access to care in California. PRIME-LC expands the traditional curriculum to a five-year program with a dedicated focus on Latino health issues and additional graduate work in environmental health, science, and policy.

Eight students were admitted to the inaugural class in 2004, 11 students were admitted in 2005, and 12 were admitted in 2006 (see Table 1 for a student profile). All students admitted to the program have a record of prior service and commitment to the Latino community and a minimal fluency in speaking Spanish. The program begins with a summer immersion experience in Mexico that provides further instruction in Spanish (including medical Spanish), supervised interaction with Spanish-speaking patients and health care personnel, and additional instruction about Latino cultures. The program continues at Irvine with newly developed didactic sessions and structured clinical experiences in settings serving predominantly Spanish-speaking patients. PRIME-LC requires that all students complete requirements for a master's degree in one of several areas requiring further study and research relevant to Latino health needs. At full enrollment, PRIME-LC will have 60 students (12 per year). (For a more in-depth description of this program, see the article by Manetta and colleagues in this issue.)

Rural health and telemedicine (UC Davis). With teaching facilities in Davis and Sacramento, the medical school and its medical center have a long history and record of commitment to meeting the health and health workforce needs of the rural north and northeastern parts of California. The UC Davis Medical Center (UCDMC) serves as the principal tertiary care referral center for 33 counties and is the region's leading provider of health care to poor and uninsured populations.

Table 1
UC Irvine–PRIME-LC Student Profile*

Entering class	2004	2005	2006
Total	8	11	13†
Male/female	3/5	8/3	6/7
Disadvantaged	3	7	8
Ethnicity/race			
Black	0	1	0
Latino, other	1	2	0
Mexican	4	5	7
White	2	3	6
Other	1		0
Average undergraduate GPA	3.53	3.41	3.50
Average MCAT–verbal	9.00	9.72	9.3
Average MCAT–physical	9.8	9.72	9.2
Average MCAT–biological	10.25	10.36	10.3

* PRIME-LC (Programs in Medical Education–Latino Community) is the first of the PRIME programs being carried out or planned by the University of California medical education system. PRIME-LC began in 2004, continues to attract highly qualified, diverse medical students to the program, and has garnered state and national recognition as an exceptionally innovative and rigorous educational model. Each student is selected because of his or her academic achievement and demonstrated commitment to working with underserved Latino communities.
† Deferred from 2005.

Davis has a nationally recognized program in telemedicine that enables the campus to link rural primary care clinics to specialty clinics at UCDMC to provide telemedicine services and training to rural and urban organizations throughout California. The campus has also developed strong ties to underserved communities in California's Central Valley through an extensive primary care network.

The UC Davis School of Medicine has created a new PRIME program that will focus on training physicians to serve California's medically underserved rural communities. The program will offer new course work addressing rural health needs, telemedicine, primary care, and the challenges of practicing in rural locations. Courses focusing on rural health policy, public health, language competency, and other topics relevant to rural health and health care delivery will be provided. Students will complete clinical clerkships in rural sites and will participate in telemedicine consultations provided by the medical staff at UCDMC at the request of rural preceptors and attending physicians.

The urban underserved (UC San Francisco). The new PRIME program at UC San Francisco (UCSF) will offer classes and clinical instruction emphasizing the care of large, urban, underserved populations. The new curriculum builds on the expertise of UCSF, UC Berkeley, and UCSF–Fresno faculty in the field of health care for urban, underserved populations. Elements of the new PRIME curriculum will include a core seminar series, community preceptorships, and required community projects. The seminar series will include interactive teaching sessions that explore the health and health needs of urban, underserved populations. Experts on homelessness, immigrant health, the prison health system, and related topics will participate. Students will have longitudinal experiences in a variety of settings that will enable them to become part of the health care team and to develop relationships with patients and the community.

Clinical experiences will be based at regional safety-net clinics and hospitals that provide health care to urban, underserved populations in San Francisco and the greater Bay Area. In these settings, students will care for diverse populations and learn more about systems-level disparities. All students will complete a longitudinal community health or social advocacy project, such as setting up community-based disease-prevention programs, engaging in local community organizing campaigns, or conducting community-based research. An essential, yet less visible element of the curriculum for PRIME students will include a comprehensive mentorship program, with faculty and peer-mentoring relationships organized to provide ongoing academic and social support.

Health equity (UC San Diego). San Diego has one of the largest and most rapidly changing immigrant and migrant communities in the country. The city is in the top 15 metropolitan areas nationally for immigration, with more than 13,000 legal immigrants. The area has one of the busiest international border crossings in the world, with more refugees resettling in San Diego than in any other metropolitan area in Southern California. An estimated one third of San Diego households are non-English speaking. San Diego County is also home to 18 Indian reservations—more than any other county in the United States.[16 (p149)]

UC San Diego has developed the PRIME-HEq (Health Equity) program that will emphasize multicultural, multidisciplinary approaches to patient care, research, and health care advocacy. The program will build on UCSD's extensive regional resources and offer culture and language studies and immersion experiences that give students the flexibility to examine health equity in an area of interest that is consistent with the objectives of the federal initiative *Healthy People 2010*,[17] which calls for the elimination of health disparities among all segments of the population. Through creation of choices for dual degrees concentrating in minority health and health disparities, and the use of community–university partnerships formed over the past 20 years, PRIME-HEq seeks to increase the number of clinicians, scientists, and advocates who will create and promote multidisciplinary partnerships for reducing health disparities.

Diverse disadvantaged communities (UC Los Angeles). Physicians are increasingly trained to understand the disease burdens and health risks of various population groups. There are many reasons, however, that people may be disadvantaged in terms of their health status. They may be part of growing numbers of low-income groups who cannot afford health insurance or who have been chronically underinsured. They may be members of traditionally

underserved African American, Latino, Hmong, Vietnamese, or other ethnic and cultural groups who are unable to find providers whom they trust or with whom they can communicate.

Building on the long-standing UCLA/Drew medical education program,[18] the new UCLA PRIME program will train physicians to proactively address the needs of diverse, disadvantaged communities by delivering culturally competent clinical care, providing leadership for health delivery systems, conducting research on health disparities, and serving as advocates for their communities. Students will participate in a new curriculum that will prepare them to use new technologies and multicultural solutions for improving health services for diverse, disadvantaged communities. The program will include a combined MD and master's degree selected from a variety of UCLA degree programs in public health, public policy, telemedicine, clinical informatics, and other related fields. Clinical rotations will be based in diverse settings and will emphasize cultural competence, leadership training, and community advocacy. The UCLA program is on track and is planning (with UCR and Drew) for new students in the fall of 2008.

The UC system overall

Ultimately, UC's new PRIME programs plan to enroll 60 to 80 students per campus (across five-year programs), or more than 300 students system-wide. By approaching growth through new educational programs, UC medical schools are aiming to help prepare future graduates who will work to improve health outcomes for individuals, as well as to improve standards and systems of care for many of California's neediest communities.

In November 2006, California voters acted in support of the state's public higher education systems by passing Proposition 1D, which includes $200 million in new funding for UC medical schools to expand class size and to invest in new telemedicine programs and other high-tech approaches to health care. Although these funds are for capital and infrastructure only, they will provide much-needed support for equipment and other capital needs for new teaching and clinical care programs. As part of this initiative, UC medical education programs will invest in new and renovated classrooms that will be linked across the system for teaching and other purposes. New telemedicine programs will be developed regionally and connected to community-based locations to expand access to services provided by UC faculty physicians. Where possible, these efforts will be linked system-wide.

The Parachute

As the University of California prepares for long-term enrollment growth, our medical schools will face demographic challenges and budgetary uncertainties that will require perseverance and certain leaps of faith. We have planned the successive launch of a series of newly designed programs across multiple sites; the first phase of these programs was described above. The overall plan is aimed at providing new educational, research, and patient-care programs that will be responsive to changing demographic needs.

We understand there are no guarantees about the future. As described earlier, UC Irvine has received permanent state support for PRIME-LC, and the first class of eight students will graduate in May 2009. Eleven more will graduate in 2010, and 12 more should graduate annually thereafter. We have plans for new PRIME programs at three UC medical schools (Davis, San Diego, and San Francisco) and at Berkeley beginning in the fall of 2007. However, until the passage of the state budget later this year, our schools are moving to admit new students with no guarantee about the permanent resources required to train them. The UC regents and leaders in Sacramento are fully aware of the goals of these programs. While we wait for final approval of the state budget for 2007–2008, our schools are moving forward and admitting new students.

We have plans for enrollment growth beyond PRIME that will unfold in stepwise fashion. Each phase of this growth must build on the success of previous ones. As we admit new students in UC PRIME programs, we are planning for further enrollment growth at other locations. UC medical schools are fortunate to have $200 million in new bond funding to improve infrastructure for increasing numbers of students and to invest in new telemedicine programs designed to expand access to services provided by our faculty. We are planning new, technology-based programs that will include a system-wide videoconferencing network linking our schools together for teaching and other purposes. Public expectations are high, and meeting them will require facing a level of risk.

UC medical schools have a metaphorical parachute that is embodied in the history, reputation, and longevity of the University of California system itself. This improves the odds that UC medical schools will successfully launch these and other new programs. Those of us who lead and support these schools are prepared to make the leaps of faith that will be required, and we know that we cannot guarantee that all efforts will land successfully. That said, we have planned, packed, and promised to go forward. We are prepared for change and ready to jump.

Note added in proof: On August 21, 2007, after new students had arrived on two UC campuses, the California State Senate adopted the FY2008 state budget, which was signed by Governor Arnold Schwarzenegger on August 24th.

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Did You Know?

In 1998, with funding from the National Institutes of Health, researchers at the University of California–Irvine identified for the first time an easily detectable protein that holds the key to more reliably warning women about early cell abnormalities in the cervix before they get cervical cancer.

For other important milestones in medical knowledge and practice credited to academic medical centers, visit the "Discoveries and Innovations in Patient Care and Research Database" at (www.aamc.org/innovations).