



A WORKSHOP

April 3 • 8:30AM – 4:00PM PT

Advancing Health Care Professional Education and Training in Diagnostic Excellence

NATIONAL
ACADEMIES

Sciences
Engineering
Medicine

Hosted By:
Forum on Advancing Diagnostic Excellence
in collaboration with the
Global Forum on Innovation in Health Professional Education

*Arnold and Mabel Beckman Center
100 Academy Way, Huntington Room
Irvine, CA 92617*

Advancing Health Care Professional Education and Training: A Workshop

April 3, 2024 | 8:30 AM-4:00 PM PT

The virtual webcast can be accessed on April 3 at 8:30 AM PT/11:30 AM ET:

https://www.nationalacademies.org/event/44094_04-2025_advancing-health-care-professional-education-and-training-in-diagnostic-excellence-a-workshop#sl-three-columns-ee801d90-5171-4915-b852-94173d9e4231

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Advancing Health Care Professional Education and Training in Diagnostic Excellence: A Workshop



THURSDAY, APRIL 3, 2025—BECKMAN CENTER OF THE NATIONAL ACADEMIES, HUNTINGTON ROOM

8:00 AM **BREAKFAST—Dining Room**

8:30 AM **Welcome and Opening Remarks**

Andrew Bindman, Kaiser Permanente

Planning Committee Chair and Forum Member, Advancing Diagnostic Excellence

Keynote Address

Catherine Lucey, University of California, San Francisco

9:15 AM **Session 1: Exploring Approaches to Improve Diagnostic Reasoning for Trainees and Educators**

Moderators: Yolanda Wimberly, Grady Health System

Emily Abdoler, University of Michigan Medical School

Strategies to Improve Diagnostic Reasoning and Mitigate Diagnostic Errors

Joseph Rencic, Boston University Chobanian & Avedisian School of Medicine [Virtual]

Optimizing Trainee Feedback on Diagnostic Reasoning

Satid Thammasitboon, Baylor College of Medicine and Texas Children's Hospital

Faculty Development in Remediation Strategies for Learners Struggling with Diagnostic Reasoning

Andrew Parsons, University of Virginia School of Medicine and UVAHealth

Panel Discussion/Audience Q&A

10:15 AM **Session 2: Best Practices for the Appropriate Use of Diagnostic Tests and Technologies to Support Decision Making**

Moderators: Geeta Singhal, Baylor College of Medicine

Barry Issenberg, University of Miami Miller School of Medicine [Virtual]

Leveraging Artificial Intelligence and Machine Learning to Support Diagnostic Reasoning

Cornelius James, University of Michigan Medical School

Diagnostic Stewardship Interventions to Ensure Appropriate Use of Diagnostic Testing

Valerie Vaughn, University of Utah School of Medicine

Evidence-Based Simulation Learning Interventions to Improve Diagnostic Reasoning

Leah Burt, University of Illinois Chicago

Panel Discussion/Audience Q&A

11:15 AM BREAK

11:30 AM Session 3: Fostering Patient-Centered Communication and Shared Decision Making to Improve Diagnostic Excellence

Moderators: *Cristina Gonzalez, New York University Grossman School of Medicine*
Dimitrios Papanagnou, Thomas Jefferson University [Virtual]

Faculty Development Approaches to Addressing Implicit Bias in Clinical Encounters

Monica Lypson, Columbia University

Strategies to Effectively Communicate Diagnostic Uncertainty to Patients, Families, and Caregivers

Danielle McCarthy, Northwestern University Feinberg School of Medicine

Improving Diagnostic Communication and Quality for Older Adults

Alberta Tran, MedStar Health

Panel Discussion/Audience Q&A

12:30 PM LUNCH BREAK—Dining Room

1:30 PM Session 4: Promoting Interprofessional Education to Build a Collaborative Environment and Optimize Patient Care

Moderators: *Gene Harkless, University of New Hampshire*
Maria Soto-Greene, Rutgers New Jersey Medical School

Interprofessional Competencies in Nursing Education to Improve Diagnostic Safety

Kelly Gleason, Johns Hopkins School of Nursing [Virtual]

Interprofessional Education in Physical Therapy to Improve Diagnostic Excellence

Raine Osborne, University of North Florida

Opportunities to Advance Interprofessional Education Through the Interprofessional Partnership to Advance Care and Education Unit

Sarah Hallen, MaineHealth

Panel Discussion/Audience Q&A

2:30 PM Session 5: A Vision for the Future of Diagnostic Excellence in Health Care Professional Education and Training

Moderator: *Andrew Olson, University of Minnesota Medical School*

Panelists:

- Mark Graber, Community Improving Diagnosis in Medicine
- Eric Holmboe, Intealth [Virtual]
- Sydney Look-Why, Boston University Chobanian & Avedisian School of Medicine [Virtual]
- Grace Sun, National Organization of Nurse Practitioner Faculties

Panel Discussion/Audience Q&A

3:45 PM Workshop Closing Remarks

Andrew Bindman, Kaiser Permanente

Planning Committee Chair and Forum Member, Advancing Diagnostic Excellence

4:00 PM MEETING ADJOURNS

**Advancing Health Care Professional Education and Training in Diagnostic Excellence: A
Workshop
Statement of Task**

A planning committee of the National Academies of Sciences, Engineering, and Medicine will organize a public workshop to explore opportunities to strengthen health care professional education and training in the diagnostic process and reduce the potential for diagnostic errors. Workshop participants will also consider the current scientific landscape and research opportunities for improving curricula and training programs in the diagnostic process across the career trajectory.

The workshop will feature invited presentations and discussions on education and training by exploring educational strategies within areas such as:

- The iterative and collaborative nature of the diagnostic process, including information gathering, integration, and interpretation, to form a working diagnosis;
- Developments in training and education on how to incorporate shared decision making in the diagnostic process, improving timely communication of diagnosis with patients and their families, and leveraging community-centered approaches;
- Strategies to educate trainees to improve communication, care coordination, and teamwork among health care professionals, patients, and their caregivers and families;
- Innovative methods for educating trainees about factors that can contribute to diagnostic disparities, including social determinants of health, access to high-quality diagnosis, and systemic inequities;
- Methods for educating trainees about the appropriate use of diagnostic tests, technologies, innovations, artificial intelligence, and machine learning, to support the diagnostic process and the appropriate use of testing to reduce overuse and overdiagnosis; and to enable learning opportunities from diagnostic errors within health systems;
- The educational process for health care professionals, assessment of learning, and incorporating elements of diagnostic excellence into professional development and continuing education; and
- The opportunities and potential unintended consequences of advancing health care professional education and training in diagnosis.

In accordance with institutional guidelines, a designated rapporteur will prepare a proceedings-in brief of the workshop based on the presentations and discussion during the workshop. The proceedings-in brief will be subject to the National Academies review procedures prior to release.

Advancing Health Care Professional Education and Training in Diagnostic Excellence: A Workshop Speaker Biographies



Leah Burt, Ph.D., APRN, ANP-BC, CHSE, is a Clinical Assistant Professor and Director of the Adult-Gerontology Primary Care Nurse Practitioner Program at the University of Illinois Chicago College of Nursing, as well as a Clinical Assistant Professor and Director of Educational Quality Assurance at the University of Illinois College of Medicine Department of Medical Education Simulation and Integrative Learning Institute. After completing her PhD in Nursing Science with a focus on diagnostic reasoning, Dr. Burt engaged in postdoctoral training as a Fellow in Diagnostic Excellence through the Society to Improve Diagnosis in Medicine as well as postdoctoral training in simulation education and research. A Certified Healthcare Simulation Educator, Dr. Burt's scholarship blends expertise in educational design with mixed methodology research to

discover evidence-based ways to assess and enhance learner competency through innovative simulation. Dr. Burt is a sought after international speaker whose leadership and impact has been honored with the Society to Improve Diagnosis in Medicine's Emerging Leader Rising Star Award, the Barbara Berger Excellence in Teaching Award, and the DAISY Faculty Award for extraordinary educational contributions. In addition, she maintains a clinical practice as a Nurse Practitioner at the University of Illinois Hospital and Health Sciences System in the Department of Emergency Medicine.



Kelly T. Gleason, Ph.D., RN, is an Associate Professor at the Johns Hopkins School of Nursing. Previously, she served as an inpatient nurse on medical-surgical units. Dr. Gleason's research expertise centers on diagnostic safety, particularly in optimizing the role of patients and nurses in improving diagnostic quality. She co-leads the Team Core at the Armstrong Institute Center for Diagnostic Excellence and has been instrumental in advocating for nurses' and patients' involvement in diagnostic safety efforts. Her work emphasizes system improvements that support nurses' and patients' participation in the diagnostic process. She has received multiple grants to fund her work, including from the Gordon and Betty Moore Foundation. Dr. Gleason earned her PhD from the Johns Hopkins School of Nursing and her Bachelor of Science in Nursing from Georgetown University.



Mark L. Graber, M.D., FACP is Professor Emeritus of Medicine at Stony Brook University, NY. Dr Graber is the leading authority internationally on diagnostic error and how to address it. He is the founder of the annual Diagnostic Error in Medicine conference series and the journal, DIAGNOSIS, and is the founder and President of the Community Improving Diagnosis in Medicine (CIDM). In 2014 he received the John M Eisenberg Award from The Joint Commission and the National Quality

Forum, the nation's top honor in patient safety and quality for originating Patient Safety Awareness Week and establishing the new field of diagnostic safety.



Sarah Hallen, M.D., is a practicing geriatrician at MaineHealth Maine Medical Center (MH MMC) in Portland, ME. She is an Assistant Professor at Tufts University School of Medicine in Boston, MA, and is the Assistant Designated Institutional Official for Graduate Medical Education at MH MMC. Dr. Hallen is also the Program Director for the geriatric medicine fellowship and a co-director of the internal medicine-geriatric medicine combined residency and fellowship at MH MMC. She completed medical school training at the University of Vermont College of Medicine in Burlington, VT. She did her internal medicine residency at Strong Memorial Hospital at the University of Rochester in Rochester, NY, and completed her geriatric medicine fellowship at MMC. In 2010, she was awarded a K01 Geriatric Academic Career Award from HRSA to learn the skills to teach and evaluate interprofessional teams. Since then, she has co-authored several publications in various areas, many of which focus on the care of older adults

and interprofessional collaboration and education. She is currently the PI of an AMA Reimagining Residency Grant to spread the iPACE, an interprofessional care and educational model, throughout the MH health system. Dr. Hallen has won several teaching awards within her institution; most recently, she was awarded the 2023 Department of Medicine Excellence in Teaching award for MH MMC. Her research interests draw directly from her clinical experience caring for older adults. She is particularly interested in the Clinical Learning Environment and the intersection between quality improvement, patient safety, clinical care, and interprofessional education.



Eric Holmboe, M.D., is President and CEO of Intealth. He is Adjunct Professor of Medicine at the Yale University School of Medicine and the Uniformed Services University of the Health Sciences. He is Adjunct Professor of Medical Education at the Feinberg School of Medicine at Northwestern University. Previously, he served as Chief, Research, Milestones Development and Evaluation Officer at the Accreditation Council for Graduate Medical Education (ACGME) until 2023 and as the Chief Medical Officer at the American Board of Internal Medicine (ABIM) from 2009 until 2014. He previously served as the Associate Program Director, Yale Primary Care Internal Medicine Residency Program, Director of Student Clinical Assessment, Yale School of Medicine, and Assistant Director of the Yale Robert Wood Johnson Clinical Scholars program. Before joining Yale in 2000, he served as Division

Chief of General Internal Medicine at the National Naval Medical Center. Dr. Holmboe retired from the US Naval Reserves in 2005. His research interests include interventions to improve quality of care and methods in the assessment of clinical competence. His professional memberships include the American College of Physicians, where he is a Master of the College, Society of General Internal Medicine, and Association of Medical Education in Europe. He is an honorary Fellow of the Royal College of Physicians in London, honorary Fellow of the Royal College of Physicians and Surgeons of Canada, and honorary fellow of the Academy of Medical Educators. Dr. Holmboe is a graduate of Franklin and Marshall College and the University of Rochester School of Medicine. He completed his residency and chief residency at Yale-New Haven Hospital and was a Robert Wood Johnson Clinical Scholar at Yale University.



Cornelius James, M.D., is an Assistant Professor in the Departments of Internal Medicine, Pediatrics and Learning Health Sciences at the University of Michigan, where he practices primary care. His scholarly work focuses on preparing clinicians to use digital health technologies (DHT), including artificial intelligence to augment their decision making, and equitable implementation of safe and effective DHTs. Dr. James is a 2021 NAM Scholar in Diagnostic Excellence, and he is the recipient of the 2022 Kaiser Permanente Award for Excellence in Teaching, the most prestigious teaching award given by the University of Michigan Medical School. He also holds the Division of General Medicine James Woolliscroft Endowment for Humane Patient Care. Dr. James received his medical

degree from Wayne State University, and he completed a combined Internal Medicine and Pediatrics residency at Beaumont Health.



Sydney Look-Why, is a third-year medical student at Chobanian and Avedisian Boston University School of Medicine. Before medical school, she spent two years as a clinical research coordinator and Massachusetts Eye Research and Surgery Institution. She is passionate about research and medical education which she plans to continue in residency. She is applying this upcoming year to Urology match.



Catherine Lucey, M.D., MACP, a practicing physician and leading national voice on medical school education, took the helm as Executive Vice Chancellor and Provost (EVCP) in January 2023. As EVCP, Dr. Lucey leads both UCSF's robust research enterprise as well as its highly ranked academic programs, comprising four professional schools and the Graduate Division. She works in close collaboration with the Chancellor and the leadership team to develop and implement campus priorities and vision, maintain the University's status as an international leader in health sciences education and research, and oversee external partnerships representing UCSF's best interests across the University of California system, at the UC Office of the President, and beyond. Renowned for her leadership, Dr.

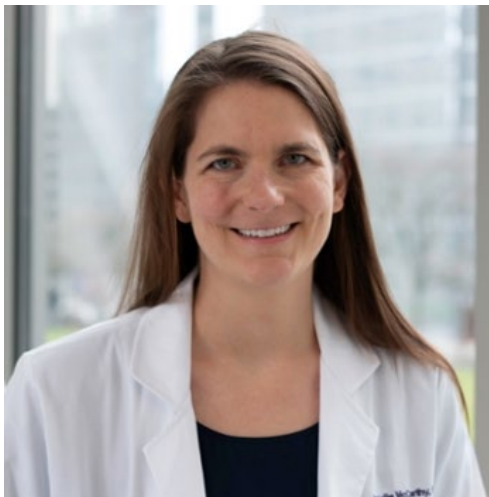
Lucey was Vice Dean for Education and Executive Vice Dean for the School of Medicine, reporting to Dean Talmadge E. King, Jr. In these roles, she directed the undergraduate, graduate, and continuing medical education programs of the School of Medicine and the Office of Medical Education. A champion of diversity, equity, and inclusion, Dr. Lucey also was on the executive management team for the School of Medicine's Differences Matters Initiative and oversaw other strategic projects across the campus. Her national portfolio of work has included membership on the National Academy of Medicine, the Board of Directors of the Association of American Medical Colleges, and the American Board of Medical Specialties. Additionally, she served as Chair of the American Board of Internal Medicine. In these roles, she has worked to influence the direction of academic medicine and the continuum of medical education in ways aligned with UCSF's approach to education, culture, and community. Dr. Lucey joined UCSF in 2011 from The Ohio State University, where she was Vice Dean for Education for the College of Medicine and Associate Vice President for Health Sciences Education for the Office of Health Sciences. She completed her residency in internal medicine at UCSF, including service as Chief Resident at the UCSF-affiliated San Francisco General Hospital (now named Zuckerberg San Francisco General

Hospital and Trauma Center). She earned her medical degree from Northwestern University School of Medicine.



Monica Lypson, M.D., MPHE, is the Vice Dean for Education at Columbia University's Vagelos College of Physicians and Surgeons and holds the title of Rolf H. Scholdager Professor of Medicine at Columbia University Irving Medical Center. She is dedicated to advancing medical education, improving access in healthcare, and preparing a culturally competent workforce. Board-certified in general internal medicine, Dr. Lypson has significant leadership experience in clinical, educational, and administrative settings. Dr. Lypson has authored over 100 peer-reviewed publications on learner assessment, communication skills, and cultural humility and workforce. She has worked with organizations like the Accreditation Council of Graduate Medical Education, the Association of American Medical Colleges, and the National Board of Medical Examiners to address healthcare workforce development and education. She earned her Bachelor's degree from Brown University, her medical degree from Case Western Reserve University School of Medicine, and a Master's degree in Health Professions Education from the University of Illinois in Chicago. She

completed her internal medicine residency at Brigham and Women's Hospital and trained as a Robert Wood Johnson Clinical Scholar at the University of Chicago. She is a former Aspen Health Innovators Fellow and a trained executive coach.



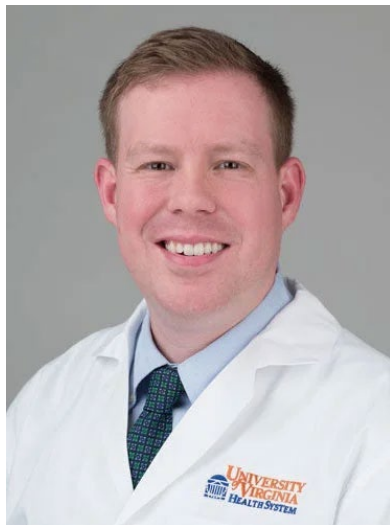
Danielle McCarthy, M.D., is an Associate Professor and the Vice Chair of Research in the Department of Emergency Medicine at Northwestern University Feinberg School of Medicine. She completed her undergraduate studies at Harvard University followed by medical school at Northwestern University. After finishing emergency medicine clinical training at Northwestern in 2010, she completed a National Service Research Award T32 fellowship and earned a Master's degree in Health Services and Outcomes Research. Dr. McCarthy's area of expertise is in doctor-patient communication in the emergency department. Specifically, she studies communication related to risk, diagnostic uncertainty, and opioid use and designs interventions that seek to improve

patient's understanding of their own care in this high-risk setting. She was recently awarded the MidCareer Researcher Award by the Society for Academic Emergency Medicine and is currently the PI of two AHRQ awards (R01 and R18) and a co-investigator on awards from AHRQ, NCCIH, NIDA as well as a mentor on three K awards.



Raine Osborne, PT, DPT, EdD, is an Assistant Professor in the Department of Physical Therapy at the University of North Florida. He serves as the Director of the UNF Center for the Promotion of Innovation and Excellence in Rehabilitation and is a faculty member of the Brooks Rehabilitation Residency and Fellowship Program. Dr. Osborne is Board-certified (emeritus) in orthopaedic physical therapy and a Fellow of the American Academy of Orthopaedic Manual Physical Therapists (AAOMPT). As a researcher, Dr. Osborne focuses on the intersection of health professions education and learning health systems. His research interests include professional engagement, physical therapist residency and fellowship education, interprofessional education, and clinical learning

environments. He is an editorial board member for the Journal of Physical Therapy Education and chairs the APTA Academy of Education Residency and Fellowship Research Collaborative. Dr. Osborne earned his physical therapy degree from the University of South Florida, completed an orthopaedic physical therapy residency and orthopaedic manual physical therapy fellowship at Brooks Rehabilitation, and obtained a doctorate in educational leadership from the University of North Florida.



Andrew Parsons, M.D., MPH, is an Associate Professor of Medicine in the Division of Hospital Medicine and Associate Dean for Clinical Competency for the University of Virginia (UVA) School of Medicine. Dr. Parsons completed his internal medicine residency training at UVA following medical school at East Tennessee State University and a Master of Public Health at Emory University. Dr. Parsons' research is focused on the assessment and remediation of clinical reasoning, specifically management reasoning, and he is currently a PhD candidate in the School of Health Professions Education at Maastricht University in the Netherlands. Dr. Parsons is an accomplished educator and mentor, winning local and national teaching awards. His work has led to impactful publications and national and international workshops on clinical reasoning and coaching.



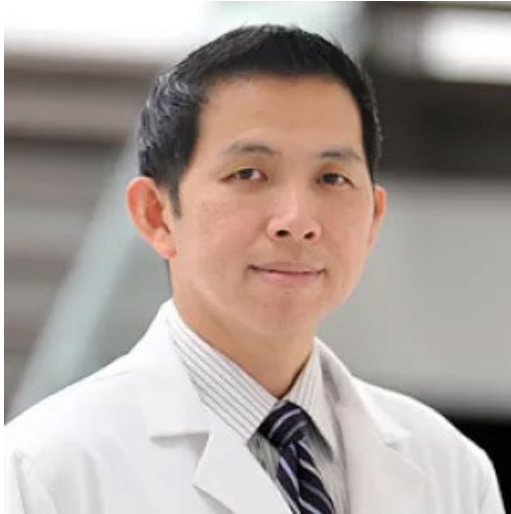
Joseph Rencic, M.D., received his BS at Georgetown University and his MD at the University of Pennsylvania School of Medicine. He completed his residency and chief residency in internal medicine at the Hospital of the University of Pennsylvania. He is a Professor of Medicine at Boston University and a hospitalist in the Division of General Internal Medicine. Dr. Rencic's research seeks to improve health professionals' clinical reasoning and enhance their diagnostic accuracy and treatment decisions, with the ultimate goal of reducing medical errors and improving patient outcomes. He has developed and disseminated theory-based strategies for how to effectively teach and evaluate clinical reasoning through curricula, assessment methods, journal publications, and a book, "Teaching Clinical Reasoning." His multiple peer-reviewed publications in clinical reasoning have challenged existing constructs, proposed a new conceptual framework, provided a seminal reference for its assessment, highlighted the inadequacy of clinical reasoning curricula in U.S. medical schools, and contributed to a team that developed the first set of interprofessional competencies in diagnosis. In addition to his research, Dr. Rencic is the Director of Clinical Reasoning Education, the co-course Director of Doctoring 2, and a member of the Academy of Medical Educators at the Chobanian and Avedisian School of Medicine. He also serves as Acting Internship Director for the fourth-year internal medicine rotation at Boston Medical Center. These positions align with his strong professional interests in medical education, curriculum design, assessment, competency, and mentoring. Dr. Rencic has been actively involved in the Alliance for Academic Internal Medicine, serving as councilor for the Clerkship Director of Internal Medicine, as well as the Society for Improved Diagnosis in Medicine. Along with two colleagues, he received the 2017 Clerkship Directors of Internal Medicine Louis N Pangaro, MD, Educational Program Development Award, which was given for his innovative work in teaching clinical reasoning to medical students. He also received the 2010 Medical Educator Award from the New England region of the Society of General Internal Medicine, which is awarded to an outstanding generalist clinician-educator.



Grace Sun, DNP, APRN, FNP-BC, is the current Secretary of the National Organization of Nurse Practitioner Faculties, as well as a Clinical Professor and the Assistant Dean of APRN Programs at the University of Texas. Dr. Sun has over 15 years of experience in academia, with expertise in curriculum development, online instructional design, distance education, and interprofessional education. She has developed a niche in artificial intelligence in education and practice and is a nationally invited speaker. Dr. Sun is an American Nurses Credentialing Center board-certified Family Nurse Practitioner and a member of the American Association of Nurse Practitioners, Sigma Theta Tau International, Advanced Practice Provider Executives,

American Organization for Nursing Leadership, American Nurses Association, and numerous state and regional organizations. She has received multiple yearly Outstanding Faculty Awards (2018-2024), President's Award for Interprofessional Teamwork, and Outstanding Preceptor Award. Dr.

Sun holds doctorate in nursing practice (DNP) from Texas Tech University Health Sciences Center, a BSN and MSN from the Johns Hopkins University, and a BS from the University of California at Berkeley.



Satid Thammasitboon, M.D., MHPE, is an Associate Professor of Pediatrics and the Director of the Center for Research, Innovation, and Scholarship at Texas Children's Hospital, Baylor College of Medicine. He is the Co-Founder of the Network of Practice in Health Sciences Scholarship, the Council Lead of the Best Evidence Medical Education, the Co-Founder of Flourishing Nexus, LLC. Dr. Thammasitboon's expertise spans clinical reasoning, design-based research, instrument development, and evidence synthesis. He serves as Deputy Editor for Perspectives on Medical Education, Associate Editor for Medical Teacher and Diagnosis Journal, and as a key contributor to global medical education initiatives. He has also established

programs such as the Clinical Reasoning Lab, the Health Professions Education Certificate program, and the Medical Education Research Community in Southeast Asia. His recent honors include the 2024 ASPIRE to Excellence Award for International Collaboration in Health Professions Education, the 2023 Karolinska Institutet Prize for Research in Medical Education Fellowship, and multiple mentorship and research awards. Dr. Thammasitboon earned his MD at Prince of Songkla University, Thailand, a residency in Pediatrics and a Master's in Health Professions Education at the University of Illinois at Chicago, and Critical Care Medicine fellowship at Baylor College of Medicine.



Alberta Tran, Ph.D., RN, CCRN, is a Senior Research Scientist at the MedStar Health Research Institute, Assistant Professor of Medicine at Georgetown University Medical Center, and Adjunct Assistant Professor at the University of North Carolina-Chapel Hill (UNC-CH) School of Nursing. Dr. Tran has a clinical background in critical care nursing and over 10 years of experience teaching nursing students, medical students, and clinicians in simulation, team-based communication, health innovation, and older adult health. Dr. Tran is a health services researcher whose current research focuses on the organization and delivery of nursing care to improve quality outcomes in hospitals and ambulatory care settings, interventions to improve

diagnostic communication and quality for older adults, and the use of secondary data to respond to timely issues that impact the healthcare workforce. She has developed a focused body of research on diagnostic communication and quality for older adult populations and was the 2023

Society for Improving Diagnosis in Medicine Age-Friendly Care Fellow in Diagnostic Excellence. She received her PhD and postdoctoral training at UNC-CH and was selected as a Robert Wood Johnson Foundation Future of Nursing Scholar.



Valerie Vaughn, M.D., MS, SFHM, FACP, is a tenured Associate Professor, the Bertram H. and Janet M. Schaap Presidential Endowed Chair, and Director of Clinical Research for the Department of Internal Medicine. A national leader in hospital medicine, Dr. Vaughn envisions a world where patient care is rapidly and iteratively improved by generating and implementing high quality, high value evidence across diverse context with teams that are compassionate, collaborative, and transformational. Dr. Vaughn's research targets critical challenges in healthcare, focusing on reducing diagnostic error and curbing antibiotic overuse. As a practicing hospitalist, Dr. Vaughn is at the forefront of understanding how hospitalists contribute to both diagnostic accuracy, overuse, and antibiotic stewardship. Her collaborative work spans key areas such as physician decision-making, cognitive error, diagnostic stewardship, and the development of quality measures to drive better patient outcomes. Amongst others, Dr. Vaughn's work was

supported by the National Academy of Medicine as a Diagnostic Scholar. An accomplished scholar, she has published over 80 peer-reviewed articles in top journals. She serves as the hospitalist lead for the Antimicrobial Use Initiative within the Michigan Hospital Medicine Safety Consortium, helping hospitals harness data to improve infection care and directs the Utah Quality Advancement Laboratory (UQuAL), an innovative patient safety research center that includes the UQuAL Scholars program and the UQuAL Hospitalist team, designed to train the next generation of healthcare leaders.

Advancing Health Care Professional Education and Training in Diagnostic Excellence: A Workshop Planning Committee Biographies



Andrew B. Bindman, M.D., (Chair), is the executive vice president and chief medical officer for Kaiser Foundation Health Plan, Inc., and Hospitals. In this role, Dr. Bindman is responsible for driving superior quality and equitable health outcomes through the integration of quality innovation, research, and care delivery. He collaborates with the Permanente Medical Groups to accelerate Kaiser Permanente's quality strategy and improve the high-quality care provided to members and patients nationwide. Dr. Bindman reports directly to Kaiser Permanente's chairman and chief executive officer and is a member of the National Executive Team and the

CEO Executive Committee. He works closely with clinical and operational leaders to establish common performance standards for quality and service, drive consistent adoption of key quality programs, and leverage data analytics and research across the enterprise. His areas of focus include advancing the quality outcomes that matter most to members and establishing equity, alongside quality and safety, as a fundamental metric for care. Dr. Bindman previously spent more than 30 years at the University of California, San Francisco where he practiced and taught clinical medicine while conducting research in health access and outcomes that resulted in more than 180 published scientific articles. A noted policy advocate, he has held advisory and leadership roles for the U.S. House Energy and Commerce Committee, the U.S. Department of Health and Human Services, the Agency for Healthcare Research and Quality, the California Medicaid Research Institute, and the Healthy California for All Commission, among other agencies. Dr. Bindman is a graduate of Harvard College and the Mount Sinai School of Medicine. A board-certified general internist, he completed his residency in internal medicine at UCSF and was a Robert Wood Johnson Foundation Clinical Scholar at Stanford University. He was elected to the National Academy of Medicine in 2015 and serves on the organization's Board on Health Care Services.



Emily Ann Abdoler, M.D., MAEd, is a Clinical Associate Professor of Medicine at the University of Michigan Medical School and Staff Physician at the Ann Arbor VA Health System. She works clinically in adult Infectious Diseases (ID), is associate program director of the ID fellowship, co-chair of the Academy of Medical Educators, assistant director of the preclerkship medical school curriculum, and co-director of the Infectious Diseases & Microbiology course for medical students. Her research interests lie in the areas clinical reasoning and reflective practice. In 2022, she received the M. Brownell Anderson Award for early-career medical educators through the Central Group on Academic Affairs for the AAMC. She is also a past recipient of the Kaiser Permanente Award for Excellence in Teaching in the

Pre-clinical Sciences through the University of Michigan Medical School. She completed her medical degree at the University of Michigan Medical School, followed by Internal Medicine residency and Infectious Diseases fellowship at the University of California, San Francisco. During her fellowship, she also attained her Master's in Education through the University of California,

Berkeley, and completed an advanced fellowship in Health Professions Education Evaluation and Research at the San Francisco VA Health.



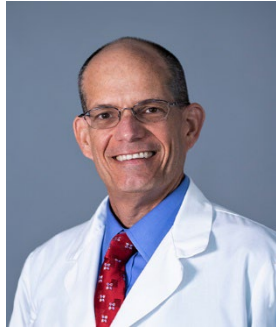
Cristina Gonzalez, M.D., M.Ed., is a Professor of Medicine and Population Health at New York University Grossman School of Medicine and an Associate Director for the Institute for Excellence in Health Equity. She is an alumna of Albert Einstein College of Medicine, completed internal medicine residency at New York Presbyterian Hospital- Weill Cornell Medical Center, and a medical education research fellowship at University of Cincinnati, earning a Master's Degree in Medical Education. Upon completing that fellowship, she was selected as a Scholar in the Harold Amos Medical

Faculty Development Program of the Robert Wood Johnson Foundation. This prestigious four-year award launched her research program designing, implementing, and evaluating interventions aimed at implicit bias recognition and management (IBRM) in clinical encounters. She was subsequently selected as a Scholar in the Macy Faculty Scholars Program of the Josiah Macy, Jr. Foundation to continue advancing her work. Dr. Gonzalez is an internationally renowned expert in the development of skills-based curricular interventions in IBRM for physicians and trainees. In 2019 she transitioned from foundation funding to NIH funding from the National Institute for Minority Health and Health Disparities. With this funding she is designing and validating novel metrics facilitating future evaluation of interventions focused on IBRM with robust, clinically relevant outcome metrics. In 2022 she was selected as a Scholar in the National Academy of Medicine's Scholars in Diagnostic Excellence program. This program's funding and network enabled Dr. Gonzalez to continue her work in IBRM through the lens of equity diagnostic excellence.



Gene Harkless, MSN, DNSc, an associate professor, and chair of the University of New Hampshire Department of Nursing has taught and led undergraduate and graduate program development there for 38 years. A family nurse practitioner since 1980, she continues to practice at the Greater Seacoast Community Health Center. Dr. Harkless has focused her teaching on evidence-based practice, clinical judgement, and family nursing theory. Her scholarship includes work on the diagnostic process, clinical decision-making, quality improvement, and long-term care for frail elders. She has been awarded three Fulbright Scholar awards in Norway, India, and Indonesia over her career. In 2010, Dr. Harkless was named a Fellow of the American Academy of Nurse Practitioners and in

2014 she received the New Hampshire Nurse Practitioner Association Lifetime Achievement Award. In 2017, Dr. Harkless was selected by the Society to Improve Diagnosis in Medicine to serve on the Macy Foundation-funded national workgroup convened to develop an interprofessional curriculum to improve diagnosis in medicine. Dr. Harkless received her BSN from Duke University, her MSN FNP education at Vanderbilt, and her DNSc at Boston University.



Barry Issenberg, M.D., holds the Michael S. Gordon Endowed Chair of Medical Education and serves as a tenured Professor of Medicine, Senior Associate Dean for Research in Medical Education, and Director of the Gordon Center for Simulation and Innovation in Medical Education. Dr. Issenberg's career has been dedicated to the research, development, implementation, and evaluation of innovative training and assessment systems. His research with colleagues has established the validity of computer-based simulation and virtual patient training programs for teaching and assessing health professionals. Dr. Issenberg has authored or

co-authored over 200 publications and digital applications on the development, use, and evaluation of innovative training systems in health sciences education. Furthermore, Dr. Issenberg serves on several national and international boards and committees related to medical education and healthcare simulation. He is currently the president of the Society for Simulation in Healthcare, the largest international organization dedicated to using simulation to enhance training and patient care. Dr. Issenberg received his medical degree from the University of Miami School of Medicine and completed his residency training in internal medicine at the University of Alabama at Birmingham.



Andrew Olson, M.D., is a Professor of Medicine and Pediatrics at the University of Minnesota Medical School, where he practices hospital medicine and pediatrics. A native of rural Iowa and a graduate of Luther College, Dr. Olson attended medical school at the University of California, Davis, and He serves as the founding Director of the Division of Hospital Medicine and Director of Medical Education Research and Innovation in the Medical Education Outcomes Center, focusing on linking education with clinical and workforce outcomes. Dr. Olson's academic focus is better understanding clinical reasoning, especially diagnostic reasoning. His research focuses on the interactions between individuals and the clinical environment and how teams make diagnostic decisions. He has published

over 120 articles, mostly focused on diagnosis, and has been the recipient of multiple extramural grants focused on improving diagnosis. He is the recipient of the Mark L. Graber Award for Leadership in Diagnostic Excellence, and an inductee into the Academy of Excellence for the Scholarship of Teaching and Learning at the University of Minnesota.



Dimitrios Papanagnou, M.D., Ed.D., MPH is a Professor of Emergency Medicine and Vice Chair for Education in the Department of Emergency Medicine. He serves as Senior Associate Dean for Faculty Development at SKMC. He extends his commitment to faculty across the University as the Associate Provost for Faculty Development, with a specific emphasis on health professions education and scholarship. He oversees SKMC's Health Systems Science curriculum and designed and currently leads SKMC's first-ever Scholarly Inquiry Track in Medical Education. Previous to Jefferson, he led simulation-based in situ training for multidisciplinary teams across New York City's Health and Hospitals Corporation. As a Macy Faculty Scholar,

he developed and implemented a vertically aligned curriculum for uncertainty in clinical practice. His research lies at the intersection of HSS, uncertainty in clinical practice, diagnosis, and medical education. In 2022, Dr. Papanagnou was named a Scholar of Diagnostic Excellence by the National Academy of Medicine. He is the recipient of numerous teaching awards, including the AAMC's 2023 Alpha Omega Alpha Robert J. Glaser Distinguished Teacher Award. He has >120 publications and >200 abstracts/poster presentations, with nearly all of them centered on medical education. He has helped secure >\$2 million in grant funding to advance medical education. His work has been funded by the AMA, AHRQ, the Emergency Medicine Foundation, the Society for Academic Emergency Medicine, the U.S. Department of Health & Human Services, the Josiah Macy Jr. Foundation, the Gordon & Betty Moore Foundation, and the ABIM Foundation. Dr. Papanagnou completed his undergraduate and graduate medical training at NYU School of Medicine and Bellevue Hospital. He completed his MPH and doctorate in education at Columbia University.



Geeta Singhal, M.D., MEd., is a pediatric hospital-based physician and Professor at Baylor College of Medicine. She received her medical degree from the University of Oklahoma, her Master of Education from the University of Houston and completed her pediatric residency at Children's Hospital, Los Angeles. Her achievements include leadership roles in pediatric hospital medicine, administration and in education at the local and national levels. She is the former Director of the BCM Office of Faculty Development, is an Executive Vice Chair in the BCM Department of Pediatrics, and past Chair of the American Academy of Pediatrics Section of Hospital Medicine Executive Council. She is the recipient of multiple teaching awards, locally and nationally. She is considered an expert in family-centered rounding, diagnostic errors and in workshop/conference planning. She also has a great interest in global health and has taught in India, Brazil, India, Finland, Malawi, Taiwan and Uganda. Dr. Singhal completed an 18-month tenure as the elected President of the TCH medical staff, where she worked closely with other leaders during the pandemic and times of social unrest.



Maria Soto-Greene, M.D., is a tenured Professor and Executive Vice Dean at Rutgers New Jersey Medical School (NJMS). She has amassed decades of experience in all aspects of medical education. In her current role, Dr. Soto-Greene oversees undergraduate medical education, faculty affairs, professional development, accreditation, diversity affairs, and all basic science and clinical departments. She is committed to advancing the school's health equity and social justice education, community service, and engagement with University Hospital, a safety-net hospital. Dr. Soto-Greene has been funded by federal and private agencies since the early 1990's and has passionately worked to create unparalleled opportunities for thousands of individuals underrepresented

in medicine and science. These programs support students at the pre-college level through medical school faculty. Dr. Soto-Greene received her M.D. degree from New Jersey Medical School, completed her internal medicine training at University Hospital in Newark, NJ, and obtained a

M.S. in Health Professions Education at the MGH Institute of Health Professions. She has been the proud recipient of numerous awards recognizing her contributions to advancing diversity in academic medicine including the 2019 AAMC Herbert W. Nickens Award for her exemplary contributions to promoting social justice in medical education and health equities.



Yolanda Wimberly, M.D., is a nationally respected and distinguished healthcare and public health leader, educator, and community advocate, Dr. Yolanda Wimberly brings a dynamic vision to her position as senior vice president and Chief Health Equity Officer at Grady Health System. A board-certified physician in both pediatrics and adolescent medicine, Dr. Wimberly serves as an adjunct professor of pediatrics at Morehouse School of Medicine (MSM). Her leadership and nationally respected voice in the health equity movement are born of 21 years of clinical experience. As the former Senior Associate Dean of Graduate Medical

Education and Clinical Affairs for Grady at MSM, Dr. Wimberly led the clinical experience and educational enterprise of hundreds of medical students, residents, and faculty for 20 years. During her tenure there, she developed the strategic plan for graduate medical education at MSM and led the expansion of GME at MSM by 50%, while decreasing program citations by 75%. Dr. Wimberly earned her Doctor of Medicine degree from Meharry Medical College and her Master of Science in Epidemiology from the University of Cincinnati. After completing her pediatric residency at Northwestern Children's Hospital, she completed an adolescent medicine fellowship at Cincinnati Children's Hospital. Highly regarded for her perceptive leadership, Dr. Wimberly serves on several boards focused on improving health outcomes and elevating health equity in the United States and around the world. Her board membership includes the board of directors for the Accreditation Council on Graduate Medical Education (ACGME), Metro Atlanta YMCA, and Camp Twin lakes. In recognition of her leadership and accomplishments, Dr. Wimberly was the recipient of the Association for American Medical Colleges' prestigious Arnold P. Gold Foundation Humanism in Medicine Award, and of numerous other national awards. In 2022, Dr. Wimberly was named a Top Diversity and Inclusion Officer by the Atlanta Business Chronicle, was recognized by Becker's Hospital Review as a Top Diversity and Inclusion Officers to Watch in 2023 and was consistently from 2011 through 2024, recognized as one of Atlanta's Top Doctors by Atlanta Magazine.

Advancing Health Care Professional Education and Training in Diagnostic Excellence: A Workshop

Relevant Readings and Resources

- Clary, C., A. Cohen, S. Kumar, M. Sur, B. Rissmiller, G. Singhal, and S. Thammasitboon. 2025. [The effect of a provisional diagnosis on intern diagnostic reasoning: A mixed methods study](#). *Diagnosis*.
- Cohen, A., M. Sur, C. Falco, G. Dhaliwal, G. Singhal, and S. Thammasitboon. 2022. [Using the assessment of reasoning tool to facilitate feedback about diagnostic reasoning](#). *Diagnosis*, 9(4), 476-484.
- Danielson, J., M. Jones, M. L. Graber, J. Ballard, and G. L. Grice. 2022. [Training for team-based diagnosis: The future of interprofessional education](#).
- Gleason, K., G. Harkless, J. Stanley, A. P. Olson, and M. L. Graber. 2021. [The critical need for nursing education to address the diagnostic process](#). *Nursing Outlook*, 69(3), 362-369.
- Hallen, S., M. I. Zelaya, P. White, and K. Varaklis. 2023. [Creating optimal clinical learning environments through interprofessional bedside rounding models: Lessons from the iPACE story](#). *Academic Medicine*, 10-1097.
- Parsons, A. S., J. J. Dreicer, J. R. Martindale, G. Young, and K. M. Warburton. 2024. [A targeted clinical reasoning remediation program for residents and fellows in need](#). *Journal of Graduate Medical Education*, 16(4), 469-474.
- Santhosh, L., C. L. Chou, and D. M. Connor. 2019. [Diagnostic uncertainty: From education to communication](#). *Diagnosis*, 6(2), 121-126.
- Vaughn, V. M., and D. J. Morgan. 2024. [Diagnostic stewardship: Improving use of diagnostic tests for better quality and value in hospital medicine](#). *Journal of Hospital Medicine*, 19(7), 644-647.

FORUM ON ADVANCING DIAGNOSTIC EXCELLENCE

Diagnostic errors are the most common cause of medical errors reported by patients, accounting for nearly 60 percent of all errors and an estimated 40,000-80,000 deaths per year. The 2015 Institute of Medicine consensus report, [*Improving Diagnosis in Health Care*](#), found that diagnostic errors are a persistent and underappreciated quality and safety challenge throughout all settings of health care. The study committee estimated that every person is likely to experience a diagnostic error in their lifetime, sometimes with devastating consequences, and concluded that improving diagnosis is “not only possible, but also represents a moral, professional, and public health imperative.” To improve the diagnostic process, the committee called for a widespread commitment from health care professionals, health care organizations, patients and their families, researchers, and policy makers.

In 2018, the Gordon and Betty Moore Foundation announced the Diagnostic Excellence Initiative, with the aim of reducing harm from diagnostic errors, improving health outcomes, and saving lives. The initiative included a workshop series on Advancing Diagnostic Excellence hosted by the National Academies. The [six workshops](#) in the series focused on sepsis, acute cardiovascular events, cancer, diagnostic lessons learned from the COVID-19 pandemic, diagnosis for older adults, and diagnosis in maternal health care.

To provide a more sustained platform for this work, while engaging a broader range of funders and stakeholders, the National Academies of Sciences, Engineering, and Medicine established a **Forum on Advancing Diagnostic Excellence** in 2023 to provide a structured environment and neutral venue to discuss data, policies, practices, and systems that affect the quality of diagnosis in health care. The Forum fosters an ongoing dialogue on a range of topics to examine the current scientific landscape and research opportunities for improving diagnosis within the U.S. health care system, with emphasis on conditions and populations with the greatest risk of harm from diagnostic errors.

2025 Public Events and Activities

[Advancing Health Care Professional Education and Training in Diagnostic Excellence: A Workshop](#)

April 3, 2025, Irvine, CA.

A National Academies of Sciences, Engineering, and Medicine planning committee, in collaboration with the Global Forum on Innovation in Health Professional Education, will organize and host a hybrid public workshop to explore opportunities to strengthen health care professional education and training in the diagnostic process and reduce the potential for diagnostic errors.

- To register for the workshop visit: https://events.nationalacademies.org/44094_04-2025_advancing-health-care-professional-education-and-training-in-diagnostic-excellence
- Find more information on the Statement of Task and Planning Committee [here](#).

[Advancing Diagnostic Excellence in Rural Areas: A Workshop](#)

October 14, 2025, Washington, D.C.

A National Academies of Sciences, Engineering, and Medicine planning committee will organize and host a hybrid public workshop to explore opportunities to improve diagnosis in rural areas in the United States.

2024 Public Events and Activities

Diagnosis in the Era of Digital Health and Artificial Intelligence: A Workshop

July 25, 2024, Washington, D.C.

This hybrid public workshop examined the opportunities and challenges for improving diagnosis in the era of digital health and artificial intelligence.

- Access the workshop recording [here](#).
- Read the [proceedings-in brief](#) and interactive [overview](#).

Advancing Equity in Diagnostic Excellence to Reduce Health Disparities: A Workshop

September 23-24, 2024, Washington, D.C.

In collaboration with the Roundtable on the Promotion of Health Equity, this hybrid public 1.5-day workshop that examined equity in access to high-quality diagnosis to reduce health disparities.

- Access the workshop recording [here](#).

Executive Leadership Strategies to Drive Diagnostic Excellence: A Webinar

December 11, 2024, Virtual

This public webinar explored select strategies undertaken by leaders in the U.S. health care system to drive diagnostic excellence in their organizations.

- Access the webinar recording [here](#).

FORUM MEMBERSHIP

Andrew Bindman, Kaiser Permanente (Chair)

Helen Burstin, Council of Medical Specialty Societies (Representing the Mont Fund)

Nicole Everline Alexander-Scott, Brown University

Amit Agrawal, Danaher

Helen Burstin, Council of Medical Specialty Societies (Representing The Mont Fund)

Daniel K. Cassavar, The Doctors Company

Linda N. Geng, Stanford University

Cristina Maria Gonzalez, New York University Grossman School of Medicine

Gene Elizabeth Harkless, University of New Hampshire (Representing AANP)

Donald Karcher, George Washington University Medical Center (Representing CAP)

Salahuddin Kazi, University of Texas Southwestern Medical Center (Representing ABIM)

David Larson, Stanford University (Representing ACR)

Kathryn McDonald, Johns Hopkins University

Kristen Elizabeth Miller, MedStar Health

Jennifer Orozco-Kolb, American Academy of Physician Associates

Pari Pandharipande, The Ohio State University (Representing RSNA)

Cheryl Phillips, The John A. Hartford Foundation

Sumant Ranji, University of California San Francisco (Representing the Gordon and Betty Moore Foundation)

Lisa C. Richardson, Centers for Disease Control and Prevention

Thomas Sequist, Harvard Medical School, Mass General Brigham

Saul Weingart, Tufts Medical Center

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(AANP)

American Board of Internal Medicine (ABIM)

American College of Radiology (ACR)

Danaher Corporation

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Centers for Disease Control and Prevention
(CDC)

College of American Pathologists (CAP)

The Gordon and Betty Moore Foundation

The John A. Hartford Foundation (JAHF)

The Mont Fund

Radiological Society of North America (RSNA)

FORUM STAFF

Jennifer Lalitha Flaubert, Director, Forum on Advancing Diagnostic Excellence

Adrienne Formentos, Associate Program Officer

Sharyl Nass, Director, Board on Health Care Services

Forum website: <https://www.nationalacademies.org/our-work/forum-on-advancing-diagnostic-excellence>

Global Forum on Innovation in Health Professional Education

About the Forum

The Forum's mission is to spark change in health professional education (HPE) by illuminating promising innovations that contribute to improving health and healthcare. Its work is structured by three goals that include:

- bringing together the health professional education community to explore critical issues impacting health, health care, and health professions education, and identifying sparks for innovative solutions to address these challenges;
- promoting dissemination of forum generated materials (i.e., reports, workshops, videos, and NAM-published papers), for educating health professionals; and
- serving as a platform for networking, information exchange, and member engagement for sharing personal and professional experiences while learning from the work of others across professions, countries, and sectors.

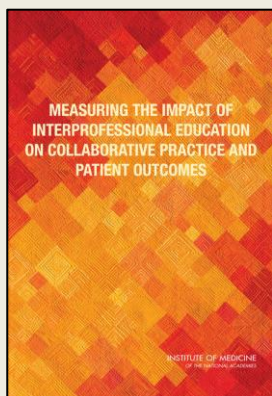
Forum members jointly select topics carried out by the full membership. Additional activities are also pursued on an individual basis in conjunction with forum staff.

Forum & Member Activities

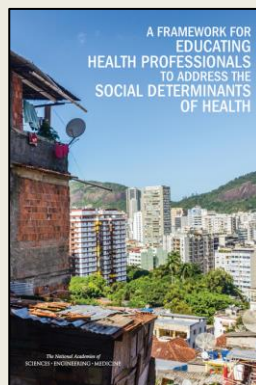
The Forum has taken on numerous activities since its opening in 2012. Each activity is underpinned by interprofessional concepts and forms the basis of our work whether the topic is assessment, economics, or accreditation. An area of extensive focus for the forum is exploring the role of the educator in areas such as education during COVID, faculty development, implementation science, and the scholarship of teaching and learning. Members of the forum have also written extensively about stress and burnout of in the health professions and education. Most recently, the forum has hosted workshops on addressing the needs of an aging population, artificial intelligence in HPE, and exploring health systems science across professions.

Forum Products

- Social Determinants of Mental Health [video](#)
- Written publications of the IHPE Forum's workshops from 2012 as [proceedings](#)
- Forum workshop [recordings](#)
- Forum member published National Academy of Medicine [perspectives papers](#)
- Two studies supported by the individual sponsors of the forum (click on picture for full report)



2015



2016



Forum Affiliates & Sponsors

1. Academy of Nutrition and Dietetics
2. Accreditation Council for Graduate Medical Education
3. American Academy of Nursing
4. American Association of Colleges of Osteopathic Medicine
5. American Board of Family Medicine
6. American Council of Academic Physical Therapy
7. American Dental Education Association
8. American Nurses Credentialing Center
9. American Medical Association
10. American Physical Therapy Association
11. American Speech-Language-Hearing Association
12. Association of American Medical Colleges
13. Association of Schools and Colleges of Optometry
14. Athletic Training Strategic Alliance
15. Columbia University Vagelos College of Physicians & Surgeons
16. Council on Social Work Education
17. Indiana University of Pennsylvania
18. Intealth
19. Massachusetts General Hospital Institute of Health Professions
20. National Academies of Practice
21. Kutztown University of Pennsylvania
22. National Board for Certified Counselors, Inc. and Affiliates
23. National Board of Medical Examiners
24. National Center for Interprofessional Practice and Education
25. National League for Nursing
26. National Register of Health Service Psychologists
27. Physician Assistant Education Association
28. Society for Simulation in Healthcare
29. Texas Tech University Health Sciences Center
30. The Academy of Integrative Health and Medicine/ACIH Council
31. The George Washington University
32. THEnet – Training for Health Equity Network
33. University of California, San Francisco
34. University of Utah
35. Weill Cornell Medicine – Qatar