PUBLIC HEALTH DEEP DIVE

APR. 25-26, 2019
BOSTON, MA

HARVARD
Advanced Leadership Initiative

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About the Advanced Leadership Initiative

The Advanced Leadership Initiative (ALI) is a third stage in higher education designed to prepare experienced leaders to take on new challenges in the social sector where they have the potential to make an even greater societal impact than they did in their careers

ALI Deep Dive sessions highlight one major global or community challenge where ALI Fellows might fill a gap. Deep Dives include readings, outside experts, often faculty from relevant Harvard programs, and a focus on problem solving and practical applications of knowledge.

ALI Fellows contribute ideas based on their experience and knowledge for immediate solution-seeking with major figures in the field under discussion and with affected constituencies.

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Executive Summary

The 2019 Public Health Deep Dive featured presentations and discussions on global health frameworks with examples from low and middle-income countries, alongside an introduction to the economics and politics of health care reform in the United States. Although the U.S. is one of the wealthiest nations in the world, it is far from the healthiest and its challenges provided a useful lens through which to view health system design challenges more broadly.

During the two day event, ALI Fellows conversed with Harvard Chan School faculty, community, and health care industry leaders about the complex challenges associated with improving health systems, and ultimately health, both in the U.S. and globally. A central theme of the Deep Dive was that improving future health in the broadest sense, as noted by the World Health Organization's definition of "complete physical, mental, and social well-being", would require assets and partners outside of the health care sector.

The Deep Dive featured a panel discussion, dynamic speakers, and a design workshop. Presentations began with basic knowledge on health systems, and moved towards discussion of current domestic and global health priorities, including the nutritional consequences of climate change, addiction, and mental health. The cohort came together in the middle of the second day to design a solution to a specific health challenge, and the Deep Dive concluded with an intimate conversation with Jim O'Connell, founder and president of Boston Health Care for the Homeless.

Bringing together the content of the Deep Dive, Rosenthal helped fellows synthesize their thinking around the complex issues in public health.

Ultimately, ALI Fellows seemed to agree that some degree of collaboration was necessary to address these issues. Change could happen only by working with communities to identify problems and potential solutions and by gathering stakeholders across sectors to implement those solutions.

Howard Koh and Meredith Rosenthal, members of the ALI Faculty Executive Committee and Faculty at the Harvard Kennedy School and the Harvard T.H. Chan School of Public Health, chaired the Deep Dive.


PUBLIC HEALTH DEEP DIVE

Burden of Disease: Global and U.S. Perspectives

To launch the 2019 Public Health Deep Dive, Professor Howard Koh of the Harvard T.H. Chan School of Public Health and Harvard Kennedy School discussed the disease burden from a global and U.S. perspective. He highlighted some of the challenges in health and health care and presented some pathways forward to make progress. Ultimately, he explained, public health needed the support and engagement of the broader population.

Koh began his session by explaining the definitions of both health and public health. "Health is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity," he explained. He added that the World Health Organization has stated that enjoying the highest attainable standards of health is a fundamental right of every human being. Public health, then, was ensuring that all individuals were able to experience the highest standard of health. Citing the respected 20th century British author and systems thinker Geoffrey Vickers, Koh said that public health was also "successive re-definings of the unacceptable."

With that foundation in place, Koh described the Global Burden of Disease Project (GBD)—an effort to measure global public health and the effects of diseases and injuries on a country-by-country basis. Started in 1990, the GBD published its most recent report in 2017, cataloging more than 359 diseases and injuries and 84 risk factors for disease in 195 countries and territories. The 2017 report showed that non-communicable diseases—cardiovascular disease, cancer, respiratory diseases, diabetes, and dementia—accounted for the leading causes of death around the world.

Koh explained that the 2017 GBD report showed that "we live in a fragile world that is gradually improving." According to the report, global adult mortality rates had decreased, and life expectancy had increase over time. Nonetheless, there were significant disparities around the world.

In an effort to address these disparities and the global burden of disease more generally, the United Nations developed the 2015 Sustainable Development Goals (SDGs). While the SDGs examine how to make the world better in a broad sense—eliminating poverty and hunger—many

of these goals in fact involve health and wellbeing. Koh described his own efforts as the 14th U.S. Assistant Secretary for Health to achieve similar goals in the U.S. He oversaw Healthy People 2020, continuing a decade-by-decade metric to evaluate the country's progress toward achieving higher standards of public health.

Like the rest of the world, the U.S. had made progress in overall life expectancy, but Koh highlighted one major problem: health care spending far outpaced improvements in health care outcomes. This disparity has been attributed in part due to a relative lack of social services in the U.S.: for every $1 spent on health care, OECD countries spent $2 on social services; for every $1 spent on health care, the U.S. spent less than $.50 on social services. Koh explained that the U.S. needed to pay more attention to the social determinants of health. "Health starts where people live, learn, labor, play, and pray."

He further explained that health outcomes varied considerably in the U.S. from state to state. As an example, overall life expectancy at birth in Hawaii was 81 years, while in Mississippi it was 75 years. In addition, for the first time since 1993, life expectancy was shown to be declining in the U.S. in 2017. Koh attributed this troubling statistic to a rise in obesity, substance use disorders, and mental health challenges, including suicide, across the country. Addressing these issues would require a reframing of public health in the U.S.

"Health is much more than what happens to you in the doctor's office," Koh said. He said as a country, we needed to also consider the effects of income, education, housing, and the other social determinants of health. He also described his own efforts to build cross-sector collaboration and promote a "culture of health"— by encouraging business to support their employees, consumers, communities, and the environment. "Health is too important to be left to the health experts alone," he said, "we need all of you to weigh in on this issue."

U.S. Health Care Policy: Coverage, Affordability, and Value

Professor Meredith Rosenthal of the Harvard T.H. Chan School of Public Health brought a systems-level perspective to the Public Health Deep Dive, looking at health care policy and insurance in the United States. Rosenthal discussed the state of U.S. health and health care and gave an overview on the country's insurance model after the passage of the Affordable Care Act (ACA). She also helped ALI Fellows think about the balance between quality and value in health care delivery and advocated for value-based health care payments in the U.S.

Starting with the big picture, Rosenthal explained that the U.S. was spending far more than other countries on health care and not seeing commensurate increases in life expectancy. She explained that the U.S. pays its physicians more, pays more for a hospital day, and pays more for fixed services. "In essence, we get less health care and we spend quite a bit more," she explained.

To complicate matters, life expectancy varied widely across the U.S. Rosenthal talked about the "Eight Americas," a concept first described by Chris Murray, director of the Harvard Initiative for Global Health: different regions across the country have vastly different life expectancies. "There is a 10-year gap in life expectancy depending on where you live in the United States," Rosenthal explained. In fact, some states in the southern U.S. had life expectancies on par with developing nations around the world.

While not causal, Rosenthal noted that there was a correlation between life expectancies and health insurance coverage across the country. "Coverage in the U.S. is voluntary and fragmented," she said, "We have a patchwork system of both public and private health insurance." While this voluntary system respected the rights of individuals to make decisions, it also led to adverse selection—people who buy health insurance tend to be sicker and have more planned expenditures.

In the U.S., most individuals under the age of 65 relied on employer-sponsored coverage. While people over 65 were almost universally covered by Medicare, the ACA attempted to provide coverage for the portion of the under-65 population that was not otherwise insured. In practice, however, adoption of the ACA varied considerably among states and, as a result, many indi-

viduals were underinsured—they had a health insurance plan but struggled to pay for medical care. These underinsured individuals were more likely to have skipped follow-up tests and treatments, not filled a prescription, and not received specialist care.

Quality of care also varied widely state-by-state. Rosenthal explained that there was a fourfold variation in the number of ICU days in the last six months of life for patients depending on the region of the country. Looking at a random sample of charts across the U.S., for every recommended service—even the most basic—people received the evidence-based standard of care only about half of the time. "The problem is that we spend a lot on coverage, quality of care is sub-optimal, and use and quality of care vary widely," she added.

One potential solution to this problem was value-based payment—reforms that target both overall spending and quality. Rosenthal said the current way of paying for health care, fee-for-service, encouraged more utilization and intensity but not necessarily an increase in quality. She encouraged the use of payment models that provide coordination and collaboration: Accountable Care Organizations, hospital value-based purchasing, and merit-based incentive payment systems. These models encouraged a system-based approach to health care that considered "episodes of care" and populations rather than individual services.

Ultimately, Rosenthal said the U.S. needed to break down silos and move away from paying for volume alone. She added that leaders in the health care sector and beyond needed to broaden the scope of accountability and consider the importance of the social determinants of health. "We need to make the health system actually focus on health instead of being a system where we focus on producing widgets."

Health Systems around the Globe: Aspirations and Realities

Professor Margaret Kruk of the Harvard T.H. Chan School of Public Health continued the discussion on public health systems, this time adding a global perspective. Kruk first defined a health system before examining how health systems worked in lower- and middle-income countries (LMICs). She also looked at international goals to improve health care systems and the practical realities in realizing those goals. Finally, Kruk presented some potential solutions to addressing challenges in health care systems around the globe.

Kruk began her talk by defining a health system. As defined by the World Health Organization, a health system constituted the activities whose primary purpose was to promote, restore, or maintain health. This system included health services, traditional healers, home care, medication, health promotion and disease prevention, and environmental safety interventions. Kruk explained that her focus was primarily on how we as societies provide care to people.

Having defined health systems, she added the goals of these systems were to improve the health of populations, respond to individuals' non-health expectations, and provide financial protection against the costs of ill-health. She noted that other people thought that health systems should be both efficient and equitable; they serve as social institutions that communicate governments' commitments to its citizens.

In an effort to meet these goals, the UN developed its Millennium Development Goals (MDGs). The MDGs

sought to reduce child mortality, improve maternal health, and combat HIV/AIDS, tuberculosis, and malaria. When these goals expired, the UN created Sustainable Development Goals with a broader scope around 'good health.' These goals included addressing noncommunicable diseases, maternal mortality, substance abuse, and tobacco control. Unfortunately, Kruk said, many countries around the world were not prepared to adapt to this new agenda.

As a result, Kruk argued that the definition of health systems needed updating. She said that health systems should be designed for people. A high-quality health system should optimize health in a given context by: Consistently delivering care that improves or maintains health;

- Being valued and trusted by all people; and
- Responding to changing population needs.

Under this new definition, health systems needed new goals. "If health systems are for people, and we are judging performance," Kruk explained, "we need to focus on more than managerial aspects." She argued that individuals care about process of care—competent care and services, positive user experiences—and quality impacts—better health, confidence in the system, and economic benefit.

Unfortunately, many healthy systems around the globe failed to meet quality standards and, as a result, lost the trust of their communities. In the LMICs Kruk examined, nearly six in 10 amenable deaths were due to poor quality of care. In addition, fewer than one in four people believed their health system worked well.

Kruk explained that to improve quality, leaders needed to look upstream—at structural, systems-level changes. In particular, she advocated for governing for quality, redesigning service delivery, transforming the health workforce, and igniting demand for quality among patients. She noted that these improvements were large scale strategies that were slower to implement. "There are no more easy fixes for health care."

Health Policy and Systems Discussion

Following their individual presentations, Professors Margaret Kruk and Meredith Rosenthal of the Harvard T.H. Chan School of Public Health had a discussion about health policies and systems, both globally and in the United States. Through their conversation, Kruk and Rosenthal looked for lessons from the international arena that could be applied in the U.S. and vice versa. The two professors also answered questions from fellows and outlined potential solutions to health care problems.

Rosenthal began the discussion by asking Kruk what health systems in low- and middle-income countries (LMICs) might teach leaders in the U.S. Kruk explained that in her experience the boldness of vision in many countries impressed her. "There is a sense of deep need to make change," she said, "and an ability to set a bolder vision for health systems." She also explained that LMICs focused on primary care much more seriously than the U.S.

Rosenthal said the data shows that there is a strong correlation between access to primary care and high-quality health outcomes. Nonetheless, driving change in primary care had proved difficult. "We haven't yet been able to show that if you pour money into primary care, you will be able to change things throughout the system," Rosenthal explained.

After Kruk and Rosenthal opened up the discussion to questions from the audience, ALI Fellows asked the two experts about the effectiveness and feasibility of a single payer health insurance system in the U.S. Rosenthal explained that while a single-payer system would likely be more equitable and efficient, there were political hurdles that made adopting such a system practically impossible. "In my opinion, the closest we will get in the U.S. is single-stream financing with private insurers to create a mandatory system," she said.

Kruk added that the lack of trust in government in the U.S. made the situation considerably different than in other countries she studied. "This is a uniquely skeptical country around the role of government," she said. By contrast, she explained that in many developing countries, leaders were following the best practices laid out by economists to institute models of universal coverage.

Fellows also asked Kruk and Rosenthal how they saw the role of primary and specialist care in health systems in the U.S. and LMICs. Kruk shared her experience working as a physician in Canada to highlight the country's emphasis on "watchful waiting." She said this sort of practice was viewed negatively in the U.S. and a high volume of care tended to be seen as the best medical response.

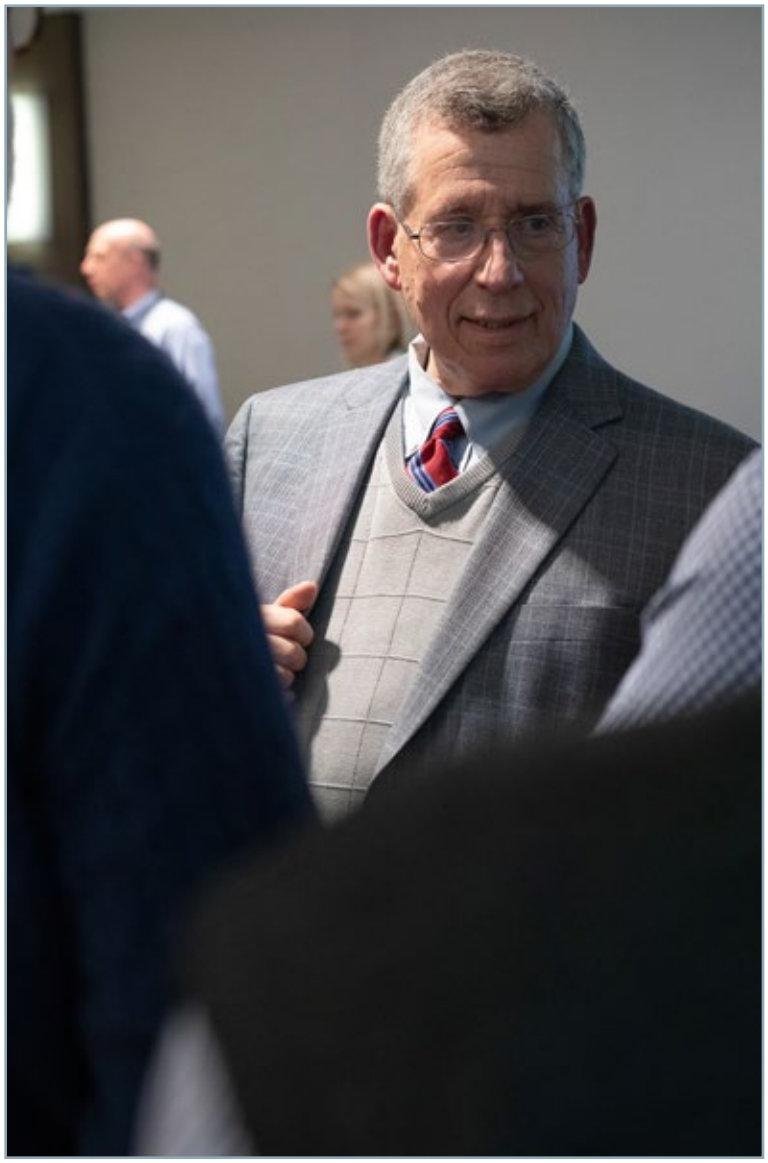
Rosenthal agreed, noting that U.S. payment policies contributed to the emphasis on volume of care rather than quality of care. "We need to think about payment reform as a way to incentivize watchful waiting and other best practices," she said.

In a final question, one ALI Fellow asked the professors what leaders could do

to address the amount of big-money interests driving the politics around health care in the U.S. Rosenthal explained that the U.S. had made considerable advances to shift the conversation around health care over the last 20 years—the American Medical Association and health insurers both supported the passage of the Affordable Care Act.

Even so, she said true reform for health policy in the U.S. required broad public support. Rosenthal explained: "The notion that the health care system will heal itself without public intervention is untenable."

The Politics of Health Reform: Where are We Headed?



Professor Robert Blendon of the Harvard T.H. Chan School of Public Health talked about the important role that politics play in health reform in the United States. Blendon explained that political polarization in the U.S. led to inaction around health care reform. He also described the reasons for the widening political divide and outlined an array of possibilities surrounding health care policy following the 2020 U.S. presidential election.

Blendon started his session by explaining that the wide and growing divide between the two political parties in the U.S. had led to a standstill on health policy. He said that the primary system in the U.S. created a political environment that catered to extreme viewpoints. Politicians must respond to the wishes of voters, and

centrists tended not to vote in primary elections.

Blendon also noted that the presence of lobbying organizations and private political contributions influenced the outcome of elections, and often, health policies. He said that nearly 1,800 organizations in the U.S. lobbied on health policy issues. "There are five registered health care lobbyists for every member of Congress," he explained. Moreover, the private sector contributed nearly $6.5 billion in the 2016 presidential election; the third largest contributor among private sector donors was the health care sector.

Finally, he explained that there was growing skepticism in the U.S. toward policy experts when it came to public decision making. "This is one negative side of the internet," he said, "the opinion of experts is being crowded out by the quantity of voices online." He also said that the information available online was subject to strong political bias. "Tell me the site you go to, and I'll tell you the facts they'll give you."

Because of these factors, the partisan gap around health care policy continued to grow in the U.S. Blendon explained that the likelihood that Republicans and Democrats would vote for the same policy bill was roughly two percent. Public opinion on the roles and responsibilities of government in health care reform, the Affordable Care act, and the possibility of single-payer insurance was entirely split by political party.

Nonetheless, Blendon said that health care reform would be an important issue in the 2020 presidential election. In particular, voters would be interested in politicians' views on insurance for individuals with pre-existing conditions. He also noted that Americans generally saw the primary problem with the health system as the cost structure and the prices associated with medicine, insurance, and medical care.

Blendon concluded his remarks by explaining that major changes in health policy would only occur if one political party held the presidency and both houses of Congress. "If one party wins, we are going to move in one direction or the other very quickly," he said. Dramatic changes to health care and insurance policies would hinge almost entirely on the 2020 election.

Beyond Health Care: New Partnerships for Health

Lending important perspective to the Public Health Deep Dive, speakers from the public, private, and nonprofit sectors shared their work to effect change in the health care system. Kay Mooney, vice president of health at CVS Health, Massachusetts State Representative Jeffrey Sánchez, and David Waters, CEO of nonprofit Community Servings, talked about their efforts to address the various social factors that impact public health. ALI Faculty Chair and Deep Dive Co-Chair Meredith Rosenthal moderated the discussion.

The session started with Mooney describing her work to lead well-being transformation at CVS Health. She said that in the U.S., our environment, culture, and lifestyles were negatively impacting our health. She also made the case that employers need to care about health and well-being because it is good for the bottom line and because it is the right thing to do. Finally, she explained that her work at CVS Health involved shifting paradigms: redefining health as flourishing, not just the absence of illness.

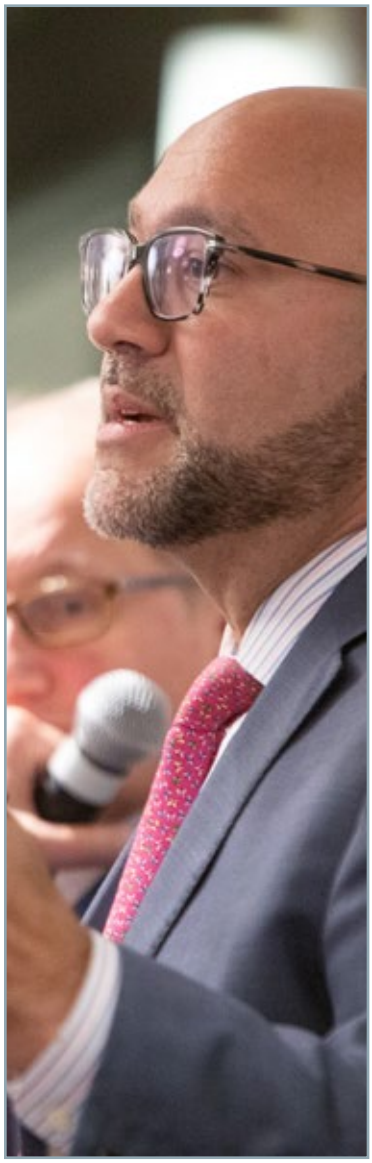
Next, Waters talked about his organization, Community Servings, a nutrition delivery program that creates meals for individuals with challenging and complex food plans. Community Servings fed 2,500 people in Massachusetts annually, creating meals from scratch tailored to over 15 medical diets. Initially launched as a response to the AIDS epidemic, the nonprofit had evolved to manage diets for the five percent of Americans who account for 50% of health care costs. "We see food as medicine," he said, "and we are now advocating for making the business case behind this model."

Sánchez then offered his perspective, both growing up in a disadvantaged neighborhood in Boston and as chair of the Massachusetts Committee on Ways and Means and the Joint Committee on Public Health. As young man, he saw firsthand the disparities in the health care system: people in his community worked menial jobs in some of the city's best hospitals but were not able to access the high-quality care within these hospitals. After a successful career in the private sector, he entered city government and worked to insure the entire state population. Despite recent trends in politics, he noted the progress around health care in Massachusetts: "Business, individuals, and government are still

committed to health care."

Following their opening remarks, Rosenthal asked the panelists what they saw as the single biggest obstacle to improving health in their communities. Mooney said for CVS Health, the biggest challenge was changing individual behavior; Waters explained that for Community Servings the biggest challenge was gaining validation; and Sánchez said that for government the biggest challenge was promoting empathy. While their individual responses varied, all three panelists agreed that their efforts were meant to drive equity for individuals in their communities.

Turning the discussion to action, Rosenthal also asked the panelists what ALI Fellows could do to help them further their work. The panelists all highlighted the importance of spreading the word and involving others in the discussions on public health. Whether discussing CVS Health's work around building a culture of health among employers or Community Serving's efforts to increase understanding of the social determinants of health, conversation was key. "Ultimately, you need to involve those who are impacted by the problem in solving it," Sánchez observed, "Work with other people, involve them in the process."



Making Mental Health Matter

Examining one of the most pressing health problems in the world, Professor Vikram Patel of the Harvard Medical School and the Harvard T.H. Chan School of Public Health explained that mental health presented one of the greatest challenges not just to science but to society more generally. "One of the marvels of the world is that we have mapped the universe and mapped the atom," he explained, "but we have not mapped what's between our ears."

Patel said that the concept of mental health was imbued with an idea of madness and othering in societies around the world and was implicit in the biomedical approach to mental illness. Mental health was most often associated with disorder or illness, but the mind is a central asset for every individual. "Our minds allow us to engage with the world around us—to be able to experience the world and be productive members of our communities."

Yet too often, Patel explained, leaders in public health stressed physical health as a priority. "The common refrain is that there are more important things to attend to before we can attend to mental health." The public perception that mental health care had no tangible benefit, that it was expensive, and that mental health problems were a product of social and cultural factors, made it even more difficult to promote effective mental health interventions.

The lack of attention given to mental health was especially distressing because of the prevalence of mental health disorders in communities around the world.

Looking at the Global Burden of Disease 2016 Report, Patel explained that the burden of mental health problems was increasing in all countries. These problems affected at least one in four people around the world and several of the most burdensome conditions involved mental health—depression, schizophrenia, and substance abuse. "Mental health problems are very common, and they are often chronic," he said.

Mental health problems affected people around the world regardless of socioeconomic status or culture. While genetics were a part of the puzzle behind the origins of mental health problems, Patel explained that environmental stresses played a crucial role. "Mental health is a combination of circumstances happening in your life combined with your biology," he said. Traumatic events—for example, exposure to war or abuse—are important triggers for mental health problems.

To address the barriers to mental health care, Patel said the most important priority was to address the shortage of skilled human resources. "When we think about health, we only think about doctors in hospitals." Patel added that leaders needed to move beyond the decade-long process of training to a skills-based community provider approach. Implementation researchers had shown that community-based providers could provide safe, effective, clinical interventions and could be key human resources for mental health care in places where there were no physicians or mental health care providers.

Finding solutions to mental health challenges around the globe was an urgent matter: deaths due to mental health problems were on the rise globally, particularly among young people. Through his work with the Global Mental Health Initiative at Harvard, Patel was actively working to build leadership, establish metrics, and build a workforce to address mental health problems. He was also working to protect the rights of people with mental health problems. "Even though we have a great deal of knowledge, we still have a long road ahead to put it to use."

Global Syndemic of Obesity, Undernutrition, and Climate Change

Looking at another global public health crisis, Professor Lindsay Jaacks of the Harvard T.H. Chan School of Public Health talked about obesity and its complex relationship with undernutrition and climate change, highlighting findings of the recent Lancet commission report. Jaacks argued that a lack of political will contributed to the rising global trends of obesity and that social mobilization would be required to address this. She also made the case for responses that simultaneously address sustainability and undernutrition in food systems.

To begin her remarks, Jaacks explained that when it came to malnutrition, both the quantity and the quality of food mattered. "Malnutrition is not just being underweight, or wasting," she explained, "It's also nutritional deficiencies and obesity." Having too little or too much food, or a poor-quality diet, could contribute to malnutrition.

Having established this broader conception of malnutrition, Jaacks explained that body mass index (BMI) and obesity levels were on the rise both in the U.S. and around the world. From 1975 to 2016, there was a more than doubling of obesity levels globally. While there was huge variability from country to country, and even within countries, in terms of absolute numbers, obesity was a more serious problem among adults than undernutrition on a global scale.

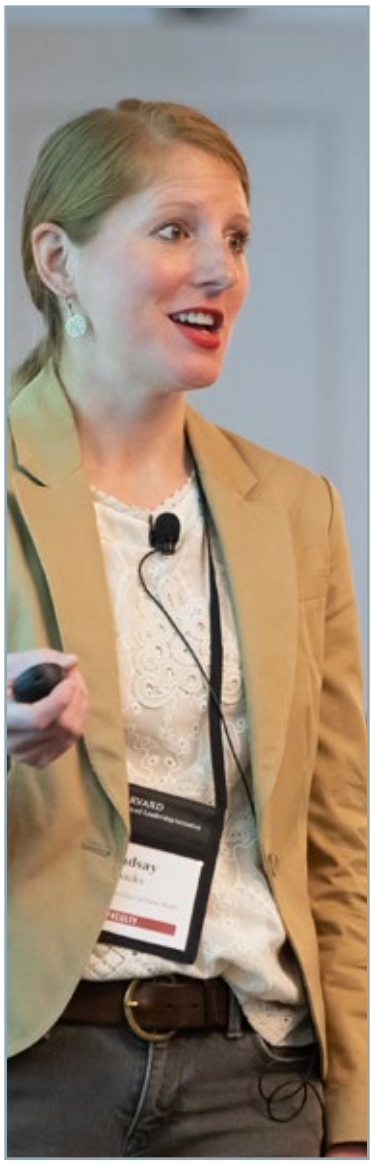
While obesity itself was not a cause of death, Jaacks explained that it was a risk factor for other serious diseases. Obesity could contribute to diabetes, hypertension, and cardiovascular disease. To make matters worse, many health systems around the globe are not well-equipped to address comorbidities associated with obesity.

Jaacks said that obesity, undernutrition, and climate change represented a global syndemic—a condition that was exacerbated by social, economic, environmental, and political factors. "Context is key," Jaacks continued, "Obesity is not just a failure of individuals, but rather the result of complex circumstances."

While many organizations developed evidence-based, globally-agreed upon recommendations, there had been little progress in addressing the obesity challenge. "So much has been happening globally around improving diets, encourag-

ing exercise, and yet obesity trends continue upwards." Jaacks explained that solutions must address norms, economics, and policies and that leaders had the opportunity to impact the three elements of the syndemic—obesity, undernutrition, and climate change—simultaneously.

In particular, Jaacks advocated for taking a careful look at food systems, both in terms of quantity and quality of food produced. "There is a fine line between ensuring nutrient adequacy and avoiding excessive consumption," Jaacks cautioned. She pointed out that 90% of the calories in the world came from just 15 crops. Potential solutions could involve increasing fruit and vegetable consumption and promoting sustainable dietary guidelines.



To conclude her session, Jaacks explained that obesity was a serious problem that was on the rise—it was increasing in every region of the world and most solutions attempted to merely slow increasing obesity rates. She added that changes in health policy alone were not sufficient to address the crisis. "Implementation of obesity prevention policies requires social mobilization," Jaacks said. The only way to drive change on the syndemic was through public demand for government action.

Rethinking the Opioid Epidemic

Professor Vaughan Rees of the Harvard T.H. Chan School of Public Health shifted the conversation to another pressing public health crisis: the opioid epidemic in the United States. In his session, Rees detailed the history of the opioid epidemic, described the unique challenges in treating substance abuse, and proposed more integrated, long-term care as a potential solution. He also highlighted the importance of destigmatizing substance abuse and developing harm-reduction as a strategy to support individuals.

Rees explained that from 2003 to 2014 there was a dramatic increase in the prevalence of opioid overdose deaths in the U.S. The crisis seemed to have reached its peak in 2016, with 50,000 deaths that year from opioid overdose—91 deaths per day—accounting for the leading cause of death in Americans under the age of 50. Rees said that there had been three stages in the opioid epidemic: the epidemic began in the 1990s with the rise in prescription opioid overdose deaths; the second stage saw a rise in heroin overdose deaths attributed to those who had become addicted to opioids; the third stage saw a rise in synthetic opioid overdose deaths.

Rees said the challenge in responding to the opioid epidemic was the nature of substance use disorder (SUD). He defined SUD as a chronic, relapsing condition characterized by compulsive drug seeking and use, despite harmful consequences. "This can often involve individuals replacing all of their activities with substance use," he said. Individuals also developed rapid tolerance and could have serious withdrawal symptoms which could be powerful motivators to continue to use the drugs.

The initial response to this problem was "more beds"—more short-term treatment facilities to help individuals suffering from SUD. "The problem with more beds is that a short-term stay does not resolve a chronic, relapsing disorder," Rees explained. Individuals needed persistent, evidence-based care—a years-long approach that involved structures and systems of support.

Rees also highlighted the need for a multi-level approach to addressing the opioid epidemic. At the first level, public health officials needed to change prescriber behavior, reduce the opioid stockpile in communities,

and promote better health communication. At the second level, officials needed to identify high risk individuals and institute prescription drug monitoring programs. At the third level, care providers needed to focus on treatment and, potentially, harm reduction.

Historically, this third stage—treatment—had often been ineffective because it did not meet the needs of individuals with a chronic, relapsing disorder. While models of substance use and dependence had changed over time, most approaches focused exclusively on abstinence with a moral, spiritual, or psychological foundation to care. Instead, Rees encouraged the use of medication-assisted treatment (MAT) as one part of a long-term, holistic model of care.

Holding up Vermont's "hub and spoke" model as an example, Rees explained that the treatment of SUD must happen over an extended period of time and must have a basis in primary care. "Treatment of substance use problems is not a quick fix," he added. In Vermont, officials had integrated MAT services—the hub—with ongoing primary care, medical specialists, and nurses—the spokes. Vermont was also one of the only states in the country to have stabilized the opioid epidemic.

Rees challenged the audience to consider harm reduction as an approach to taking on the opioid epidemic around the country. Recognizing that not all individuals are ready to abstain from substances, he advocated for access to clean injecting equipment, provision of information on safer using and alternatives to use, and supervised injecting facilities. With that said, he challenged the notion of an either-or solution. "There does not need to be a dichotomy between harm reduction or abstinence-based programs," he explained. "Recovery happens on a spectrum and context matters."

Designing for Real User Needs

Patrick Whitney, Professor in Residence at the Harvard T.H. Chan School of Public Health and former dean of the Institute of Design at the Illinois Institute of Technology, made the case that design was an essential component to creating solutions in public health. As problems became more ambiguous, and solutions more uncertain, Whitney explained that leaders were turning to design and new ways of thinking. His systematized approach to design thinking used frameworks and methods to amplify creativity and imagination.

Whitney began by telling the story of children in low-income neighborhoods in Chicago suffering from asthma at eight times the rate of children in middle-class suburbs. Despite there being clear process for treating asthma, and well-developed protocols for medical response, the children were not seeing improvement in their condition.

While the strategies, processes, and offerings for asthma treatment aligned, they did not take into consideration the user and his or her environment. Whitney highlighted the mold on walls, the dysfunctional ventilation ducts, and other factors as key inhibitors to progress in Chicago. "The daily life of the people is disrupting the best laid plans of the medical provider," he said.

Complex problems, in public health and beyond, required human-centered design—understanding human needs and aspirations was key to understanding users and why they were disruptive.

Whitney explained that design was originally manufacturer centered. Standardized parts were easy to fix, and ease of production was the only consideration designers took to mind. Soon, however, design had evolved to be market centered. Users had choice on certain dimensions—shape and color—when buying products. Eventually, design had shifted again to experience centered: businesses were competing against alternatives to their products, for example, selling mobility rather than simply a motor vehicle.

Whitney challenged all of these conceptions of design and instead promoted a user-centered understanding. "User experience is about designing whole offerings," he said. Whitney used the acronym POEMS and the example of Disney to encapsulate this framework:

- People—Disney characters;
- Objects—Disney's clothes, toys, and games;
- Environments—Disney theme parks;
- Messages—Disney movies;
- Services—Disney hotels and restaurants.

To better understand user experience, Whitney shared two frameworks for thinking: Five Stages and Five Modes. He said the Five Stages of user experience were: entice, enter, engage, exit, extend; the Five Modes were: physical, cognitive, social, cultural, and emotional. While not every product would occupy all five modes of experience, Whitney explained that there must be alignment in user experience.

The key in developing any solution or product, Whitney added, was discovering users' unmet needs. To do this, providers needed to connect with users. He also noted that speed was important in this work: it forced individuals to address questions early in the process and could become an accelerator for research.

When developing solutions or products, Whitney cautioned against information pollution and reflection deficit disorder. "Over time, the speed of creating, finding, and sharing information has increased rapidly," he said. "The problem is the invisible resource called 'down time' has been decreasing rapidly." In closing, Whitney highlighted the importance of reflection and encouraged the use of prototypes to test ideas.

Synthesis

Bringing together the content of the two-day Deep Dive, ALI Faculty Chair Meredith Rosenthal helped fellows synthesize their thinking around public health. She observed that public health touches nearly all elements of our lives. "We are talking about the fabric of our lives and our communities," she said, "Many of the drivers of public health problems are social factors that have deep, systemic dimensions."

To effect change along these dimensions required a firm understanding of the fundamental drivers of health behaviors. "Making a difference in these complex systems depends on a deep understanding of the complexity of the problems you want to solve," she added. She encouraged fellows to consider how the sessions would impact their own project work moving forward.

As the fellows reflected on the Public Health Deep Dive, many felt both overwhelmed and reinvigorated; overwhelmed initially by the magnitude of the problem but reinvigorated by the importance of these issues. Fellows also highlighted the importance of drawing lessons from all of the ALI Deep Dives, for example, considering how successful action on climate change might be replicated to address challenges in public health.

Other fellows questioned the presenters' emphasis on the social determinants of health, emphasizing the need to consider personal responsibility in individual health. Others still pointed to the business community as best-positioned to drive change in public health.

Ultimately, ALI Fellows seemed to agree that some degree of collaboration was necessary to address these complex issues. Change could happen only by working with communities to identify problems and potential solutions and by gathering stakeholders across sectors to implement those solutions.

Medicine in the Shadows: Caring for Boston's Rough Sleepers

To close the 2019 Public Health Deep Dive, Dr. James O'Connell, president of the Boston Health Care for the Homeless Program (BHCHP), discussed his efforts over more than 30 years to provide health services to some of the city's most vulnerable individuals. O'Connell shared anecdotes and lessons learned from his career serving Boston's homeless population and left fellows feeling inspired to take action.

O'Connell said that early in his career working with the homeless, he realized that he needed to rethink everything he had learned about medicine. "When working with the homeless, new eyes and new ways of looking at things are always necessary," he said. He had first become involved with the BHCHP program following a grant from the Robert Wood Johnson Foundation to address the rising health care costs of the homeless in the city of Boston.

From the start, O'Connell saw that it was essential to get out of hospitals and emergency rooms to address problems before it was too late. Working at the Pine Street Inn, he saw that he had much to learn from the nurses who had spent their careers working with the homeless. Namely, he understood that he needed to slow down and listen. "You've been trained to go fast and efficiently, but it doesn't work," O'Connell said, "The nurses pointed out how little the doctors and hospitals had done to help the homeless up to that point."

O'Connell spent months soaking patients' feet, earning their trust before he could treat their other mal-

adies. Over time, he came to know the individuals he treated, and he realized that he needed to rethink his approach to caring for the homeless. "We started to figure out where people were and went to treat them where they lived." Through these efforts, O'Connell engaged with local businesses and nonprofits, and saw that it took a true community effort to help homeless individuals in Boston.

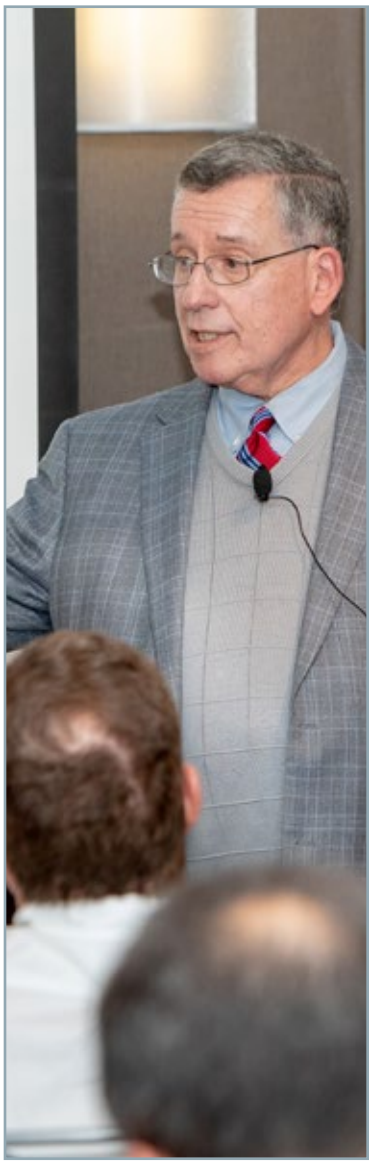
O'Connell explained that BHCHP had always worked to provide continuity of care in its health care delivery model. "Fragmentation is such a part of homelessness," O'Connell explained, "We didn't want to duplicate this feeling in their health care delivery." Instead he worked with a multi-disciplinary team—psychologists, social workers, physicians and others—and he involved homeless individuals in the organization's decision-making process. At the time of his presentation, a third of BHCHP's board were homeless.

O'Connell told the group about lessons he had learned working with patients suffering from tuberculosis and AIDS. Through each of his stories, it was clear that O'Connell and his team showed a level of compassion and dignity that was a rarity to their homeless patients. In the early 2000s, BHCHP established a respite room with a dental and psychiatric clinic and started to provide more end of life care for the homeless population. Recently, the organization had started securing housing opportunities for their patients.

Ultimately, O'Connell said that he saw homelessness as a truly intractable problem. "If you hold a prism up to society, homelessness refracts the weaknesses in each of our sectors." He encouraged fellows to think of the issue as a broader public health problem, with links to education and poverty. Only by working across sectors could we hope to bring an end to the challenges of homelessness.

Speaker Biographies

Robert Blendon



Dr. Robert J. Blendon is currently the Richard L. Menschel Professor and Senior Associate Dean for Policy Translation and Leadership Development at the Harvard T.H. Chan School of Public Health. He holds appointments as a Professor of Health Policy and Political Analysis at both the Harvard T.H. Chan School of Public Health and the Harvard Kennedy School of Government. In addition, he directs the Harvard Opinion Research Program, which focuses on better understanding of public knowledge, attitudes, and beliefs about major social policy issues in the U.S. and other nations. He currently co-directs the Robert Wood Johnson Foundation/ Harvard T.H. Chan School of Public Health project on understanding Americans' Health Agenda, including a joint series with National Public Radio and POLITICO. Previously, he co-directed a special polling series with the *Washington Post* and Kaiser Family Foundation, which was nominated for a Pulitzer Prize. Additionally, Blendon co-directed a special survey project for the *Minneapolis Star Tribune* on health care that received the National Press Club's 1998 Award for Consumer Journalism. He also co-directed a project for National Public Radio and the Henry J. Kaiser Family Foundation on American attitudes toward domestic policy. The series was cited by the *National Journal* as setting a new standard for use of public opinion surveys in broadcast journalism.

Between 1987 and 1996 he served as Chairman of the Department of Health Policy and Management at the Harvard T.H. Chan School

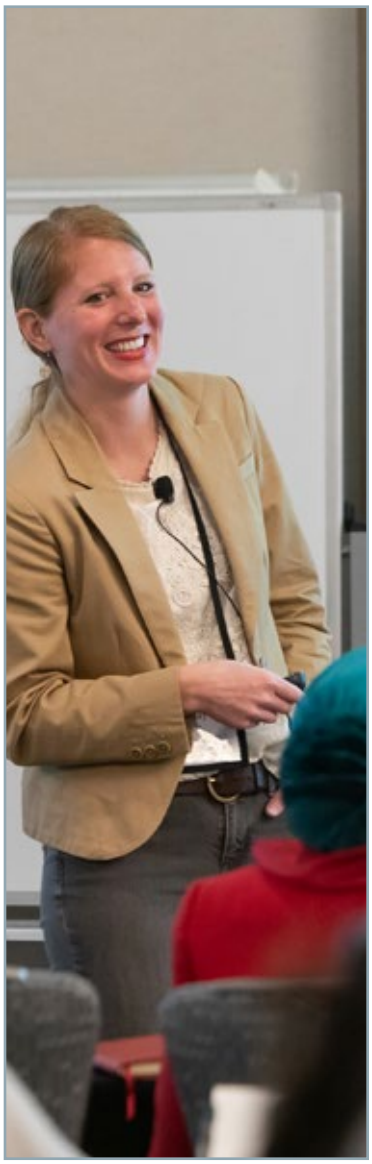
of Public Health and as Deputy Director of the Harvard University Division of Health Policy Research and Education. Prior to his Harvard appointment, Blendon was senior vice-president at The Robert Wood Johnson Foundation. In addition, he has served as a senior faculty member for the U.S. Conference of Mayors, the National Governor's Association, and the U.S. Congress Committee on Ways and Means.

Blendon teaches courses on both Political Strategy in Health Policy and Public Opinion Polling at the Harvard Kennedy School of Government and the Harvard T.H. Chan School of Public Health. He also directs the Political Analysis track in the University's Ph.D. Program in Health Policy.

Blendon is a member of the Institute of Medicine, of the National Academy of Sciences and of the Council of Foreign Relations, a former member of the advisory board to the Director of the Centers for Disease Control and Prevention, and a former member of the editorial board of the *Journal of the American Medical Association*. He is also a Past President of the Association of Health Services Research and winner of their Distinguished Investigator Award. He is also a recipient of the Baxter Award for lifetime achievement in the health services research field. He has also received the John M. Eisenberg Excellence in Mentorship Award from the Agency for Healthcare Research and Quality (AHRQ) and the Mendelsohn award from Harvard University. In 2008, he was the recipient of the Warren J. Mitofsky Award for Excellence in Public Opinion Research given by the Roper Center.

He is a graduate of Marietta College. He is also a graduate of the School of Business at the University of Chicago, with a Masters in Business Administration. In addition, he holds a Doctoral degree from the School of Public Health of Johns Hopkins University, where his principal attention was directed toward health policy.

Lindsay Jaacks



Dr. Lindsay Jaacks's research focuses on improving our understanding of the global drivers of the epidemiological transition from communicable to non-communicable diseases. Specifically, she is interested in the complex interactions between nutritional and environmental exposures within the food system and the role that these interactions play in the etiology of obesity, diabetes, and cardiovascular disease.

She has worked on a number of epidemiological studies in China, India, and the United States. Current projects include the quantification of circulating levels of persistent organic pollutants among adults in urban India and estimation of their association with incident diabetes; the longitudinal assessment of circulating levels of persistent organic pollutants, pyrethroids, organophosphate metabolites, and perfluorinated chemicals among youth with diabetes in the United States and estimation of their association with cardio-metabolic risk factors; and analysis of mediation of the association between cookstove fuel use and blood pressure by dietary intake in rural Chinese women. She is a co-investigator for a large, multi-country (India, Rwanda, Guatemala, and Peru) household air pollution intervention trial. She is also working on several projects relating to understanding drivers of food choice among overweight women in low- and middle-income countries, and new approaches to quantifying the nutrition transition.

Jaacks has served as a consultant for the UK Department for International Development on addressing overweight and obesity in

low- and middle-income countries and for RTI International on policies to prevent diabetes in the United States. She is a Visiting Professor at the Public Health Foundation of India.

Howard Koh

Dr. Howard K. Koh is the Harvey V. Fineberg Professor of the Practice of Public Health Leadership at the Harvard T. H. Chan School of Public Health and the Harvard Kennedy School. He is also Co-Chair of the Harvard Advanced Leadership Initiative. In these roles, he advances leadership education and training at the Harvard T.H. Chan School of Public Health as well as with the Harvard Kennedy School, the Harvard Business School and across Harvard University.

From 2009-2014, Koh served as the 14th Assistant Secretary for Health for the U.S. Department of Health and Human Services (HHS), after being nominated by President Barack Obama and being confirmed by the U.S. Senate. During that time he oversaw 12 core public health offices, including the Office of the Surgeon General and the U.S. Public Health Service Commissioned Corps, 10 Regional Health Offices across the nation, and 10 Presidential and Secretarial advisory committees. He also served as senior public health advisor to the Secretary of HHS. During his tenure, he promoted the disease prevention and public health dimensions of the Affordable Care Act, advanced outreach to enroll underserved and minority populations into health insurance coverage and was the primary architect of landmark HHS strategic plans for tobacco control, health disparities (including Asian American and Pacific Islander health) and chronic hepatitis. He also led interdisciplinary implementation of Healthy People 2020 and the National HIV/AIDS Strategy as well as initiatives

in a multitude of other areas, such as nutrition and physical activity (including HHS activities for Let's Move!), cancer control, adult immunization, environmental health and climate change, women's health, adolescent health, behavioral health and substance use disorders, health literacy, multiple chronic conditions, organ donation and epilepsy.

Koh previously served at Harvard School of Public Health (2003-2009) as the Harvey V. Fineberg Professor of the Practice of Public Health, Associate Dean for Public Health Practice and Director of the Harvard School of Public Health Center for Public Health Preparedness. In an academic career where he has been Principal Investigator (PI) for over $24 million in research grant activities, he is currently the PI of the Robert Wood Johnson Foundation-funded grant "Making a Culture of Health A Business Leadership Imperative." He has published more than 250 articles in the medical and public health literature, addressing broad areas such as disease prevention and health promotion, health reform, health equity (including Asian American, Native Hawaiian and Pacific Islander Health), health and spirituality, health literacy and public health leadership. He has also written about more specific areas such as tobacco control and cancer control, melanoma and skin oncology, the opioid crisis, health issues of the homeless, chronic hepatitis, organ donation and epilepsy.

From 1997-2003, Koh was Commissioner of Public Health for the Commonwealth of Massachusetts after being appointed by Governor William Weld. As Commissioner, Koh led the Massachusetts Department of Public Health, which included a wide range of health services, four hospitals, and a staff of more than 3,000 professionals. In this capacity, he emphasized the power of prevention and strengthened the state's commitment to eliminating health disparities. During his service, the state saw advances in areas such as tobacco control, cancer screening, bioterrorism response after 9/11 and anthrax, health issues of the homeless, newborn screening, organ donation, suicide prevention and international public health partnerships.

Koh graduated from Yale College, where he was President of the Yale Glee Club, and the Yale University School of Medicine. He completed postgraduate training at Boston City

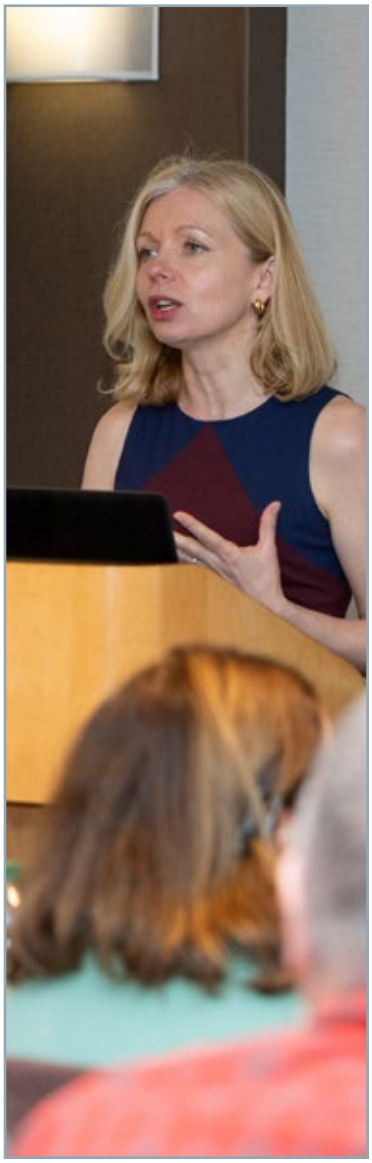
Hospital and Massachusetts General Hospital, serving as chief resident in both hospitals. He has earned board certification in four medical fields: internal medicine, hematology, medical oncology, and dermatology, as well as a Master of Public Health degree from Boston University. At Boston University Schools of Medicine and Public Health, he was Professor of Dermatology, Medicine and Public Health as well as Director of Cancer Prevention and Control.

He has earned over 70 awards and honors for interdisciplinary accomplishments in medicine and public health, including the Dr. Martin Luther King Jr. Legacy Award for National Service, the Distinguished Service Award from the American Cancer Society, the 2014 Sedgwick Memorial Medal from the American Public Health Association (the highest honor of the organization), and five honorary doctorate degrees. President Bill Clinton appointed Koh as a member of the National Cancer Advisory Board (2000-2002). He is an elected member of the National Academy of Medicine (formerly the Institute of Medicine.) A past Chair of the Massachusetts Coalition for a Healthy Future (the group that pushed for the Commonwealth's groundbreaking tobacco control initiative), Koh was named by the New England Division of the American Cancer Society as "one of the most influential persons in the fight against tobacco during the last 25 years." He has also received the Champion Award from the Campaign for Tobacco Free Kids, the "Hero of Epilepsy" Award from the Epilepsy Foundation, the Distinguished National Leadership Award from the National Colorectal Cancer Roundtable, the Baruch S. Blumberg Prize from the Hepatitis B Foundation, the National Leadership Award from The Community Anti-Drug Coalitions of America (CADCA) and the Dr. Jim O'Connell Award from the Boston Healthcare for the Homeless Program. He was named to the K100 (the 100 leading Korean Americans in the first century of Korean immigration to the United States) and has received the Boston University Distinguished Alumnus Award. He has been recognized by Modern Healthcare as one of the country's Top 100 Most Influential People in Healthcare as well as one of the Top 25 Minority Executives in Healthcare. He enjoys the distinction of throwing out the ceremonial first pitch on two different

occasions: at Nationals Park in Washington DC on behalf of HHS (2011), and at Fenway Park where he was designated a "Medical All Star" by the Boston Red Sox (2003) in recognition of his national contributions to the field of early detection and prevention of melanoma.

He currently serves on the Board of Directors of the Journal of the American Medical Association (JAMA), the Network for Public Health Law, Community Anti-Drug Coalitions of America (CADCA), the Josiah Macy Jr. Foundation and New England Donor Services. Koh and his wife Dr. Claudia Arrigg are the proud parents of three adult children.

Margaret Kruk



Dr. Margaret E. Kruk is Associate Professor of Global Health at the Harvard T.H. Chan School of Public Health. Kruk's research generates evidence for improved health system quality and responsiveness in low- and middle-income countries. Her research is at the intersection of health systems and populations and brings together data from users and systems. She collaborates with colleagues in Tanzania, Ethiopia, Liberia, and India, among other countries. Her work is in three areas:

- Analyzing health system performance: studies how health system quality influences population utilization and preferences for health care and measures the competence and user experience of care that people receive.
- Testing solutions: uses implementation science to evaluate policies and interventions to promote appropriate utilization and high quality care in resource-constrained systems.
- Reframing health systems: applies findings from empirical work to update conceptual models of health systems that optimize production of health and can respond to emergent population needs.

Kruk is currently Chair of the Lancet Global Health Commission on High Quality Health Systems in the SDG Era (HQSS Commission), a global effort to redefine and measure quality in the health systems of lower-income countries. Previously, Kruk was Associate Professor of Health Policy and Management and Director of the Better Health

Systems Initiative at Columbia University. She has held posts at the United Nations Development Program and McKinsey and Company and practiced medicine in northern Ontario, Canada. She holds an MD degree from McMaster University and an MPH from Harvard University.

Kay Mooney

As VP, Well-Being, CVS Health, Kay Mooney leads a team responsible for integrating the company's holistic well-being approach into the products and experiences it creates. The team is guided by the belief that "health" is broader than the traditional definition of "the absence of illness" and focuses on all aspects of individuals' lives that help them thrive and flourish.

Mooney is at the helm of the company's groundbreaking research collaboration with Harvard's School of Public Health to understand the determinants of well-being, correlations to engagement and productivity, and efficacy of various interventions. With this data and machine learning, she is leading the development of engaging solutions that reflect the company's holistic approach and help employees, consumers and communities achieve their best health.

In nearly 30 years with Aetna, Mooney served in various leadership roles. Most recently, she led Workforce Well-being & Inclusion, where she introduced innovative benefits and well-being programs to support Aetna's strategy and drive engagement.

Prior to joining the Human Resources organization, Mooney led Aetna's national Health Care Reform Exchange Program Management Office, where she was responsible for driving the development and implementation of Aetna's strategy for public exchanges, and she previously served as chief of staff for the Office of the Chairman and CEO. She has held a variety of senior leadership roles at Aetna, focused on pricing,

underwriting, product management, mergers & acquisitions integration and medical cost analytics.

Mooney's passion for well-being extends beyond her position at Aetna and includes leadership roles with the American Heart Association. Most recently, she served as co-chair of the 2018 Greater Hartford Heart Walk, and chair of the 2017 Greater Hartford Heart Ball. In previous years, she chaired the organization's Go Red for Women campaigns, where she helped drive awareness of the risks of heart disease among women and raise money for this life-saving movement.

In 2018, Mooney joined the Board of Directors for Pet Partners, the nation's largest and most prestigious organization committed to connecting people with the health benefits of animal-assisted intervention. This aligns with Mooney's strong belief in the healing power of pet therapy.

Mooney graduated with a bachelor's degree in mathematics from Penn State. She is a Fellow of the Society of Actuaries, and is a member of the American Academy of Actuaries.

James J. O'Connell

Dr. James O'Connell graduated summa cum laude from the University of Notre Dame in 1970 and received his master's degree in theology from Cambridge University in 1972. After graduating from Harvard Medical School in 1982, he completed a residency in Internal Medicine at Massachusetts General Hospital (MGH). In 1985, O'Connell began fulltime clinical work with homeless individuals as the founding physician of the Boston Health Care for the Homeless Program, which now serves over 13,000 homeless persons each year in two hospital-based clinics (Boston Medical Center and MGH) and in more than 60 shelters and outreach sites in Boston. With his colleagues, O'Connell established the nation's first medical respite program for homeless persons in September, 1985, with 25 beds in the Lemuel Shattuck Shelter. This innovative program now provides acute and sub-acute, pre- and post-operative, and palliative and end-of-life care in the freestanding 104-bed Barbara McInnis House. Working with the MGH Laboratory of Computer Science, O'Connell designed and implemented the nation's first computerized medical record for a homeless program in 1995.

From 1989 until 1996, O'Connell served as the National Program Director of the Homeless Families Program of the Robert Wood Johnson Foundation and the U.S. Department of Housing and Urban Development. O'Connell is the editor of *The Health Care of Homeless Persons: A Manual of Communicable Diseases and Common Problems in Shelters and on the Streets*. His articles have appeared

in the New England Journal of Medicine, the Journal of the American Medical Association, Circulation, the American Journal of Public Health, the Journal of Clinical Ethics, and several other medical journals.

O'Connell has been featured on ABC's Nightline and in the feature-length documentary *Give Me a Shot of Anything*. He has received numerous awards, including the Albert Schweitzer Humanitarian Award in 2012 and The Trustees' Medal at the bicentennial celebration of MGH in 2011. O'Connell has collaborated with homeless programs in many cities in the USA and across the globe, including Los Angeles, London, and Sydney. O'Connell's book *Stories from the Shadows: Reflections of a Street Doctor* was published in 2015 in celebration of BHCHP's 30th anniversary. O'Connell is president of BHCHP and an assistant professor of medicine at Harvard Medical School.

Vikram Patel

Vikram Patel, MBBS, PhD is The Pershing Square Professor of Global Health in the Department of Global Health and Social Medicine at Harvard Medical School. He is an adjunct professor and joint director of the Centre for Chronic Conditions and Injuries at the Public Health Foundation of India, honorary professor at the London School of Hygiene & Tropical Medicine (where he co-founded the Centre for Global Mental Health in 2008), and is a co-founder of Sangath, an Indian NGO which won the MacArthur Foundation's International Prize for Creative and Effective Institutions in 2008 and the WHO Public Health Champion of India award in 2016.

He is a fellow of the UK's Academy of Medical Sciences and has served on several WHO expert and Government of India committees. His work on the burden of mental disorders, their association with poverty and social disadvantage, and the use of community resources for the delivery of interventions for their prevention and treatment has been recognized by the Chalmers Medal (Royal Society of Tropical Medicine and Hygiene, UK), the Sarnat Medal (US National Academy of Medicine), an honorary doctorate from Georgetown University, the Pardes Humanitarian Prize (the Brain & Behaviour Research Foundation), an honorary OBE from the UK Government and the Posey Leadership Award (Austin College). He also works in the areas of child development and adolescent health. He was listed in TIME Magazine's 100 most influential persons of the year in 2015.

Vaughan Rees

Dr. Vaughan Rees is Director of the Center for Global Tobacco Control, whose mission is to reduce the global burden of tobacco-related death and disease through training, research, and the translation of science into public health policies and programs. He directs the Tobacco Research Laboratory at the Harvard Chan School, where the design and potential for dependence of tobacco products are assessed. Studies examine the impact of dependence potential on product use and individual risk, to inform policy and other interventions to control tobacco harms. Current research uses conventional and innovative strategies to evaluate new and novel tobacco products. Examples of these products include modified risk tobacco products such as e-cigarettes; reduced ignition propensity cigarettes; hookah (tobacco waterpipe); and novel smokeless tobacco products such as snus. Clinical research methods are used to evaluate the influence of tobacco product design features on consumer responses, and their role in promoting initiation or maintenance of use among targeted populations. Findings have been used to inform tobacco control policy, develop resources for communicating risks of tobacco products, and to enhance understanding of factors that contribute to tobacco dependence.

Other research involves development of strategies to reduce secondhand smoke (SHS) exposure in domestic environments, with a focus on evaluating interventions for reducing domestic SHS exposure among children. Rees also leads an NIH funded study which seeks to

reduce secondhand smoke exposure among children from low income and racially/ethnically diverse backgrounds. This research utilizes the principles of community based participatory research (CBPR) to develop and evaluate a cognitive behavioral intervention to help caregivers maintain a smoke free home environment. He has conducted studies on SHS emissions of tobacco waterpipe, and SHS monitoring in indoor environments, including private homes and cars.

Rees' academic background is in health psychology (substance use and dependence), and he trained at the National Drug and Alcohol Research Centre at the University of New South Wales in Sydney, Australia, and did postdoctoral training through the National Institute on Drug Abuse. He has also published research on the role of cue reactivity in tobacco and alcohol abuse and dependence; and clinical trials on interventions for alcohol and cannabis dependence.

Meredith Rosenthal

Dr. Meredith Rosenthal received her B.A in International Relations (Commerce) from Brown University in 1990 and her Ph.D. in Health Policy (Economics track) from Harvard University in 1998.

Her research focuses primarily on policies that will help slow the growth in healthcare spending and improve value. These efforts include changes in payment incentives, benefit design, and the provision of information and behavioral "nudges" to both patients and providers. Her research has influenced the design of provider payment systems in both the public and private sectors. She has advised federal and state policymakers in healthcare payment policy and implementation. She has also testified in Congressional hearings on direct-to-consumer advertising of prescription drugs and pay-for-performance and in legislative hearings in California and Massachusetts concerning healthcare provider payment and benefit design policies.

Rosenthal's work has been published in the New England Journal of Medicine, the Journal of the American Medical Association, Health Affairs, and numerous other peer-reviewed journals. In 2014, Rosenthal was elected to the Institute of Medicine (recently renamed the National Academy of Medicine).

Rosenthal is a member of the Committee on Higher Degrees in Health Policy, the Massachusetts Center for Healthcare Information and Analysis Oversight Board, and Board Chair of Massachusetts Health Quality Partners, a

multi-stakeholder quality improvement organization. As Associate Dean for Diversity she works closely with the Dean's Advisory Committee on Diversity and Inclusion (DACDI) on strategic planning and issues related to equity, diversity and inclusion affecting all members of the School community.

Jeffrey Sánchez

Born in Washington Heights in New York City, Jeffrey Sánchez was raised in the Mission Main Housing Development in Boston. He has represented Mission Hill, Jamaica Plain and Brookline in the Massachusetts House of Representatives for 16 years where he has been lauded as a leader in healthcare reform, housing and infrastructure, gun laws, violence prevention, criminal justice reform, the environment and youth empowerment. He finished his last term serving as the first Latino Chairman of the House Committee on Ways and Means in the history of the Commonwealth. Previously, Jeffrey served as Chairman of the Joint Committee on Health Care Financing and the Chairman of the Joint Committee on Public Health as well as the Vice-Chair of the Joint Committee on Economic Development.

Throughout his time in the Massachusetts House of Representatives, Sánchez has emphasized bringing people together to work out their differences and pass laws that improve the lives of residents in the Commonwealth, especially the most vulnerable. Most recently in 2018 he was successful in nearly unanimously passing a $41.8 billion budget that was applauded by individual citizens, stakeholders, and business and fiscal watchdogs. He also drafted the largest Housing Bond bill Authorization in the Commonwealths history, $1.8 billion. Under his leadership, Massachusetts continued to lead on gun control by implementing a ban on bump stocks and passed legislation allowing for courts to issue extreme risk protection orders while at the same time ushering wholesale criminal justice reform.

Sánchez has been advocating for healthcare reform for over sixteen years. In 2006, he worked to pass landmark legislation which affirmed health care as a right in Massachusetts. Since then, he has crafted laws that support and enable the Life Sciences industry to grow and thrive, establish a statewide health care cost benchmark, and worked to protect and ensure 98% of the state's population has health insurance to this day. He authored and successfully ushered into law comprehensive legislation to close the racial health disparities gap, compounding pharmacy practice, and improve school nutrition programs.

In all of his endeavors, Sánchez has sought to find equity and opportunities for those most vulnerable and those who often get overlooked in opportunities in joining a thriving economy. He proudly fought and successfully defeated efforts to repeal gay marriage, he championed comprehensive front-to-back criminal justice reform and he is a successful advocate for English language learners. After 15 years of advocacy, Chairman Sanchez's Language Opportunities for Our Kids (LOOK) bill was signed into law, overturning a failed one-size-fits-all policy to educating English language learner (ELL) students and creating a pathway to ensure ELL students receive a quality education.

Before running for State Representative in 2002, Sánchez worked for Boston Mayor Thomas Michael Menino. During that time, he took a crash course in city services, working on initiatives as simple as ensuring potholes were filled to those as complicated as rehousing those who lost their home in fires and floods. He played a key role organizing the Jackson Square Coordinating Group, which created the community vision to redevelop the neighborhood, and as State Representative fought for state dollars to make that vision a reality: over 600 units of affordable housing have since been developed in Jackson Square, and another 500 units are in the pipeline. Sánchez also ran Boston's 2000 Census, ensuring that everyone, especially those who spoke another language, were counted in the Census. Prior to working in government he worked in banking and finance.

Sánchez attended Roxbury Community College and received his Bachelor of Arts in Legal Education from the University of Massachusetts,

Boston before earning his Masters of Public Administration from the John F. Kennedy School of Government at Harvard University. He is currently a Richard Menschel Fellow at the T.H. Chan School of Public Health and Principal of Sánchez Strategies which focuses on strategic impact in leadership, health care policy and finance, communications and government relations. He currently lives in Jamaica Plain with his wife, Brenda, and two daughters. Sánchez will not engage in discussions relative to the Yankees and Red Sox but will happily talk about the art of grilling, classic movies and Salsa (the music not the sauce).

David Waters

David Waters has been involved with Community Servings since its inception in 1989, moving from volunteer to board member, Board Chair, Director of Development, and eventually CEO, in 1999.

Under Waters' leadership, Community Servings has evolved from a small neighborhood meals program delivering dinner to 30 people, to a critical regional program providing 15 medically-tailored meals plans to 2,300 people with acute life-threatening illnesses, their dependents, and caregivers in 21 Massachusetts communities.

An advocate for integrating accessible, medically tailored meals into the healthcare system, Waters has formed partnerships with leading healthcare payers and providers to better link clinical care and social services, designing some of the country's first health insurance contracts for prescription meals.

With 35+ years experience in food service management, Waters also created the highly cost-effective fundraising events, Life-Savor and Pie in the Sky, a Thanksgiving pie sale duplicated in cities around the country.

He is the former Board Chair of the Association of Nutrition Service Agencies, and is a founding member of the national Food Is Medicine Coalition. In recognition of his leadership at Community Servings, Waters was named a Barr Foundation Fellow in 2017. A resident of Cambridge, he holds graduate degrees from Middlebury College and Boston University.

Patrick Whitney

Patrick Whitney has published and lectured throughout the world about ways of making technological innovations more humane, the link between design and business strategy, and methods of designing interactive communications and products. His writing is generally about new frameworks of design that respond to three transformations: linking insights about user experience to business strategy, the shift from mass-production to flexible production, and the shift from national markets to markets that are both global and "markets of one."

BusinessWeek has profiled Whitney as a "design visionary" for bringing together design and business, *Forbes* named him as one of six members of the "E-Gang" for his work in human-centered design, *Fast Company* has identified him as a "master of design" for linking the creation of user value and economic value, and *Global Entrepreneur* named him one of the 25 people worldwide doing the most to bring new ideas to business in China.

He is the principal investigator of several research projects at the Institute of Design, including "Global Companies in Local Markets," "Design for the Base of the Pyramid," and "Schools in the Digital Age." His recent work has been supported by several grants, including funding from the John D. and Catherine T. MacArthur Foundation, SC Johnson, the Steelcase Foundation, and numerous corporations.

He is a trustee of the Global Heritage Fund, which supports restoration of heritage sites and local communities in the developing world.

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