UCSF Department of Medicine
ZUCKERBERG
SAN FRANCISCO GENERAL

Improving African American Health

As part of our celebration of Black History Month, this issue of the newsletter highlights two initiatives to improve health equity for African Americans.

Dr. Lucas Zier and Dr. Jonathan Davis
Health Equity in Heart Failure

One goal of caring for hospitalized patients is not just addressing immediate medical needs, but working to reduce preventable readmissions to the hospital.

In 2017, Zuckerberg San Francisco General Hospital and Trauma Center (ZSFG) had the highest rates of hospitalized patients who were readmitted within 30 days, compared with all safety net hospitals in California. Lucas Zier, MD, MS, now Associate Clinical Professor of Medicine in the ZSFG Division of Cardiology and the Division of Clinical Informatics and Digital Transformation, and his colleagues did a deep dive into the numbers.

They found that heart failure patients represented the largest share of 30-day readmissions, and identified inconsistencies in the care they received. They also discovered that Black and African American men had the worst health outcomes, and many had heart failure related to stimulant use.

Lucas Zier, MD

"My colleagues and I were tasked with developing an approach to reduce our readmission rates without worsening health equity," said Dr. Zier.

Dr. Jonathan Davis celebrating success with a patient.

"We needed to both implement a standardized approach, but also to give additional resources to our highest-risk patients to improve equity."

By developing novel technological tools and innovative clinical programs, Dr. Zier and his colleagues reduced 30-day all-cause readmission rates by 13 percent, decreased one-year heart failure mortality by 6 percent, and eliminated the equity gap for Black/African American patients compared with the general heart failure population.

Keeping patients healthier and out of the hospital is not only better for patients, but also for health systems. As a safety net hospital, ZSFG must meet certain performance metrics to obtain federal and state funding. Before this intervention, ZSFG lost $1.2 million annually from failing to meet the quality metric tied to 30-day readmission rates. Since 2018, ZSFG has met this goal every year, saving the San Francisco Health Network $7.2 million to date.

Improving Both Equality and Equity

To address inconsistencies in care delivery, Dr. Zier and his team developed a paper-based checklist of best practices for hospitalized heart failure patients. These included prescribing heart failure medicines, administering medications to remove excess fluid from the body, and ensuring patients had follow-up appointments soon after discharge.

"Given the tools we had at the time, the best

way to standardize care was to go down the list and make sure providers met each part of the algorithm," said Dr. Zier. "I had the team sign the checklist and put it under my door so I could track who was using it." This tool helped reduce both 30-day readmission rates and mortality.

The group's root cause analysis also led to the 2018 recruitment of Jonathan Davis, MD, MPHS, Associate Clinical Professor in the ZSFG Division of Cardiology, as Founding Director of the San Francisco Health Network's Heart Failure Program. In addition to starting a heart failure clinic at ZSFG, he also led efforts works to improve care for the highest-risk patients. "When someone comes to the emergency room over and over, that's often driven by a combination of non-medical things such as lack of transportation, low health literacy, food insecurity, mental health and substance use," he said.

In response, Dr. Davis established the Heart Team. This multidisciplinary group meets monthly to discuss holistic care of heart failure patients with frequent hospital readmissions, and includes experts in heart failure, primary care, palliative care, addiction medicine, and social medicine. By bringing together these previously siloed specialists, the team helps patients access housing, transportation, treatment for mental health or substance use, and other resources which help stabilize them, reduce preventable hospitalizations, and improve health.

Because many heart failure patients with the highest readmission rates also use stimulants, especially methamphetamine or cocaine, Dr. Davis also partnered with colleagues in Addiction Medicine to create the Heart Plus Clinic. "We're in the midst of a stimulant epidemic, and one of the downstream things it can lead to is cardiovascular disease and heart failure," said Dr. Zier.

In the Heart Plus Clinic, cardiologists and addiction medicine specialists co-manage patients. To encourage attendance, they successfully piloted a reward system to reinforce positive behavior. For every clinic visit and every negative drug test, patients draw tickets with the chance to win a gift card; the more clinic visits and negative drug tests they accumulate in a row, the more tickets they get to draw. They receive support from addiction medicine specialists, who help them explore reasons to reduce or stop using stimulants and take steps towards their health goals. They also meet with Dr. Davis for help managing their heart failure.

"Rates of going to the Emergency Department and hospital admissions dropped dramatically, and clinic attendance went from very low to more than 80 percent," said Dr. Davis. "People took their heart medications more frequently, used less stimulants, and felt better cared for. Patients consistently saw specific providers, which really fostered rapport…. A lot of our folks were able to attend appointments with their primary care physician, social worker or housing program – things we hadn't fully anticipated, but are thrilled to see."


Jonathan Davis, MD

From Paper Checklist to Digital Tool

The next step was scaling up these successful pilots and prioritizing the highest-risk patients. To support this effort, Dr. Zier completed a fellowship in data science, machine learning and artificial intelligence, and in 2021 co-founded the Pioneering Research and Organizational Solutions to Promote Equitable Care Through Technology (PROSPECT) Lab. It studies how technology can improve health outcomes and health equity in safety net health care systems and vulnerable patient populations.

Dr. Zier and his colleagues translated their paper-based heart failure checklist into a robust decision support ecosystem within the electronic health record (EHR) to help standardize care. Since residents frequently manage heart failure patients, his group interviewed residents on the most critical elements for a new user interface.

Dr. Zier's group incorporated this feedback into their prototypes and applied principles of human-centered design, which involves psychology, technology and decision behavior. "We intentionally made an effort to not bombard people with lots of alerts," he said. "We wanted to create something that gave residents a reason to go to this area of the EHR, because it simplified their workflows and made their lives easier."

The tool centralizes important clinical data such as the patient's most recent ejection fraction and creatinine levels, summarizes recommended tasks such as ordering a 30-day prescription for heart failure medications, then provides a drop-down menu with evidence-based options for what to prescribe. "Our decision support infrastructure is a continuous workflow from admission to discharge," said Dr. Zier. "We're not aware of anywhere else in the country that has built something with this degree of complexity or detail."

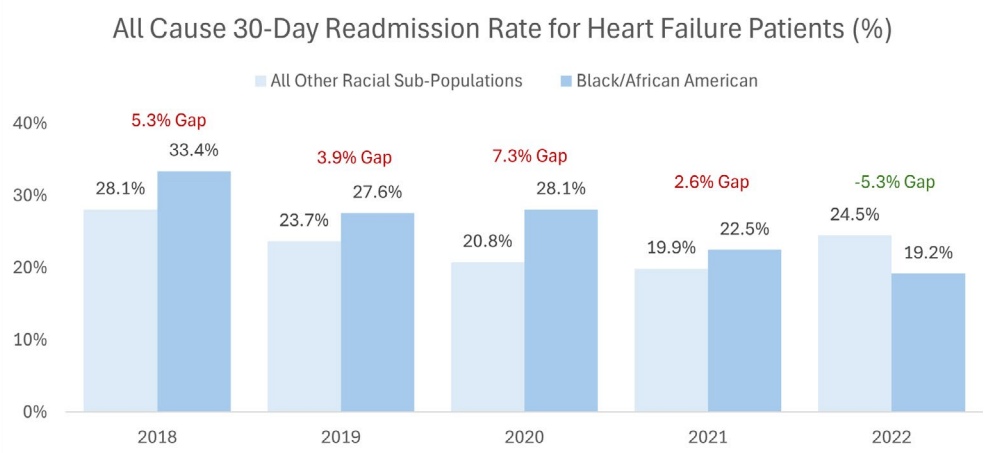
Using AI to Predict Risk

The PROSPECT Lab also tackled another thorny problem: how to identify the highest-risk patients with heart failure, ideally before they are hospitalized? They analyzed many variables in the EHR, using predictive AI to develop a model that identifies patients who would most benefit from earlier interventions. "We intentionally did not use race in our predictive modeling, because it's usually an inaccurate and biased proxy for social determinants," said Dr. Zier. "That can end up worsening disparities instead of improving them."

Their group found that standard readmission predictors alone, such as blood pressure or kidney function, were not helpful in identifying the highest-risk patients at ZSFG. So in addition to clinical data, they also folded in behavioral factors as well as social determinants of health, including access to food, shelter and clothing. The PROSPECT Lab used all this information to develop a machine learning risk prediction model that stratifies heart failure patients as having high, medium or low risk for readmission. They also created a dashboard which lets providers view clinical information for each group, as well as for individual patients.

"The predictive AI is running 24 hours a day, seven days a week," said Dr. Zier. "Jonathan can pull up this dashboard which tells him who is at highest risk of readmission in the next 30 days. By identifying our most vulnerable patients, we could start to improve equity by targeting them with the very innovative programs that Jonathan developed."

That means, for example, that the decision support ecosystem can alert providers that one of their patients is at high risk of readmission, and gives them a way to easily make a referral for an expedited clinic visit with Dr. Davis. "Tying predictive output to a specific workflow improves equity, because it allows us to give high-risk patients more resources at a time when they



really need them," said Dr. Zier. "Readmissions and mortality went down for everyone, but overall readmissions went down even more substantially in the high-risk population, which includes our Black/African American patients."

Dr. Zier and Dr. Davis are now launching an outpatient version of this heart failure prediction tool, deploying and testing it across the San Francisco Health Network. "If you can provide really good care in the outpatient setting and prevent them from ever having to go to the hospital in the first place, that's really how you keep people out of the hospital," said Dr. Zier. "This is really where the future of decision support is. But it's also more challenging because it requires standardization across not just a hospital, but across different health care settings and clinics. That's why I'm excited about our heart failure pilot in the outpatient setting, which is currently being rolled out in a clinical trial."

Leveraging Technological Tools

"This has to be a multidisciplinary approach to patient care, not just the cardiologist seeing the patient," said Dr. Davis. "Some of the changes may feel insurmountable, but they aren't – you just have to keep trying." He mentioned one Black patient who was recently featured in the San Francisco Chronicle. She became homeless after leaving an abusive relationship, and struggled with stimulant use and heart disease. Over four years, the care team helped her stop using stimulants, secure permanent housing, and get connected with primary care and the UCSF Heart Transplant Program. Last year she successfully received a heart transplant.

"It takes a village," said Dr. Davis. "The technology will do a lot of the work, but not all of it. It's how you leverage it that makes it extra powerful. San Francisco General gives you the support and flexibility to develop new ideas and ways to engage people with care."

Dr. Davis and Dr. Zier acknowledge the critical support from their colleagues as well as key stakeholders, including Susan Ehrlich, MD, MPP, Chief Executive Officer of ZSFG; James Marks, MD, PhD, former Chief of Performance Excellence; Jenna Bilinski, RN, MBA, former Director of the Kaizen Promotion Office; and the leadership of Information Technology and the San Francisco General Hospital Foundation. "This work is an example of a health system coming together to support innovative work," said Dr. Zier.

In recognition of their work, ZSFG received the 2024 Bernard J. Tyson National Award for Excellence in Pursuit of Healthcare Equity from the Joint Commission and Kaiser Permanente, as well as the 2024 Quality Leaders Award from the California Association of Public Hospitals and Health Systems, in partnership with the California Health Care Safety Net Institute.

AI for Good

Dr. Zier is excited to apply this approach to other drivers of hospital readmissions as well as outpatient conditions. "We've built a platform for chronic disease management, and there's no reason we can't repurpose this approach for other diseases such as hypertension, diabetes and asthma," he said.

He hopes to convene a symposium for other safety net health care systems with data science capabilities, and to establish a collaboratory. "There's an opportunity to disseminate this and partner with other health care systems," said Dr. Zier. "The future forward for safety net health care systems dealing with issues of inequality and inequity is to come together as a larger group. This technology is paradigm-shifting, and gives us opportunities we didn't previously have. There are a lot of concerns about technology worsening disparity gaps. This is an example of how AI can improve health outcomes and health equity when it is properly developed and thoughtfully deployed on a systems level."

Dr. Andreas Mitchell
Reducing Hypertension Disparities in Black Patients

"I believe in democratizing quality improvement (QI), and that needs to be front and center in how we think about health equity work," said Andreas Mitchell, MD, MPP, Assistant Professor in the ZSFG Division of General Internal Medicine.

After completing his internal medicine residency and chief residency at UCSF, Dr. Mitchell spent two years at a community health center in Oakland that served a predominantly Black patient population, where he garnered several grants to improve diabetes outcomes. In August 2024 he returned to ZSFG as a faculty member, becoming Clinical QI Lead in the Richard Fine People's Clinic (RFPC).

"At RFPC, I wanted to focus on one high-impact area," said Dr. Mitchell. He and his leadership team identified improving hypertension equity among Black patients as a priority area. "Cardiovascular disease is one of the top killers in the United States, and uncontrolled hypertension affects so many of our patients and puts them at high risk of heart attack and stroke," he said.


Andreas Mitchell, MD, MPP

His staff's analysis identified persistent racial disparities since 2017. As of July 2024, only 63 percent of Black and African American patients at RFPC

had controlled hypertension, compared with 70 percent for the overall clinic population. "Structural racism and historical inequity are probably the biggest factors [for that disparity]," said Dr. Mitchell. "A lot of our Black patients may have lower income, more barriers to care, and more competing priorities in their lives. Things such as diet, exercise, stress and depression affect people at the individual level, but are also rooted in legacies of historic racism. It's multifactorial."

Harnessing the Team's Expertise

To address this inequity, Dr. Mitchell convened a clinic-wide retreat in fall 2024. Together, front desk staff, medical staff, nurses and doctors identified root causes of the problem. Those included social determinants of health, such as food insecurity, transportation obstacles, and lack of safe places to exercise; material needs, such as lack of blood pressure cuffs for home use; clinical processes; and other challenges. Then they brainstormed possible interventions, rating each one by level of impact and how much effort it would require to implement. "We got a lot of very rich ideas," said Dr. Mitchell.

The group then selected several ideas to implement. They recruited a volunteer to develop patient education posters about hypertension. Because nutrition and food security was such an important factor, they applied to become a referring site for the District 10 Community Market – a recently established free grocery store in Bayview Hunters Point open to low-income residents in the southeastern part of San Francisco who are referred by specific community organizations.

"A resounding thing we heard at the retreat was that patients felt rushed during a 20-minute visit with their doctor, and like medications were being pushed on them," said Dr. Mitchell. "Some patients want to learn what they can do differently with diet and exercise." The clinic team identified culturally concordant care as a high-impact intervention – providing more opportunities for Black patients to receive care from a health care team member who is also Black. "Research suggests that patients often feel more comfortable, are more likely to follow recommendations, and are more likely to come back for follow-up visits if they receive culturally concordant care," he said.

The group originally thought this intervention would require substantial additional effort, but a Black nurse in the clinic mentioned that she enjoyed discussing blood pressure management with Black patients and established good rapport with many of them. The clinic decided to pilot culturally concordant hypertension equity nursing visits for Black patients which focus on blood pressure education. Patients who need a blood pressure cuff to take home measurements receive one during their visit. Clinic staff proactively call qualifying patients to set up an appointment, rather than waiting for a provider to refer them.

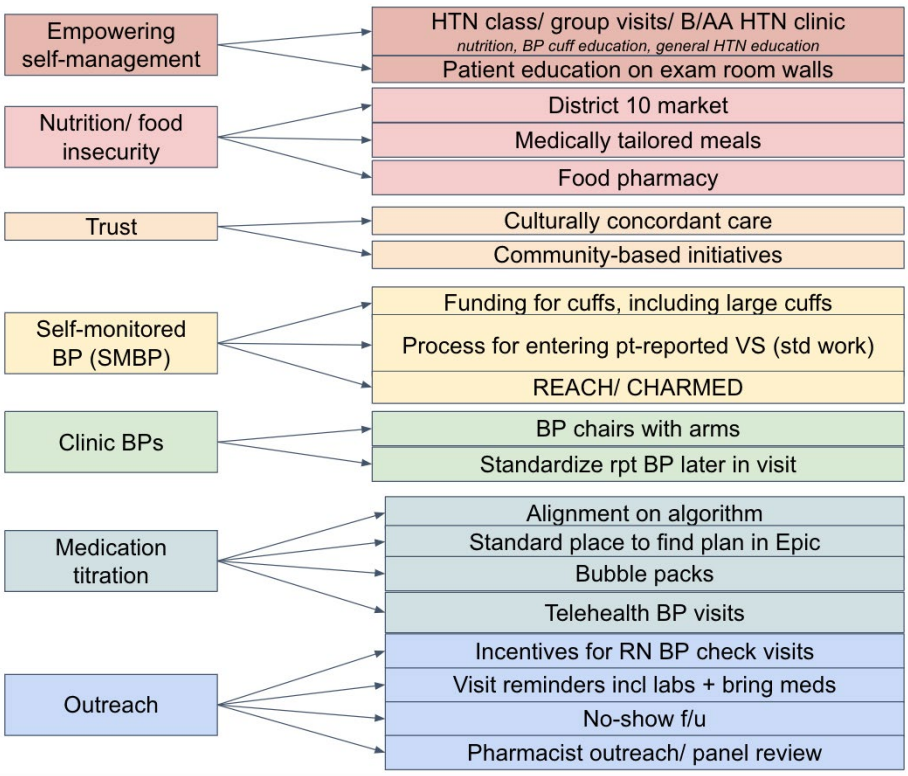
Even though these pilot interventions are just getting off the ground, Dr. Mitchell is encouraged that the racial equity gap in hypertension control has already been cut in half. "We're already seeing improvement just from people in clinic thinking about this and being engaged," he said.

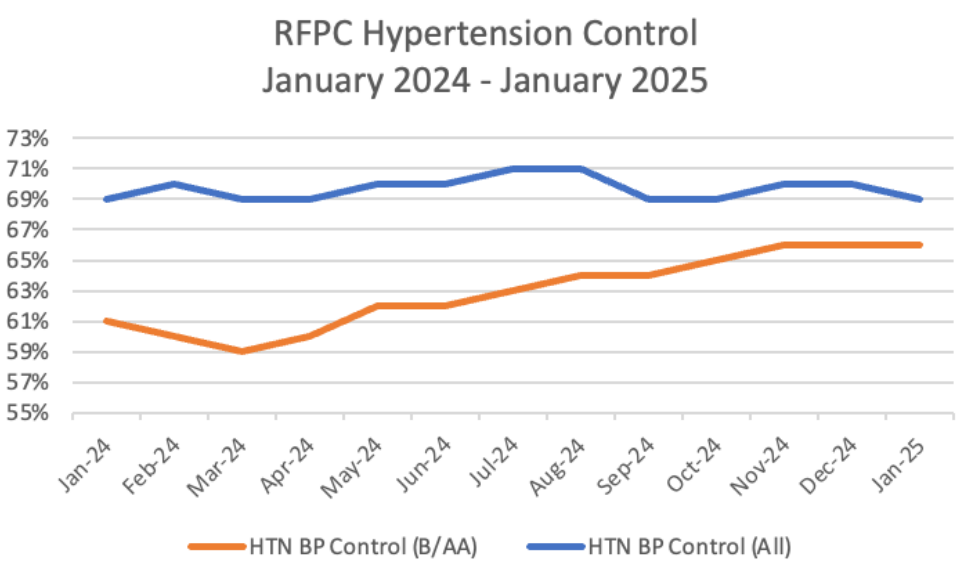
Doubling Down on Health Equity

Dr. Mitchell developed his passion for quality improvement while working in a community clinic after residency. "Previously I focused my energy on advocacy and changing high-level policy, but I realized there was so much we could do to have a positive impact on patients in our clinic," he said. For example, the community clinic ran a weekly diabetes group, but did not focus on measurable health outcomes. He successfully applied for grant funding and improved their data infrastructure, allowing his data team to better understand the effectiveness of the clinic's current approach and invite everyone's ideas about how to improve diabetes control.

"The QI mindset was new for the clinic, so it was a huge culture shift," said Dr. Mitchell. He worked hard to build relationships with his colleagues, setting up weekly one-on-one

Possible Countermeasures by Category





meetings with his team members. "I doubled down on understanding how things had been done and why, and to reflect that understanding as I proposed new things," he said. "In particular, I was cognizant of not overstretching the bandwidth of the team…. I learned a lot about change management and communicating the vision, while leaving it to the experts to implement that vision."

Though he loved his work at the community clinic, he returned to ZSFG last year in part to work with QI experts who could help him hone his skills. One key learning is the importance of bringing everyone to the table. "I used to lead meetings in a fairly structured way, with a tight agenda," said Dr. Mitchell. "But when our QI analyst and I just introduce a topic, share the data, and let people respond, we get a flood of engagement and amazing ideas. Folks are enthusiastic about improving outcomes for our patients – they just need the space and structure in which to do it."

Dr. Mitchell's work in health equity work has both professional and personal roots. "My father is Black, and I identify as Black," he said. "I've always been attuned to health equity since I started on my pathway in medicine. I've also come to appreciate quality improvement as a way to improve outcomes for our most vulnerable patients, and to bridge the clinic and the community, such as by partnering with the District 10 Community Market. If health inequities are driven by social determinants of health, we need to think beyond our clinic walls to close those gaps, and to build partnerships that strengthen our communities."

He is excited about the real-world impact of this work. "First you need to see where your equity gaps are, and then empower everyone – including frontline staff and providers – to contribute ideas and participate in the work of closing those gaps," said Dr. Mitchell. "I've been delighted to work with such a great team that is committed to equity and implicitly understands the importance of this work. It's more important than ever to double down on our health equity efforts and not shy away from it, even in a difficult climate."

-Elizabeth Chur
Editors: Neil Powe, Leonard Telesca, Ali Cunningham

SPOTLIGHT

Congratulations!

Marlene Martin MD, Division of Hospital Medicine, received a Hero and Heart Award from the SFGH Foundation for her efforts with the Addiction Care Team

Jaya Mallidi, MD, Division of Cardiology, has received UCSF's Distinction in Teaching Award in Category 1

Binh An Phan, MD, Division of Cardiology, has won the Maxine Papadakis Award for Faculty Professionalism and Respect and the Bridges Curriculum Award for Excellence in Innovative Teaching Modalities

Shelene Stine, MD, MPH, Division of Hospital Medicine, has won the Henry J. Kaiser Award for Excellence in Teaching