Achieving Excellence in Sepsis Diagnosis: A Workshop

Moderator and Speaker Biographical Information

Derek C. Angus, MD, MPH, is a physician scientist and healthcare administrator. He holds the rank of Distinguished Professor and the Mitchell P. Fink Endowed Chair at the University of Pittsburgh School of Medicine where he chairs the Department of Critical Care Medicine. He is also physician director of the UPMC ICU Service Center, responsible for the organization and delivery of critical care services across the 40-plus hospital system. Dr. Angus' research interests include translational, clinical, and health services research in the fields of sepsis, pneumonia, and multisystem organ failure, as well as optimal acute care delivery. He has a particular interest in novel trial designs for precision medicine and strategies to enable a true rapid learning health system, specifically REMAP-CAP. Dr. Angus has led several large NIH-funded multicenter studies, published several hundred papers, and received numerous national and international awards for his work. He is also the critical care editor for JAMA.

Andrew B. Bindman, MD, is a Professor of Medicine, Epidemiology & Biostatistics, and a core faculty member within the Philip R. Lee Institute for Health Policy Studies at the University of California, San Francisco. He is a primary care physician with federal and state health policy experience who has practiced and taught clinical medicine at Zuckerberg San Francisco General Hospital for over 30 years while also conducting health services research to improve access to high quality health care. Dr. Bindman is a leading national voice on primary care, the health care safety net, and population health. He was appointed as the Director for the Agency for Healthcare Research and Quality (AHRQ) within the US Department of Health and Human Services in 2016 and he served in that role until the end of the Obama administration. He currently serves as the editor in chief of the journal, Health Services Research. Dr. Bindman was elected to the National Academy of Medicine in 2015.

Gari D. Clifford, DPhil, is a tenured Professor of Biomedical Informatics and Biomedical Engineering at Emory University and the Georgia Institute of Technology, and the Chair of the Department of Biomedical Informatics (BMI) at Emory. His research applies signal processing and machine learning to medicine to classify, track and predict health and illness. His focus research areas include critical care, digital psychiatry, global health, mHealth, neuroinformatics and perinatal health. After training in Theoretical Physics, he transitioned to AI and Engineering for his doctorate at the University of Oxford in the 1990's. He subsequently joined MIT as a postdoctoral fellow, then Principal Research Scientist where he managed the creation of the MIMIC II database, the largest open-access critical care database in the world. He later returned to Oxford as an Associate Professor of Biomedical Engineering, where he helped found its Sleep & Circadian Neuroscience Institute and served as Director of the Centre for Doctoral Training in Healthcare Innovation at the Oxford Institute of Biomedical Engineering. As Chair of BMI, Dr Clifford has established the department as a leading center for critical care and mHealth informatics, and as a champion for open-access data and open-source software in medicine, particularly through his leadership of the PhysioNet/CinC Challenges and contributions to the PhysioNet Resource. Despite this, he is a strong supporter of commercial translation, working closely with industry, and serves as CTO of MindChild Medical, a spin out from his research at MIT, and serves as an advisor to several companies.

Laura Evans, MD, MSc, is the medical director for critical care and associate professor in the division of pulmonary, critical care and sleep medicine at the University of Washington Medical Center. Previously, Dr. Evans was an associate professor of medicine at New York University School of Medicine and the Medical Director of Critical Care at Bellevue Hospital. Her interests focus on education, patient safety and quality improvement in the intensive care unit. Dr. Evans earned her medical degree at the University of Michigan and did her residency in internal medicine at Columbia University. She completed pulmonary and critical care medicine fellowship training and earned a Master of Science in epidemiology at the University of Washington. She joined the faculty of NYU and Bellevue Hospital in 2006. In her role there, she led the evacuation of the Bellevue Hospital intensive care units in the aftermath of Hurricane Sandy and was the clinical lead for New York City's only patient with Ebola. She joined the steering committee of the Surviving Sepsis Campaign in 2012 and is the current Surviving Sepsis Campaign guidelines co-chair. She also serves on the Council of the Society of Critical Care Medicine.

Harvey V. Fineberg, MD, is the president of the Gordon and Betty Moore Foundation, which fosters path-breaking scientific discovery, environmental conservation, improvements in patient care and preservation of the special character of the San Francisco Bay Area. He previously held the Presidential Chair for 2014-2015 as visiting professor at the University of California, San Francisco. Prior to that, he served as president of the Institute of Medicine from 2002 to 2014 and as provost of Harvard University from 1997 to 2001, following 13 years as dean of the Harvard School of Public Health. He has devoted most of his academic career to the fields of health policy and medical decision-making. His past research has focused on the process of policy development and implementation, assessment of medical technology, evaluation and use of vaccines, and dissemination of medical innovations. Fineberg chairs the board of the Carnegie Endowment for International Peace and serves on the boards of the William and Flora Hewlett Foundation and the China Medical Board. He helped found and served as president of the Society for Medical Decision Making and also served as consultant to the World Health Organization. Fineberg is co-author of the books Clinical Decision Analysis, Innovators in Physician Education and The Epidemic That Never Was, an analysis of the controversial federal immunization program against swine flu in 1976. He has co-edited several books on such diverse topics as AIDS prevention, vaccine safety, understanding risk in society and global health. He has also authored numerous articles published in professional journals. Fineberg is the recipient of several honorary degrees—the Frank A. Calderone Prize in Public Health, the Henry G. Friesen International Prize in Health Research and the Harvard Medal, awarded by the alumni association of the university from which he earned his bachelor's and doctoral degrees.

J. Michael Gaziano, MD, MPH, is a preventive cardiologist and internationally recognized chronic disease epidemiologist whose research interests include the epidemiology of chronic diseases using large data sources. He has a particular interest in the lifestyle, metabolic, biochemical and genetic determinants of common chronic disease such as cardiovascular disease and cancer. A centerpiece of his research involves the conduct of observational studies and trials that are imbedded in a health care system and the curation of electronic health data from many sources. He serves as one of the PIs of the Million Veteran Program (MVP), a project that will enroll one million veterans into a longitudinal cohort with stored biospecimens, self-reported

data and the rich electronic clinical and administrative data available in the VA. To date over 830,000 veterans have been enrolled into MVP. He is leading a new initiative in health data science that combines the health data of the VA including date on nearly 24 million users of the Veterans Healthcare System over the last 2 decades with the computing power and expertise in the Department of Energy. This will create one of the largest and most complex health data repositories in the world. He is principal investigator of the Physicians' Health Study, a large-scale trial-based cohort of over 29,000 physicians followed for over 30 years. He has also served as PI, Co-PI or co-investigator on a number of other cohort studies and large-scale trials. He serves on advisory committees for UKBiobank. Dr. Gaziano oversees several fellowship programs and teaches advanced epidemiology at the Harvard School of Public Health. He has published over 500 journal articles, reviews, book chapters and books. He also served as an Associate Editor for the Journal of the American Medical Association. He is a Fellow of the Royal College of Physicians.

Foster Gesten, MD, was most recently the Chief Medical Advisor for Quality and Health Care Delivery at the Greater New York Hospital Association where he was responsible for the clinical direction of member initiatives in quality improvement, patient safety, and care innovations. Prior to that role he held leadership positions within the New York State Department of Health (NYSDOH), the last as the Chief Medical Officer for the Office of Quality and Patient Safety, an office he helped to co-create. He has been the clinical leader at the NYSDOH responsible for the development of quality measurement and improvement programs within Medicaid and health insurance plans. Working with an extraordinary team of professionals he contributed to making New York a national leader in public reporting of health system performance, developed innovations in the application of quality incentives, and made demonstrable reductions in the health care 'quality disparity' between low income and commercially insured populations. Dr. Gesten led New York's efforts to make timely evidence-based care for patients with sepsis a priority for all hospitals through strategic use of regulation, innovations in the measurement of clinical process and outcomes, and the accountability of public reporting.

Christine Goeschel, ScD, MPA, MPS, RN, FAAN, is Assistant Vice President at the MedStar Institute for Quality and Safety at MedStar Health, a diversified provider network in the mid-Atlantic with 10 hospitals, over 30,000 employees, and several hundred ambulatory care sites. Dr. Goeschel directs the MedStar Institute for Quality and Safety Center to improve diagnosis in healthcare and is a Professor of Medicine at Georgetown University. Dr. Goeschel created the Michigan Keystone Center for Quality and Patient Safety and was co-principal investigator with faculty from Johns Hopkins on groundbreaking efforts to reduce bloodstream infections in intensive care units in Michigan from 2003-2005. She continues as adjunct faculty in the Hopkins Bloomberg School of Public Health where she teaches in the MHA program.
Dr. Goeschel has served on the board of directors of the Maryland Patient Safety Center and as an examiner for the U.S. National Baldrige Performance Excellence Program, in addition to serving on several National Quality Forum steering committees. She spent two years on a select panel chosen by the Institute of Medicine (now National Academy of Medicine) examining the problem of diagnostic errors in healthcare. Improving Diagnosis in Healthcare was released in September 2015 and has spawned national and international attention on this ubiquitous challenge. Dr. Goeschel has published more than 75 articles and book chapters.

Helen Haskell, MA, is president of the nonprofit patient organizations Mothers Against Medical Error and Consumers Advancing Patient Safety. Since the medical error death of her young son Lewis in 2000, Helen has devoted herself to enhancing the patient contribution to safety and quality in healthcare, in areas ranging from infection prevention, medication safety, and diagnostic accuracy to health professional education and response to patient harm. She serves on the boards of directors of the Institute for Healthcare Improvement and the Accreditation Council for Graduate Medical Education, on the board of advisors of the International Society for Rapid Response Systems, and as co-chair of the World Health Organization's Patients for Patient Safety advisory group. She has been closely involved in the passage of patient safety legislation in her state of South Carolina and has written numerous articles, book chapters, and patient educational materials, including a co-edited textbook of case studies in patient safety from the patient perspective. Her son Lewis's story has been featured in educational programs and videos including Transparent Health's full-length Lewis Blackman Story. Helen holds a bachelor's degree in Classical Studies from Duke University and a master's degree in Anthropology from Rice University.

Michael Howell, MD, MPH, is Chief Clinical Strategist and a Principal Scientist at Google Health, where he focuses on how technology can help improve health and healthcare. He was previously Chief Quality Officer at the University of Chicago Medicine, where he was the senior physician responsible for overseeing the quality of care at the health system. Before that, he served at Harvard Medical School and the Beth Israel Deaconess Medical Center in a variety of roles focused on quality, patient safety, and healthcare delivery science. An active investigator, Michael has published more than 100 research articles, editorials, and book chapters. These studies have held an interest for the public and have been covered by CNN, the New York Times, Wall Street Journal, Forbes, and Consumer Reports, among others. A nationally recognized expert on patient safety and quality, Dr. Howell has also served on national advisory and guideline panels for the CDC, Medicare, the National Academy of Medicine, and national professional associations. His book, Understanding Healthcare Delivery Science, focuses on the intersection of real-world improvement and research-quality methods in the complex environment of healthcare.

Jeremy M. Kahn, MD MSc, is Professor of Critical Care Medicine and Health Policy & Management at the University of Pittsburgh School of Medicine and Graduate School of Public Health. He is a core faculty member in the Clinical Research, Investigation and Systems Modeling of Acute Illness (CRISMA) Center in the Department of Critical Care Medicine, where he directs the CRISMA Program on Critical Care Health Policy and Management. Dr. Kahn's research program focuses on the organization, management, and financing of critical care services in the United States. Specific areas of interest include ICU workforce and staffing, quality measurement, benchmarking, telemedicine, and regionalization of critical and emergency care. His work integrates approaches from the fields of epidemiology, health services research, health economics and organizational science to investigate novel strategies for increasing the quality and efficiency of care for critically ill patients. In addition to his research activities, he provides clinical care in the ICU at Magee Women's Hospital of UPMC in Pittsburgh.

Vincent Liu, MD, MSc, is a Research Scientist at the Kaiser Permanente Division of Research and Director of the Systems Research Initiative where his research program focuses on using

electronic health record data and machine learning to identify innovative health system approaches for preventing adverse outcomes in sepsis and hospitalized patients. As the Regional Director of Hospital Advanced Analytics, he also oversees the use of real-time predictive models to improve the care of >4 million patients across 21 hospitals in Northern California. He directs the Informatics track of the KP DOR Delivery Science Fellowship program and is an Associate Professor in Health Systems Science at the Bernard Tyson KP School of Medicine. His work is supported by a diversity of federal, foundation, and internal grants and he has published >100 scientific publications.

John Marshall, MD, is a Professor of Surgery at the University of Toronto, and a Trauma Surgeon and Intensivist at St. Michael's Hospital in Toronto, Canada. His academic interests are sepsis, trauma, and the innate immune response. His laboratory studies the cellular mechanisms that prolong neutrophil survival in critical illness by preventing neutrophil programmed cell death, or apoptosis. Professor Marshall has an active clinical research interest in sepsis and Intensive Care Unit-acquired infection, and in the design of clinical trials and outcome measures. He has published 415 manuscripts, and 85 book chapters, and is the editor of 2 books. He is the founding chair of the International Forum of Acute Care Trialists – a global network of investigator-led critical care clinical research groups, and past-Secretary-General of the World Federation of Societies of Intensive and Critical Care Medicine. He is past-chair of the International Sepsis Forum, past-President of the Surgical Infection Society, and past-chair of the Canadian Critical Care Trials Group. He has given invited lectures at more than 500 meetings around the world, and is an associate editor of the journals Critical Care Medicine and Critical Care.

Kathryn McDonald, PhD, MBA, recently joined the faculty of Johns Hopkins University as the Bloomberg Distinguished Professor of Health Systems, Quality and Safety. She holds primary appointments in the School of Nursing and the School of Medicine, as well as affiliations in business, public health and engineering. She was the founding executive director of the Center for Primary Care and Outcomes Research at Stanford University's School of Medicine and also executive director of Stanford's Center for Health Policy in the Freeman Spogli Institute for International Studies. She is dedicated to interdisciplinary scholarship to inform and improve health care delivery. Influential research products include over 100 evidence-based national quality, prevention and safety measures, and seminal publications on coordination of care, patient safety and quality improvement strategies. She has served as President of the Society for Medical Decision Making, and as a member of National Academy of Medicine Committees — one on Child Health and Healthcare Measures, and another on Improving Diagnosis and Reducing Diagnostic Errors – that grappled with challenges of measuring and improving quality and health. Her scientific contributions rely on insights from patients, frontline clinical teams, and delivery system leaders. She also draws from her early career experiences in semiconductor processing, technology optimization, business development, and new product development. She holds a PhD in Health Policy with an emphasis on Organizations and Management from UC Berkeley, an MBA from Northwestern University, and a BS in Chemical Engineering from Stanford University.

Nuala J. Meyer, MD, MS, is Associate Professor of Medicine at the University of Pennsylvania Perelman School of Medicine. She is a critical care physician and translational scientist using

genomic and molecular tools to better explain ARDS risk and risk for sepsis-associated organ failure. The goal of her work is to develop personalized therapy for sepsis and ARDS. Her research program includes a large observational cohort of critically ill subjects with sepsis including COVID-19 phenotyped for infection subtype, comorbidities, survival, ARDS, acute kidney injury, and cognitive impairment; discovery and validation of genetic and molecular risk factors for sepsis-associated organ dysfunction; and clinical trials for ARDS and sepsis.

Lyle Moldawer, PhD, received his PhD in Experimental Medicine in 1986 from the Gothenburg University in Sweden. For the past 30 years, he has conducted inflammation research testing key hypotheses that explore the inflammatory response to trauma and sepsis. Funded continuously by the National Institute of Health (NIH) for over 25 years, Dr. Moldawer is a past NIH MERIT Award recipient. His current research at the University of Florida focuses on populations at the highest risk of developing sepsis, the very young (premature infants) and the very old. He has published over 400 peer-reviewed publications and has been cited more than 28,000 times.

Shamim Nemati, PhD, obtained his Ph.D. degree in Electrical Engineering and Computer Science from MIT in 2013. While at MIT, he held a Ruth L. Kirschstein National Research Service Award position at the Brigham and Women's Hospital and Harvard Medical School, with a focus on physiological control systems and critical care informatics. Upon completion of his Ph.D. degree, Dr. Nemati joined the Harvard Intelligent Probabilistic Systems group as a James S. McDonnell Foundation postdoctoral fellow in complex systems, where he focused on the application of deep learning and reinforcement learning techniques for prediction of adverse clinical events and optimization of treatment protocols in critically ill patients. Dr. Nemati's early career award (K01) focused on the early prediction of sepsis using advanced machine learning and streaming analytics techniques. He is currently an Assistant Professor of Biomedical Informatics and the Director of Predictive Health Analytics at the UC San Diego Health. As the lead PI on a multi-center BARDA-funded study, Dr. Nemati is currently involved in retrospective validation, prospective implementation, and FDA clearance of a sepsis prediction algorithm that was developed as a part of his K01 award. Additionally, Dr. Nemati's group has been working closely with industry partners, including Samsung, Google, Microsoft, Roche, GE Healthcare, among others, to commercially disseminate research results and products related to application of Machine Learning/Deep Learning in Critical Care. He has published in several areas of research, including advanced signal processing and machine learning techniques, computational neuroscience/brain-machine interface, predictive monitoring in intensive care, and nonlinear and nonstationary multidimensional time-series analysis, resulting in over 80 peer-reviewed publications.

Steven M. Opal, MD, is a research scientist and Clinical Professor of Medicine, Infectious Disease Division, Alpert School of Medicine at Brown University and the co-director of the Ocean State Clinical Coordinating Center at Rhode Island Hospital. He did his initial training in microbiology at Dr. Alan Cross's laboratory at Walter Reed Army Institute of Research in Washington DC. In 1985 he moved to the Alpert Medical School of Brown University in Providence, RI to establish a laboratory of pathogenic microbiology, rapid genomic identification and detection measures for biohazardous viral and bacterial pathogens. His long term research interests are focused upon the initial host-pathogen interaction during the early phase of invasive microbial infection, the pathophysiology of the systemic inflammatory

response to infection, and non-antibiotic solutions to treat multi-drug resistant bacterial pathogens. For the past decade he has also served as co-director of the OSCCC along with his colleague Dr. Mitchell Levy, director of the pulmonary medicine and critical care services at Rhode Island Hospital. He has had the good fortune to collaborate with scientists and clinical investigators worldwide over the course of these global clinical and research studies. He have served as the principal investigator in numerous worldwide, multi-center trials for adjuvant agents to treat severe infections. He has published numerous primary research papers and clinical reviews. He is also the lead editor for a major textbook in infectious diseases, now in its fourth edition (Cohen, Powderly and Opal's Infectious Diseases).

Hallie Prescott, MD, MSc, is an Assistant Professor in Pulmonary & Critical Care Medicine at the University of Michigan and staff physician at the Ann Arbor Veterans Affairs Hospital. She is an expert in long-term outcomes and recovery from sepsis, and her research has been published in leading journals such as JAMA, BMJ, and AJRCCM. She serves as vice-chair of the Surviving Sepsis Campaign Guidelines and is physician-lead for a Michigan-statewide sepsis quality improvement collaborative sponsored by Blue Cross/Blue Shield of Michigan. She leads grants from AHRQ and Department of Veteran Affairs on hospital antibiotic prescribing patterns and novel methods of hospital performance measurement.

Raj Ratwani, PhD, is the vice president of scientific affairs for the MedStar Health Research Institute, the director of the MedStar Health National Center for Human Factors in Healthcare and an associate professor at the Georgetown University School of Medicine. As director, he oversees the Center's vision and strategy and has overall responsibility for Center activities. He is also an active applied researcher serving as principal investigator on numerous grants and contracts, including three research project grant (R01) awards from the U.S. Department of Health and Human Services (HHS), which are among the most prestigious grants. Raj has extensive expertise in health information technology, usability and safety, interruptions and workflow, data visualization, and data science. Raj's research has been funded by the Agency for Healthcare Research and Quality (AHRQ), National Institutes of Health (NIH), The Pew Charitable Trusts, and industry partners. His work has been published in high-impact journals such as The Journal of the American Medical Association (JAMA) and Health Affairs and has influenced both policy and frontline clinical practice. His research has been featured by Politico, Fortune, Kaiser Health News, National Public Radio (NPR), and many other media outlets. He serves on the federal 21st Century Cures Act Health Information Technology Advisory Committee and has testified to the U.S. Senate Health, Education, Labor, and Pensions Committee. He holds a doctorate in human factors and applied cognition and was a National Research Council post-doctoral fellow at the U.S. Naval Research Laboratory. He enjoys spending time with family, traveling, distance running, and tennis.

Emanuel P. Rivers, MD, MPH, is an emergency medicine and critical care specialist. He is vice chairman and director of research in emergency medicine at Henry Ford Hospital in Detroit, MI. He is also a Clinical Professor at Wayne State University. Dr. Rivers has been at the forefront of sepsis research and care for several years, and has published several articles on sepsis diagnosis and management. His landmark paper, published in November 2001, supported and expanded the concept of early goal directed therapy. This incorporated improved early sepsis care to all hospitalized patients who had signs of severe sepsis or septic shock. This approach expanded the

hospital landscape to include patients from the emergency department, general practice floors, and the critical care unit. Facilities across the country took notice of this concept and adapted it to suit their needs and save lives.

Kristina E. Rudd, MD, MPH, is a pulmonary and critical care physician and clinical researcher in the Department of Critical Care Medicine at the University of Pittsburgh. Her research focuses on sepsis epidemiology from a global perspective, and she has expertise in both clinical and administrative methods to identify sepsis patients. She has particular interest in investigating the impact of poverty, multimorbidity, and healthcare access and quality on an individual's risk for developing or dying from sepsis. She also studies the management of patients with sepsis and other critical illnesses in resource-limited settings.

Suchi Saria, PhD, MSc, is an AI expert and health AI pioneer, and her research has led to myriad new inventions to improve patient care. Her work first demonstrated the use of machine learning to make early detection possible in sepsis, a life-threatening condition (Science Trans. Med. 2015). In Parkinson's, her work showed a first demonstration of using readily-available sensors to easily track and measure symptom severity at home, to optimize treatment management (JAMA Neurology 2018). On the technical front, her work at the intersection of machine learning and causal inference has led to new ideas for building and evaluating reliable ML (ACM FAT 2019). Suchi currently holds a John C. Malone endowed chair at Johns Hopkins University, with appointments across engineering, public health, and medicine. She is also the Founder of Bayesian Health, aiming to revolutionize the delivery of healthcare by empowering providers and health systems with real-time access to essential clinical inferences. She is the recipient of numerous prizes and honors, including being named a Sloan Research Fellow, a National Academy of Medicine Emerging Leader in Health and Medicine, MIT Technology Review's 35 Innovators Under 35, and a World Economic Forum Young Global Leader.

Christopher Seymour, MD, is an Associate Professor in the Departments of Critical Care, Emergency Medicine, and Clinical and Translational Science at the University of Pittsburgh School of Medicine. Over the past 10 years, his research program has focused on clinical and translational studies involving sepsis, biomarkers, and large electronic health record databases. Dr. Seymour uses machine learning, bioinformatics, and biology-informed models to identify endotypes of sepsis. His work studies how to transition sepsis endotypes from offline inquiry to online learning in the electronic health record: at scale and at the point-of-care. Dr. Seymour completed his NIGMS Career Development Award (K23), mentored by Dr. Derek Angus, titled "Prehospital identification of high-risk sepsis." This successful award led to funding of a NIH/NIGMS R35 ESI-Merit Investigator Research Award, "Sepsis endotypes during emergency care." He is Director of the Clinical and Translational Science Program in the Department of Critical Care Medicine, member of the International Sepsis Forum, and Associate Editor for Critical Care at JAMA. His research has been published in the New England Journal of Medicine, JAMA, and The Lancet, among others.

Manu Shankar-Hari, MD, EDIC, MSc (Epi), PhD (Imm), FRCA, FFICM, undertook a period of clinical training in Guy's and St Thomas' Hospital NHS Trust, University College London Hospital NHS Trust, The Royal Free Hospital, St Mary's Hospital and at a number of regional district general hospitals around London. He completed MSc in Epidemiology at the

London School of Hygiene and Tropical Medicine. Manu was awarded PhD in Immunology, for his research into in B-lymphocyte and immunoglobulins biology in sepsis, at King's College London. Manu was appointed as a tenured consultant physician in Intensive Care Medicine at Guy's and St Thomas' Hospital NHS Foundation Trust in 2009. Manu was awarded the prestigious NIHR Clinician Scientist Award in 2016. Manu was recognized for his contributions to sepsis research with the ANZICS Intensive Care Global rising star award in 2017 and International Sepsis Forum Lowry Fink Fellowship in 2019. Currently, Manu leads a translational research group, located within the School of Immunology and Microbial Sciences. Manu's group is funded primarily by grants from the NIHR and the MRC-EME program. Manu's research explores ways to improve outcomes in adult critically ill patients with sepsis and with ARDS, by linking the illness immunobiology to interventional trial design.

Timothy Sweeney, MD, PhD, is a licensed physician and data scientist with over 15 years of experience researching sepsis. After completing his MD/PhD at Duke University, he was a surgery resident at Stanford for 4 years. While training as a surgeon, he became frustrated with the current diagnostic tools for infection. During his residency research years, he completed a postdoc MS in Biomedical Informatics, during which he worked with Dr. Khatri to identify a new way to diagnose infections based on 'reading' the immune system. Their work designing custom informatics algorithms for sifting through heterogeneous large transcriptomic datasets led to multiple manuscripts in defining the presence, type, severity, and immune responsiveness of sepsis. Since founding Inflammatix in 2016 to commercialize this research, Dr. Sweeney has served as its CEO. Inflammatix is translating several multi-marker tests into a 30-min, POC cartridge-based medical diagnostic device. The company has over two dozen clinical studies enrolling, and is supported by several public-private partnerships.

Abraham Verghese, MD, MACP, DSc (Hon), FRCP (Edin), is a critically acclaimed author and a prominent voice in medicine. His books have sold millions of copies and are broadly translated. His gifts as a storyteller give him powerful appeal for healthcare professionals and non-medical audiences alike. He sees a future for healthcare that marries technological innovation with hands-on physical diagnosis, and has a deep faith in patients' stories and the power of touch in providing what patients most want – healing, if not curing. Dr. Verghese's novel, Cutting for Stone, topped the New York Times bestseller list for over two years and My Own Country, was a finalist for the National Book Critics Circle Award and made into a movie. The Tennis Partner was a New York Times Notable Book. His writing has appeared in The New York Times, The New Yorker, Granta, and The Wall Street Journal. He has served on the Board of Directors of the American Board of Internal Medicine. He is a Master of the American College of Physicians, elected to the Association of American Physicians, as well as, notably in 2011, to the Institute of Medicine of the National Academy of Sciences. He is a 2014 recipient of the Heinz Award for Arts and Humanities, and in 2016 he was honored with a National Humanities Medal in a ceremony at the White House with President Barack Obama.

Saul N. Weingart, MD, MPP, PhD, is Chief Medical Officer and Senior Vice President of Medical Affairs at Tufts Medical Center and Professor of Medicine, Public Health, and Community Medicine at Tufts University School of Medicine. Previously, he served as Vice President for Quality Improvement and Patient Safety at Dana-Farber Cancer Institute. Dr. Weingart holds a doctorate in public policy from Harvard and an MD degree from the University

of Rochester. Dr. Weingart's research examines patient safety in primary and specialty care, patient engagement, and diagnostic errors. A general internist, Dr. Weingart served as a member of the board of directors of the National Patient Safety Foundation and was the recipient of the 2012 John M. Eisenberg individual achievement award in quality and patient safety.

Daniel Yang, MD, is a program officer at the Gordon and Betty Moore Foundation where he helped establish the Diagnostic Excellence Initiative, which plans to invest $85 million in grant funding over six years. The initiative aims to reduce harm from erroneous or delayed diagnoses, reduce costs and redundancy in the diagnostic process and improve patient outcomes through timely, accurate, efficient and patient-centered diagnoses. The initiative is focused on three clinical categories of diseases that contribute to a disproportionate share of harm from suboptimal diagnosis including acute vascular events, infections and cancer. Daniel is also a practicing hospitalist and a board-certified internal medicine physician. He completed his residency training at the University of California, San Francisco which was followed by a fellowship in health care systems design at Stanford University's Clinical Excellence Research Center.