IMPROVING DIAGNOSIS IN HEALTH CARE: IMPLEMENTATION WORKSHOP

Monday, July 17, 2017

The National Academy of Sciences
Lecture Room
2101 Constitution Avenue NW
Washington D.C. 20418

The National Academies of
SCIENCES • ENGINEERING • MEDICINE
BRIEFING BOOK TABLE OF CONTENTS

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VII. Improving Diagnosis in Health Care Report Recommendations

Workshop Notes

• This workshop is being webcast and recorded. Please identify your name and affiliation prior to asking questions at the microphone.
• The workshop webpage and webcast can be found at: http://nationalacademies.org/hmd/Activities/Quality/DiagnosticErrorHealthCare/2017-JUL-17.aspx
• Please use hashtag #ImprovingDiagnosis to tweet about the workshop.
# Agenda

**July 17, 2017**

<table>
<thead>
<tr>
<th>Time</th>
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| 7:30 am | Registration and Breakfast  
NAS East Court |
| 8:00 am | Welcome from the National Academies of Sciences, Engineering, and Medicine  
Victor Dzau, National Academy of Medicine  
Overview of the Meeting  
George Thibault, The Josiah Macy Jr. Foundation |
| 8:30 am | Session 1: Review Reactions to the Report on *Improving Diagnosis in Health Care and Progress on Report Recommendation Goals 1-4*  
*Moderators: Paul Epner, Society to Improve Diagnosis in Medicine  
Mark Graber, Society to Improve Diagnosis in Medicine*  
- Goal 1: Facilitate more effective teamwork in the diagnostic process among health care professionals, patients, and their families  
- Goal 2: Enhance health care professional education and training in the diagnostic process  
- Goal 3: Ensure that health information technologies support patients and health care professionals in the diagnostic process  
- Goal 4: Develop and deploy approaches to identify, learn from, and reduce diagnostic errors and near misses in clinical practice  
*Panel Discussion*  
- Helen Burstin, National Quality Forum  
- David Hunt, Office of the National Coordinator for Health Information Technology  
- David Newman-Toker, Armstrong Institute Center for Diagnostic Excellence  
- Sue Sheridan, Centers for Medicare and Medicaid Services  
- Hardeep Singh, Houston Veterans Affairs Research Center of Innovation and Baylor College of Medicine  
- George Thibault, The Josiah Macy Jr. Foundation |
| 10:00 am | Break |
| 10:15 am | Session 2: Review Reactions to the Report on *Improving Diagnosis in Health Care and Progress on Report Recommendation Goals 5-8*  
*Moderators: Robert Berenson, Urban Institute  
Pascale Carayon, University of Wisconsin-Madison* |
- **Goal 5:** Establish a work system and culture that supports the diagnostic process and improvements in diagnostic performance
- **Goal 6:** Develop a reporting environment and medical liability system that facilitates improved diagnosis by learning from diagnostic errors and near misses
- **Goal 7:** Design a payment and care delivery environment that supports the diagnostic process
- **Goal 8:** Provide dedicated funding for research on the diagnostic process and diagnostic errors

**Panel Discussion**
- **Jeffrey Brady,** Agency for Healthcare Research and Quality
- **Carolyn Clancy,** U.S. Department of Veterans Affairs
- **Stephen Friedhoff,** Anthem
- **Allen Kachalia,** Brigham & Women’s Hospital
- **Kathryn McDonald,** Stanford University

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<tr>
<td>11:45 am</td>
<td>Pick up Lunch and Proceed to Break Out Rooms</td>
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| 12:15 pm   | WORKING LUNCH

**Session 3A: Break Out Discussions: Brainstorming and Dialogue Among Stakeholders to Improve Diagnosis**

**BREAK OUT GROUP 1**
*Improving Diagnosis in Clinical Practice*
*Room: NAS 125*

Moderators: **Elisabeth Belmont,** MaineHealth
**Christine Cassel,** Kaiser Permanente School of Medicine

**BREAK OUT GROUP 2**
*Improving Diagnosis Through Health Care Professional Education*
*Room: NAS 250*

Moderators: **Christine Goeschel,** MedStar Health
**George Thibault,** The Josiah Macy Jr. Foundation

**BREAK OUT GROUP 3**
*Patient-Centered Health Care, Education, and Policy to Improve Diagnosis*
*Room: NAS Board Room*

Moderators: **Pascale Carayon,** University of Wisconsin-Madison
**Kathryn McDonald,** Stanford University

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<td>2:00 pm</td>
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<td>2:15 pm</td>
<td><strong>Session 3B: Report Back from Break Out Discussions</strong></td>
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<td><em>Moderator: Kathryn McDonald, Stanford University</em></td>
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<td>• Christine Cassel, Kaiser Permanente School of Medicine</td>
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<td>• Christine Goeschel, MedStar Health</td>
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<td>3:15 pm</td>
<td><strong>Session 4: Panel Discussion: Opportunities to Advance Progress on Report Recommendations</strong></td>
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<td><em>Moderator: Elizabeth McGlynn, Kaiser Permanente</em></td>
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<td><em>Panel Discussion</em></td>
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<td>• Amy Berman, The John A. Hartford Foundation</td>
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<td>• Lisa McGiffert, Consumers Union</td>
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<td>• Ann Louise Puopolo, CVS Health</td>
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<td>4:45 pm</td>
<td><strong>Meeting Recap and Opportunities to Advance Progress</strong></td>
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<td><em>Christine Cassel, Kaiser Permanente School of Medicine</em></td>
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<td>5:00 pm</td>
<td><strong>Adjourn</strong></td>
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# Roster: Workshop Planning Group, Moderators, and Panelists

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<tr>
<td>John Ball, M.D., J.D.</td>
<td>Executive Vice President Emeritus, American College of Physicians</td>
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<td>Rear Admiral Jeffrey Brady, M.D., M.P.H.</td>
<td>Director, Center for Quality Improvement and Patient Safety, Agency for Healthcare Research and Quality</td>
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<td>Christine Goeschel, Sc.D., M.P.A., M.P.S., RN, FAAN</td>
<td>Assistant Vice President, Quality, MedStar Health</td>
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<td>Helen Burstin, M.D., M.P.H., FACP</td>
<td>Chief Scientific Officer, National Quality Forum</td>
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<td>Pascale Carayon, Ph.D.</td>
<td>Procter &amp; Gamble Bascom Professor in Total Quality, Director, Center for Quality and Productivity Improvement, University of Wisconsin-Madison</td>
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<tr>
<td>David Hunt, M.D., FACS</td>
<td>Medical Director, Health IT Adoption and Patient Safety, Office of the National Coordinator for Health Information Technology</td>
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<td>Christine Cassel, M.D.</td>
<td>Planning Dean, Kaiser Permanente School of Medicine</td>
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<tr>
<td>Allen Kachalia, M.D., J.D.</td>
<td>Chief Quality Officer, Vice President for Quality and Safety, Brigham &amp; Women's Hospital, Associate Professor of Medicine, Harvard Medical School and Harvard T.H. Chan School of Public Health</td>
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<td>Carolyn Clancy, M.D.</td>
<td>Deputy Under Secretary for Health for Organizational Excellence, U.S. Department of Veterans Affairs</td>
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Shari Ling, M.D.
Deputy Chief Medical Officer
Centers for Medicare and Medicaid Services

Ann Louise Puopolo, BSN, RN
Vice President
Enterprise Patient Safety
CVS Health

Kathryn McDonald, Ph.D., M.M.
Executive Director and Senior Scholar
Center for Health Policy
Center for Primary Care and Outcomes Research
Stanford University

Susan Sheridan, M.B.A., MIM, D.H.L.
Patient and Family Engagement Advisor
Centers for Medicare and Medicaid Services

Lisa McGiffert
Director
Safe Patient Project
Consumers Union

Hardeep Singh, M.D., M.P.H.
Chief, Health Policy, Quality & Informatics Program
Houston Veterans Affairs Research Center of Innovation
Baylor College of Medicine

Elizabeth McGlynn, Ph.D.
Vice President
Kaiser Permanente Research Executive Director
Center for Effectiveness & Safety Research
Kaiser Permanente

George Thibault, M.D.
President
The Josiah Macy Jr. Foundation

David Newman-Toker, M.D., Ph.D.
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Professor of Neurology, Otolaryngology, and Emergency Medicine
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The National Academies of Sciences Engineering Medicine
**Biographies**

**John R. Ball, M.D., J.D.**, is an executive vice president emeritus of the American College of Physicians. He is a graduate of Emory University, received a J.D. and an M.D. from Duke University, and was a Robert Wood Johnson Clinical Scholar at George Washington University. After a residency in internal medicine at Duke University, he held several health policy positions in the U.S. Public Health Service and was a senior policy analyst in the Office of Science and Technology Policy, Executive Office of the President. Dr. Ball originated the Washington office of the American College of Physicians and served as its executive vice president for 8 years. He subsequently was president and chief executive officer of Pennsylvania Hospital and an executive vice president and chief executive officer of the American Society for Clinical Pathology. In retirement, he served as interim president of the Milbank Memorial Fund. He currently is chair of the board of the Mission Health System in Asheville, North Carolina, where he also resides. Dr. Ball was elected a member of the National Academy of Medicine in 1992.

**Elisabeth Belmont, J.D.**, serves as Corporate Counsel for MaineHealth. She is responsible for a myriad of complex issues faced by an integrated delivery systems including electronic health information network strategy development and implementation to support innovations in care delivery and payment models; information technology acquisitions and licensing; telehealth and mobile health technologies; use of "Big Data" to facilitate research, quality improvement, and clinical integration initiatives; HIPAA and data privacy compliance; cybersecurity and loss prevention programs; and professional liability claims prompted by a significant self-insurance program. Ms. Belmont has participated in many governmental and national initiatives where quality improvement, patient safety and information technology intersect. She is a member of the National Academies of Sciences, Engineering and Medicine (NASEM) Health Care Services Board, and she recently served on NASEM’s Committee on Diagnostic Error in Health Care and was co-chair of the National Quality Forum’s Health IT Patient Safety Measures Standing Committee. She co-authored the 2016 DHHS Office of the National Coordinator agency guidance, EHR Contracts Untangled: Selecting Wisely, Negotiating Terms and Understanding the Fine Print. Ms. Belmont is a Past President of the American Health Lawyers Association and a Past Chair of the Association's Health Information and Technology Practice Group. She is the recipient of numerous honors including being named by Modern Healthcare as one of the 2007 Top 25 Most Powerful Women in Healthcare, recipient of the 2014 David J. Greenburg Service Award and designated a 2016 National Associate by NASEM.
Robert Berenson, M.D., is an Institute Fellow at the Urban Institute in Washington D.C. He is an expert in health care policy, particularly Medicare, with experience practicing medicine, serving in senior positions in two Administrations, and helping organize and manage a successful preferred provider organization. His primary research and policy interests currently are in the areas of payment and delivery system reform, market concentration, and performance measurement. Dr. Berenson recently completed service on the Medicare Payment Advisory Commission, including two years as Vice-Chair. From 1998-2000, he was in charge of Medicare payment policy and private health plan contracting in the Centers for Medicare and Medicaid Services. Previously, he served on the Carter White House Domestic Policy Staff. Dr. Berenson is a board-certified internist who practiced for twenty years, the last twelve in a Washington, D.C. group practice, and while practicing helped organize and manage a successful PPO serving the Washington, D.C. metropolitan area. Dr. Berenson received his M.D. degree from the Mount Sinai School of Medicine. He is a Fellow of the American College of Physicians.

Amy J. Berman, B.S.N., L.H.D., is a Senior Program Officer at the John A. Hartford Foundation, and heads the Integrating and Improving Services program, focusing on developing innovative, cost-effective models of care for older adults. She also directs a number of collaborations with the U.S. Administration on Aging/AARP that address the needs of family caregivers. Prior to joining Hartford, Ms. Berman served as Nursing Education Initiatives Director at the Hartford Institute for Geriatric Nursing at New York University’s College of Nursing, and before that she worked in home health care administration. She has also served on the New York State Department of Health’s Emergency Preparedness Task Force, and is a member of numerous organizations, among them the Aging Task Force for Healthy People 2020, the Gerontological Society of America, and the Honor Society of Nursing, Sigma Theta Tau. Ms. Berman earned a B.S. in nursing from New York University, a B.S. in health care administration from the University of Massachusetts, Amherst, and a Geriatric Scholar Certificate from the Consortium of New York Geriatric Education Centers.

Rear Admiral Jeffrey Brady, M.D., M.P.H., serves as an Assistant Surgeon General in the Commissioned Corps of the U.S. Public Health Service and is assigned to the Agency for Healthcare Research and Quality (AHRQ) as Director of the AHRQ Center for Quality Improvement and Patient Safety (CQuIPS). He is a member of the AHRQ Senior Leadership Team and leads a part of the Agency that conducts several AHRQ programs, including: Patient Safety Research, Healthcare-Associated Infections Program, the Patient Safety Organizations Program, the National Healthcare Quality & Disparities Reports (QDR), and the Consumer Assessment of Healthcare Providers and Systems (CAHPS) Program. The AHRQ Patient Safety Research Program, which RADM Brady led from 2009 to 2013, supports projects aimed at understanding and enhancing the safety of health care through approaches such as increased teamwork, prevention of healthcare-associated infections,
the effective use of medical simulation, expansion of a culture of patient safety, and other health care quality improvement initiatives.

**Helen Burstin**, M.D., M.P.H., FACP, is the Chief Scientific Officer of the National Quality Forum, a not-for-profit membership organization that works to catalyze healthcare improvement through quality measurement and reporting. In her role, Dr. Burstin provides strategic guidance to all NQF work from the perspective of current and emerging measurement science. She provides scientific oversight for the evaluation, endorsement and selection of quality measures and the transition to electronic performance measurement. Prior to joining NQF, Dr. Burstin was the Director of the Center for Primary Care, Prevention, and Clinical Partnerships at the Agency for Healthcare Research and Quality (AHRQ). She was selected as a 2015-2016 Baldrige Executive Fellow. Dr. Burstin is the author of more than 80 articles and book chapters on quality, safety and disparities. She is a Professorial Lecturer in the Department of Health Policy at George Washington University School of Public Health and a Clinical Associate Professor of Medicine at George Washington University where she serves as a preceptor in internal medicine.

**Pascale Carayon**, Ph.D., is Procter & Gamble Bascom Professor in Total Quality in the Department of Industrial and Systems Engineering, the Director of the Center for Quality and Productivity Improvement and the Founding Director of the Wisconsin Institute for Healthcare Systems Engineering at the University of Wisconsin-Madison. She leads the Systems Engineering Initiative for Patient Safety (SEIPS), an internationally known interdisciplinary research program that brings together researchers from human factors ergonomics with researchers from medicine, surgery, nursing, pharmacy and health services. Professor Carayon received her Engineer diploma from the Ecole Centrale de Paris, France, in 1984 and her Ph.D. in Industrial Engineering from the University of Wisconsin-Madison in 1988. Professor Carayon’s research belongs to the discipline of human factors engineering, in particular macroergonomics. Her scholarly contributions aimed at modeling, assessing and improving work systems (i.e. the system of tasks performed by individuals using various technologies in a physical and organizational environment) in order to enhance system performance and worker well-being. She has developed human factors and systems engineering methods and the SEIPS model to improve patient safety and health information technologies in complex healthcare settings. Professor Carayon’s research has been funded by the Agency for Healthcare Research and Quality, the National Science Foundation, the National Institutes for Health, various other federal agencies and foundations, and private industry. She is a Fellow of the Human Factors and Ergonomics Society and a Fellow of the International Ergonomics Association. She has published more than 140 journal publications, and is the editor of the Handbook of Human Factors and Ergonomics in Health Care and Patient Safety. She was a member of the IOM Committee on Diagnostic Error in Healthcare. She is the chair of the National Research Council Board on Human-Systems Integration. In 2016, Professor Carayon received the John M. Eisenberg Patient Safety and Quality Award for Individual Achievement. In 2015, 2016
and 2017, Becker’s Hospital Review selected her as one of the 50 experts leading the field of patient safety.

Christine Cassel, M.D., is the Planning Dean of the Kaiser Permanente School of Medicine. Previously, she was the President and CEO of the National Quality Forum. She has also served as president and CEO of the American Board of Internal Medicine and the ABIM Foundation, as Dean of the Oregon Health and Sciences University School of Medicine, Chair of the Department of Geriatrics at Mount Sinai Medical Center in New York, and Chief of General Internal Medicine at the University of Chicago. She is a leading national expert in geriatric medicine, medical ethics, health policy and quality of care. Dr. Cassel was one of 20 scientists chosen by President Obama to serve on the President’s Council of Advisors on Science and Technology (PCAST), which advised the President on science, technology, and innovation relevant to responsible and effective policy. She has led PCAST working groups that have made recommendations to the President on health information technology, systems engineering in healthcare, and technology to foster independence and quality of life in an aging population. Among her many professional achievements and honors, Dr. Cassel is a member of the Institute of Medicine, was President of the American College of Physicians, Chair of the American Board of Internal Medicine; President of the American Federation for Aging Research; and was a member of the Advisory Committee to the Director at the National Institutes of Health. She has received numerous honorary degrees and is a Fellow of the Royal Colleges of Medicine of the U.K. and Canada. She is author of over 200 articles and author or editor of 11 books. She has served on the boards of directors of Kaiser Foundation Health Plan and Hospitals, Premier Inc., and the Greenwall Foundation.

Carolyn Clancy, M.D., is a highly experienced and nationally recognized physician executive. She has oversight of VHA’s performance, quality, safety, risk management, systems engineering, auditing, oversight, ethics and accreditation programs. She leads more than 700 clinical and administrative professionals in the day-to-day operations of these key programmatic elements. Additionally, she serves in a direct consultative capacity to the Under Secretary for Health, serving as a national subject matter expert in her directorate. She works collaboratively, leading the strategic direction of the Veterans Health Administration. In her current position she works closely with Department leaders as well as Veterans Service Organizations, Congress and their constituents addressing the immediate and long term needs of our Nation’s Veterans. Prior to her current position, she served as the Interim Under Secretary for Health overseeing the nation’s largest integrated health care system, as well as ten years as the Director, Agency for Healthcare Research and Quality. Dr. Clancy, a general internist and health services researcher, is a graduate of Boston College and the University of Massachusetts Medical School. She holds an academic appointment at George Washington University School of Medicine; serves as Senior Associate Editor, Health Services Research and is a member of the Institute of Medicine. Dr. Clancy has contributed to eight academic text books and authored, co-authored and provided
invited commentary in more than 225 scholarly journal articles. She served as member of the National Quality Forum, Board of Directors, as the Chair of the AQA Alliance and served on the Board of Governors, Patient-Centered Outcomes Research Institute. An elected member of the National Academy of Medicine, Dr. Clancy was most recently presented with the 2016 NQF-TJC John M Eisenberg Award for quality and safety, has also received the 2014 Quality Champion Award, National Committee for Quality Assurance and was also named as Honorary Fellow, American Academy of Nursing.

Victor Dzau, M.D., is the President of the National Academy of Medicine (NAM), formerly the Institute of Medicine (IOM). In addition, he serves as Chair of the Health and Medicine Division Committee of the National Academies of Sciences, Engineering, and Medicine. He is Chancellor Emeritus and James B. Duke Professor of Medicine at Duke University and the past President and CEO of the Duke University Health System. Previously, Dr. Dzau was the Hersey Professor of Theory and Practice of Medicine and Chairman of Medicine at Harvard Medical School's Brigham and Women's Hospital, as well as Chairman of the Department of Medicine at Stanford University. Dr. Dzau has made a significant impact on medicine through his seminal research in cardiovascular medicine and genetics, his pioneering of the discipline of vascular medicine and his leadership in health care innovation. His important work on the renin angiotensin system (RAS) paved the way for the contemporary understanding of RAS in cardiovascular disease and the development of RAS inhibitors as widely used, lifesaving drugs. Dr. Dzau also pioneered gene therapy for vascular disease, and his recent work on stem cell paracrine mechanisms and the use of microRNA in direct reprogramming provides novel insight into stem cell biology and regenerative medicine. In his role as a leader in health care, Dr. Dzau has led efforts in health care innovation. His vision is for academic health sciences centers to lead the transformation of medicine through innovation, translation, and globalization. Leading this vision at Duke, he and his colleagues developed the Duke Translational Medicine Institute, the Duke Global Health Institute, the Duke-National University of Singapore Graduate Medical School, and the Duke Institute for Health Innovation. These initiatives create a seamless continuum from discovery and translational sciences to clinical care, and they promote transformative innovation in health.

Paul Epner, M.B.A., is the Executive Vice President and co-founder of the Society to Improve Diagnosis in Medicine (SIDM). He is also the Chair of the Coalition to Improve Diagnosis, a multi-organization collaboration. Paul is a Past President of the Clinical Laboratory Management Association (CLMA) where he also created the Increasing Clinical Effectiveness (ICE) initiative. He is a member of the CDC’s "Clinical Laboratory Integration into Healthcare Collaborative," a consultant to their Laboratory Medicine Best Practices program (an evidence-based practice initiative), and Chair of the Coordinating Council on the Clinical Laboratory Workforce’s (CCCLW) Taskforce on Measuring Testing-Related Value. He is also a collaborator on multiple funded research efforts.
Harvey Fineberg, M.D., Ph.D., is the president of the Gordon and Betty Moore Foundation. 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.

Stephen Friedhoff, M.D., is Senior Vice President of Clinical Programs and Strategy at Anthem. Prior to his current position, Dr. Friedhoff held the role of Chief Medical Officer of the Anthem Government Business Division and a similar role with Amerigroup Corporation prior to Amerigroup’s acquisition by Anthem. He has held several clinical and administrative positions over the course of his career. At Independence Blue Cross/AmeriHealth-New Jersey in Philadelphia, Pa., he assumed progressive responsibility including senior/regional medical director. He was also medical director with Health Net of the Northeast (formerly Qualmed Health Plans) in Philadelphia, Pa. and clinical faculty and medical director in the Virtua Family Medicine Residency Program, at Virtua Memorial Hospital in Mount Holly, N.J. He continued to practice Family Medicine in NJ part time until 2015. Dr. Friedhoff obtained his undergraduate degree at Rensselaer Polytechnic Institute in Troy, N.Y., summa cum laude, and his medical degree at the Rutgers–New Jersey Medical School in Newark, N.J. He completed his family medicine residency at Virtua Memorial Hospital in Mount Holly, N.J., where he served as chief resident and was the recipient of the New Jersey Resident of the Year Award by the New Jersey Academy of Family Physicians. Dr. Friedhoff is a certified health insurance executive through America’s Health Insurance Plans, a diplomat of the American Academy of Family Physicians and board certified by the American Board of Family Medicine. He holds active medical licenses in New Jersey, Florida, Kansas, Iowa and Louisiana. Dr. Friedhoff has also served on the board of trustees of
Samaritan Hospice in Marlton, N.J. and was a recipient of the "Home Care Physician of The Year" award in southern New Jersey.

Chris Goeschel, Sc.D., M.P.A., M.P.S., RN, FAAN, is the Assistant Vice President for Quality at MedStar Health, a 4.6 billion dollar health system in the Mid-Atlantic, that includes 10 acute care hospitals, nearly 300 primary care sites, a visiting nurse agency and variety of other ambulatory services. Her responsibilities include oversight and leadership for quality measurement and improvement. She is also an Associate faculty in the Johns Hopkins Bloomberg School of Public Health, where she teaches a required course in the Master of Hospital Administration program. Formerly the Director of Strategic Research Initiatives at the Johns Hopkins Armstrong Institute, and an Assistant Professor in the Johns Hopkins Schools of Medicine, Nursing and Public Health, Dr. Goeschel is a frequent speaker both nationally and internationally, with a particular interest in cultivating clinical and administrative leadership to improve the science of health care delivery. Her doctoral dissertation explored the relationship between hospital boards of trustees and quality and safety performance. She is a Fellow of the American Academy of Nursing. Dr. Goeschel has significant and diverse health care leadership experience: as a critical care nurse, a hospital executive, as developer and first executive for the Keystone Center for Patient Safety and Quality at the Michigan Health & Hospital Association, and as an implementation scientist. She collaborated with Dr. Peter Pronovost on groundbreaking efforts to reduce bloodstream infections in intensive care units in Michigan from 2003-2005, and was a member of his research team at Johns Hopkins from 2006-2013. She has contributed to large scale improvement projects in Spain, England, and Peru and to an AHRQ-funded initiative that spread the bloodstream infection reduction program to every state in the U.S. and Puerto Rico. In addition to her doctor of science in Health System Management Dr. Goeschel earned two masters degrees one in Public Administration and another in Pastoral Studies. She has served on the Board of Directors of the Maryland Patient Safety Center, was an examiner for the U.S. National Baldrige Performance Excellence Program in 2013 and 2014, and served on the National Quality Forum national steering committee for Hospital Associated Conditions, and on an NQF expert panel examining linkages between cost and quality of care. Dr. Goeschel has published more than 65 articles and several book chapters related to patient safety and the measurement and evaluation of safety efforts and was a member of the 2013-2015 Institute of Medicine Committee that will examined how to improve healthcare diagnoses in medicine. In addition to her MedStar responsibilities, she currently serves on the board of a multi hospital healthcare system in Michigan, chairs the Vizient Chief Quality Officers Steering Committee and is PI on the MedStar AHRQ ACTION III contract.
Mark Graber, M.D., FACP, is a Senior Fellow at RTI International, Professor Emeritus of Medicine at Stony Brook University, NY and President of the Society to Improve Diagnosis in Medicine. Dr. Graber is a national leader in the field of patient safety who originated Patient Safety Awareness Week in 2002, an event now recognized internationally. He is also a pioneer in efforts to address diagnostic errors in medicine. In 2008 he originated the Diagnostic Error in Medicine conference series, in 2011 he founded the Society to Improve Diagnosis in Medicine, and in 2014 he launched a new journal, DIAGNOSIS, devoted to improving the quality and safety of diagnosis, and reducing diagnostic error. Dr. Graber is the 2014 recipient of the John M Eisenberg Award from The Joint Commission and the National Quality Forum, recognizing individual achievement advancing patient safety.

David Hunt, M.D., FACS, is a general and vascular access surgeon who currently serves as the medical director for health IT adoption and patient safety in the Office of the National Coordinator (ONC). At ONC, he focuses on patient safety, health care disparities, and strengthening programs that promote the effective and safe implementation of electronic health records. Beyond his surgical practice, Dr. Hunt has years of hands-on experience at all levels of information technology from programmer to systems analyst and software developer. While working at the Centers for Medicare and Medicaid Services (CMS) from 2002 – 2007, he led two of the largest surgical quality and patient safety programs in the nation, the Surgical Care Improvement Project (SCIP) and the Medicare Patient Safety Monitoring System (MPSMS). Dr. Hunt was awarded a bachelor’s degree in biochemistry from the University of Rochester (NY) and a medical degree from the Howard University College of Medicine. He completed his residency in surgery at Howard University and became a diplomate of the American Board of Surgery in 1991. Practicing in both private and academic settings, Dr. Hunt served as a Clinical Assistant Professor of Surgery at Howard University, chair of surgical peer review at various hospitals in the Washington metropolitan area, and has been a fellow of the American College of Surgeons since 1993.

Allen Kachalia, M.D., J.D, is the Chief Quality Officer and Vice President for Quality and Safety at Brigham Health in Boston, Massachusetts. In this role, he oversees the institution’s inpatient and ambulatory quality and safety and patient experience initiatives. Allen is a general internist and practices as an academic hospitalist on the hospital wards with medical students and residents. Allen is also Associate Professor of Medicine at Harvard Medical School and Associate Professor of Health Policy and Management at the Harvard School of Public Health where he teaches a course on legal issues in clinical medicine. His research focuses on how the law affects medical care, particularly how liability system reform and the disclosure of medical error relate to the quality and safety of healthcare.
Christopher Koller, M.D., is President of the Milbank Memorial Fund and Publisher of the Milbank Quarterly. The Fund is a 112 year operating foundation that improves population health by connecting leaders with the best information and experience. Before joining the Fund in 2013, he served the state of Rhode Island for eight years as the country’s first health insurance commissioner, where he and his team aligned regulation and rate review with statutory authority to help promote delivery system reform in such areas as primary care transformation. Prior to that, he was CEO of Neighborhood Health Plan of Rhode Island. He is a member of the National Academy of Medicine’s Health Care Services Board and serves in numerous national and state health policy advisory capacities. Mr. Koller is also adjunct professor of community health in the School of Public Health at Brown University.

Shari Ling, M.D., currently serves as the Deputy Chief Medical Officer for the Centers for Medicare and Medicaid Services (CMS), and Medical Officer in the Center for Clinical Standards and Quality (CCSQ). She assists the CMS Chief Medical Officer in the Agency’s pursuit of better health care, healthier populations, and smarter spending. Dr. Ling’s committed focus is on the achievement of meaningful health outcomes for patients and families through the delivery of high quality, person-centered care, across all care settings. Her clinical focus and scientific interest is in the care of persons with dementia, multiple chronic conditions, and functional limitations. Dr. Ling represents CMS on several Health and Human Services (HHS) efforts. She leads the Clinical Services federal workgroup for the National Alzheimer’s Project Plan, and represents CMS on the workgroups to eliminate and prevent Healthcare Associated Infections (HAIs) and the National Strategy to Combat Antimicrobial Resistance. Dr. Ling is a board certified Geriatrician, Rheumatologist and Internist who received her medical training at Georgetown University School of Medicine and received her clinical training in Internal Medicine and Rheumatology at Georgetown University Medical Center, and Geriatric Medicine training at Johns Hopkins University. She served on the faculty of the Johns Hopkins School of Medicine for 5 years before joining the Intramural Research Program of the National Institutes of Health at the National Institute on Aging as a Staff Clinician to study human aging and age-associated chronic diseases with attention to musculoskeletal conditions and mobility function for 8 years. Dr. Ling is also a Gerontologist who served as the Clinical Services Co-director of the Andrus Older Adult Counseling Center after receiving her training in Direct Service from the Leonard Davis School at the University of Southern California.
Kathryn McDonald, Ph.D., M.M., has over 25 years of experience in health care, working in a variety of settings — industry, hospital and academia. She is the Executive Director of the Center for Health Policy and the Center for Primary Care and Outcomes Research (CHP/PCOR) at Stanford University, a Senior Scholar at the centers, and Associate Director for the Stanford-UCSF Evidence-based Practice Center (with RAND). She conducts research on healthcare quality and patient safety improvement, with an emphasis on building and assessing the evidence base related to measurement, interventions, and organizational context. She aims to make her research findings useful to key healthcare stakeholders — patients/families, clinicians, systems administrators and leaders. Her research portfolio includes numerous peer-reviewed publications, initial and ongoing development of the publicly released Agency for Healthcare Research and Quality (AHRQ) Quality Indicators (www.qualityindicators.ahrq.gov), reviews of patient safety practices (Making Healthcare Safer I and II), two series of evidence reports on quality improvement strategies (Closing the Quality Gap, Quality Kaleidoscope), creation of the Care Coordination Measures Atlas, and development of the Care Coordination Quality Measure for Primary Care (CCQM-PC). Building on her long-term commitment to patient safety, she recently served on the Institute of Medicine (now National Academy of Medicine) Committee on Diagnostic Error in Healthcare that produced the report Improving Diagnosis in Health Care, was the co-Chair for the Patient Engagement Committee for the Society to Improve Diagnosis in Medicine, and has led the Network of Patient Safety Databases contract team for the AHRQ Patient Safety Organization Program. She is a Past President of the Society for Medical Decision Making, holds a PhD in Health Policy from UC Berkeley, an MBA from Northwestern University, and a BS in chemical engineering from Stanford University.

Lisa McGiffert directs Consumers Union’s Safe Patient Project. Consumers Union is the policy and mobilization arm of Consumer Reports. This national project works on state and federal policies to end medical harm, focusing on healthcare-acquired infections, medical device safety, medical errors, and physician accountability. Beginning in 2003, the campaign developed a model law and initiated state laws to publish hospital infection rates and raise public awareness about the problem. Today because of this highly successful campaign, more than 30 states and the federal Medicare program require such reporting of all US hospitals. Recent work has included improving consumer information available about disciplined doctors (including requiring doctors on probation for sexual misconduct, gross negligence and substance abuse — to inform their patients) and antibiotic resistant infections and antibiotic overuse. McGiffert’s leadership includes collaboration with individuals who have personal experiences with medical harm. Collectively they have created a national activist network to make health care safer for patients. A leading national consumer voice on patient safety issues at conferences and with the media, in 2015 she was listed on Modern Healthcare’s 100 Most Influential People in HealthCare and was given the Ben Shimberg Award by the Citizens Advocacy Center for her work on physician accountability. In 2016 and
2017 she was named by Becker’s Hospital Review as one of 50 experts leading the field of patient safety.

Elizabeth McGlynn, Ph.D., is Vice President for Kaiser Permanente Research and Executive Director of the Kaiser Permanente Center for Effectiveness & Safety Research (CESR). She is the senior national executive leader for Research in Kaiser Permanente and is responsible for coordinating the development and implementation of the national research strategy, working with national and regional leadership to enhance the contribution of research to improved care for Kaiser Permanente members and the communities in which they live. She is also responsible for oversight of research administration, the ongoing development and use of the Kaiser Permanente Research Bank, and two internal research and analytic groups. Dr. McGlynn is an internationally known expert on methods for evaluating the appropriateness and quality of health care delivery. Prior to joining Kaiser Permanente, Dr. McGlynn was the Associate Director of RAND Health and held the RAND Distinguished Chair in Health Care Quality. She received AcademyHealth’s Distinguished Investigator Award in 2012. Dr. McGlynn is a member of the National Academy of Medicine. She chairs the American Board of Internal Medicine Foundation Board of Trustees and the National Advisory Council for the Agency for Healthcare Research and Quality. She is the former chair of and serves on the Institute for Healthcare Improvement’s Scientific Advisory Group. She is on the editorial boards of JAMA, Health Services Research, and the Milbank Quarterly.

David Newman-Toker, M.D., Ph.D., is an internationally-recognized leader in neuro-otology, acute stroke diagnosis, and the study of diagnostic errors. He completed his undergraduate studies at Yale University, his medical degree at University of Pennsylvania, his residency training at Harvard University, and his doctoral degree in clinical research methods at the Johns Hopkins Bloomberg School of Public Health. He is Professor of Neurology, Otolaryngology, and Emergency Medicine at the Johns Hopkins University School of Medicine. He serves as Director of the Division of Neuro-Visual & Vestibular Disorders in the Department of Neurology and as Director of the Armstrong Institute Center for Diagnostic Excellence. He is a Core Faculty member in the Brain Injury Outcomes Clinical Trials Unit and Trial Innovation Center. Dr. Newman-Toker’s clinical interest is in diagnosis of acute disorders affecting the brainstem and cranial nerves, particularly stroke. His research mission is to achieve better outcomes through better diagnosis. He has been the principal investigator for multiple NIH, AHRQ, and foundation grants. He has published more than 90 journal articles and given more than 170 invited lectures on dizziness and diagnostic errors. He is a founding member of the Society to Improve Diagnosis in Medicine (SIDM) and is active in the national movement to eliminate patient harms from diagnostic error. He currently serves on SIDM’s Board of Directors and as Chair of its Policy Committee. He currently sits on the National Quality Forum (NQF) expert panel developing national measures of diagnostic accuracy and error.
Ann Louise Puopolo, BSN, RN, is the Vice President of Enterprise Patient Safety at CVS Health. She is responsible for setting the strategic direction for the enterprise patient safety program and fostering a culture of safety across seven business units. These units include Retail, Mail, Specialty Mail and Retail, long term care and infusion pharmacies as well as the MinuteClinics. With her team of patient safety experts, Ann Louise leads the strategic and operational planning to mitigate risk and improve patient safety by proactively addressing patient safety risks, utilizing malpractice data insights, patient safety event reports, root cause analyses, patient complaints and other data sources to identify the causal and contributory factors associated with medical errors. She guides the businesses in utilizing this safety intelligence data to identify and prioritize high risk vulnerabilities and set annual patient safety plans to include metrics to evaluate impact of improvement activities. In 2014, under Ann Louise’s leadership, CVS Health registered with the Agency of Healthcare Research and Quality (AHRQ) and received approval to function as a Patient Safety Organization (PSO). The federal and state level confidentiality and peer review protections afforded through the Patient Safety Quality Improvement Act (PSQIA) of 2005 further allows Ann Louise and her team to advance the patient safety agenda across CVS Health. Prior to joining CVS Health, Ann Louise was the Vice President of Patient Safety for CRICO (Risk Management Foundation of the Harvard Medical Institutions). In that role, she was responsible for a team of experts who analyzed malpractice claims and provided consultative services to the Harvard Medical Institutions. She too was responsible for the leadership of the Academic Medical Center Patient Safety Organization (AMC/PSO), a component entity of the Risk Management Foundation. Ann Louise has over 16 years of health services research experience and served as a Director of Research at Brigham & Women’s Hospital and the Harvard School of Public Health leading studies with funding support from the Robert Wood Johnson Foundation (RWJ) and AHRQ focused on end of life decision making, medical malpractice and patient safety. Ann Louise received a Bachelor’s of Science in Nursing degree from Vanderbilt University and practiced as a critical care nurse at Boston’s Beth Israel Deaconess Hospital.

Sue Sheridan, M.B.A., MIM, D.H.L., is currently the Patient and Family Engagement Adviser at CMS, CCSQ, QIIQ where she is helping integrate the Person and Family Engagement Strategy throughout the CMS community. Previous to her joining CMS, Sue served as the Director of Patient Engagement for the Patient-Centered Outcomes Research Institute (PCORI) where she lead the Patient Engagement team, which developed and implemented programs, and processes to encourage meaningful engagement of patients and other stakeholders in all PCORI’s activities and the research that they funded. Before joining PCORI, Sheridan was the external lead of the Patients for Patient Safety program at the World Health Organization (WHO), where she helped develop and implement a global network of patients who built country and regional strategic plans for patient engagement for various WHO initiatives. Sheridan had previously spent 10 years in patient advocacy inspired by adverse family experiences in the healthcare system. She
cofounded and is past president of Parents of Infants and Children with Kernicterus (brain damage from jaundice), who engaged with the healthcare system to implement a new standard of care in jaundice management. She is also cofounder of Consumers Advancing Patient Safety, which helps organizations engage patients as partners in developing patient-safety solutions. Prior to her leadership in patient engagement, she worked as a finance banker for international trade. Sue received her BA from Albion College, her MIM and MBA from the Thunderbird School of Global Management and her DHL from Adrian College.

Hardeep Singh, M.D., M.P.H. is a general internist and Chief of Health Policy, Quality & Informatics Program based at the Houston VA Research Center of Innovation and Baylor College of Medicine. He leads a portfolio of research and implementation activities in reducing diagnostic errors and improving the use of health information technology. His research has informed several national patient safety initiatives and policy reports, including those by the National Academy of Medicine (formerly the IOM), US Department of Health and Human Services, National Quality Forum, American Medical Association, Agency for Healthcare Research and Quality, and the WHO. In 2012, he received the AcademyHealth Alice S. Hersh New Investigator Award for high impact research and in 2014, received the prestigious Presidential Early Career Award for Scientists and Engineers (PECASE) from President Obama for pioneering work in the field. His multidisciplinary team's work on improving diagnosis received the 2016 VA Health System Impact Award, which honors research that significantly impacts clinical practice or policy. In addition to co-developing the national VA policy on diagnostic test results communication in 2015, Hardeep co-chaired the National Quality Forum committee on recommendations for health IT safety measurement and co-developed the "ONC SAFER Guides" that provide national recommendations for safe electronic health record use. In 2014, he was elected as a Fellow of the American College of Medical Informatics for significant and sustained contributions to biomedical informatics. He currently serves on the federal Clinical Laboratory Improvement Advisory Committee, which advises the CDC, FDA and CMS, and as an Associate Editor for journal Diagnosis.

George Thibault, M.D., became the seventh president of the Josiah Macy Jr. Foundation in January 2008. Immediately prior to that, he served as Vice President of Clinical Affairs at Partners Healthcare System in Boston and Director of the Academy at Harvard Medical School (HMS). He was the first Daniel D. Federman Professor of Medicine and Medical Education at HMS and is now the Federman Professor, Emeritus. Dr. Thibault previously served as Chief Medical Officer at Brigham and Women’s Hospital and as Chief of Medicine at the Harvard affiliated Brockton/West Roxbury VA Hospital. He was Associate Chief of Medicine and Director of the Internal Medical Residency Program at the Massachusetts General Hospital (MGH). At the MGH he also served as Director of the Medical ICU and the Founding Director of the Medical Practice Evaluation Unit. For nearly four decades at HMS, Dr. Thibault played leadership roles in many
aspects of undergraduate and graduate medical education. He played a central role in the New Pathway Curriculum reform and was a leader in the new Integrated Curriculum reform at HMS. He was the Founding Director of the Academy at HMS, which was created to recognize outstanding teachers and to promote innovations in medical education. Throughout his career he has been recognized for his roles in teaching and mentoring medical students, residents, fellows and junior faculty. In addition to his teaching, his research has focused on the evaluation of practices and outcomes of medical intensive care and variations in the use of cardiac technologies.

Dr. Thibault is Chairman of the Board of the MGH Institute of Health Professions, Chairman of the Board of the New York Academy of Medicine, and he serves on the Boards of the New York Academy of Sciences, the Institute on Medicine as a Profession and the Arnold P. Gold Foundation. He served on the President’s White House Fellows Commission and for twelve years he chaired the Special Medical Advisory Group for the Department of Veteran’s Affairs. He is past President of the Harvard Medical Alumni Association and Past Chair of Alumni Relations at HMS. He is a member of the Institute of Medicine of the National Academy of Sciences. Dr. Thibault graduated summa cum laude from Georgetown University in 1965 and magna cum laude from Harvard Medical School in 1969. He completed his internship and residency in Medicine and fellowship in Cardiology at Massachusetts General Hospital (MGH). He also trained in Cardiology at the National Heart and Lung Institute in Bethesda and at Guys Hospital in London, and served as Chief Resident in Medicine at MGH. Dr. Thibault has been the recipient of numerous awards and honors from Georgetown (Ryan Prize in Philosophy, Alumni Prize, and Cohongaroton Speaker) and Harvard (Alpha Omega Alpha, Henry Asbury Christian Award and Society of Fellows). He has been a visiting Scholar both at the Institute of Medicine and Harvard’s Kennedy School of Government and a Visiting Professor of Medicine at numerous medical schools in the U.S. and abroad.
BREAK OUT DISCUSSION GUIDE

Thank you for participating in the Break Out Discussion Session at the Improving Diagnosis in Health Care: Implementation Workshop. Three break out groups will be meeting from 12:15 pm – 2:00 pm ET. We encourage you to participate actively in these discussions. To help you prepare for the breakout session discussions, the planning group and workshop attendees have developed a number of questions for your consideration in advance of the workshop (please see following pages).

- **Break Out Group 1: Improving Diagnosis in Clinical Practice**
  - Moderators: Elisabeth Belmont and Christine Cassel
  - Location: NAS 125
  - WebEx Meeting Information (see instructions following the breakout discussion guide)
    - Meeting Number: 746 730 269
    - Meeting Password: 85fPP3SD

- **Break Out Group 2: Improving Diagnosis through Health Care Professional Education**
  - Moderators: Christine Goeschel and George Thibault
  - Location: NAS 250
  - WebEx Meeting Information (see instructions following the breakout discussion guide)
    - Meeting Number: 747 632 030
    - Meeting Password: breakout2

- **Break Out Group 3: Patient-Centered Health Care, Education and Policy to Improve Diagnosis**
  - Moderators: Pascale Carayon and Kathryn McDonald
  - Location: NAS Board Room
  - WebEx Meeting Information (see instructions following the breakout discussion guide)
    - Meeting Number: 745 986 403
    - Meeting Password: qNM3mKPM

**Role of the moderators**
- Provide participants with the objectives and goals of the session, facilitate discussion, and take notes on key themes that emerge from discussions
- Summarize key themes in the 1-hour Report Back Session

**Role of the breakout session attendees**
- Discuss your interest in improving diagnosis
- Suggest opportunities to advance progress in improving diagnosis and listen to other attendee’s perspectives and input
Break Out Group 1: Improving Diagnosis in Clinical Practice
Moderators: Elisabeth Belmont and Chris Cassel

DISCUSSION QUESTIONS

• Is your organization measuring diagnostic performance? If so, how does your organization measure success in improving diagnostic performance? What metrics is your organization tracking? Are these metrics shared with the institution’s Board Quality Committee, who in turn reports on these metrics to the Governing Board?

• Has your organization developed any tools or practices to improve diagnostic performance? Are any strategies relevant to busy outpatient practices? How is your organization evaluating the effectiveness of tools and practices to improve diagnostic performance?

• Does your organization have any data on whether such tools or practices are making a meaningful difference in improving diagnostic performance? Is the data specific to diagnostic error or quality more generally?

• What are the most effective tools and/or strategies (not necessarily technology driven) you know of to synthesize clinical data to support decision making in diagnosis? What makes them effective?

• Do you think EMRs have improved or exacerbated efforts to improve diagnosis in clinical practice?

• What training specific to diagnostic error is being provided to physicians, other clinicians, and students at your organization?

• Does your organization actively engage patients in promoting discussion about the approach to their own diagnosis? If so, how does that work? What strategies are most effective?

• How can the ordering of diagnostic tests and procedures, and communication of such results, be better managed to improve diagnostic performance?

• What challenges has your organization faced in your efforts to improve diagnosis?

• How can we improve diagnosis when the external environment influencing health care delivery may not reward diagnostic accuracy?

• Can we develop processes that embed learning from diagnostic errors in the quality agenda and clinical operations? What are some of the risks and/or benefits from such an effort?

• From your perspective, what steps should be taken to improve diagnosis in health care? What are the most promising “shovel ready” solutions to overcoming those obstacles? Is there “low hanging fruit”?

• Which strategies can be implemented in the short-term, and which strategies might be more suitable for longer-term implementation?

• What collaborations are needed to improve diagnosis in clinical practice?

• What sorts of resources (e.g., financial, expertise, research) are needed to improve diagnosis in clinical practice? Can other quality and patient safety efforts be leveraged to improve diagnosis?

• How can we assess (both quantitatively and qualitatively) whether the actions taken to improve diagnosis have had an impact? In other words, how will we know if we have made a difference?
Break Out Group 2: Improving Diagnosis through Health Care Professional Education

Moderators: Chris Goeschel and George Thibault

DISCUSSION QUESTIONS

• What efforts are currently underway to improve health care professional education related to diagnosis?
• From your particular perspective, what steps should be taken to improve health care professional education?
• What are some of the challenges involved in addressing the diagnostic process and diagnostic errors in health professional education?
• What are some of the opportunities for practicing physicians improve their diagnostic performance?
• What are the roles of different stakeholder groups in improving education around diagnosis (e.g., educators, health care professional societies and boards, accreditation organizations, medical malpractice insurers)?
• How can feedback on diagnostic performance be better incorporated into clinician education?
• What are the opportunities to partner with medical malpractice insurers to improve health professional education?
• What sorts of resources are needed to improve diagnosis through health professional education?
• How can we assess (both quantitatively and qualitatively) whether the actions taken to improve diagnosis have had an impact? In other words, how will we know if we have made a difference?
Break Out Group 3: Patient-Centered Health Care, Education and Policy to Improve Diagnosis
Moderators: Pascale Carayon and Kathy McDonald

DISCUSSION QUESTIONS

• What are the most important priorities currently for patient-centered and patient-partnered initiatives to improve diagnosis and reduce diagnostic error?
• How can patient advocates improve the emphasis on patient-centered policies related to diagnosis in clinician practices, hospitals, and within the larger policy arena?
• How can patient involvement in the diagnostic process be encouraged at all levels, including in the creation and implementation of policy, in addition to clinician-patient interactions?
• Are you/Is your organization considering opportunities to better involve patients and families in promoting and improving patient-centeredness in diagnosis? What are examples of progress in this area?
• Are you/Is your organization considering opportunities to improve patient-centered education? What are examples of progress in this area?
• Can initiatives that promote patient-centeredness in clinical practice be leveraged to include a specific focus on improving diagnosis?
• What are the opportunities to use advances in health information technologies to improve patient-centeredness in health care while simultaneously improving diagnosis?
• How can social media and health applications be leveraged to improve diagnosis?
• What should be the next avenues of research to better incorporate the patient experience in diagnosis research, practice, and policy?
• How can patients be better prepared to participate in diagnosis, especially among individuals who may have limited health literacy?
• How can we assess (both quantitatively and qualitatively) whether the actions taken to improve diagnosis have had an impact? In other words, how will we know if we have made a difference?
Improving Diagnosis in Health Care: Implementation Workshop

Breakout Group 1: Improving Diagnosis in Clinical Practice

WebEx Information

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Meeting information
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Topic: Breakout Group 1: Improving Diagnosis in Clinical Practice
Date: Monday, July 17, 2017
Time: 12:15 pm, Eastern Daylight Time (New York, GMT-04:00)
Meeting Number: 746 730 269
Meeting Password: 85fPP3SD

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You can contact me at:
nlubin@nas.edu

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Improving Diagnosis in Health Care: Implementation Workshop

Breakout Group 2: Improving Diagnosis through Health Care Professional Education

WebEx Information

Meeting information

Topic: Break Out Group 2: Improving Diagnosis through Health Care Professional Education
Date: Monday, July 17, 2017
Time: 12:15 pm, Eastern Daylight Time (New York, GMT-04:00)
Meeting Number: 747 632 030
Meeting Password: breakout2

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Call-in number: 1-845-977-0098 (US)
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Improving Diagnosis in Health Care: Implementation Workshop

Breakout Group 3: Patient-Centered Health Care, Education, and Policy to Improve Diagnosis

WebEx Information

Meeting information

Topic: Patient-Centered Health Care, Education, and Policy to Improve Diagnosis
Date: Monday, July 17, 2017
Time: 12:15 pm, Eastern Daylight Time (New York, GMT-04:00)
Meeting Number: 745 986 403
Meeting Password: qNM3mKPM

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Teleconference information

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Show global numbers: https://www.tcconline.com/offSite/OffSiteController.jsp?cc=4201573718
Conference Code: 420 157 3718

For assistance

If you experience any technical difficulties, please contact technical support at 1-800-508-8758.
You can contact me at:
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Improving Diagnosis in Health Care

Quality Chasm Series

Getting the right diagnosis is a key aspect of health care: It provides an explanation of a patient’s health problem and informs subsequent health care decisions. For decades, diagnostic errors—incorrect or delayed diagnoses—have represented a blind spot in the delivery of quality health care. Diagnostic errors persist throughout all settings of care and continue to harm an unacceptable number of patients.

Improving the diagnostic process is not only possible, but also represents a moral, professional, and public health imperative. The National Academies of Sciences, Engineering, and Medicine, with support from a broad coalition of sponsors, convened an expert committee to synthesize what is known about diagnostic error and propose recommendations to improve diagnosis.

Improving Diagnosis in Health Care, a continuation of the landmark Institute of Medicine reports To Err Is Human: Building A Safer Health System (2000) and Crossing the Quality Chasm: A New Health System for the 21st Century (2001) finds that diagnosis—and, in particular, the occurrence of diagnostic errors—has been largely unappreciated in efforts to improve the quality and safety of health care. The result of this inattention is significant: The committee concluded that most people will experience at least one diagnostic error in their lifetime, sometimes with devastating consequences. Urgent change is warranted to address this challenge.

WHAT IS DIAGNOSTIC ERROR?
The committee defines diagnostic error as “the failure to (a) establish an accurate and timely explanation of the patient’s health problem(s) or (b) communicate that explanation to the patient.” The definition frames diagnostic error from the patient’s perspective, because a patient bears the ultimate risk of harm from diagnostic errors. It also reflects the iterative and complex nature of the diagnostic process, as well as the need for a diagnosis to convey more than simply a label of a disease.

Diagnostic errors stem from many causes, including inadequate collaboration and communication among clinicians, patients, and their families; a health care work system that is not well designed to support the diagnostic process; limited feedback...
to clinicians about diagnostic performance; and a culture that discourages transparency and disclosure of diagnostic errors, which in turn may impede attempts to learn from these events and improve diagnosis.

Diagnostic errors may cause harm to patients by preventing or delaying appropriate treatment, providing unnecessary or harmful treatment, or resulting in psychological or financial repercussions. It is estimated that 5 percent of U.S. adults who seek outpatient care each year experience a diagnostic error. Postmortem examination research spanning decades has shown that diagnostic errors contribute to approximately 10 percent of patient deaths, and medical record reviews suggest that they account for 6 to 17 percent of adverse events in hospitals. Furthermore, diagnostic errors are the leading type of paid medical malpractice claims and are almost twice as likely to have resulted in the patient’s death compared to other claims.

The committee recognized that a sole focus on reducing diagnostic errors will not achieve the extensive change necessary. Instead, a broader focus on improving diagnosis is warranted. To provide a framework for this dual focus, the committee developed a conceptual model to articulate the diagnostic process (see figure), describe work system factors that influence this process, and identify opportunities to improve the diagnostic process.

GOALS FOR IMPROVEMENT
The committee outlined eight goals to reduce diagnostic error and improve diagnosis (see insert for the report’s recommendations, anchored to each of the eight goals):

The committee's conceptual model of the diagnostic process.
Facilitate more effective teamwork in the diagnostic process among health care professionals, patients, and their families.
The diagnostic process hinges on successful collaboration among health care professionals, patients, and their families. Patients and their families are critical partners in the diagnostic process. In addition, all health care professionals need to be well prepared and supported to engage in diagnostic teamwork.

Enhance health care professional education and training in the diagnostic process.
Getting the right diagnosis depends on all health care professionals involved in the diagnostic process receiving appropriate education and training. Improved emphasis on diagnostic competencies and feedback on diagnostic performance are needed.

Ensure that health information technologies (IT) support patients and health care professionals in the diagnostic process.
Although health IT has the potential to improve diagnosis and reduce diagnostic errors, many experts are concerned that it currently is not effectively facilitating the diagnostic process and may even be contributing to errors. Collaboration among health IT vendors, users, and the Office of the National Coordinator for Health Information Technology is needed to better align health IT with the diagnostic process.

Develop and deploy approaches to identify, learn from, and reduce diagnostic errors and near misses in clinical practice.
Few health care organizations have processes in place to identify diagnostic errors and near misses in clinical practice. But collecting this information, learning from these experiences, and implementing changes are critical for achieving progress. Health care professional societies can also be engaged to identify high-priority areas to improve diagnosis.

Establish a work system and culture that supports the diagnostic process and improvements in diagnostic performance.
The work system and culture of many health care organizations could better support the diagnostic process. For example, health care organizations should promote a non-punitive culture that values feedback on diagnostic performance, ensure effective communication in diagnostic testing, and design a work system that supports team members involved in the diagnostic process, including integrating error recovery mechanisms.

Develop a reporting environment and medical liability system that facilitates improved diagnosis through learning from diagnostic errors and near misses.
There is a need for safe environments, without the threat of legal discovery or disciplinary action, where diagnostic errors, near misses, and adverse events can be analyzed and learned from in order to improve diagnosis and prevent diagnostic errors. Voluntary reporting efforts should be encouraged and evaluated for their effectiveness. Reforms to the medical liability system are needed to make health care safer by encouraging transparency and disclosure of medical errors, including diagnostic errors.

Diagnostic errors may cause harm to patients by preventing or delaying appropriate treatment, providing unnecessary or harmful treatment, or resulting in psychological or financial repercussions.
Design a payment and care delivery environment that supports the diagnostic process.

Payment likely influences the diagnostic process and the occurrence of diagnostic errors. For example, fee-for-service payment lacks incentives to coordinate care, and distortions between procedure-oriented and cognitive-oriented care may be diverting attention from important tasks in the diagnostic process. A fundamental research need is an improved understanding of the impact of payment and care delivery models on diagnosis.

Provide dedicated funding for research on the diagnostic process and diagnostic errors.

Federal resources devoted to diagnostic research are overshadowed by those devoted to treatment. Dedicated, coordinated funding for research on diagnosis and diagnostic error is warranted. Public–private collaboration and coordination can help extend financial resources to address research areas of mutual interest.

CONCLUSION

Without a dedicated focus on improving diagnosis, diagnostic errors will likely worsen as the delivery of health care and the diagnostic process continue to increase in complexity. Just as the diagnostic process is a collaborative activity, improving diagnosis will require collaboration and a widespread commitment to change among health care professionals, health care organizations, patients and their families, researchers, and policy makers. The committee’s recommendations contribute to the growing momentum for change in this crucial area of health care quality and safety.
## RECOMMENDATIONS

### Goal 1: Facilitate more effective teamwork in the diagnostic process among health care professionals, patients, and their families

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| **In recognition that the diagnostic process is a dynamic team-based activity, health care organizations should ensure that health care professionals have the appropriate knowledge, skills, resources, and support to engage in teamwork in the diagnostic process.** To accomplish this, they should facilitate and support:  
• Interprofessional and intraprofessional teamwork in the diagnostic process.  
• Collaboration among pathologists, radiologists, other diagnosticians, and treating health care professionals to improve diagnostic testing processes. | **Health care professionals and organizations should partner with patients and their families as diagnostic team members and facilitate patient and family engagement in the diagnostic process, aligned with their needs, values, and preferences. To accomplish this, they should:**  
• Provide patients with opportunities to learn about the diagnostic process.  
• Create environments in which patients and their families are comfortable engaging in the diagnostic process and sharing feedback and concerns about diagnostic errors and near misses.  
• Ensure patient access to electronic health records (EHRs), including clinical notes and diagnostic testing results, to facilitate patient engagement in the diagnostic process and patient review of health records for accuracy.  
• Identify opportunities to include patients and their families in efforts to improve the diagnostic process by learning from diagnostic errors and near misses. |

### Goal 2: Enhance health care professional education and training in the diagnostic process

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| **Educators should ensure that curricula and training programs across the career trajectory:**  
• Address performance in the diagnostic process, including areas such as clinical reasoning; teamwork; communication with patients, their families, and other health care professionals; appropriate use of diagnostic tests and the application of these results on subsequent decision making; and use of health information technology (IT).  
• Employ educational approaches that are aligned with evidence from the learning sciences. | **Health care professional certification and accreditation organizations should ensure that health care professionals have and maintain the competencies needed for effective performance in the diagnostic process, including the areas listed in Recommendation 2A.** |

### Goal 3: Ensure that health information technologies support patients and health care professionals in the diagnostic process

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| **Health IT vendors and the Office of the National Coordinator for Health Information Technology (ONC) should work together with users to ensure that health IT used in the diagnostic process demonstrates usability, incorporates human factors knowledge, integrates measurement capability, fits well within clinical workflow, provides clinical decision support, and facilitates the timely flow of information among patients and health care professionals involved in the diagnostic process.** | **ONC should require health IT vendors to meet standards for interoperability among different health IT systems to support effective, efficient, and structured flow of patient information across care settings to facilitate the diagnostic process by 2018.** | **The Secretary of the U.S. Department of Health and Human Services (HHS) should require health IT vendors to:**  
• Routinely submit their products for independent evaluation and notify users about potential adverse effects on the diagnostic process related to the use of their products.  
• Permit and support the free exchange of information about real-time user experiences with health IT design and implementation that adversely affect the diagnostic process. |

### Goal 4: Develop and deploy approaches to identify, learn from, and reduce diagnostic errors and near misses in clinical practice

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| **Accreditation organizations and the Medicare conditions of participation should require that health care organizations have programs in place to monitor the diagnostic process and identify, learn from, and reduce diagnostic errors and near misses in a timely fashion. Proven approaches should be incorporated into updates of these requirements.** | **Health care organizations should:**  
• Monitor the diagnostic process and identify, learn from, and reduce diagnostic errors and near misses as a component of their research, quality improvement, and patient safety programs.  
• Implement procedures and practices to provide systematic feedback on diagnostic performance to individual health care professionals, care teams, and clinical and organizational leaders. | **HHS should provide funding for a designated subset of health care systems to conduct routine postmortem examinations on a representative sample of patient deaths.** | **Health care professional societies should identify opportunities to improve accurate and timely diagnoses and reduce diagnostic errors in their specialties.** |
Goal 5: Establish a work system and culture that supports the diagnostic process and improvements in diagnostic performance

RECOMMENDATION 5

Health care organizations should:
• Adopt policies and practices that promote a non-punitive culture that values open discussion and feedback on diagnostic performance.
• Design the work system in which the diagnostic process occurs to support the work and activities of patients, their families, and health care professionals and to facilitate accurate and timely diagnoses.
• Develop and implement processes to ensure effective and timely communication between diagnostic testing health care professionals and treating health care professionals across all health care delivery settings.

Goal 6: Develop a reporting environment and medical liability system that facilitates improved diagnosis by learning from diagnostic errors and near misses

RECOMMENDATION 6A

The Agency for Healthcare Research and Quality (AHRQ) or other appropriate agencies or independent entities should encourage and facilitate the voluntary reporting of diagnostic errors and near misses.

RECOMMENDATION 6B

AHRQ should evaluate the effectiveness of patient safety organizations (PSOs) as a major mechanism for voluntary reporting and learning from these events and modify the PSO common formats for reporting of patient safety events to include diagnostic errors and near misses.

RECOMMENDATION 6C

States, in collaboration with other stakeholders (health care organizations, professional liability insurance carriers, state and federal policy makers, patient advocacy groups, and medical malpractice plaintiff and defense attorneys), should promote a legal environment that facilitates the timely identification, disclosure, and learning from diagnostic errors. Specifically, they should:
• Encourage the adoption of communication and resolution programs (CRPs) with legal protections for disclosures and apologies under state laws.
• Conduct demonstration projects of alternative approaches to the resolution of medical injuries, including administrative health courts and safe harbors for adherence to evidenced-based clinical practice guidelines.

RECOMMENDATION 6D

Professional liability insurance carriers and captive insurers should collaborate with health care professionals on opportunities to improve diagnostic performance through education, training, and practice improvement approaches and increase participation in such programs.

Goal 7: Design a payment and care delivery environment that supports the diagnostic process

RECOMMENDATION 7A

As long as fee schedules remain a predominant mechanism for determining clinician payment, the Centers for Medicare & Medicaid Services (CMS) and other payers should:
• Create current procedural terminology (CPT) codes and provide coverage for additional evaluation and management activities not currently coded or covered, including time spent by pathologists, radiologists, and other clinicians in advising ordering clinicians on the selection, use, and interpretation of diagnostic testing for specific patients.
• Reorient value fee tables to more appropriately value the time spent with patients in evaluation and management activities.
• Modify documentation guidelines for evaluation and management services to improve the accuracy of information in the EHR and to support decision making in the diagnostic process.

RECOMMENDATION 7B

CMS and other payers should assess the impact of payment and care delivery models on the diagnostic process, the occurrence of diagnostic errors, and learning from these errors.

Goal 8: Provide dedicated funding for research on the diagnostic process and diagnostic errors

RECOMMENDATION 8A

Federal agencies, including HHS, the U.S. Department of Veterans Affairs, and the United States Department of Defense, should:
• Develop a coordinated research agenda on the diagnostic process and diagnostic errors by the end of 2016.
• Commit dedicated funding to implementing this research agenda.

RECOMMENDATION 8B

The federal government should pursue and encourage opportunities for public–private partnerships among a broad range of stakeholders, such as the Patient-Centered Outcomes Research Institute, foundations, the diagnostic testing and health IT industries, health care organizations, and professional liability insurers to support research on the diagnostic process and diagnostic errors.

To download the full report and to find additional resources, visit nas.edu/improvingdiagnosis