Graduate Medical Education Outcomes and Metrics: a Workshop

October 10-11, 2019

NAS Room 120
2101 Constitution Ave., NW
Washington, DC 20001
**GME Outcomes and Metrics Workshop**  
**October 10-11, 2019**

**Briefing Materials**

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GME Outcomes and Metrics Workshop

Health and Medicine Division
Board on Health Care Services

Agenda | October 10-11, 2019 | NAS Building | Washington, DC
Access remotely at: https://nasem.zoom.us/j/745821962

Thursday, October 10, 2019
2101 Constitution Ave., NW
Washington, DC 20001
Room 120

10:00 a.m.  Breakfast

10:30 a.m.  Welcome and Brief Background
            Sharyl J. Nass, PhD

10:35 a.m.  The Quest to Utilize GME Data to Optimize Outcomes
            Debra Weinstein, MD

11:00 a.m.  What ‘Big Data’ Can Accomplish
            Anupam Jena, MD, PhD

11:35 a.m.  Overview of the Current State of GME-related Data
            Marc Triola, MD

12:15 p.m.  Lunch

1:00 p.m.   Panel Presentation and Discussion: Lessons from Past and Current Efforts
            Facilitator: Dorothy Andriole, MD
            a. Procedural Learning and Safety Collaborative - Brian George, MD, MA
            b. Association of Pediatric Program Director’s Longitudinal Educational Assessment Research Network (APPD LEARN) - Alan Schwartz, PhD
            c. NYU Education Data Warehouse - Marc Triola, MD
            d. Data Commons - Hershel Alexander, PhD

2:30 p.m.   Break-out Session 1
            GROUP 1: Institutional GME Leaders (Room 118)
            Facilitator: Debra Weinstein, MD
            1. What questions should a data-sharing pilot focus on?
2. What data should be collected in common and shared among institutions to address the chosen set of questions?
3. What level of anonymity at the individual, program, and institutional level is needed for data shared within the pilot group?

GROUPS 2A (Room 227) and 2B (Room 114): Organizational Leaders
Facilitators: Marion Couch, MD, PhD, MBA (2A) and William Pinsky, MD (2B)
1. Can an inventory of available data and data-sharing policies be circulated to GME leaders and researchers by the end of 2020?
2. Can redundant areas of data collection across organizations be addressed to reduce administrative effort (e.g. via a central repository or data transfers)?
3. What is needed/what obstacles must be overcome to contribute data to a central repository or share across organizations?

GROUP 3: Content Experts (Room 120)
Facilitator: Marc Triola, MD
1. Identify the key requirements for a comprehensive, longitudinal, national GME data warehouse or registry with individually-identified (coded) data.
2. Recommend the best approach (e.g. single platform/warehouse vs. aggregate from multiple sources, etc.)
3. How should priorities and development agenda be set?

3:45 p.m. Break

4:00 p.m. Report-back and Discussion
Facilitator: Susan Kirk, MD
a. Institutional GME Leaders
b. Organizational Leaders
c. Content Experts

5:30 p.m. ADJOURN

Friday, October 11, 2019
2101 Constitution Ave., NW
Washington, DC 20001
Room 120

7:30 a.m. Breakfast

8:00 a.m. Publicly Available Physician Data, Now and in the Future
Allison Oelschlaeger, CMS
8:45 a.m.  **Break-out Session 2**
GROUP 1: Room 118  
GROUP 2: Room 120  
GROUP 3: Room 227

1. What are the next steps, with specific goals for 2020?
2. Recommend a high-level structure. What are the implications in terms of technical format, and what are the major cost drivers? Available resources?
3. What is the best approach to data governance and level of anonymity?
4. How would GME programs/sponsoring institutions/national organizations/researchers access the data?

10:00 a.m.  **Break**

10:15 a.m.  **Report-back and Discussion**
Facilitator: *Vineet Arora, MD, MAPP*

11:15 a.m.  **Organization and Governance: Panel and Group Discussion**
Facilitator: *Adina Kalet, MD, MPH*
Panelists: *Thomas J. Nasca, MD, MACP; William Pinsky, MD; Susan E. Skochelak, MD, MPH*

12:00 p.m.  **Lunch**

12:45 p.m.  **Potential Funding Mechanisms for a National GME Data Registry: Facilitated Group Discussion**
Facilitator: *Deborah Powell, MD*

1:20 p.m.  **Reactor Panel; Summary and Next Steps**

2:00 p.m.  **ADJOURN**
Hershel Alexander, PhD, is Director of Data Operations and Services at the Association of American Medical Colleges. This team contributes to a variety of efforts to provide compelling information to help transform academic medicine. For example, the team assists the Liaison Committee on Medical Education with the LCME Annual Medical School Questionnaire, LCME Annual Financial Questionnaire, LCME Student Financial Aid Questionnaire, and LCME Data Tables. The team also provides applicant, student, graduate, and resident information through the Post-MCAT Questionnaire, Matriculating Student Questionnaire, Year Two Questionnaire, Graduation Questionnaire, Student Records System, GME Track, and Report on Residents. Data Operations and Services helps with compensation studies as well, such as the Faculty Salary Report, Report on Resident/Fellow Stipends and Benefits, Report on the Compensation of Medical School Deans, Report on the Compensation of the Deans’ Office Staff, Department and Division Administrator Compensation Survey Report, and Practice Plan Executive Compensation Report. The team collaborates with the Council of Teaching Hospitals on projects, including the Annual Survey of Hospital Operations and Financial Performance, Quarterly Survey of Hospital Operations and Financial Performance, Group on Information Resources IT Survey, Compliance Officers’ Forum Survey, and Group on Resident Affairs Members Survey. In addition, members of this team are involved with other AAMC data resources, such as the Faculty Roster, Medical School Profile System, Missions Management Tool, Operations Management Tool, AAMC/SACME Harrison CME Survey, Institutional GME Leadership Survey, Professional Development Survey, Summer Health Professions Education Program Annual Report, and Organizational Characteristics Database. Hershel has been with the AAMC since 2001.

Dorothy Andriole, MD, joined the AAMC in January 2018 as Senior Director for the newly created Medical Education Research unit. Prior to joining the AAMC, she was Associate Professor of Surgery and Assistant Dean for Medical Education at Washington University School of Medicine, where her research focused on U.S. medical students’ academic and professional development as physician-scientists.

Vineet Arora, MD, MAPP, is Associate Chief Medical Officer for Clinical Learning Environment at University of Chicago Medicine. Through her role, she bridges educational and health system leadership to align the clinical and educational missions. An accomplished researcher, she is an elected member of American Society of Clinical Investigation, and PI of numerous federal and foundation grants to evaluate novel interventions that combine systems science with learning theory to improve both care and learning in academic teaching hospitals. Her work has appeared in numerous high-impact journals, and garnered media coverage from major news outlets. She is currently a member of the Board of Directors for the American Board of Internal Medicine and on the leadership group for the NASEM’s Action Collaborative on Preventing Sexual Harassment in Higher Education.

Brian George, MD, MA, is an Assistant Professor of Surgery and serves as the Director of Educational Research at the Center for Health Outcomes and Policy at the University of Michigan. He is a national leader in operative performance assessment and is the Executive Director a multi-institutional non-profit research consortium (Procedural Learning and Safety Collaborative). In collaboration with the many institutional members of this group he is laying the groundwork for an ongoing national initiative in healthcare education quality improvement. With funding from the American Board of Surgery, the Association of Program Directors in Surgery, and the Association for Surgical Education, Dr. George’s current research bridges the gap between surgical education research and health services research. This multidisciplinary approach aims to understand the impact of surgical trainee competence on early-
career patient outcomes and then use that data to develop patient-centered standards for surgical training.

**Anupam Jena, MD, PhD,** is the Ruth L. Newhouse Associate Professor of Health Care Policy at Harvard Medical School and a physician in the Department of Medicine at Massachusetts General Hospital. He is also a faculty research fellow at the National Bureau of Economic Research. As an economist and physician, Dr. Jena’s research involves several areas of health economics and policy including the economics of physician behavior and the physician workforce, medical malpractice, the economics of health care productivity, and the economics of medical innovation. Dr. Jena graduated Phi Beta Kappa from the Massachusetts Institute of Technology with majors in biology and economics. He received his MD and PhD in Economics from the University of Chicago, where he was funded by the NIH Medical Scientist Training Program. He completed his residency in internal medicine at Massachusetts General Hospital. In 2007, he was awarded the Eugene Garfield Award by Research America for his work demonstrating the economic value of medical innovation in HIV/AIDS. In 2013, he received the NIH Director’s Early Independence Award to fund research on the physician determinants of health care spending, quality, and patient outcomes. In 2015, he was awarded the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) New Investigator Award. From 2014-15, Dr. Jena served as a member of the Institute of Medicine Committee on Diagnostic Errors in Health Care.

**Adina Kalet, MD, MPH,** just became the Stephen and Shelagh Rowell Endowed Chair and Director, Robert D. and Patricia E. Kern Institute for the Transformation of Medical Education Medical College of Wisconsin. Prior to moving to MCW she was Professor of Medicine and Surgery (tenured) at New York University University Medical School. Dr. Kalet has devoted her career to ensuring that public investment in health professionals training leads to improved health outcomes in those they serve. Combining her training in both Health Services and Medical Education Research she has served as the PI on several grants, including from the NSF and NIH to conduct a 7-institution randomized controlled trial of WISE-MD and was founding Director of the Research on Medical Education Outcomes (ROMEO) a group of cross-disciplinary researchers dedicated to conducting the education and health services research linking medical education to long-term outcomes in learners and patients. With colleagues she led the Program on Medical Education Innovations and Research (PrMEIR) and directed the NYU Clinical Translational Science Institute Translational Research Education and Careers Mentor Development Program (NYU CTSI TREC MDP). Among her many publications she co-edited a book entitled Remediation in Medical Education: A Midcourse Correction (Springer) which was the first long form scholarly work on this topic. She co-directs the US site of the University of Maastricht School of Health Professions Education to launch the NYU-Maastricht master’s in health professions education (MHPE). And recently served as chair of the Literature Selection Technical Review Committee, advisory to Director of the National Library of Medicine. She serves on a number of external review boards nationally and internationally and has been engaged in many cross-institutional and internationally curriculum innovation and research projects.

**Susan Kirk, MD,** is the Designated Institutional Official and Associate Dean for Graduate Medical Education at the University of Virginia Health System, where she is also jointly appointed as an Associate Professor in Internal Medicine and Obstetrics and Gynecology. She is a graduate of Douglass College and Rutgers Medical School. She completed her internship and residency, and was chief resident in Internal Medicine at the University of North Carolina Chapel Hill. At the University of Virginia she served on a number of external review boards nationally and internationally and has been engaged in many cross-institutional and internationally curriculum innovation and research projects.
As Designated Institutional Official, Dr. Kirk oversees 110 accredited and non-accredited programs at her institution, including programs in Medical and Medical Subspecialty disciplines, Pharmacy, Chaplaincy, Dentistry, Radiation Physics, Clinical Laboratory Medicine and Clinical Psychology. There are currently 820 graduate medical trainees at the University of Virginia. Since her appointment in 2006, she has developed or overseen many innovative Graduate Medical Education programs to further the educational opportunities for its trainees. She has been a member of the Institutional Review Committee of the ACGME since 2013 and was elected by her peers to serve as its chair until her term ends in June 2020. She and her husband are the parents of five adult children. She is a member of a 70s cover band and an avid birder.

Thomas J. Nasca, MD, MACP, is president and chief executive officer of the Accreditation Council for Graduate Medical Education (ACGME) and founding president of ACGME International, Professor of Medicine and Molecular Physiology at Thomas Jefferson University, and senior scholar in the department of medical education at the University of Illinois at Chicago School of Medicine. He is board certified in internal medicine and nephrology. He previously served as senior vice president of academic affairs at Thomas Jefferson University, the president of Jefferson University Physicians, and the Anthony and Gertrude DePalma Dean of Jefferson Medical College. Dr. Nasca has been a leader of most organizations responsible for support and oversight of graduate medical education, as well as others engaged in oversight of the continuum of medical education in the United States. He has served as president of the Association of Program Directors in Internal Medicine and associate editor of the Nephrology Medical Knowledge Self-Assessment Program for the American College of Physicians. He is also the former chair of Residency Review Committee for Internal Medicine, member of the Internal Medicine In-Training Examination Steering and Writing Committees, the Alliance for Internal Academic Medicine, and the Federated Council for Internal Medicine, the National Board of Medical Examiners, and the Liaison Committee on Medical Education. He has served as a member of the Council on Graduate Medical Education of the U.S. Department of Health and Human Services of the U.S. Congress. He was elected a Master of the American College of Physicians in 2006. He is the Co-Chair of the National Academy of Medicine Action Collaborative on Clinician Well-Being, and member of the steering committee of the National Academy of Medicine Action Collaborative on the Opioid Crisis. He is the recipient of numerous institutional and national awards and honorary degrees, the author of more than 150 articles and chapters, and has given more than 450 presentations on medical education to national and international audiences.

Sharyl J. Nass, PhD, serves as the director of the Board on Health Care Services and the director of the National Cancer Policy Forum at the National Academies of Sciences, Engineering, and Medicine. To help enable the best possible care for all patients, the board engages independent, scholarly analysis of the organization, financing, effectiveness, workforce, and delivery of health care, with an emphasis on quality, cost, and accessibility. The National Cancer Policy Forum examines policy issues pertaining to the entire continuum of cancer research and care. For 20 years, Dr. Nass has worked on a broad range of health and science policy topics, including the quality and safety of health care and clinical trials, developing technologies for precision medicine, and strategies for large-scale biomedical science. She received her B.S. and an M.S. from the University of Wisconsin–Madison, completed her Ph.D. at Georgetown University, and conducted postdoctoral research at the Johns Hopkins University School of Medicine and the Max Planck Institute in Germany. She has received the Cecil Medal for Excellence in Health Policy Research, a Distinguished Service Award from the National Academies, and the Institute of Medicine staff team achievement award as a team leader.

Allison Oelschlaeger is the Chief Data Officer and Director of the Office of Enterprise Data & Analytics (OEDA) at the Centers for Medicare and Medicaid Services (CMS). In this role, Allison focuses on
transforming the American healthcare system through connecting people to data and analytics. Allison oversees the systems and policies for sharing CMS data with health system stakeholders such as beneficiaries, researchers, and providers. She coordinates and directs the public release of CMS data and information products. Allison also manages the development of advanced analytics using CMS data that help inform policy decisions and evaluate programs. Before joining CMS, Allison worked at the Lewin Group where she specialized in program evaluation and data analysis. She is a graduate of Georgetown University.

William Pinsky, MD, is President and Chief Executive Officer of the Educational Commission for Foreign Medical Graduates (ECFMG) and Board Chair of the Foundation for Advancement of International Medical Education and Research (FAIMER), ECFMG’s nonprofit foundation. Prior to joining ECFMG in mid-2016, Dr. Pinsky was Executive Vice President and Chief Academic Officer of Ochsner Health System (OHS). He also served as Executive Vice President for Ochsner International and Professor and Head at the Ochsner Clinical School, a U.S. partner of The University of Queensland School of Medicine in Australia. Dr. Pinsky retains an Honorary Professor title from the University of Queensland. Dr. Pinsky graduated from Saint Louis University School of Medicine, and trained at Baylor College of Medicine and at Texas Children’s Hospital. Before joining OHS, Dr. Pinsky held a number of senior academic and executive roles at Wayne State University School of Medicine (Associate Dean) in Detroit, and at the Detroit Medical Center. Dr. Pinsky has served on the Boards of the Accreditation Council for Graduate Medical Education, the Accreditation Council for Continuing Medical Education, and the Alliance of Independent Academic Medical Centers where he also served as President. He is the founder of Racing For Kids®, a 501(c)(3) foundation that uses professional motorsports to promote the health care needs of children and children’s hospitals. Dr. Pinsky is a Fellow of the American Academy of Pediatrics, the American College of Cardiology, and the American College of Chest Physicians. His most recent honors include the Leadership Award for the Faculty of Medicine and Biological Sciences, presented by The University of Queensland in 2015, and The Founders Award, presented by the American Academy of Pediatrics in 2013.

Deborah Powell, MD, joined the University of Minnesota Medical School in 2002 and served as Dean of the Medical School and Assistant Vice President for Clinical Affairs until July 1, 2009. Currently she is Dean Emerita, and Professor of Laboratory Medicine and Pathology. She is certified in Anatomic Pathology by the American Board of Pathology. Dr. Powell is well-known nationally for her expertise in medical education. She currently serves as a member of the Board of Advisors of Tufts University School of Medicine and of the Geisinger-Commonwealth Medical School and as Vice-Chair of the Senior Fellows Group of the Association of Pathology Chairs. She has recently served as a member of the LCME Council, the Advisory Council of the National Center for Complementary and Alternative Medicine, and the Department of Education’s National Committee on Foreign Medical Education and Accreditation. She is a Life Trustee of the American Board of Pathology. In 2013 she received the Abraham Flexner Award for Distinguished Service to Medical Education from the AAMC. She was elected to membership in the National Academy of Medicine in 2000. Dr. Powell has served as a member of the National Institutes of Health Scientific Management Review Board, Chair of the Board of the Association of American Medical Colleges, past-president of the American Board of Pathology, past board member of the Institute for Healthcare Improvement, and a past member of the board of trustees of the Accreditation Council for Graduate Medical Education (ACGME) and the Educational Commission for Foreign Medical Graduates (ECFMG). She received her M.D. from Tufts University School of Medicine and completed her residency in pathology at Georgetown University Medical Center and the Clinical Center of the National Institutes of Health (NIH). Before joining the University of Minnesota, Dr. Powell was executive dean and vice chancellor for clinical affairs at the University of Kansas School of Medicine.
Prior to that, she chaired the Department of Pathology and Laboratory Medicine at the University of Kentucky in Lexington.

Alan Schwartz, PhD, is the Michael Reese Endowed Professor of Medical Education and Interim Head of the UIC Department of Medical Education, as well as Research Professor in the UIC Department of Pediatrics. He holds a PhD in cognitive psychology and MS in organizational behavior and industrial relations from the University of California at Berkeley. Dr. Schwartz's research focuses on medical decision making, competency-based assessment in graduate medical education, and infrastructure for medical education research. In the first area, he currently serves as the Editor-in-Chief of the journals Medical Decision Making and Medical Decision Making Policy & Practice. In the latter two areas, he is the Director of the Association of Pediatric Program Directors Longitudinal Educational Assessment Research Network (APPD LEARN), a practice-based educational research network of over 150 Pediatrics residencies.

Susan E. Skochelak, MD, MPH, serves as the Group Vice President for Medical Education at the American Medical Association (AMA). She leads the AMA's Accelerating Change in Medical Education initiative promoting innovation to align physician training with the changing needs of our health care system. Since 2013, the AMA has awarded more than $12.5 million dollars in grant funding to 32 medical schools to transform medical education through bold, rigorously evaluated projects to create the medical school of the future. More information is available at www.changemeded.org A nationally recognized authority in medical education, Dr. Skochelak pioneered new models for community based interdisciplinary medical education and initiated new programs in rural, urban, global and public health. Dr. Skochelak previously served as the Senior Associate Dean for Academic Affairs at the University of Wisconsin School of Medicine and Public Health and as the director of Wisconsin Area Health Education System. Dr. Skochelak has been the principal investigator for more than $18 million in grant awards for medical education research. She is the lead author on a new textbook, "Health Systems Science", the first on this important topic written for medical and health professions students. Dr. Skochelak serves as a member of the National Academies of Sciences, Engineering, and Medicine’s Global Forum on Innovation in Health Professions Education, the Liaison Committee for Medical Education Council, and the Coalition for Physician Accountability. In 2015 Dr. Skochelak was elected to the National Academy of Medicine.

Marc Triola, MD, is the associate dean for educational informatics and an associate professor of medicine at NYU Langone Health, where he is also the founding director of the Institute for Innovations in Medical Education. Dr. Triola’s research focuses on the revolution in medical education driven by technological advances, big data, and learning analytics. He has worked to create a continuously learning medical education system that includes computer-based learning tools and new ways to integrate clinical data into educational research.

Debra Weinstein, MD, is Vice President for Graduate Medical Education at the Partners Healthcare System. In this role she is responsible for >300 graduate medical education (GME) programs with over 2400 trainees and has led initiatives that have served as national models for innovation in GME. Dr. Weinstein is a graduate of Wellesley College and Harvard Medical School; she completed clinical training in Internal Medicine and Gastroenterology at Massachusetts General Hospital, was selected as Chief Resident, and later served as Associate Chief and Director of Residency Training in Medicine. As an Associate Professor of Medicine at Harvard Medical School she is involved in teaching and mentoring students, residents, and faculty, and is engaged in medical education research. She is currently the Principal Investigator of a 5-year AMA-funded study on competency-based time-variable GME.
GME Outcomes and Metrics: Goals  
(as endorsed by the planning committee)

Goal of overall effort: Utilization of nation-wide GME data to enhance the outcomes of GME  
• improve process of training  
• better align the physician workforce with societal needs for access to care, innovators, leaders and scholars who will enhance health care and heath  
• provide benchmarking data for individual institutions and programs

Proposed vehicle: National GME data repository  
• Facilitate association of outcomes data with individual characteristics and specific aspects of training → Provide foundation for hypothesis-driven research and evidence-based GME  
• Avoid or reduce duplicative data collection; improve accuracy  
• Document and disseminate GME outcomes  
  o Benchmarking data for institutions  
  o Documentation of ROI for public support

Approach:

Workshop #1: October 10 and 11, 2017  
• Consensus development about the relevant outcomes of GME -Initial consideration of metrics that could be used to track these outcomes  
• Examination of potential obstacles, including privacy issues  
• Consideration of next steps

Follow up of workshop #1:  
• November, 2017 meeting of ~25 workshop participants and a few additional stakeholders: consolidated points of consensus (included informal survey and voting exercise)  
• Commentary in Academic Medicine communicated summary of workshop #1 and recommended next steps to the broader community  
• Continued discussion among participants and other stakeholders

Workshop #2: October 10 and 11, 2019:  
GOALS  
• Strengthen the case for moving forward (and the justification for needed investments) by highlighting examples of
- Successful examples of what can be learned from utilizing ‘big data’
- Current barriers to large-scale research on GME
- Potential research questions that can be answered and their expected impact
- Current and anticipated future data availability
- Innovative technology platforms and solutions for preserving anonymity

- Incorporate additional perspectives
- Learn from experts and prior related work (successful and unsuccessful)
- Move from consensus about “what” to roadmap of “how”
  - Advance a multi-institutional pilot
    - Agree on a prioritized list research questions and related metrics to be tracked
    - Describe framework for the pilot; e.g. institutions’ responsibilities; permissions required (IRB), resources required, potential funders, proposed timeline etc.
  - Clarify how national organizations could participate in a national registry, and steps and mechanisms necessary for data-sharing
  - Develop framework for a national GME data repository
    - Identify resource needs and recommend potential funders
    - Propose alternative approaches to structure and governance
  - Recommend next steps
GME Leaders’ Suggestions for Questions to Address via a Multi-institution Data-sharing Pilot:

GME leaders participating in the workshop were asked:

1. Identify **three questions related to enhancing GME outcomes** that you would like to address via a multi-institution data-sharing pilot.

Aggregated responses:

**IDENTIFYING CORRELATIONS BETWEEN INDIVIDUAL APPLICANT OR TRAINEE CHARACTERISTICS AND SPECIFIC OUTCOMES**

- What is the relationship of race/ethnicity, gender, marital status, other demographics to milestones progress/achievement?
- Are there predictors of trainee disciplinary action for professionalism or academic/competency deficiencies?
- What applicant metrics correlate with ultimate academic career success (promotion status, leadership positions, grant success, etc)?
- What applicant metric correlates best with success in training program as marked by milestone evaluations, faculty assessment, etc?
- What trainee characteristics are most correlated with need for remediation plan and/or disciplinary action and secondarily ultimate ability to graduate successfully from program?
- Do residents' procedure volumes (not just surgical) or volumes of patients admitted differ by gender or race in different specialties?
- What is the impact of [a] marital status and [b] family size and [c] #/length of leaves of absence on: ITE scores, board exam pass rates, practice type after training, application to fellowship, or well-being/flourishing measures?
- What is the impact of having children during residency on case log volumes during residency, ITE scores, board exam pass rates, and practice type after training? Does this differ by gender?
- Do residents’ surgical volumes differ by gender or race in different specialties?
- Is there a discrepancy in evaluation scores for male and female trainees? (OR URM/ vs. non-URM)
- Assess whether/which individual characteristics correlate with development of burnout or depression, including debt level, partnered status, gender, move to a new location, parenting during GME, specialty, level of training, USMG vs IMG, citizen/non-citizen/immigration status, etc.
- What factors predict the outcome of resident remediation or probation? (e.g. PGY level, type of performance deficit, history of prior probation or disciplinary action, etc)
IDENTIFYING CORRELATIONS BETWEEN PROGRAM or INSTITUTIONAL CHARACTERISTICS AND SPECIFIC OUTCOMES

- What features of GME programs correlate with higher levels of resident well-being?
- Explore correlation between clinical training time (actual # months) and competency at end of residency (measured by milestones, attending evaluations, and/or subsequent practice data).
- Which residency applicant characteristics correlate most closely with post-graduate practice in an underserved area (rural/non-rural zip code of HS and college; med school; SES; etc.)?
- Is there a discrepancy in evaluation scores for male and female faculty? (OR URM/ vs. non-URM)
- Which GME initiatives across institutions have been most successful in fostering an increase in the recruitment and retention of diverse candidates?
- What is the relationship between the number of ACGME mandates Faculty Development offerings and burnout levels of trainees?
- What is the impact of faculty diversity on recruitment and retention of diverse candidates?
- Do trainees in systems with collective bargaining units have higher or lower resident well-being scores?
- Are there characteristics of programs that mitigate duty hours when it comes to resident well-being?
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<tr>
<th>INPUTS</th>
<th>OUTCOMES OF INTEREST</th>
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<tr>
<td>INDIVIDUAL CHARACTERISTICS</td>
<td>(INDIVIDUAL; can be rolled up by program, institution, specialty, etc.)</td>
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<tr>
<td>Gender</td>
<td>In GME:</td>
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<td>Race</td>
<td>Well-being/flourishing measures</td>
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<td>Ethnicity</td>
<td>Volume of key clinical experiences</td>
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<td>Marital and partner status</td>
<td>(procedures, admissions, other)</td>
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<td>Family size/# children</td>
<td>Milestones progress/achievement</td>
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<td>Amount of debt</td>
<td>Remediation</td>
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<td>Distance from parents home</td>
<td>Disciplinary/adverse action</td>
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<td>USMG vs IMG</td>
<td>ITE scores</td>
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<td>Citizen/immigration status</td>
<td>Successful graduation</td>
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<td>Socioeconomic status</td>
<td>Application to fellowship (pursuit of subspecialty training)</td>
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<tr>
<td>[Disability]</td>
<td>Evaluation scores/ratings</td>
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<td>EDUCATIONAL PROCESS/EXPERIENCE</td>
<td>Success program completion</td>
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<td>Level of training (PGY, YIP)</td>
<td>Post GME:</td>
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<td>Family size/# children added during training</td>
<td>Board exam pass rates</td>
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<td>Leave(s) of absence (#, length)</td>
<td>Completion of subspecialty training</td>
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<td>Volume of key clinical experiences</td>
<td>Practice type after training</td>
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<td>(procedures, patient admissions, etc)</td>
<td>Practice location in an underserved area</td>
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<td>History of remediation or performance deficit</td>
<td>Academic rank/Promotion status</td>
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<td>Residents part of a collective bargaining unit</td>
<td>Leadership positions</td>
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<td>Grant success (funding)</td>
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<td>Well-being/flourishing measures</td>
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<td>PROGRAM CHARACTERISTICS</td>
<td>PROGRAM/INSTITUTION</td>
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<tr>
<td>Specialty</td>
<td>% diverse residents; % URM residents</td>
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<tr>
<td>Work hours</td>
<td>% diverse faculty; % URM faculty</td>
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<tr>
<td>[# months/% time that is elective]</td>
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<tr>
<td>[Program Director years in role]</td>
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<td>[Program Director rating by residents]</td>
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<td>Faculty diversity</td>
<td></td>
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<tr>
<td>[# of ACGME citations]</td>
<td></td>
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<tr>
<td>[# of clinical training sites for required rotations/experiences]</td>
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</table>
GME leaders participating in the workshop were also asked:

2. Are there any specific GME-related benchmarking data you would like to have access to from a cohort of teaching hospitals?

- Discipline-specific milestones progress.
- How many residents/fellows in your institution also hold a faculty appointment? (Looking at the feasibility of the new independent practice requirement.)
- Level of diversity of faculty as it relates to these outcomes.
- Number of mistreatment reports by faculty and trainees.
- Gender related differences in trainee outcomes and well being
### Examples of Potential GME outcomes

**Note:** *Intermediate outcomes – measured at the time of graduation from GME – are italicized*

<table>
<thead>
<tr>
<th>Domain</th>
<th>Level of measurement</th>
<th>Individual</th>
<th>Program</th>
<th>Teaching institution</th>
<th>(state, region, or) National</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experience (upon completion of GME)</strong></td>
<td></td>
<td><em>Volume of surgical cases and other key clinical experiences during GME</em></td>
<td><em>Average volume among individuals trained</em></td>
<td><em>Annual institutional volume</em></td>
<td><em>Volume of key experiences averaged across all individuals by specialty</em></td>
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<tr>
<td></td>
<td></td>
<td><em>Experience working on interprofessional teams</em></td>
<td><em>Experience working on interprofessional teams, averaged across individuals</em></td>
<td><em>Experience working on interprofessional teams, averaged across individuals</em></td>
<td></td>
</tr>
<tr>
<td><strong>Capabilities and Clinical Competence</strong></td>
<td></td>
<td><em>Readiness for independent practice at time of graduation</em></td>
<td><em>Average readiness among individuals trained</em></td>
<td><em>Average readiness among individuals trained</em></td>
<td><em>Average readiness among individuals trained</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Board scores</em></td>
<td><em>Board pass rate</em></td>
<td><em>Average quality of care delivered by graduates</em></td>
<td><em>Average quality of care delivered by graduates</em></td>
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<td></td>
<td></td>
<td><em>Quality of care delivered</em></td>
<td><em>Average quality of care delivered by graduates</em></td>
<td><em>Average quality of care delivered by graduates</em></td>
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<td></td>
<td><em>Cost/value of care delivered</em></td>
<td><em>Average cost/value of care delivered by graduates</em></td>
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<tr>
<td><strong>Workforce considerations</strong></td>
<td></td>
<td><em>#/% pursuing fellowship training</em></td>
<td><em>Mix of (sub)specialties; #/% pursuing fellowship training</em></td>
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<td></td>
<td></td>
<td><em>Proportion of graduates entering practice vs. other activities</em></td>
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<td></td>
<td><em>Graduation rate</em></td>
<td><em>Average graduation rate</em></td>
<td><em>Average graduation rate</em></td>
<td><em>Average graduation rate</em></td>
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<td></td>
<td></td>
<td><em>Distribution of practice locations</em></td>
<td><em>Distribution of practice locations, populations cared for</em></td>
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<td></td>
<td></td>
<td><em>Populations cared for across all grads</em></td>
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</tbody>
</table>
### The National Academies of Sciences • Engineering • Medicine

#### Professional satisfaction and wellness

- Total volume of care provided by graduates
- Professional satisfaction and wellness avg'd across graduates

#### Total volume of care provided by graduates

- Total volume of care provided by graduates
- Professional satisfaction and wellness avg'd across graduates

- Total volume of care provided by graduates
- Professional satisfaction and avg'd across graduates

### Academic contributions

- Publications
- Grants awarded
- Academic titles
- Honors, prizes
- Teaching

- Average across graduates
- Average across graduates
- Average across graduates

### Leadership and other contributions

- Leadership positions held
- Honors, prizes

- Average across graduates
- Average across graduates
- Average across graduates

### Cost

- Cost of training/graduate
- Cost of training/graduate
- Cost of training/graduate

### NOTES:

- Semantics are tricky: “inputs”, “outcomes”, and “metrics” overlap and blend together.
- Broadly, “outcomes” of GME would encompass the distribution of the physician workforce; physicians’ productivity (volume of care delivered); the quality and value of care delivered; and academic output that advances biomedical science, care delivery and human health. (We could argue whether the overall status of population health should be considered as an outcome related to GME – many would feel that other factors have greater influence - e.g. socioeconomic factors; availability of social safety net and services.)
- Research aimed at optimizing GME might suggest looking at the immediate outcomes of GME, such as the volume of experience accrued/care delivered during training, more as “inputs” for which correlation to significant later outcomes (e.g. quality of care delivered) should be assessed.

* examples of potential metrics: patient-reported outcomes measures; patient satisfaction; skills in inter-professional teamwork; disease-specific patient metrics; adherence to practice guidelines (e.g. screening); sanctions by licensing boards; complication rates; malpractice judgments
### Breakout Session 1

<table>
<thead>
<tr>
<th>Group 1 (NAS 120)</th>
<th>Group 2A (NAS 114)</th>
<th>Group 2B (NAS 227)</th>
<th>Group 3 (NAS 118)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bobby Baron</td>
<td>Hershel Alexander</td>
<td>Dorothy Andriole</td>
<td>Vineet Arora</td>
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<tr>
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<td>Michelle Washko</td>
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### Breakout Session 2

<table>
<thead>
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</table>
Background Materials:

Proceedings from prior GME Outcomes and Metrics Workshop: https://doi.org/10.17226/25003

Video from prior GME Outcomes and Metrics Workshop:
http://nationalacademies.org/hmd/Activities/Workforce/GMEoutcomesandmetrics/2017-OCT-10.aspx

A Visual Guide to Practical Data De-identification


Additional Materials for Reference:


Coutinho, Anastasia J., Anneli Cochrane, Keith Stelter, Robert L. Phillips, and Lars E. Peterson. "Comparison of intended scope of practice for family medicine residents with reported scope of

Coutinho, Anastasia J., Kathleen Klink, Peter Wingrove, Stephen Petterson, Robert L. Phillips, and Andrew Bazemore. "Changes in Primary Care Graduate Medical Education Are Not Correlated With Indicators of Need: Are States Missing an Opportunity to Strengthen Their Primary Care Workforce?." *Academic Medicine* 92, no. 9 (2017): 1280-1286. [https://doi.org/10.1097/ACM.0000000000001539](https://doi.org/10.1097/ACM.0000000000001539).


