



# SENATE CALIFORNIA LEGISLATURE

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## **A Review of California's Health Care Workforce Shortages and Strategies to Address These Shortages**

### **Executive Summary**

Statewide shortages of health care providers currently exist in several major health professions. Additionally, health care workforce needs are projected to increase dramatically due to population aging, growth, and diversity. This existing shortage will only intensify as about 4.7 million more Californians will be eligible for health insurance, starting in 2014, as a result of federal health care reform legislation.<sup>1</sup> Inability to meet health care workforce needs will have serious adverse consequences on health access, quality, and cost.

Several strategies addressing the barriers that may be limiting the supply and utilization of the health care workforce are summarized below. These options, many of which are controversial, are offered for discussion purposes and should be considered with the following guiding principles in mind: improving access to care, increasing the diversity and cultural competency of the health care workforce, and ensuring patient safety.

### **Education and Training Pipeline and Curriculum**

- Implement merit-based admission to allied health programs
- Encourage more public-private partnerships
- Take advantage of new and proposed legislative changes affecting the workforce and community college systems
- Improve transfer process between institutions of higher education
- Increase capacity at higher education institutions
- Facilitate system-wide change at community colleges
- Encourage a three-year medical school within the University of California system

### **Professional Entry Requirements and Regulation**

- Evaluate supply and demand of clinical training programs
- Eliminate barriers for clinical laboratory personnel
- Increase professional fees to support loan repayment programs
- Realign scope-of-practice to maximize efficiencies while still maintaining patient safety

### **Delivery Reforms**

- Eliminate barriers for utilization of telehealth

- Evaluate options for delivery of care that more efficiently uses the workforce
- Encourage professions to work at the top of their license
- Relocate the delivery of health services

This background paper provides information on the state's current and projected health care workforce shortages, a review of current efforts underway to address the health care workforce shortages, and a discussion of short- and long-term strategies that may address the forecasted shortages of health care services.

## **Is California Facing a Health Care Workforce Shortage?**

Recent health care workforce research indicates that health professional shortage, distribution, and diversity issues impact access to primary, allied, mental, and dental health care in California today. The demand for these health care professions is also forecasted to grow faster than professions in other industries. The scale and scope of the problem, however, is not well understood because the data on the supply and demand of health professionals are incomplete and not systematically or regularly updated.

**Health Care Reform.** As a result of federal health care reform legislation, the Patient Protection and Affordable Care Act of 2010 (ACA), about 4.7 million more Californians will be eligible for health insurance starting in 2014.<sup>2</sup> The newly insured will likely increase demand for health care on an already strained system. Furthermore, the ACA aims to change how care is delivered, providing incentives for expanded and improved primary care, and creating team-based models of service delivery.<sup>3</sup> Additionally, research indicates implementation of the ACA will place higher skill demands on all members of the health care workforce as health care systems try to improve quality while limiting costs.<sup>4</sup>

The scale of change with implementation of the ACA is unlike anything that the state has prepared for in the past. In the sections below, we discuss further how the ACA may affect the state's shortages of health care professionals.

### **Primary Care**

**Physicians.** According to a report commissioned by the California Health Care Foundation, California is at the lower end of the range of need for primary care physicians, and the distribution of these physicians is poor. In 2008, there were 69,460 actively practicing physicians in California (this includes Doctors of Medicine and Doctors of Osteopathic Medicine), and 35 percent (or 24,124) of these physicians reported practicing primary care.<sup>5</sup> This equates to 63 active primary care physicians in patient care per 100,000 population. According to the Council on Graduate Medical Education a range of 60 to 80 primary care physicians are needed per 100,000 in order to adequately meet the needs of the population. Only 16 of California's 58 counties fall within the needed supply range for primary care physicians.<sup>6</sup> Those areas that meet the recommended supply range include, the Bay Area, Sacramento, and Orange County. Areas with a pronounced under supply of primary care physicians include the Inland Empire and the San Joaquin Valley.<sup>7</sup>

A further strain on the demand for primary care physicians will be the potential addition of over 4 million more Californians into the health care system as a result of the ACA. Research has shown that

persons who have health insurance use more health care services than uninsured persons, particularly in the areas of primary care and preventive services.<sup>8</sup> This was found in Massachusetts, which experienced a substantial increase in demand for primary care services as a result of its 2006 health reform.<sup>9</sup> Consequently, it is likely that there will be an increase in the demand for primary care services by these newly insured.

**Physician Assistants.** In California, physician assistants are permitted to provide patient education, prescribe medication, establish treatment plans, perform physical exams, and take patient histories. A physician may supervise up to four physician assistants and may delegate caregiving duties within that physician's scope of practice.<sup>10</sup>

California has fewer physician assistants per 100,000 persons (about 21.7) than does the nation as a whole (about 25.0 per 100,000 persons). Nevertheless, the number of physician assistants has been growing over the last decade. From 2001 to 2009 there was a 62 percent increase in the number of physician assistants.<sup>11</sup>

**Nurse Practitioners.** In California, nurse practitioners are permitted to diagnose, treat, evaluate and manage acute and chronic illness and disease. They are also permitted to conduct physical exams and obtain medical histories. They may order, perform, and interpret diagnostic studies; prescribe physical therapy and other rehabilitation treatments; provide family planning services and prenatal care; and furnish drugs for chronic and acute illnesses.<sup>12</sup> However, California does not allow nurse practitioners to practice independently.

The number of nurse practitioners in California doubled between 2004 and 2008, bringing the total in 2008 to approximately 17,000.<sup>13</sup>

**Registered Nurses.** In 2002, there was a projected shortage of RNs, and many initiatives were put into place to increase the state's supply of RNs. Consequently, 52 new nursing programs were approved, enrollment capacity increased by 92 percent, and student graduations increased by over 100 percent.

According to a 2009 statewide survey,<sup>14</sup> currently there is no shortage of nursing positions in California, but a shortage of those hiring RNs. Employers reported the following reasons for not hiring new RN graduates: less employee turnover, delayed retirements of existing RNs, hiring freeze or budget constraints, decrease in patient census, and current staff working more shifts or converting from part-time to full-time. Still, the Board of Registered Nursing projects that as the economy improves and the current nursing workforce continues to age, there will be an exodus of the current RN workforce, which will result in major shortages of nurses. It is estimated that California will have a shortfall of 116,000 RNs by 2020, meeting only 65 percent of the state's demand for RNs, and needing an additional 108,000 to match the benchmark of the national average of RNs per capita by 2020.<sup>15</sup> Estimates from 2009, for example, show the state lagging behind the national average: California had 653 nurses per 100,000 persons, while nationally, there were 825 nurses per 100,000 persons, approximately 25 percent more.<sup>16</sup>

It should be noted that RNs could help fill the demand for primary care services (and chronic care management) as a result of ACA because nurses' regular and close contact with patients could help coordinate the care of patients in a patient-centered care model (as promoted in the ACA).<sup>17</sup>

## Pharmacy Services and Allied Health Professions

**Pharmacists.** In 2009, California had 23,000 pharmacists, an increase of 7 percent from 2001, when California had about 21,500 pharmacists. California also has a lower ratio of pharmacists to population (62.4 per 100,000) than the nation as whole (87.2 per 100,000).<sup>18</sup>

**Allied Health.** Allied health professions distinct from medicine, dentistry, and nursing include clinical laboratory scientist, radiological technologist, pharmacy technician, and respiratory therapist, among others.

Allied health professionals comprised 605,000 workers in 2010 and are projected to increase to 988,000 in 2030. This represents a faster growth rate (63 percent) than other workers in the health sector (60 percent).<sup>19</sup> Researchers, however, project that the state's universities and community colleges will only be able to meet between 63 and 79 percent of future demand.<sup>20</sup>

A January 2009 study commissioned by The California Wellness Foundation found that 76 percent of clinics report a staffing shortage of allied health workers.<sup>21</sup> Similarly, a December 2007 survey conducted by the California Hospital Association found that vacancies in selected allied health occupations (clinical laboratory and medical imaging professionals) have a significant impact on hospital efficiencies and access to care.

A review of the literature<sup>22</sup> and data<sup>23</sup> indicates that at least the following allied health professionals face current shortages and have high growth rates:

- Clinical Laboratory Scientist / Medical Laboratory Technician
- Medical Imaging (Radiologic Technician, Sonographer, MRI Technician)
- Occupational Therapist Assistant
- Pharmacy Technician
- Psychiatric Technician
- Respiratory Therapist

Results from a more recent California Hospital Association survey, conducted from January through May of 2010, came to similar conclusions.<sup>24</sup> According to that study, allied health vacancies in the following occupations had negative impacts on hospital efficiency and access to care:

- Pharmacist
- Physical Therapist
- Respiratory Therapist
- Clinical Laboratory Scientist
- Nuclear Medicine Technologist
- Medical Imaging (including Ultrasound, MRI, CT, and Radiological Technologists)
- Pharmacy Technician

Comparative data for California and the U.S. also shows ongoing shortages for many allied health professions in 2009:<sup>25</sup>

- California had only 38.6 physical therapists per 100,000 persons compared to 56.8 physical therapists per 100,000 persons nationwide.
- California had only 42.9 radiologic technologists per 100,000 persons compared to 69.6 radiologic technologists per 100,000 persons nationwide.
- California had only 35 Clinical Laboratory Scientists per 100,000 persons compared to 54.4 clinical laboratory scientists per 100,000 persons nationwide.

## **Mental and Behavioral Health**

A 2009 survey conducted by the Center for Health Professions<sup>26</sup> indicates that there is a shortage of mental health providers. Many survey respondents acknowledged a particularly high vacancy rate for child psychiatrists, community-based counselors, and psychiatric nurse practitioners. A September 2011 study of mental health shortages in California by the Office of Statewide Health Planning and Development (OSHPD) indicated mental health shortages across many rural areas of the state.<sup>27</sup> Additionally, according to data from the California Employment Development Department, demand for mental health and substance abuse social workers, and substance abuse and behavioral disorder counselors is expected to grow by 22.8 percent and 35.4 percent, respectively, from 2006 to 2016.

According to a study by Rutgers Center for State Health Policy,<sup>28</sup> it is expected that the currently uninsured adults gaining access to health insurance through ACA are likely to have more behavioral health problems (e.g., substance abuse and mental health issues), which will increase demand for these services.

## **Dental Health**

Another key component in the health care workforce shortage is the geographic distribution of the dental health professionals workforce. In 2009, a UCLA study found that Alpine county had zero dentists, and Yuba County had less than one dentist per 5000 residents. Five more counties have less than 1.5 dentists per 5000 residents.<sup>29</sup> Another study of California's 541 Medical Service Study Areas (MSSA), found that 101 (or about 19 percent) are at or below the federal Dental Health Professional Shortage Area primary care dentist-to-population ration of 1:5,000. (See Appendix C for a map of where these shortage areas are located. MSSAs are sub-county designations defined by the California Healthcare Workforce Policy Commission at OSHPD that allow for more detailed analysis of the distribution of the health care workforce.) Additionally, projections show that the dentist-to-population ratios will decline over the next 20 years.<sup>30</sup> This shortage hinders access to oral health care and often contributes to racial, ethnic, and geographic disparities in oral health.

Furthermore, it is estimated that up to 1.2 million California children will gain dental coverage due to ACA since insurance plans offered under the California Health Benefit Exchange must include oral care for children.<sup>31</sup>

## **Diversity and Access to Care**

In addition to the shortages of certain health professionals, California's health professions workforce does not reflect the state's demographic racial and ethnic composition and language proficiency, as

described in Table 1. For example, Latinos compose 37 percent of the state’s population, yet they make up only 8 percent of nurses, 5 percent of physicians, and 7 percent of dentists in California.

**Table 1: Current Composition of Selected Health Professions in California by Race/Ethnicity**

	<b>California Population<sup>32</sup></b>	<b>Nurses<sup>33</sup></b>	<b>Physicians<sup>34</sup></b>	<b>Dentists<sup>35</sup></b>
African American	6%	4%	3%	3%
Asian/Pacific Islander	12%	27%	21%	32%
Latino	37%	8%	5%	7%
Other	4%	3%	7%	1%
White	42%	59%	53%	57%

Source: Compiled by Office of Statewide Health Planning and Development

According to research conducted by the Public Health Institute and the School of Public Health at the University of California, Berkeley, California’s emerging populations are underrepresented in all health professions and in the health professions pipeline. In general, as the level of education increases and as admission spots become more competitive, racial and ethnic diversity decreases.

Lack of diversity impacts access to health care. A report by the Institute of Medicine links poor health outcomes for minorities to the shortage of minority health care providers. One reason for this is that persons of color are less likely than whites to receive needed services, including clinically necessary procedures, due to cultural or linguistic barriers between the health care provider and the patient. Additionally, evidence suggests that a workforce able to serve culturally and linguistically diverse individuals increases the number of initial visits, results in higher utilization of care, enhances high-quality encounters, lowers medical errors, and reduces emergency room admissions.<sup>36</sup>

Furthermore, the Sullivan Commission finds that the lack of a diverse workforce results in a “loss of productivity, higher absenteeism, and greater employee health care costs . . . resulting in millions of dollars lost to companies as the result of chronic conditions left untreated.”

**Future Growth of Health Care Workforce Outpaces Other Industries**

In addition to the current workforce shortage, demand for health care professions is projected to grow faster than other industry professions over the next 10 years. According to the California Employment Development Department, 24 of the top 50 fastest growing occupations are related to the health care industry. See Table 2 for a summary of these professions.

**Table 2: Projected Fastest Growing Health Professions, 2008–2018**

<b>Occupation</b>	<b>Average Annual Employment</b>		<b>Percent Change</b>
	<b>2008</b>	<b>2018</b>	
Medical Scientists, except epidemiologist	26,200	38,500	46.9
Home Health Aides	54,300	78,000	43.6
Physician Assistants	8,100	11,500	42.0
Physical Therapist Aides	5,900	8,100	37.3
Emergency Medical Technicians and Paramedics	14,300	18,700	30.8
Medical Assistants	76,100	99,400	30.6
Surgical Technologists	8,900	11,500	29.2
Physical Therapists	15,300	19,700	28.8
Pharmacy Technicians	27,800	35,700	28.4
Respiratory Therapists	12,400	15,700	26.6
Dental Hygienists	18,500	23,300	25.9
Occupational Therapists	8,100	10,200	25.9
Registered Nurses	236,400	297,200	25.7
Dental Assistants	46,300	58,200	25.7
Medical Secretaries	88,000	109,100	24.0
Biological Technicians	10,600	13,100	23.6
Medical and Public Health Social Workers	10,900	13,400	22.9
Pediatricians, General	5,400	6,600	22.2
Medical Records and Health Information Technicians	15,100	18,400	21.9
Diagnostic Medical Sonographers	5,100	6,200	21.6
Licensed Practical and Licensed Vocational Nurses	63,300	76,900	21.5
Family and General Practitioners	10,300	12,500	21.4
Radiologic Technologists and Technicians	16,000	19,400	21.2
Nursing Aids, Orderlies, and Attendants	108,100	130,800	21.0

## What are California's Current Health Care Workforce Efforts?

Many public and private organizations have launched initiatives and programs aimed at addressing the state's health care workforce shortages. These efforts have focused on, among other things, addressing shortages in specific health occupational categories, increasing capacity in the state's educational institutions, increasing the diversity and cultural competency of the health care workforce, and preparing research reports and studies that analyze the state's health care workforce supply and needs.

This section highlights some of these recent efforts and initiatives. See Appendix A for a description of some of the state's ongoing efforts related to health care workforce development.

**ACA Workforce Provisions.** Title V of the ACA addresses the health care workforce. Its provisions are intended to help the nation's health care workforce meet the new demands resulting from implementation of the ACA. The total amount of funding available is not specified because the ACA authorizes, but does not appropriate, most of this funding. The federal government has already awarded numerous grants and continues to announce new funding opportunities.

The major health care workforce programs and grants in the ACA are:

- **Innovations in Health Care Workforce**—Provides planning and implementation grants to states focused on education, training, and retaining individuals for health careers, and establishes regional centers for workforce analysis.
- **Increasing the Supply of Health Care Workforce**—Provides loan repayment and scholarships for various medical professions, and provides grant opportunities to Nurse Managed Health Clinics for comprehensive primary care services or wellness services to underserved or vulnerable populations.
- **Enhancing Health Care Workforce Education and Training**—Provides support for residencies, internships, fellowships for primary care, direct care, dentistry, mental and behavioral health, nursing and advanced nursing, and community health workers.
- **Supporting the Existing Health Care Workforce**—Continues support for Area Health Education Centers, increases nursing education opportunities for persons from disadvantaged backgrounds, and establishes a Primary Care Extension Program.
- **Strengthening Primary and Other Workforce Improvements**—Expands access to primary care services and general surgery services by offering incentive payments in shortage areas, and reallocates unused residency positions to qualifying hospitals for primary care residents.
- **Improving Access to Health Care Services**—Provides appropriations to federally qualified health centers to serve medically underserved populations, and awards grants and cooperative agreements for demonstration projects for the provision of coordinated and integrated services to special populations through the colocation of primary and specialty care services in community-based mental and behavioral health settings.



***Health Workforce Development Council (HWDC).*** The California Workforce Investment Board (CWIB) and OSHPD applied for the planning grant mentioned above (under the Innovations in Health Care Workforce category) and received \$150,000 in September 2010. This money was used to form and staff the Health Workforce Development Council (HWDC). HWDC includes representatives from higher education, labor, workforce development, hospitals, and clinics, among other entities. HWDC is facilitating the planning grant requirements to identify and create strategic partnerships, identify education and workforce data availability and gaps, map education and career pathways necessary to supply the health workers demanded, and assess legislative and administrative policy changes. HWDC will develop a plan that expands the primary care health care workforce by 10 percent to 25 percent over 10 years.

HWDC is a committee under CWIB and is composed of members who represent CWIB, health employers, philanthropy, industry associations, statewide and community-based organizations, labor, and the Legislature.

As part of the planning grant, HWDC held regional focus groups throughout the state and intended to use the findings from these meetings as a basis for its application to the federal government for an implementation grant. However, on June 3, 2011, the U.S. Department of Health and Human Services, Health Resources and Services Administration indicated that it would not be awarding implementation grants. (California anticipated a \$3 million to \$5 million implementation grant.) HWDC plans to continue to meet to develop a comprehensive strategy to ensure that California has the necessary skilled workforce for the implementation of the ACA.

The Career Pathway Subcommittee under HWDC is looking at existing and potential pathways for the following health care professions:

- Primary Care Physicians;
- Advanced Practice Nurses and Registered Nurses;
- Clinical Laboratory Scientists;
- Social Workers;
- Community Health Workers/Promotoras;
- Medical Assistants;
- Public Health Workers; and
- Alcohol and Other Drug Counselors;

In September 2012, this subcommittee released a report on recommendations for these professions developing career pathway models and recommendations, and proposing ongoing and sustainable infrastructure partnerships and processes. For example, for medical assistants, one barrier identified by this subcommittee is that there is a lack of information needed to assess and choose between medical assistant programs, no standardized curriculum, and multiple entities accredit these programs, which causes confusion among the employers and does not ensure that graduating students have the competencies to excel in the workplace. Consequently, this subcommittee is considering recommending the development of a standardized competency-based curriculum leading to a specific national accreditation.

***Health Professions Shortage and Underserved Areas.*** For over 20 years, OSHPD has received a federal grant to administer the Shortage Designation Program (SDP). OSHPD collects, analyzes, and publishes data about California's health care workforce and health professional training, and identifies areas of the state in which there are shortages of health professionals and service capacity. A recent survey indicates that California is receiving approximately \$1.5 billion in federal, local, and private foundation grants for programs in which one of the prerequisites for participation is location in a federally designated shortage and underserved area. These include the federal National Health Service Corp Scholarship and Loan Repayment, Federally Qualified Health Center (FQHC) and FQHC Look-Alike, and Medicare Incentive Payments for Physician's Services programs; and state programs such as Expanded Access to Primary Care Program, Rural Health Services Development, Seasonal Agricultural and Migratory Workers, and various health professions scholarship and loan repayment programs.<sup>37</sup>

OSHPD is in the process of transforming its SDP into a proactive program to find areas that meet the federal definitions and qualify for designation. The greater the number of federally designated areas in California, the greater the opportunity for funding to provide care to the population located in these underserved areas. For example, to participate in the Pediatric Specialty Loan Repayment Program, introduced in ACA, the provider must practice in a federally designated shortage or underserved area. If more areas are designated as shortage or underserved in California, then more providers may qualify for these types of programs and even more funding for health care services in underserved areas can be brought into the state.

See Appendices B, C, and D for maps on where these shortages are located.

***California Healthcare Workforce Clearinghouse Program.*** The Clearinghouse serves as the state's central source of health care workforce and educational data. The program was established within OSHPD by SB 139 (Scott), Chapter 522, Statutes of 2007, and is currently under development and scheduled to be implemented by June 2012. The Clearinghouse will serve as the central source for collection, analysis, and distribution of information on the health care workforce employment and educational data trends for the state. OSHPD will retrieve data from the Employment Development Department's Labor Market Information Division, state health licensing boards, and state higher education entities.

***Health Workforce Pilot Projects.*** The Health Workforce Pilot Projects (HWPP) program was established in 1972 and is administered by OSHPD. This program allows organizations to test, demonstrate, and review new or expanded roles for health care professionals or new health care delivery alternatives before changes in licensing laws are made by the Legislature.

Demonstration projects typically last from one to three years and are funded by the applicants or the applicant's sponsor. (Past applicants have included community clinics, public and private hospitals, and higher education institutions.) These projects are evaluated by OSHPD at the conclusion of the project to assess implications regarding existing licensure laws, health services curricula, and health care delivery systems; teaching methods; quality of care and degree of patient acceptance; and cost of the care provided in the project and the likely cost of such care if performed after the conclusion of the project compared to the cost of the same care when delivered by the current providers (among other things).

Between 1973 and 2005, a total of 171 applications were made into HWPP (with 85 of these applications being submitted before 1975), and 115 programs were approved and implemented.<sup>38</sup> Table 3 summarizes the purposes of these applications.

**Table 3 – Purpose of Pilot Programs**

<b>Purpose</b>	<b>Count</b>
Extend Role of Nursing	85
Extend Role of Physician Assistants	3
Extend Role of Dental Workers	32
Relevant to Mental Health Workers	5
Extend Role of Pharmacy Workers	7
Extend Role of Medical Auxiliaries	27
Train Previously Untrained Workers	19
Relevant to Other Category of Worker	8

Note: Pilot program applications often list more than one purpose and can address multiple types of care; consequently the total of Table 3 (186) exceeds the total number of applications received prior to 2005.

The majority of these pilots were approved and implemented, and ultimately, 45 percent resulted in some sort of regulatory or legislative change, such as permitting pharmacists to dispense prescription drugs based on a physician’s diagnosis (AB 502 [Maddy], 1983).<sup>39</sup> Most of the changes were a result of more than one pilot project testing the scope of practice change. However, according to a 2010 study by the Center for Health Professions many of the more recent pilot projects have improved access, cost savings, and health outcomes, but these results did not lead to change because of opposition from political lobbies.<sup>40</sup>

**California Community Colleges’ Health Care Initiative.** The California Community College Chancellor’s Office and its Economic and Workforce Development (EWD) Program has established the Health Care Initiative (HCI) to provide education and training programs to meet the emerging demands for health care delivery. There are seven HCI centers throughout the state that work with community colleges to provide services to the regions. HCI staff develops partnerships that encourage collaboration between health care employers and education providers. For example, the Welcome Back Center in San Diego is a partnership between various organizations, including Grossmont College, Kaiser Permanente San Diego, hospitals, and clinics. The Welcome Back Center builds a bridge between the need for linguistically and culturally competent health services in underserved communities and the pool of internationally trained health workers living in California by helping foreign-trained health workers enter into California’s health care workforce. Another example of the services that the HCI has provided is hosting seven clinical instruction modules that were created in response to a need by nursing programs for new clinical instructors. These modules were funded by a grant from Johnson and Johnson.

**Senate Informational Hearings.** In March 2011, the Senate Business, Professions and Economic Development Committee held an informational hearing on many of the boards at the Department of Consumer Affairs, including the Dental Board of California, Board of Registered Nursing, and Board of Vocational Nursing and Psychiatric Technicians. These hearings focused on topics like the impact of the ACA on these boards’ particular workforce, the diversity of these professions, and loan repayment programs.

**California Area Health Education Centers (AHECs).** The California AHEC program was created over 30 years ago and has been supported by a grant from the federal Health Resources and Services Administration (HRSA) and the state (as part of the University of California's budget).

Its goal is to improve access to health care and decrease health disparities for all Californians. There are 14 AHEC centers in California, each located in an underserved area and affiliated with local clinical and educational institutions. California AHECs are involved in one or more of the following activities: health professions education, teaching residents and students how to conduct health education in community settings, community-based clinical experiences for health professions students, and administering pipeline programs for disadvantaged and underrepresented groups of students. For example, AHEC funding has been used to provide housing for dental students in Redding, Spanish health interpreters in Eureka, and telemedicine training in Fresno.

**Partnerships.** Many public and private entities have partnered together to address health care workforce issues affecting their organizations. For example:

- The California Health Workforce Alliance (CHWA) is a public-private partnership dedicated to building a health professions workforce that can serve California's diverse population. CHWA was formed as a result of wanting to continue the momentum of the Connecting the Dots project (a four-year statewide initiative that looked into the issues, challenges, and opportunities to increase health professions workforce diversity).
- The California Health Professions Consortium is a statewide consortium comprised of organizations and individuals with a vested interest in increasing diversity in California's health care workforce.
- The California Institute for Nursing and Health Care is a statewide nonprofit organization that partners with nurse leaders, educators, providers, payers, policy leaders, and consumers to develop solutions to the state's nurse shortage.
- Sutter Health Sacramento Sierra Region has been involved in many partnerships with higher education institutions to enhance allied health programs. In the last seven years, it has invested over \$27 million in health care workforce development partnerships. For example, it partnered with the Yuba College Radiological Technologist program to provide financial support for the equipment, classrooms, and faculty needed to educate 50 students each semester. Additionally, in 2010 it provided the equipment necessary to start the medical laboratory technician program at Folsom Lake College, and it partnered with Cosumnes River College to start an accredited ultrasound technician program (previous to this program there was not an accredited ultrasound technician program between Oregon and the Bay Area).
- In 2006, MemorialCare, a nonprofit health care system that includes four Southern California hospitals, had a respiratory therapist vacancy rate of 17 percent. MemorialCare identified one of the barriers to producing more respiratory therapists as a lack of clinical instructors for existing programs. Consequently, it formed a partnership with Orange Coast College (OCC) and provided a respiratory therapists to work as an instructor. Between 2008 and 2009, 24 additional respiratory

therapists graduated. MemorialCare estimates hiring OCC graduates will save about \$1.4 million between 2008 and 2012.

- Biotech Partners was established in 1993 as an agreement between Bayer HealthCare and the City of Berkeley. The program is currently implemented at Berkeley High School, Oakland Technical High School, and the Peralta Community College District. This program provides 120–125 at-risk youth with training for technical positions in bioscience, starting in the 11<sup>th</sup> grade through community college, paid summer internships for high school students, year round co-op jobs for community college participants, and support services to help each student achieve success. Funding for the program comes from over 35 public, private, and foundation partners.
- The Coachella Valley Economic Partnership (CVEP) is a regional economic development organization devoted to attracting, retaining, and expanding business while improving the quality of the workforce in order to raise the overall economy and quality of life for the region. In 2005, CVEP launched the Career Pathways Initiative (with a grant from the James Irvine Foundation and the Riverside County Economic Development Agency and Workforce Development Board) to create a network of career pathways to prepare students for success in three industry clusters, health care, clean energy and arts, and media and entertainment. This initiative partners more than 250 industry, economic development, and education professionals with students in the Coachella Valley. This initiative has developed a \$1.5 million scholarship fund with 40 percent going to students pursuing health careers and developed a medical magnet academy with 800 students.

## **How Can California Meet Its Health Care Workforce Demands?**

In order for California to meet its current and future health care workforce demands, short- and long-term strategies are needed to change the systems and processes limiting our ability to provide timely access to care. Given the state's fiscal situation, it is important that these strategies utilize partnerships and innovations that do not rely or put pressure on state funding.

**Guiding Principles.** As the state considers various strategies to ensure the state's health care workforce is available to meet demand, there are a few key principles that should be remembered:

- **Access.** Ensuring that those who need care have access to quality health care services. This is especially a consideration in rural and underserved urban areas that generally there is an unmet need for providers and education programs.
- **Diversity and Cultural Competency.** Improving the diversity and cultural competency of California's health care workforce could produce a range of benefits, including increased access to care for vulnerable populations, improved patient-provider communication and quality of care, and expanded availability of careers for underrepresented racial and ethnic populations.
- **Patient Safety.** The prevention of medical errors and adverse health care events should be a major focus of health care services.

Based on research and interviews, the following approaches are offered to address the barriers that may be limiting the supply of health care workers.

## **Education and Training Pipeline and Curriculum**

The pipeline to a health care profession can begin with engagement of students at the K–12 level and can continue through all levels of higher education. Each step along the pathway presents challenges and barriers to ensuring an adequate supply of the health care workforce. Additionally, the lack of coordination between these steps leads to missed opportunities to developing this workforce. However, legislation was recently introduced which could improve health career pathways. Assembly Bill 1584 (Eng) expands the Health Science and Medical Technology Project, which currently provides grants to public schools to create or enhance health career pathway programs to students in grades 7-12, to include similar programs serving public postsecondary students.

### Short Term

**Implement Merit-Based Admission to Allied Health Programs.** AB 1559 (Berryhill), Chapter 172, Statutes of 2007, allows California community college districts to adopt and implement merit-based admissions policies for associate degree nursing (ADN) programs if there are more applicants seeking enrollment than can reasonably be accommodated. This allows the community college to evaluate an applicant's ability to succeed in the program. An analysis on the effectiveness of merit-based admissions policies for ADN programs has not been completed; however, the California Board of Registered Nursing's 2009-10 Annual School Report shows that the student attrition rate for nursing programs at community colleges was 24 percent in 2004-05 and 16.6 percent in 2009-10. Community college administrators cite this as evidence that merit-based admissions policies have helped improved the completion rate of nursing students. One of the concerns with the implementation of merit-based admission for community college programs is the impact on the diversity of students who may qualify for a program. No analysis has been completed to assess AB 1559's impact on the diversity of nursing graduates.

A 2010 survey of allied health care programs at the community colleges indicate that allied health programs are highly sought after; only 6 percent of deans reported that they were able to accept all qualified applicants for their programs (i.e., they received more applications from qualified students than they had the capacity to enroll).<sup>41</sup> Implementing a merit-based admissions policy for allied health programs could help ensure that students most likely to complete the program are given priority for admission.

**Encourage More Public–Private Partnerships.** Linkages between educational systems, employers, and workforce development organizations are critical to increasing the supply of health care workers. Eighty-one percent of deans of allied health programs at community colleges believe that more partnerships with health care employers would help them expand their capacity to train workers and enroll more students.<sup>42</sup> Increased partnership building could allow for increased efficiency in utilization of existing resources.

Many of the successful partnerships discussed above were a result of groups coming together because funding was available to support their collaboration or past relationships between the partners. Given the state's fiscal situation, it is unlikely that new state funds would be available to support new partnerships. However, existing efforts, like the aforementioned Health Workforce Development Council, could

highlight local and regional partnerships or initiatives and work to bring these innovations up to scale statewide.

Additionally, efforts to systematically bring together regional stakeholders who might share a common purpose could be undertaken. Members of the Legislature may wish to convene regional meetings to engage stakeholders in how they can partner to develop the state's health care workforce.

***Take Advantage of New and Proposed Legislative Changes Affecting the Workforce and Community College Systems.*** As discussed above, the Health Workforce Development Council (HWDC), a partnership of the California Workforce Investment Board and OSHPD, brought together a wide range of stakeholders, including representatives from the state and local workforce investment boards. Discussions at HWDC meetings have highlighted the opportunity for more involvement of local workforce investment boards (LWIBs) in health care job sector analysis and training at the regional level. Generally, LWIBs have used the majority of the base formula funds appropriated to them under the Workforce Investment Act to provide one-stop employment services that help those who are looking for work to find it quickly and have generally spent less on job training for a skilled profession, which research indicates appears to have more of an impact on wages and employability.<sup>43</sup> However, two bills passed and signed in 2011 may increase opportunities to fund and coordinate additional health care workforce training at the local level:

- Senate Bill 734 (DeSaulnier) requires that LWIBS spend at least 25 percent of their relevant federal base formula funds on job training programs.
- Senate Bill 698 (Lieu) sets up a process to create performance and planning standards for LWIBS that may encourage greater workforce planning and investment in local areas where there is a shortage of health care workers. The California Workforce Investment Board is in the initial stages of determining what these standards will be.

Two other workforce bills currently being sponsored by Senator Lieu are also relevant:

- Senate Bill 1401 (Lieu), requires the California Workforce Investment Board to perform statewide and regional industry sector analysis to inform statewide workforce investment decisions and the planning process, so as to better align the use of relevant statewide funds with regional labor market needs. The passage of this bill would likely encourage further health care workforce planning and investments in labor markets where there is a shortage of skilled workers.
- Senate Bill 1402 (Lieu), reauthorizes the Economic and Workforce Development (EWD) program at the Chancellor's Office at the Community Colleges, and requires that programs better align EWD grants with the regional labor market needs of colleges receiving the grants. Like SB 1401, the passage of this bill could encourage further health care workforce planning and investment. (The current EWD program already provides about \$1 million in investments relevant to the health care workforce each year).

Finally, a bill sponsored Assemblymember Mitchell is aimed at enhancing the UCLA International Medical Graduate (IMG) program, which helps prepare bilingual English/Spanish IMGs to become Board-certified California family physicians. Participants currently commit to train in a 3-year, salaried Family Medicine residency training program in California, and are then required to spend 2-3 years in

an underserved community providing care to those immigrants and low-income patients who face financial and language barriers for care. UCLA IMGs, unlike regularly matriculated medical students, are currently unable to engage in the practice of medicine as part of their course of study. AB 1533 (Mitchell) authorizes a five-year pilot for the UCLA IMG program that would allow a program participant to engage in supervised patient care activities for a 16-24 week assignment in an approved and supervised clinical clerkship or rotation.

***Improve Transfer Process Between Institutions of Higher Education.*** The transfer process between higher education institutions (private post-secondary schools, community colleges, and California State Universities) is regarded as confusing, complicated, and inefficient. For example, the Institute for Higher Education Leadership and Policy finds that most students who transfer take many more classes than necessary for a degree and many of these classes do not count towards a degree and waste students' and taxpayers' money.<sup>44</sup> The transfer process is based on institution-to-institution agreements with no consistency across institutions or programs.

There are efforts currently under way as a result of AB 1295 (Fuller), Chapter 283, Statutes of 2009, and SB 1440 (Padilla), Chapter 428, Statutes of 2010, to streamline the pathway between community colleges and California State University (CSU) systems. AB 1295 prohibits the CSU System from requiring a student who has a nursing license and ADN from a community college to complete coursework whose content was already included in the community college curriculum. SB 1440 requires community college districts to develop associate degrees for transfer that meet specified criteria and prohibits CSU from requiring transfer students to complete coursework whose content was included as part of their associate's degree program or take more than 60 additional units to earn their baccalaureates (the ADN and some allied health associate degrees do not fall under this law because they require more than 60 units).

The Legislature may wish to consider requiring community colleges, CSUs, and private post-secondary institutions to undertake efforts similar to SB 1440 for allied health programs. Since transfers occur between all institutions (according to the California Community College Chancellor's Office, between 1992 and 2009, 17.2 percent of community college students took courses at more than one community college), this transfer standardization could include the transfer process between community colleges and CSUs; transfers between community colleges; and transfers between private post-secondary institutions and community colleges and CSUs.

In order to ensure that private post-secondary programs and courses meet standards similar to the state's public higher education institutions, the Legislature could evaluate requiring these institutions and their programs be accredited by a recognized entity.

By streamlining and standardizing the transfer process, students can complete their degrees and enter the health care workforce. Additionally, streamlining the transfer process will allow students to achieve higher levels of education and training to meet the new demands of care delivery. This is particularly important for ADNs seeking to become advanced practice nurses. Given the possibility that nurses may be called upon even more to fill primary care roles with the implementation of the ACA, steps to facilitate nurses achieving higher levels of education (e.g., a baccalaureate) will help ensure that future generations of nurses can deliver safe patient-centered care across all settings.<sup>45</sup>



***Increase Capacity at Higher Education Institutions.*** In order to increase California’s supply of health care workforce, capacity at higher education institutions will need to increase. As discussed above, many allied health care programs are already unable to accept all applicants, and other studies indicate that the state’s current capacity to graduate students will not meet forecasted demand.<sup>46</sup> One way to expand course and program offerings would be to allow community colleges to charge fees for credit courses and extension programs. (Currently, community colleges can only charge fees that cover the entire cost of the class for noncredit courses.)

Currently “contract education” allows organizations to contract with a community college to provide a course for the organization’s cohort. The Legislature could consider allowing community colleges to develop classes or programs in which fees paid by a group of students cover the entire cost of the class. This would allow community colleges the ability to add classes which are in high demand that would be funded by those willing to pay for the class. (AB 515 [Brownley] establishes an extension pilot program that would authorize community colleges to establish and maintain an extension program offering credit coursework to students at fee levels that cover the actual cost of maintaining these courses.)

### Long Term

***Facilitate System-Wide Change at Community Colleges.*** California’s community colleges operate independently from any state entity. The California Community College Chancellor’s Office provides leadership and support to the local colleges, but is unable to make system-wide changes. Consequently, program requirements vary by institution and might delay graduation and entry into the workforce. There is no incentive to collaborate on programs assisting students complete programs and enter the workforce. The Legislature should consider options that facilitate system-wide changes at the community college level so that this system of education can be nimble and adjust to the workforce demands.

***Establish a three-year medical school program within the University of California system.*** A recent study done by UC Irvine professor Alberto Manetta, MD, entitled “*A Study of Medical Education Training Efficiency and Financing,*” argues that it is possible to set up a three year medical school. Texas Tech University recently established one with approvals of the appropriate accrediting bodies. Texas Tech found that by cutting one year from their family medicine education program they could cut their student loan burden in half. Dr. Manetta argues the UC system could do the same for its family physician training.

### **Professional Entry Requirements and Regulation**

Different health care professions establish various entry level requirements in addition to varying levels of regulation. Most health care providers are required to meet specified minimum education and training requirements and obtain state issued certification or licensure before they can enter practice. A few, such as medical assistants, require no preparation or state registration at all.

### Short Term

***Evaluate Supply and Demand of Clinical Training Programs.*** Many health professionals are required to complete a clinical training component before they can receive a license or certification. Generally,

educational institutions partner with hospitals and other health care providers to provide the clinical training. However, for certain health professions (e.g., the clinical laboratory scientists), stakeholders claim there is an insufficient number of clinical training opportunities to meet demand.<sup>47</sup> The inventory of clinical training spots compared to the number of trainees for many of these professions is generally unknown or not easily available. The Department of Public Health's Laboratory Field Services Division reports that there were 80 training schools and 343 approved training slots approved for Clinical Laboratory Scientist Training and 41 approved programs and 153 approved training slots for Limited specialty training in 2011.<sup>48</sup>

A comprehensive review (statewide and regionally) of the number of clinical placements available, compared to the number of students seeking a placement for all professions, has not been made. Having an understanding of shortfalls and variations could lead to planning efforts to stabilize and make a case for the need for increased placements. The Legislature may wish to encourage licensing boards and California Department of Public Health to conduct such an assessment.

***Eliminate Barriers for Clinical Laboratory Personnel.*** In 2009 the Department of Public Health began working on updating clinical laboratory personnel regulations. According to the notice of proposed rulemaking, the current licensing standards are outdated, difficult to administer, and prevent licensure of qualified persons. These regulations went out for public comment in August 2010. The department was overwhelmed with over 15,000 comments on the draft regulations and withdrew its proposal and start again. On July 22, 2011 CDPH published a "Notice of Decision Not to Proceed" for the Clinical Lab Personnel Standards Regulations as a result of the numerous comments received by the department. The package was withdrawn in order for the department to adequately address the valid issues raised and to ensure the package meets all the standards of the Administrative Procedure Act including Authority, Reference, Consistency, Clarity, Necessity, and Non Duplication.

Significant changes in the new regulation package include the absence of several personnel categories that the department does not have the authority to collect licensing fees for including: Clinical Biochemical Genetics, Clinical Embryologists, Postgraduate Fellows, and Clinical Embryologist Scientists. Additionally, this regulation package is being re-organized and re-structured so the public can easily see all the requirements of each section and personnel category. The department currently has a draft under review to address any additional legal concerns before the Initial Statement of Reasons is finalized. The department anticipates publishing a new public notice of proposed regulations in late 2012 or early 2013.<sup>49</sup>

Given the department's decision, it is likely that these regulations would not be promulgated for at least another three years. The Legislature could consider streamlining these requirements through legislation in effort to more expeditiously remove barriers to increasing the state's supply of clinical laboratory personnel.

***Increase Professional Fees to Support Loan Repayment Programs.*** The state runs many health professional loan forgiveness programs (see Appendix A for a list of these programs). Additionally, the ACA has multiple provisions to increase funding to these programs and create new loan forgiveness programs (e.g., the public Health Workforce Loan Repayment Program). The ability of students to receive scholarships or loan repayment funds provides a strong incentive for students to choose a career in a health care profession. The Legislature could consider expanding licensing loan repayment

programs to include additional professions paid by licensees through licensing fees. (See Appendix A for a list of scholarship loan repayment programs.)

### Long Term

***Realign Scope of Practice to Maximize Efficiencies While Maintaining Patient Safety.*** Research suggests that scope of practice changes may be necessary to meet the forecasted demand for health care services. However, scope of practice changes are closely guarded by the professions and usually controversial because it is difficult to demonstrate that quality and safety will not be diminished when a scope of practice is expanded. While the Health Workforce Pilot Project program provides an opportunity for an objective analysis of a proposed scope of practice change, the analysis has not spurred change.

Another idea is to evaluate scope of practice changes through the creation of a council that reviews proposed scope of practice changes. This council could be modeled after the California Health Benefits Review Program which provides independent analysis to the Legislature on the medical, financial, and public health impacts of proposed health insurance benefit mandates and repeals. This new council's analysis would be partnered with any proposed change to a scope of practice. The Province of Ontario, Canada created a Health Professions Regulatory Advisory Council in 1991 to advise on various scopes of practice changes. It is regarded as a framework on the regulation of health professions that focuses on public benefit.<sup>50</sup> The Pew Health Professions Commission and the Citizen Advocacy Center recommend that such a council be created at the federal level to review the appropriateness of scopes of practice for different professions.<sup>51</sup>

Although the idea of a new council may have merit, ultimately the Legislature will continue to be the venue where scope of practice decisions are made. Developing impartial mechanisms to assist the Legislature in evaluating whether an expanded scope of practice would permit a professional to practice to the full extent of their training and skills, while also improving access to care without reducing patient safety or quality of care, could help the state to ensure that it has the workforce necessary to meet future demands.

### **Delivery Reforms**

The method in which health care services are delivered could impact ability to meet the demand for various health care services. ACA promotes a team-based, patient-centered health-care delivery system, which represents a significant shift in the way most health care workers operate.<sup>52</sup>

### Short Term

***Eliminate Barriers for Utilization of Telehealth.*** Telehealth is a mode of care delivery that may allow for better access to care, particularly in rural and underserved urban areas. Barriers exist that prevent seamless utilization of this service. For example, the Medi-Cal Provider Manual mandates that providers document why a patient cannot receive services in person and is seeking telehealth services. While this

requirement dates back to 1996 and intended to help prevent fraudulent over utilization of this service, it is unclear why this extra step is needed when telehealth offers access to higher-quality health care services.

Additionally, health care service plans are not required to pay for a consultation provided by the health provider by telephone or facsimile machine.<sup>53</sup> According to the Center for Connected Health Policy, this restricts providers from having the ability to choose the most appropriate method of delivering health services to their patients.<sup>54</sup> The Legislature may wish to consider removing any barriers to effective use of telehealth because it may be a method to more efficiently deliver care and provide access to the underserved. (AB 415 [Logue], Chapter 547, Statutes of 2011, removes various requirements to receiving health care services through telehealth.)

### Long Term

**Evaluate Options for Delivering Care that More Efficiently Uses the Workforce.** Public systems across the state are experimenting with health care delivery innovations that will provide more services at less cost and more efficiently use the health care workforce. One approach is to reduce their use of specialists. Los Angeles County, for example, is using retinal cameras to take pictures of a diabetic's retinas and sending these pictures out remotely to an optometrist for examination, rather than annually referring diabetics to an ophthalmologist for a retina examination. According to the county, these retinal pictures can be evaluated with similar results at a fraction of the cost of an ophthalmologist's exam. Similarly, Los Angeles County is working on a process by which a primary care doctor could call or email a cardiologist with a patient's electrocardiogram and prescription history to get a consultation on a course of treatment instead of referring the patient to cardiologist. Implementing options such as these statewide would not only more efficiently use the health care workforce, but could also result in financial savings.

**Encourage Professions to Work at Top of License.** Another approach these public systems are taking is evaluating and encouraging ways to use each profession "at the top of its license." Medical assistants should be scheduling follow-up and routine exams instead of the primary care physician. Ophthalmologists should be focused on surgery and complex diagnosis while optometrist could focus on more routine eye examinations. Encouraging professions to perform to the full extent of their education and training can be a step toward alleviating growing workforce shortages and improving access to care among underserved populations. Changes such as these should be less controversial because they do not involved changes to scopes of practices, but encourage health systems to review their workflow processes to determine how to most efficiently use their workforce.

**Relocate the Delivery of Health Services.** Throughout the nation, health care cost and access concerns are transforming where services are delivered. Walk-in clinics staffed by advanced practice nurses in pharmacies and chain stores are being established to provide convenient and affordable health care. Another example of how changes in where services are delivered can make more efficient use of the workforce is a proposal in Alameda County to staff fire stations with a paramedic and a medical or drug practitioner to help local residents with health issues such as vaccinations, prescriptions, or sinus infections. The goal is to reduce unnecessary emergency room visits and paramedic response services while making clinical services more accessible and delivered by a workforce that is practicing at the top

of its license. The Legislature could encourage innovations such as these and remove any barriers to implementing them on a statewide basis.

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  - <sup>2</sup> Shana Alex Lavarreda and Livier Cabezas, "Two-Thirds of California's Seven Million Uninsured May Obtain Coverage Under Health Care Reform," UCLA Center for Health Policy Research, February 2011.
  - <sup>3</sup> Rutgers Center for State Health Policy, John J. Heldrich Center for Workforce Development, "Preparing the Workforce for a Reformed Health Care System: Toward a Research Agenda," January 2011.
  - <sup>4</sup> Rutgers Center for State Health Policy, John J. Heldrich Center for Workforce Development, "Preparing the Workforce for a Reformed Health Care System: Toward a Research Agenda," January 2011. Randall Wilson, "Rx for the Health Care Workforce," Jobs for the Future, April 2010.
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  - <sup>6</sup> Office of State Health Planning and Development, California's Health Workforce Development Planning Grant Overview."
  - <sup>7</sup> C Paxton, "California Physician Facts and Figures. Oakland: California Health Care Foundation, 2010, cited in Tim Bates et al, "California's Health Care Workforce: Readiness for the ACA Era." Research Report prepared by the Center for the Health Professions, University of California, San Francisco. December 2011. The data appear to be from 2008.
  - <sup>8</sup> Janet Coffman, MA, MPP, PhD, and Gilbert Ojeda, "Impact of National Health Care Reform on California's Health Care Workforce," California Program on Access to Care White Paper, October 2010.
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  - <sup>10</sup> Tim Bates et al, "California's Health Care Workforce: Readiness for the ACA Era." Research Report prepared by the Center for the Health Professions, University of California, San Francisco. December 2011.
  - <sup>11</sup> Ibid.
  - <sup>12</sup> Factsheet from the California Association for Nurse Practitioners.  
<http://www.canpweb.org/associations/716/files/What%20is%20a%20NP%202011.pdf>
  - <sup>13</sup> Bates et al, p. 123.
  - <sup>14</sup> California Institute of Nursing and Health Care, the Board of Registered Nursing, California Student Nurses Association, Association of California Nurse Leaders, the California Community Colleges Chancellor's Office, and the UCLA School of Nursing, New Graduate Hiring Opportunity Survey Report 2009.
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  - <sup>16</sup> "The Registered Nurse Population: Initial Findings from the 2008 National Sample Survey of Registered Nurses," US Department of Health and Human Services. March 2010.
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  - <sup>18</sup> Bates et al, p. 125.
  - <sup>19</sup> Brad Kemp, "Help Wanted: Will Californians Miss Out on a Billion-Dollar Growth Industry?" Fenton Communications.

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- <sup>20</sup> Ibid.
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- <sup>33</sup> Data provided by OSHPD based on 2008 data from the Board of Registered Nursing survey found in the 2010 California Health Care Foundation Almanac.
- <sup>34</sup> Data provided by OSHPD based on 2008 data from the Medical Board of California survey found in the 2010 California Health Care Foundation Almanac. Figures represent 12 percent of physicians unaccounted for due to failure to complete survey.
- <sup>35</sup> Data provided by OSHPD based on figures from 2005/2006 reported in the 2011 UCSF “California Healthcare Workforce; Readiness for the ACA Era” report. (note: Dentist ethnicity data and California population data are not congruent due to the difference in years of data collected)
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- <sup>39</sup> Cynthia Wides and Catherine Dower, “A Review of California Office of Statewide Health Planning and Development, Health Workforce Pilot Projects Program 1973–2007,” University of California at San Francisco Center for the Health Professions, May 2010.

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