



UCSF Department of Medicine ZUCKERBERG SAN FRANCISCO GENERAL

REACHING BACK TO PRIME THE PIPELINE

California and the U.S. are becoming increasingly diverse, yet Black and Latinx communities are underrepresented both in medical schools and the health professions. It is vital to have clinicians and researchers who come from the communities most affected by health disparities as illuminated by the COVID-19 pandemic.

To meet this challenge, faculty members in the ZSFG Department of Medicine are reaching back to help high school and college students from communities underrepresented in medicine develop science, technology, engineering, and mathematics (STEM) skills and provide early exposure to medicine and research. With their deep lived experience of health inequities, community connections, and cultural wealth, these youth will transform the future of medicine.

Early Exposure to Lung & Team Medicine

“When I was in high school, I thought being a doctor would be cool, but no one in my family was in medicine,” said Antonio Gomez, MD. A family friend connected him with a neurosurgeon at a county trauma hospital who let him shadow him for a few days. “It was incredibly eye-opening, and although I probably would have applied to medical school anyway, I had a frame of reference when choosing UCSF for residency,” said Dr. Gomez, Associate Professor in the ZSFG Division of Pulmonary and Critical Care.



Antonio Gomez MD

He now helps make this experience available to other students, especially those with minimal exposure to the health field, by directing the Biology Scholars Clinical Exposure Program

(BICEP). Established about six years ago, this partnership between the UC Berkeley Biology Scholars Program and the ZSFG Pulmonary and Critical Care Division selects six or seven students each summer through a competitive process. Students receive a stipend, and spend five days shadowing a team which includes a pulmonary medicine faculty physician, a pulmonary fellow, and sometimes a resident or medical student. They keep a journal of observations and write up their reflections.

Students round with the Pulmonary Consult Team on inpatient and outpatient cases, spend time in the ZSFG Chest Clinic and ICU, and observe procedures such as bronchoscopies. They also join a multidisciplinary meeting and see how the pulmonary medicine, radiology, pathology and oncology teams work together to review the charts of patients with possible lung cancer. The group members determine what additional tests are needed and strategize how to make a diagnosis efficiently. “Students’ most common observation is that they didn’t realize how team-based medicine is,” said Dr. Gomez. “It’s not like ‘House.’”

About 20 percent of participants go on to medical school; some are interested in applying, and others decide to pursue a career in lab research, public health or another health profession. “BICEP’s goal is not necessarily for them all to become doctors – they may end up wanting to be a PA (physician



BICEP student Suzana Beyene (left) with Department of Medicine residents Natalie Richmond MD (center) and Samantha Fisch MD (right)

assistant), NP (nurse practitioner) or nurse,” said Dr. Gomez. “Hopefully they see that there are many different ways to care for patients.”

Because BICEP only hosts one student per week, they receive individualized attention. “The student can ask questions specific to their interests, without feeling self-conscious,” said Dr. Gomez. “It’s so valuable to ask what medical school or residency is like, or find out the difference between an intern and a resident. We can serve as navigators and guides.” If BICEP identifies additional funds, he would like to expand the program to other areas such as general internal medicine, cardiology and pediatrics – which would both increase capacity and address students’ stated interests in these other areas of medicine.

“It brings me great joy to see the light bulb turn on for these students,” said Dr. Gomez. “Seeing them throughout the week, reading their reflections and hearing them ask questions they probably would never have thought to ask is really rewarding”



Community Environmental Justice: Preparing Youth for Success

As a lung doctor, Neeta Thakur, MD, MPH, Associate Professor in the ZSFG Division of Pulmonary and Critical Care Medicine, sees how environmental factors such as stress and air pollution contribute to diseases such as asthma and chronic obstructive pulmonary disease (COPD), particularly in communities of color.

To develop better interventions and improve outcomes, she also leads the CLEAR (Collaborative Learning for Equity and Respiratory Health)



Neeta Thakur MD

Lab, which partners with the LifeLong Medical William Jenkins Health Center in Richmond to conduct onsite clinical research. “Participating in research has been inspiring to the community, and many caregivers and

parents asked how their children could get more involved,” said Dr. Thakur. “It was very clear that we needed a community-driven perspective to develop interventions, so we developed a program to train community youth to become local advocates for change.”

Launched with funding from the Koret Institute for Precision Prevention, the Nina Ireland Youth Participatory Action Research summer intern-



CLEAR program student intern performs a survey

ship offers four to six Richmond youth an eight-week, full-time paid internship. Interns learn about the scientific and epidemiologic context of community environmental justice issues and how to conduct qualitative and quantitative research.

This summer, interns developed and administered a survey in English and Spanish. They found that installing more trash bins, planting more trees, and creating more green spaces were the community’s top priorities for improving their local environment. They presented the results to stakeholders such as public health officials, district supervisors and the Bay Area Air Quality Management District. “Every summer I’m blown away by what they can accomplish when you provide the right tools,” said Dr. Thakur. “This year they went to 21 places and distributed the survey online, getting 306 survey responses in one week!”

The program provides comprehensive support to set students up for success, loaning them Windows tablets and mobile hotspots if needed, providing breakfast and lunch, and even buying them a professional outfit for their final presentations. The team – which includes two UC Berkeley master of public health students, a program alum from the previous year, CLEAR Lab Clinical Research Coordinator Cindy Curiel, and other members of Dr. Thakur’s lab – also provide coaching on everything from career development to how to compose a formal email and make a public presentation.

“Interns may not have another place where they would learn these skills, so we take the lid off the hidden curriculum,” said Dr. Thakur. “Our past interns flourish and do very well afterwards, and many tell us how important this experience has been.” Twenty students have completed the program since it began in 2019. All have stayed in high school, and nine out of the 10 who have graduated so far have gone to college.

“The interns are experts in their community, and



Berkeley Kidney Disparity Screening and Awareness Program participants

we facilitate the research aspects of their work,” said Dr. Thakur. “Watching them transform over the summer is amazing. We see them realize that their voice is truly important and meaningful for change in the community. That provides a renewed source of motivation to continue my work in health equities and transformative research.”

Piquing Awareness of Kidney Disease

Chronic kidney disease (CKD) affects about one in seven adults in the U.S., yet most are unaware



Raymond Hsu MD

that they have this condition. At the same time, fewer medical trainees are choosing to become kidney doctors (or nephrologists), and there is a particular lack of underrepresented minorities in nephrology – even though communities of color are particular hard-hit

by the disease.

To address these challenges, the Kidney Disease Screening and Awareness Program (KDSAP) was founded in 2008 at Harvard, and has grown to include chapters nationwide. Since 2017, UCSF has been affiliated with Berkeley KDSAP, which has about 40 undergraduate members at UC Berkeley.

“Berkeley KDSAP raises awareness and screens for kidney disease, especially in underserved populations,” said Raymond Hsu, MD, MAS, Associate Professor in the UCSF Division of Nephrology, a physician adviser to the program. “We want to expose undergraduates to health professions,



Aspiring Physicians Program participants learn cardiopulmonary resuscitation

“KDSAP is a great mechanism for not only increasing potential interest in nephrology, but also helping students who might pursue careers in public health, pharmacy, dentistry, or other health professions to become aware of kidney disease,” said Delphine Tuot, MD, MAS, Associate Professor in the ZSFG Division of Nephrology, who also serves as a Berkeley KDSAP physician adviser.

Each semester, students organize and staff two to three kidney disease screening events at local churches, clinics and community centers. Dr. Tuot, Dr. Hsu, and other volunteer nephrologists from UCSF, Stanford, Kaiser and private practice train students how to check blood pressure, screen participants’ urine for protein and blood, calculate body mass index (BMI), and assess diet. Students also shadow volunteer nephrologists, who compile all screening data and counsel patients on risk modification. “We provide guidance, but the students do most of the work, including much of the outreach,” said Dr. Tuot.



Delphine Tuot MD

Students also attend social events and educational talks given by patients, kidney transplant recipients and nephrologists. Some meet individually with volunteer nephrologists for career guidance, asking questions such as what a typical day in nephrology is like or how well the field supports work/life balance. “The informal mentorship is really rewarding,” said Dr. Hsu. “This past semester, two of the students I worked with got into medical school, which was very exciting”

“It’s a great group of students,” said Dr. Tuot. “They’re organized, enthusiastic, and very mindful of racial, ethnic and socioeconomic disparities as well as the importance of culturally tailored communication.” She is also optimistic about how the program plants seeds for the long term. “Subjectively, some of our fellows and trainees heard about kidneys for the first time through a KDSAP

chapter, whether it was local or across the country,” said Dr. Tuot. “That opened up the idea of nephrology as a great career path. It’s one pivotal way to pique their interest early and help increase our workforce.”

Cultivating Aspiring Physicians by Building on Cultural Assets

“In California, Latinos are almost 40 percent of the population, but make up only about 6 percent of physicians in academic medicine,” said Alicia Fernández, MD, Professor in the ZSFG Division of General Internal Medicine and Director of the UCSF Latinx Center of Excellence (LCOE).

To address this challenge, the LCOE has developed a number of capacity-building programs, including the Aspiring Physicians Program (APP). Now in its fourth year, it is led by LCOE Associate Director Connie Calderón-Jensen, MA. The APP partners with faculty at San Francisco State University (SFSU), California State University Fresno and UC Merced to offer an intensive six-week summer program to about 20 undergraduate students annually, plus longitudinal support. Participants are recruited online and through the biology departments at each campus, and receive a stipend for participating. The UCSF Office of Diversity and Outreach and the UCSF School of Medicine to contribute funds to broaden access to African American students, as well as undocumented students who are unable to participate in federally funded programs.

Students learn how to apply to medical school, prepare for medical college admission tests, and engage in reflective exercises and community

building activities. They also partner with community-based organizations to develop educational materials, such as a fact sheet about diabetes in the Latino community.

“One of the goals is for students to recognize how many assets they already have,” said Dr. Fernández. “I hear many students say, ‘I used to think I could never go to medical school because I was too behind and hadn’t done bench research. Now I realize that I have a lot to give, and that I can become a doctor.’”

The APP has inspired other work such as the San Francisco Vaccine Ambassador Program, in which



Alicia Fernández MD

SFSU students went door-to-door to answer questions and help community members sign up to get vaccinated. “I never would have thought to create a program like this if I hadn’t been working with the students in the APP program,” said Dr. Fernández. “These students have enormous cultural wealth. They come from these communities, speak the language, and have a deep understanding of the issues and barriers around getting vaccinated. It’s very different from a deficit model of ‘We have to help these students with remediation to get them into medical school.’”

The LCOE has received funding renewal for the next five years, helping to ensure the APP’s continuation. Eight students have already enrolled in medical school. This early exposure to medicine and research ripples out in other directions as well. “If they end up going into public health, nursing or another health profession, we also consider that a big win, because we need Latinos in all those jobs,” said Dr. Fernández. “It’s so rewarding to interact directly with these undergraduates. The future is bright, and that is highly motivating”

Elizabeth Chur

Editors: Neil Powe, Laurae Pearson, Brooks Bigart

SPOTLIGHT

David Chia MD, Meghan O’Brien MD, and Edgar Pierluissi MD, Division of Hospital Medicine, were elected to the Academy of Medical Educators.

