The Institute of Medicine

Optimizing Graduate Medical Trainee (Resident) Hours and Work Schedules to Improve Patient Safety

More Information

The Institute of Medicine will form a consensus committee to:

1) synthesize current evidence on medical resident schedules and healthcare safety.

2) develop strategies to enable optimization of work schedules to improve safety in the healthcare work environment. The strategies recommended will take into account the learning and experience that residents must achieve during their training. The recommendations will be structured to optimize both the quality of care and the educational objectives.

The committee is asked to deliver its report in 12 months, and thus will focus on two priority tasks—each with component tasks as well as related issues to be considered as relevant to the main task but not necessarily studied in depth. Although the issues to be studied are broad ones, to permit comprehensive coverage of the priority issues in the specified timeframe, the scope is limited to medical residents (versus all physicians or all healthcare workers) and their work schedules (versus all work processes or the entire work environment). The committee is asked to consider the impact of recommended actions on costs; however, a detailed cost analysis is outside the scope of the study.

Task #1: Review and Synthesize Evidence on Optimal Resident Work Schedules, including:

- Evidence on the relationship between resident work schedules, resident performance, and the quality of care delivered by residents—specifically patient safety. Consider also evidence on the safety of the residents, the education and training experience of the residents, the quality of the interactions from both the resident and patient perspective, and other aspects of safety and quality of care such as care hand-offs and transitions.

  As relevant, consider evidence on the relationship between sleep, fatigue, work schedules, and performance for other health care professionals as well as generally.

- Evidence on the strategies, practices, interventions, and tools that have been employed in the United States, Australia, Canada, Europe, New Zealand and elsewhere to optimize the work schedules for residents to assure the safety and quality of patient care. Identify barriers to change and strategies for overcoming them. Examine how related issues are handled such as staffing, financial costs, and other resources. Consider also other approaches to the nature of resident work and the role of the resident (such as assigning tasks traditionally assigned to medical residents to other healthcare professionals) and resident training (such as use of simulations).

  As relevant, consider approaches to similar issues in other healthcare work environments and other industries as well as more general issues such as teamwork and organizational culture.

Task #2: Develop Strategies for Implementing Optimal Resident Work Schedules

- Make recommendations for how the strategies, practices, interventions, and tools identified in Task #1 can be implemented to optimize resident schedules to improve the safety of the healthcare work environment and the quality of care.

- Recommend actions for stakeholders including residents, hospitals, professional societies, accrediting bodies, administrators and funders of residency training programs, federal and state agencies, and policymakers at all levels. Identify actions that can be taken in the short- and long-term. The recommendations should specify who should take what actions to create a care environment that is safe for patients, residents, and other health workers. Recommendations should also address anticipated barriers to change such as the culture of medical education and health care institutions.

Consider and describe the consequences of these recommended actions for the cost of medical training and of health care. As discussed above, costs are to be considered in general terms—the task is not to develop explicit cost estimates for recommended changes.

This project is sponsored by the Agency for Healthcare Research and Quality, Department of Health and Human Services. The approximate start date for the project is September 4, 2007. A report will be issued at the end of the project in

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approximately 18 months.

**Upcoming Meetings:**

May 8-9, 2008 - Washington, DC
June 26-27, 2008 - Washington, DC

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5/10/2008
Meetings and Workshops

The meeting agendas with presentation material are now available.

MEETING 1: December 3-4, 2008 — Washington, DC

MEETING 2: March 4-5, 2008 — Irvine, CA

MEETING 3: May 8-9, 2008 — Washington, DC

MEETING 4: June 26-27, 2008 — Washington, DC

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Committee on Optimizing Graduate Medical Trainee (Resident) Hours and Work Schedules to Improve Patient Safety

Michael M. E. Johns, M.D. (Chair)

Dr. Michael M.E. Johns is chancellor of Emory University. Until recently, he was the executive vice-president for health affairs of Emory University, director of the Robert W. Woodruff Health Sciences Center, Chairman of the Board of Emory Healthcare, and professor in the Department of Surgery, Emory University School of Medicine. He was in charge of Emory's long-standing patient care, teaching and research affiliations with Grady Memorial Hospital and the Emory Healthcare Hospital Affiliation Program with 60 hospitals in Georgia and surrounding states. Dr. Johns received his bachelor’s degree and continued with graduate studies in biology at Wayne State University in Detroit and graduated with distinction from the University of Michigan Medical School. He joined the Medical Corp of the U.S. Army and was assistant chief of the Otolaryngology Service at Walter Reed Army Medical Center. He joined the Department of Otolaryngology and Maxillofacial Surgery at the University of Virginia Medical Center before being recruited to Johns Hopkins as professor and chair of Otolaryngology-Head and Neck Surgery. He served six years as dean of the Johns Hopkins School of Medicine and vice president for medical affairs at Johns Hopkins University. Dr. Johns is internationally recognized for his work as a cancer surgeon of head and neck tumors and his studies of treatment outcomes.

James Bagian, M.D.

Dr. James P. Bagian was chosen as the first Director of the VA National Center for Patient Safety (NCPS), which was established in 1999. NCPS develops, leads, and oversees activities and programs concerned with improving patient safety throughout the Department of Veterans Affairs health care system. Dr. Bagian is the recipient of the John M. Eisenberg Patient Safety Award for Systems Innovation. A NASA astronaut for 15 years, Dr. Bagian was a crew member on two Space Shuttle missions, Discovery, March 1989, and Columbia, June 1991. Following the 1986 Challenger space shuttle explosion, he supervised the capsule's recovery from the ocean floor. In 2003, he was appointed as the Medical Consultant/Chief Flight Surgeon for the Columbia Accident Investigation Board. Dr. Bagian holds a B.S. degree in mechanical engineering from Drexel University and a doctorate in medicine from Thomas Jefferson University in occupational medicine. He was the honor graduate, and was certified in 1979 as a flight surgeon at the U.S. Air Force School of Aerospace Medicine, Brooks Air Force Base. In 2000, Dr. Bagian was elected as a member of the National Academy of Engineering and, in 2003, as a member of the Institute of Medicine.

Jayanta Bhattacharya, M.D., Ph.D.

Dr. Bhattacharya is an assistant professor of medicine and a Center for Health Policy/Center for Primary Care Outcomes Research core faculty member. His research focuses on the constraints that vulnerable populations face in making decisions that affect their health status, as well as the effects of government policies and programs designed to benefit vulnerable populations. He has published empirical economics and health services research on medical residents and the impact of their work hours, the elderly, adolescents, HIV/AIDS and managed care. Most recently, he has researched the regulation of the viatical-settlements market (a secondary life-insurance market that often targets HIV patients) and summer/winter differences in nutritional outcomes for low-income American families. He is also working on a project examining the labor-market conditions that help determine why some U.S. employers do not provide health insurance. He worked for three years as an economist at the RAND Corporation in Santa Monica, Calif., where he also taught health economics as a visiting assistant professor at the University of California-Los Angeles. He received a Ph.D. in economics and an M.D. from Stanford University.

Maureen Bisognano, M.S.

Ms. Bisognano is the Executive Vice President and Chief Operating Officer of the Institute for Healthcare Improvement. Prior to joining IHI, she was Senior Vice President of the Juran Institute, where she consulted with senior leaders worldwide on strategy and improvement in health care settings, and was Chief Executive Officer of the Massachusetts Respiratory Hospital. Since 1990 she has served on the boards of the Massachusetts Hospital Association, the Lean
Enterprise Institute, the National Initiative for Children’s Health Care Quality, and the American Society for Quality, among others. Since 2005 she has been a member of the Commonwealth Fund’s Commission on a High Performance Health System. She is also on the faculty of the Harvard School of Public Health. Ms. Bisognano began her career in health care as a staff nurse at Quincy City Hospital where she moved up through Director of Nursing and Director of Patient Services to Chief Operating Officer. She holds a B.S. from the State University of New York, and a Master’s of Science from Boston University.

Pascale Carayon, Ph.D.

Dr. Pascale Carayon is the director for the Center for Quality and Productivity Improvement for the University of Wisconsin-Madison, Department of Industrial and Systems Engineering. Her fields of expertise include technological and organizational change, job and organizational design, and quality and productivity improvement. She has experience researching human factors in healthcare and patient safety that is applicable to improving quality and safety of patient care, as well as working conditions of healthcare workers. Dr. Carayon and two collaborators, Drs. Alvarado and Hundt, have written a paper on "Reducing Workload and Increasing Patient Safety Through Work and Workspace Design" commissioned by the Institute of Medicine. This paper was used by the IOM's Committee on the Work Environment for Nurses and Patient Safety in its report on "Keeping Patients Safe – Transforming the Work Environment of Nurses" released on November 4, 2003. She received her Ph.D from the University of Wisconsin-Madison in Industrial Engineering.

Jordan J. Cohen, M.D.

Dr. Jordan J. Cohen is currently professor of medicine and public health at George Washington University and AAMC's president emeritus. During his 12 years as the president of the association (1994-2006), Dr. Cohen launched new initiatives in each of the association's mission areas of education, research and patient care; expanded and modernized the AAMC's services for medical students, applicants, residents, and constituents; strengthened the association's communications, advocacy, and data gathering efforts, and established many initiatives for improving medical education and clinical care. Prior to becoming president of the AAMC, Dr. Cohen spent 40 years in academic medicine at some of the nation's most prestigious institutions. He was dean of the medical school and professor of medicine at the State University of New York at Stony Brook, and president of the medical staff at University Hospital. Before joining SONY-Stony Brook, Dr. Cohen was professor and associate chairman of Medicine at the University of Chicago-Pritzker School of Medicine, and physician-in-chief and chairman of the Department of Medicine at the Michael Reese Hospital and Medical Center. He also held medical faculty positions at Harvard, Brown, and Tufts universities and was president of the medical staff at the New England Medical Center Hospital in Boston. He is a graduate of Yale University and Harvard Medical School and completed his postgraduate training in internal medicine on the Harvard service at the Boston City Hospital.

David F. Dinges, Ph.D.

David F. Dinges, Ph.D. is a tenured Professor and Chief of the Division of Sleep and Chronobiology, and Director of the Unit for Experimental Psychiatry in the Department of Psychiatry, and Associate Director of the Center for Sleep and Respiratory Neurobiology at the University of Pennsylvania School of Medicine. As a behavioral neuroscientist, his research focuses on physiological, neurobehavioral, and cognitive effects of sleep loss, disturbances of circadian biology, and stress, and the implications of these unmitigated effects on health and safety. He has conducted extensive scientific work on development and validation of behavioral, technological, and pharmacological interventions for these effects. During the past 30 years his research has been continuously supported by Federal grants, from such agencies as NIH, NASA, the Department of Defense, Department of Transportation, and the Department of Homeland Security. He has advised Federal and private regulatory policies regarding duty hours and fatigue management. He currently leads the Neurobehavioral and Psychosocial Factors Team for the NASA funded National Space Biomedical Research Institute. He is a member of the NIH NINR Council. He has been President of the U.S. Sleep Research Society and of the World Federation of Sleep Research and Sleep Medicine Societies, and served on the Board of Directors of the American Academy of Sleep Medicine and the National Sleep Foundation. He is currently Editor-in-Chief of SLEEP, the leading scientific journal on sleep research and sleep medicine in the world. He has received numerous awards, including the 2004 Decade of Behavior Research Award from the American Psychological Association, and the 2007 NASA Distinguished Public Service Medal.

Javier A. Gonzalez del Rey, M.D., M.Ed.

Javier A. Gonzalez del Rey, M.D., M.Ed., is currently Professor of Pediatrics, Associate Director/Division of Emergency Medicine, and Director of Pediatric Residency Training Programs at Cincinnati Children’s Hospital Medical Center (CCHMC)/University of Cincinnati College of Medicine. Dr. Gonzalez del Rey’s major areas of interests include pediatric residency, pediatric emergency medicine education and international pediatric training. He has won numerous teaching awards including the Cincinnati Children’s Hospital Medical Center Faculty Teaching Award, the University of Cincinnati Department of Emergency Medicine Golden Apple Award, and most recently the “Parker J. Palmer Courage to Teach

Award" by the Accreditation Council of Graduate Medical Education (ACGME). He received his university and medical school education at the National University Pedro Henríquez Urena in the Dominican Republic, completed his pediatric residency at the University of Connecticut Primary Care Program, and his Fellowship training in General Academic Pediatrics and Pediatric Emergency Medicine at the Cincinnati Children's Hospital Medical Center. He is currently certified in Pediatrics and Pediatric Emergency Medicine. He has completed a Master's of Medical Education. He is currently a member of the National PEM Fellows Conference, the Chair of the AAP PREP-EM course and, the organizer of many international educational exchange programs.

**Peter J. Kolesar, Ph.D.**

Peter Kolesar is Professor Emeritus at Columbia University and currently serves as research director of Columbia's Deming Center for Quality, Productivity and Competitiveness. He holds degrees in physics and mathematics from Queens College (CUNY) and in industrial engineering and operations research from Columbia University. He has been on the faculties of the Imperial College of Science & Technology (London), the Université de Montréal and the City University of New York and on the technical staffs of the RAND Corporation and Bell Labs. Professor Kolesar held joint appointments with Columbia's Graduate School of Business and its School of Engineering and Applied Science and has taught courses in statistics and quality and production management. Dr. Kolesar has made extensive applications of statistical process control, team problem solving, and experimental design for improving quality and productivity of such industries as timber harvesting, paper, plastics and metals, electronics and a wide variety of services. Dr. Kolesar has been a member of the Council of the Operations Research Society of America and of the editorial boards of the journals Operations Research, Management Science, The Technology and Operations Review, Production and Operations Management and Interfaces. He has served on several NSF and NAS advisory panels. His research has been honored by the Operations Research Society of America, the Institute of Management Sciences, and NATO and has been supported by grants from the National Science Foundation, the National Institutes of Health and the National Institute of Justice. Professor Kolesar is a fellow of the American Association for the Advancement of Science and of the Institute for Operations Research and Management Science and was a member of the Board of The Juran Institute.

**Brian W. Lindberg, M.B.A.**

Mr. Lindberg has served as the Executive Director of the Consumer Coalition for Quality Health Care since 1993. The Coalition advocates for programs and policies that address the critical need for a health care system that provides meaningful choices and information, consumer participation, grievance and appeals rights, consumer advocacy, and independent quality oversight and improvement. Mr. Lindberg served on the Planning Committee for the National Quality Forum (appointed by Vice President Gore), and currently serves as the Chair of its Consumer Council. He has also served on its Board of Directors. He represents consumer viewpoints on various panels, including the consumer advisory panels of the Joint Commission and the National Committee for Quality Assurance. He has served as a member of the CMS Advisory Panel on Medicare Education, and as a Funded Consumer Representative on the National Association of Insurance Commissioners. Mr. Lindberg also provides public policy consultation for The Gerontological Society of America (GSA), the National Academy of Elder Law Attorneys (NAELA), the National Association of State Long-Term Care Ombudsman Programs (NASOP), Experience Wave, and other organizations. Mr. Lindberg worked in Congress for 10 years on the House Select Committee on Aging and the Senate Special Committee on Aging. He holds a Bachelor of Social Work degree from Temple University, a Master's degree in Management of Human Services from Brandeis University, and studied social and health care policy at the University of Stockholm's International Graduate School.

**Kenneth M. Ludmerer, M.D.**

Dr. Kenneth Ludmerer is professor of medicine and a professor of history at Washington University in St. Louis where he has won awards for his outstanding bedside teaching and practice of internal medicine. Dr. Ludmerer received an AB from Harvard College and an MA and MD from The Johns Hopkins School of Medicine. Following medical school he did a residency in internal medicine at Barnes Hospital in St. Louis and graduate work in history at Harvard. Other past positions held by Dr. Ludmerer include: American College of Physicians teaching and research scholar 1980-83; Henry J. Kaiser Family Foundation faculty scholar in general internal medicine 1981-86; research grants 1986-96; Macy Foundation research grant 1989-94; Spencer Foundation research grant 1992-95. Dr. Ludmerer is also present or past member of the editorial boards of the following: Bulletin of the History of Medicine, Journal of the History of Medicine and Allied Sciences, History of Education Quarterly, Pharos, Annals of Internal Medicine, Academic Medicine, and American Journal of Medicine. He is best known for his work in medical education and health care policy, authoring books about the creation and evolution of American medical education (Learning to Heal and Time to Heal). He received the Abraham Flexner Award for Distinguished Service to Medical Education from the Association of American Medical Colleges for this work.

**Daniel Munoz, M.D.**

Dr. Munoz is a senior resident (post-graduate year 3) in the Department of Medicine at the Johns Hopkins University School of Medicine. He obtained his medical degree from the Johns Hopkins School of Medicine (class of 2005) and also
has a Master's in Public Administration from Harvard University's John F. Kennedy School of Government where he concentrated on health economics and public policy. He has a Bachelor of Arts in Economics from Princeton University where he graduated with honors. He spent the summers of 1999 and of 2001 working in the United States Senate in the Health Policy Office of Senator Edward M. Kennedy in Washington, D.C. He is a frequent contributor to Hopkins Medicine Magazine and The Baltimore Sun. Dr. Munoz is 1st generation Colombian-American, equally fluent in English and Spanish and currently resides in Baltimore, Maryland.

Christopher S. Parshuram, M.D.
Dr. Parshuram graduated from Otago University of New Zealand, with prizes in medicine and pharmacology. Following a residency in pediatrics at the Royal Children's Hospital in Melbourne, Australia, he moved to Canada where he completed specialist fellowship training in pediatric critical care medicine and clinical pharmacology in Toronto and Edmonton. He completed his Ph.D in Clinical Epidemiology in 2005, on the subject of patient safety. Dr. Parshuram was appointed as a staff physician in the Department of Critical Care Medicine in the Hospital for Sick Children in 2003, and is a scientist in Child Health Evaluation Sciences in the Research Institute. In addition to formal training in systems of healthcare delivery, Dr. Parshuram has expertise in cardiac arrest prevention, reducing errors that are associated with medications, and preventing fatigue in healthcare workers. He has received peer-reviewed research funding from the Heart and Stroke Foundation of Canada, the Society of Critical Care Medicine, and the Canadian Institutes of Health Research. He is a career scientist of the Ministry of Health and Long Term Care, the director of the Centre for Safety Research, and is an assistant professor at the University of Toronto in the Faculty of Medicine.

Ann E. Rogers, Ph.D., R.N.
Dr. Rogers earned a Ph.D. in Teaching-Learning Processes from Northwestern University in 1986. Before joining the faculty of the University of Pennsylvania School of Nursing, she held faculty positions first as an assistant professor (1986-1994) and then as an associate professor (1994-1998) at the University of Michigan School of Nursing, as well as an adjunct clinical nurse specialist in the Michael S. Aldrich Sleep Disorders Center at the University of Michigan Medical Center. An active member of the Center for Sleep and Respiratory Neurobiology since her arrival at the University of Pennsylvania in 1999, Dr. Rogers was appointed as associate professor, Division of Sleep Medicine/Department of Medicine at the University of Pennsylvania School Medicine in 2001

Denise M. Rousseau, Ph.D.
Dr. Rousseau earned her graduate degrees in psychology at the University of California, Berkeley. She currently chairs Master's programs in Health Care Management and Medical Management and is the faculty director of the Institute for Social Entrepreneurship and Innovation at the Carnegie Mellon University's H. John Heinz II School of Public Policy and Management and the Tepper School of Business. She also directs a Project on Evidence-Based Organizational Practices and conducts research and consults in a variety of settings. Before joining Carnegie Mellon, she served on the faculties of Northwestern University's Kellogg School of Management, the University of Michigan's Department of Psychology and Institute for Social Research and the Naval Postgraduate School at Monterey. She has also been a visiting professor at universities in the UK, Singapore, Thailand, and China.

Eduardo Salas, Ph.D.
Dr. Salas is Trustee Chair and Professor of Psychology at the University of Central Florida. He also holds an appointment as Program Director for Human Systems Integration Research Department at the Institute for Simulation & Training. Previously, he was a senior research psychologist and Head of the Training Technology Development Branch of NAVAIR-Orlando for 15 years. During this period, Dr. Salas served as a principal investigator for numerous R&D programs focusing on teamwork, team training, advanced training technology, decision-making under stress, learning methodologies and performance assessment. His expertise includes helping organizations on how to foster teamwork, design and implement team training strategies, facilitate training effectiveness, manage decision making under stress, develop performance measurement tools, and design learning environments. He is currently working on designing tools and techniques to minimize human errors in aviation, law enforcement and medical environments. He has consulted to a variety of manufacturing, pharmaceutical laboratories, industrial and governmental organizations. Dr. Salas is a Fellow of the American Psychological Association (SIOP and Division 21), the Human Factors and Ergonomics Society. He received his Ph.D. degree in industrial and organizational psychology from Old Dominion University.

Bruce Siegel, M.D., M.P.H.
Dr. Bruce Siegel is a Research Professor in the Department of Health Policy at the George Washington University School of Public Health and Health Services. There he directs two national programs of the Robert Wood Johnson Foundation: Urgent Matters, focused on improving hospital patient flow; and Expecting Success, dedicated to reducing disparities in health care for minority Americans. He has held the positions of New Jersey Commissioner of Health, President of the New York City Health and Hospitals Corporation and President of Tampa General Healthcare. In addition, he served as a Director of the Accreditation Council for Graduate Medical Education, as a Senior Fellow at New
School University, and as an advisor to the World Bank, hospitals and several national philanthropies. Dr. Siegel received his A.B. degree from Princeton University, M.D. from Cornell University Medical College, and M.P.H. from the Johns Hopkins School of Hygiene and Public Health. He is board certified in Preventive Medicine. He has written and spoken extensively on health care administration, policy and public health issues.