Health Systems: The Next Generation

Friday, September 16th, 9:00am – 5:00pm
Technology Square Research Building (TSRB), 85 Fifth Street

Sponsored by

Organized by
Dear Participants,

The Georgia Tech Center for Health and Humanitarian Systems (CHHS) would like to welcome you to the first forum on Health Systems: The Next Generation. This event will focus on improving health systems with leaders from across the fields of healthcare delivery and operations, including panel sessions on “Industry Trends in Healthcare Delivery,” “Educating the Next Generation in Health Systems”, and “Alumni Response: What Should GT Do?”, as well as faculty presentations and posters on new research.

The conference brings together professionals from across healthcare delivery and operations, including healthcare providers, insurers, healthcare technology, medical devices, epidemiology, public health policy, and others.

We are very grateful to this year’s sponsor, the Georgia Tech School of Industrial and Systems Engineering (ISyE), for making this event possible. We also thank the staff of CHHS at Georgia Tech, and the student volunteers who have helped to make the event possible.

If you need any assistance during the conference please do not hesitate to ask any of the organizers, volunteers, or Meghan Smithgall at CHHS at Georgia Tech (msmithgall@isye.gatech.edu).

We hope you enjoy the conference!

Sincerely,

2016 Health Systems Event Organizers

- **Pinar Keskinocak, PhD**, William W. George Chair, School of Industrial & Systems Engineering (ISyE); ADVANCE Professor, College of Engineering; Co-director, Center for Health & Humanitarian Systems (CHHS), Georgia Tech

- **Julie Swann, PhD**, Harold and Mary Anne Nash Professor, School of Industrial & Systems Engineering (ISyE); Co-director, Center for Health & Humanitarian Systems (CHHS); Co-founder and Co-Director, Center for Health Analytics, Georgia Tech

- **Paul Griffin, PhD**, Virginia C. and Joseph C. Mello Chair and Professor, School of Industrial and Systems Engineering (ISyE), Georgia Tech
The Center for Health & Humanitarian Systems (CHHS) would like to thank the

H. Milton Stewart School of Industrial & Systems Engineering (ISyE)

for the generous support of this event!
Agenda

8:00 - 9:00  Registration and Coffee (Pre-Function area, outside of room 118)

9:00 - 9:10  Welcome and introduction to IRCs and Coda Project (Auditorium, 118)

9:10 - 9:30  Welcome from Directors, Georgia Tech Center for Health & Humanitarian Systems (CHHS), Interdisciplinary Research Center (IRC) (Auditorium)
  - Pinar Keskinocak, PhD, William W. George Chair, Stewart School of Industrial & Systems Engineering; ADVANCE Professor, College of Engineering; Co-director, Center for Health & Humanitarian Systems (CHHS), Georgia Tech
  - Julie Swann, PhD, Harold R. and Mary Anne Nash Professor, Stewart School of Industrial & Systems Engineering; Co-director, Center for Health & Humanitarian Systems (CHHS), Georgia Tech

9:30 - 10:45  Panel 1: “Industry Trends in Healthcare Delivery” (Auditorium)
  - Courtney Baechler, MD, Vice President, Penny George Institute for Health and Healing
  - Allana Cummings, Chief Information Officer (CIO), Children’s Healthcare of Atlanta
  - Becca Norris, VP, Strategic Business Initiatives, McKesson Health Systems, McKesson Corporation
  - Rhonda Scott, PhD, RN, NE-BC, NEA-BC, Executive Vice President / Chief Operating Officer/ Chief Nursing Officer, Grady Health System
  - *Moderator: Margaret Wagner Dahl, Associate Vice President for Health IT, Enterprise Innovation Institute, Georgia Tech

10:45 - 11:15  Break & Poster Session (Pre-function area, outside of Auditorium)

11:15 - 12:15  CHHS Research Rapid Fire Presentations (Auditorium)
  - Turgay Ayer, PhD, George Family Foundation Assistant Professor of Predictive Health, H. Milton Stewart School of Industrial & Systems Engineering (ISyE, Georgia Institute of Technology
  - Jon Duke, MD, Director of Health Data Informatics, College of Computing, School of Computational Science & Engineering; Principal Research Scientist, Georgia Tech Research Institute (GTRI) Information & Cyber Sciences Directorate, Georgia Tech
  - Nicoleta Serban, PhD, Coca-Cola Associate Professor, Stewart School of Industrial & Systems Engineering; Co-founder and Co-director, Center for Health Analytics, Georgia Tech
  - Craig Zimring, PhD, Director, SimTigrate Design Lab; Professor, School of Architecture, Georgia Tech
  - *Moderator: Edwin Romeijn, PhD, H. Milton and Carolyn J. Stewart School Chair and Professor, Stewart School of Industrial & Systems Engineering, Georgia Tech
12:15 – 1:30  **Lunch** (GA Tech Hotel and Conference Center, 800 Spring Street)

1:30 – 2:45  **Panel 2: “Educating the Next Generation in Health Systems”** (Auditorium)

- **James (Jim) Curran, MD, MPH**, Dean, Rollins School of Public Health, Emory University
- **Thomas Grace, MPH**, Associate Medical Center Director, Atlanta Veteran Affairs Medical Center
- **Amanda Mewborn, MSHS**, Executive Director, Project Management, Piedmont Hospital
- **Chesley Richards, MD, MPH, FACP**, Deputy Director for Public Health Scientific Services; Director, Office of Public Health Scientific Services, Centers for Disease Control and Prevention (CDC)
- **Moderator: Bill Todd**, Professor of the Practice, Scheller College of Business, Georgia Tech

2:45 – 3:45  **Break & Poster Session** (Pre-function area, outside of Auditorium)

3:45 – 4:30  **Panel 3: Alumni Answer “What Should GT Do?”** (Auditorium)

- **Kristin Goin, MSHS**, Senior Improvement Consultant, Shepherd Center
- **Leanne Metcalf, PhD**, Senior Director of Consultative Data Science, Blue Cross and Blue Shield (IL, TX, OK, NM, MT)
- **Michael Polak**, Vice President for Product Management, Ingenious Med
- **Moderator: Julie Swann, PhD**, Harold R. and Mary Anne Nash Professor, Stewart School of Industrial & Systems Engineering; Co-director, Center for Health & Humanitarian Systems (CHHS), Georgia Tech

4:30 – 5:30  **Reception (with posters)** *light refreshments in Pre-function area*

Thank you to our generous Sponsor!

This event is made possible by generous support for the H. Milton Stewart School of Industrial & Systems Engineering (ISyE) at Georgia Tech!
Organizer Bios

Pinar Keskinocak, PhD
Georgia Institute of Technology
William W. George Chair, School of Industrial and Systems Engineering; Co-director, Center for Health & Humanitarian Systems (CHHS); ADVANCE Professor, College of Engineering, Georgia Tech

Dr. Keskinocak has over 20 years of experience in logistics and supply management. Her work focuses on the applications of operations research and management science with societal impact, particularly health and humanitarian applications. She co-founded and co-directs the GT Center for Health and Humanitarian Systems, which was recently named an Interdisciplinary Research Center at Georgia Tech. Her recent work has addressed infectious disease modeling (e.g., cholera, pandemic flu), evaluating intervention strategies, and resource allocation; catch-up scheduling for vaccinations; medical decision-making (e.g., disease screening); hospital operations management; disaster preparedness and response (e.g., prepositioning inventory, debris management). She has worked on a variety of projects with companies, governmental and non-governmental organizations, and healthcare providers, including American Red Cross, CARE, CDC, Children’s Healthcare of Atlanta, Emory University Hospital, Grady Memorial Hospital, Pan-American Health Organization, and the Task Force for Global Health.

Julie Swann, PhD
Georgia Institute of Technology
Harold R. and Mary Anne Nash Professor, School of Industrial and Systems Engineering (Courtesy appointment in Public Policy); Co-founder and Co-director, Center for Health & Humanitarian Systems (CHHS); Co-founder and co-director, Center for Health Analytics, Georgia Tech

Dr. Swann conducts educational activities and research to transform health systems and the meeting of humanitarian needs. She has a background in systems engineering and mathematical modelling for supply chains and systems, especially to solve problems in the health and humanitarian sectors. She co-founded and co-directs the GT Center for Health and Humanitarian Systems, which was recently named an Interdisciplinary Research Center at Georgia Tech. Examples of her research include interventions for influenza pandemic considering spread over geographical areas and time, locations of community clinics, factors related to uptake of vaccine during the H1N1 pandemic, and estimation of pediatric obesity in small geographical areas. She was previously on loan to the Centers for Disease Control and Prevention (CDC) as a Senior Science Advisor during the H1N1 pandemic. Dr. Swann has had collaborations with the American Red Cross, CDC, Children’s Healthcare of Atlanta, Georgia Department of Public Health, the Task Force for Global Health, World Health Organization, UNHCR, UPS, Veterans’ Administration (Atlanta location), and other companies, government agencies, or non-governmental entities.

Paul Griffin, PhD
Georgia Institute of Technology
Virginia C. and Joseph C. Mello Chair and Professor, Stewart School of Industrial & Systems Engineering, Georgia Tech

Dr. Griffin is also the research director for healthcare delivery in the Center for Health & Humanitarian Systems (CHHS) at Georgia Tech. His research interests are in health and supply chain systems. His current research activities have focused on cost-effectiveness modeling of public health interventions, health logistics, health access and economic modeling, and supply chain coordination and control including pricing and contracting mechanisms. Dr. Griffin previously served as the Peter and Angela Dal Pezzo Department Head Chair of the Harold and Inge Marcus Department of Industrial and Manufacturing Engineering at Penn State. Prior to this, he served on the Georgia Tech ISyE faculty for 21 years.
Speaker Profiles

Courtney Baechler
Penny George Institute for Health and Healing
Vice President

Courtney Jordan Baechler, MD, is vice president of the Penny George™ Institute for Health and Healing, the prevention and wellness clinical service line of Allina Health. Baechler attended the University of Minnesota, where she earned a bachelor’s degree in mathematics, a medical degree from the School of Medicine, and a master’s degree in epidemiology and public policy from the School of Public Health. She is a cardiologist and director of preventive services for United Heart and Vascular Clinic. She started her own integrative clinic focused on prevention of heart disease and behavioral change that supports wellness. Baechler has served on the national prevention committee for the American College of Cardiology and the Minnesota Department of Health State Prevention of Cardiovascular and Stroke Committee. She is a consultant to the Statewide Health Improvement Plan and chair of the clinical work group for Minneapolis. She is one of the authors of the Healthy Lifestyle Guideline for the Institute for Clinical Systems Improvement.

Allana Cummings
Children’s Healthcare of Atlanta
Chief Information Officer

Allana Cummings is Chief Information Officer of Children’s Healthcare of Atlanta. Prior to her role with Children’s, Cummings served as CIO at Northeast Georgia Health System, where she oversaw the information technology, clinical informatics, and telecommunications departments. She also previously served as Vice President and CIO of Children’s Healthcare Services of Omaha. Throughout her career, the teams Cummings has worked with have received robust national recognition for efforts in implementing electronic medical records and other technologies to advance the safety of patient care, most recently including HIMSS EMRAM Ambulatory Stage 7, HIMSS EMRAM Stage 6 and Information Week 500 award. Cummings has also been recognized among the “100 Hospital and Health System CIOs to Know” in Becker’s Hospital Review and is a current member of Most Wired Advisory Board. She served as chair of the Healthcare Information and Management Systems Society (HIMSS) Worldwide Board and as a member of the HIMSS Analytics Board and Most Wired Advisory Board. She was also appointed by Governor Nathan Deal to the Department of Community Health Board (2013 to present) and serves on the DCH Policy Committee.

Becca Norris
McKesson Corporation
VP, Strategic Business Initiatives, McKesson Health Systems

Becca is an accomplished healthcare leader with an extensive background in health systems operations, business strategy, public policy, sales management, healthcare analytics, and new program development. She is presently Vice President, Strategic Business Initiatives, at McKesson Corporation, a global healthcare services company. In this role, Becca develops and implements strategies that help healthcare organizations meet challenges of healthcare transformation. Recognized as a highly effective collaborator, Becca leads the bridging and integration of McKesson business units to provide resources supporting healthcare organizations’ pursuit of better health for their business and the patients they serve. Becca has held multiple leadership positions within McKesson in the Health Systems, Retail National Accounts and Technology business units. She is frequently sought out as a subject matter expert on population health management, health system reimbursement and changes to the healthcare landscape.
Prior to McKesson, Becca was a Vice President with VHA (now Vizient) and held positions in hospital administration at Grady Health System and Wellstar Health System in Georgia. Becca has a B.A. in Healthcare Administration from Vanderbilt University and a M.S. from the Georgia Institute of Technology. In addition, Becca served in the U.S. Navy Reserve as a Medical Service Corp Officer for eight years. Throughout her career, Becca has been actively involved in numerous healthcare-related professional organizations and non-profit community organizations, and currently serves on the board of United Family Medicine in St. Paul, MN.

Rhonda A. Scott, PhD, RN, NE-BC, NEA-BC
Grady Health Systems
Executive Vice President / Chief Operating Officer / Chief Nursing Officer

Rhonda A. Scott, Grady’s chief operating officer and chief nursing officer, is often credited for eliminating nurse contract labor, improving nursing, patient and physician satisfaction and enhancing nurse recruitment and retention. When she joined Grady in 2004, Rhonda had 20 years of nursing experience at some of the finest healthcare institutions in the U.S., including the University of Chicago Medical Center, University of Alabama Medical Center, Louis A. Weiss Memorial Hospital and Saint Joseph’s Hospital of Atlanta.

She is a member of several professional associations, has served as president of the National Association of Clinical Nurse Specialists, is now a nurse executive fellow at the Wharton School of Business and has been widely published in leading nursing journals. Rhonda was awarded Tenet’s “Outstanding Chief Nursing Officer Award” and received the “Up and Comers Award” from Modern Healthcare magazine for rising stars in healthcare management.

Margaret Wagner Dahl
Georgia Institute of Technology
Associate Vice President for Health IT, Enterprise Innovation Institute

Margaret Wagner Dahl is the Associate Vice President (AVP) for Health IT Extension Services, a new role for Georgia Tech’s tactical and strategic objectives within the sector. Health IT Extension Services are part of a comprehensive economic development strategy to enhance the industry ecosystem’s viability. Dahl works specifically with healthcare providers and the health IT industry by making Georgia Tech’s interoperability and integration resources accessible, as well as startup company technology validation and workforce training programs. The goal is to assist Georgia providers, employers and the industry to meet the goals of the Institute for Healthcare Improvement’s Triple Aim: improve the patient experience, help populations to be healthy and to reduce the per capita cost. Dahl is responsible for working closely with the research enterprise to ensure the very best of Georgia Tech research is delivered to communities across Georgia through Tech’s extension network.

Most recently, Dahl was AVP for Economic Development at the University of Georgia (UGA) and Director of the Georgia BioBusiness Center, a biotechnology business incubator tied closely to interdisciplinary research at UGA. Before UGA, she was Director of Operations at the Austin Technology Incubator, The University of Texas at Austin (U.T.). Prior to U.T. Austin, she was Director of Licensing at the University of Washington’s Office of Technology Transfer and previously co-founded two successful startup companies. Dahl has a Bachelor’s in Sociology and Geography from the National University of Ireland-Maynooth in County Kildare, Ireland. She currently serves as Trustee for the American Hospital Association’s Council on Governance, Trustee for the Georgia Hospital Association and Vice Chair for Athens Regional Health System.
Turgay Ayer, PhD  
**Georgia Institute of Technology**  
George Family Foundation Assistant Professor, Stewart School of Industrial & Systems Engineering

Turgay Ayer is a George Family Foundation Assistant Professor in the Stewart School of Industrial & Systems Engineering at Georgia Tech. He is also the research director for medical decision-making in the Center for Health & Humanitarian Systems at Georgia Tech. Dr. Ayer conducts research on stochastic modeling and optimization, with applications in predictive health, medical decision making, health care operations, and health policy. Together with his students, Dr. Ayer has received several awards for his work, including an NSF CAREER award, first place in the 2011 and 2015 INFORMS Doing Good with Good OR Student Paper Competition, finalist in the 2015 INFORMS George Nicholson Student Paper Competition, 2012 and 2014 Seth Bounder Foundation Research Award, and second place in the 2011 MSOM Student Paper Competition. He is a member of INFORMS and the Society for Medical Decision Making, and he currently serves as the president of the INFORMS Health Application Society.

Jon Duke, MD  
**Georgia Institute of Technology**  
Director of Health Data Informatics, College of Computing, School of Computational Science & Engineering; Principal Research Scientist, Georgia Tech Research Institute (GTRI) Information & Cyber Sciences Directorate

Jon Duke, M.D., is the director of health informatics at Georgia Tech's College of Computing, School of Computational Science & Engineering, and holds a joint appointment as a principal research scientist in the Georgia Tech Research Institute's (GTRI) Information & Cyber Sciences Directorate. He leads big data in medicine research projects. Duke previously held an appointment as a senior scientist and director of health analytics and advanced text mining at the Regenstrief Center for Biomedical Informatics. While at Regenstrief, he also lead the Drug Safety Informatics Lab as well as a 5-year partnership with Merck & Co, which conducted more than 45 projects involving at least 70 faculty and staff.

Duke leads Georgia Tech’s initiative to improve human health through better capture, interpretation, and applications of data. This effort incorporates a spectrum of expertise including machine learning, natural language processing, high-performance computing, sensors, cybersecurity and health data interoperability. While applying advanced technology, these efforts manifest through real-world projects supporting not only research environments but health care systems, government and industry partners, and community collaborators.

Duke’s previous work focused on advancing techniques for conducting research through structured, unstructured and patient-generated health care data, with applications spanning research, quality and clinical domains. Over the last several years, Duke has directed more than $21 million in data research for industry and government sponsors. He has worked to expand on strategies for capturing better health care data, streamlining insights for stakeholders and delivering effective data-based interventions. In 2014, Duke helped found the Observational Health Data Sciences and Informatics (OHDSI, pronounced “Odyssey”) program, which aims to develop open-source solutions to deliver value in health data through large-scale analytics. Board certified in internal medicine since 2003, Duke served as an adjunct professor of medicine, an adjunct professor of informatics and an adjunct professor of knowledge informatics and translation at the Indiana School of Medicine from 2010 to 2014. He was a resident clinical instructor at Harvard Medical School from 2000 to 2003. In addition to co-founding the OHDSI Collaborative, Duke is a member of the Health Information and Management Systems Society, the American Medical Informatics Association and the American College of Physicians.
Nicoleta Serban, PhD
Georgia Institute of Technology
Coca-Cola Associate Professor, Stewart School of Industrial & Systems Engineering

Nicoleta Serban is Associate Professor in the School of Industrial and Systems Engineering at Georgia Institute of Technology. She has co-developed along with Julie Swann the Health Analytics group at Georgia Tech, an on-going initiative in the development of analytical methods along with integration of large data sets in addressing important research focus areas in healthcare delivery. Dr. Serban’s research interests on Health Analytics span various dimensions including large-scale data representation with a focus on processing patient-level health information into data features dictated by various considerations, such as data-generation processes and data sparsity; machine learning and statistical modeling to acquire knowledge from a compilation of health-related datasets with a focus on geographic and temporal variations; and integration of statistical estimates into informed decision making in healthcare delivery and into managing the complexity of the healthcare system. In 2010, she was granted the NSF CAREER award for research in service equity and access. Her research record is quite diverse, from mathematical statistics to modeling to data analysis to qualitative insights on causality and complexity. To date, she has published more than 30 journal articles in highly reputed journals, and a collaborative (with Dr. William B. Rouse) book published by MIT Press. The book title is Understanding and Managing the Complexity of Healthcare. She is an Area Editor for physical sciences, engineering, and the environment for Annals of Applied Statistics. She has reviewed for multiple funding agencies and she has been invited to contribute with her expertise in multiple workshops and meetings organized by the National Academy of Engineering.

Craig Zimring, PhD, EDAC
Georgia Institute of Technology
Director, SimTigrate Design Lab; Professor, School of Architecture

Craig Zimring is an Environmental Psychologist and Professor of Architecture at the Georgia Institute of Technology in Atlanta, GA. His work focuses on understanding the relationships between the physical environment and human satisfaction, health, performance, and behavior. Dr. Zimring has conducted studies for Steelcase, the Robert Wood Johnson Foundation, U.S. General Services Administration, Santa Clara County’s Valley Medical Center, Ministry of Education of France, World Bank, California Department of Corrections, U.S. Courts, U.S. Department of State, Florida Board of Regents, California Department of General Services, Army Corps of Engineers and many others. He has served on the board of several organizations, including the Robert Wood Johnson Foundation’s Building Bridges program, National Research Council’s Board on Infrastructure and the Constructed Environment, the Environmental Design Research Association, and others. He has won 10 awards for his research.

Edwin Romeijn, PhD
Georgia Institute of Technology
H. Milton and Carolyn J. Stewart School Chair and Professor, Stewart School of Industrial & Systems Engineering

Edwin Romeijn serves as the H. Milton and Carolyn J. Stewart School Chair at the Stewart School of Industrial & Systems Engineering at Georgia Tech. As chair, Dr. Romeijn is responsible for overseeing the nation’s largest industrial engineering program, which has consistently been ranked No. 1 in both graduate and undergraduate education by the U.S. News & World Reports. His areas of expertise include optimization theory and applications. His recent research activities deal with issues arising in radiation therapy treatment planning and supply chain management. In radiation therapy treatment planning, his main goal has been to develop new models and algorithms for efficiently determining effective treatment plans for cancer patients who are treated using radiation therapy, and treatment schedules for radiation therapy clinics. In supply chain optimization, his main interests are in the
integrated optimization of production, inventory, and transportation processes, in particular in the presence of demand flexibility, limited resources, perishability, and uncertainty.

He previously served as the program director for the Manufacturing Enterprise Systems, Service Enterprise Systems, and Operations Research programs at the National Science Foundation, and as professor and Richard C. Wilson Faculty Scholar in the Department of Industrial and Operations Engineering at the University of Michigan. Before joining The University of Michigan in 2008 he was on the faculty of the Department of Industrial and Systems Engineering at the University of Florida and the Rotterdam School of Management at the Erasmus University Rotterdam in The Netherlands. He is a member of the Institute of Operations Research and the Management Sciences (INFORMS), Mathematical Optimization Society (MOS), Society of Industrial and Applied Mathematics (SIAM), and the American Association of Physicists in Medicine (AAPM).

James (Jim) Curran, MD, MPH
Emory University
Dean, Rollins School of Public Health

Graduating from the University of Notre Dame, he received his MD from the University of Michigan and a master of public health from Harvard University. In 1981 Dr. Curran coordinated the task force on acquired immune deficiency syndrome (AIDS) at the Centers for Disease Control and Prevention (CDC) and then led the HIV/AIDS Division. While at the CDC, he attained the rank of the assistant surgeon general.

Dr. Curran is a fellow of the American Epidemiologic Society, the American College of Preventive Medicine, and the Infectious Diseases Society of America. Author or co-author of more than 260 scholarly publications, he was elected to the Institute of Medicine of the National Academy of Sciences in 1993. He was given the Surgeon General's Medal of Excellence in 1996 and the John Snow Award from the American Public Health Association in 2003. Dr. Curran is an adjunct Professor of Medicine and Nursing, and Co-Director and Principal Investigator of the Emory Center for AIDS Research. He is immediate past chair of the board on Population Health and Public Health Practice of the Institute of Medicine and served on the Executive Committee of the Association of Schools of Public Health. Additionally, he holds an endowed chair known as the James W. Curran Dean of Public Health.

Thomas Grace, MPH
Atlanta Veteran Affairs Medical Center
Associate Medical Center Director

Mr. Thomas Grace, MBA/MHA, was appointed Associate Director of the Atlanta Veterans Affairs Medical Center, Decatur, Georgia, in July 2012. Previously, Mr. Grace served as Atlanta VAMC Assistant Director, Acting Associate Director, and Acting Director. Before coming to Atlanta in 2009, he was the Chief, Systems Analysis and Management Section for the Central Texas Veterans Healthcare System. Mr. Grace began his VA career as a Graduate Health Administration Training Program resident at the Asheville VA Medical Center in July 1994. After completing his residency, Mr. Grace became a Health System Specialist (HSS) trainee at the Asheville VAMC. Upon completing the HSS training program in 1996, Mr. Grace served as the Clinic Administrator at the Lawton/Fort Sill VA Outpatient Clinic in Lawton, OK. In April 1999, he joined the Carl Vinson VA Medical Center, Dublin, GA, as the Business Manager for the Primary Care Service Line. In February 2005, he became a Health System Specialist supporting the Chief of Staff at the Carl Vinson VA Medical Center. Mr. Grace obtained his Bachelor of Science in Management from the Georgia Institute of Technology in March 1992. He completed his Masters Degree in Business Administration in June 1994 and completed his Masters Degree in Health Administration in March 1995 at Georgia State University. Mr. Grace is a member of the Executive Career Field Candidate Development Program Class of 2006.
Amanda Mewborn, MSHS (GA Tech)
Piedmont Hospital
Executive Director, Project Management

Amanda’s passion is improving efficiency in healthcare operations so that care providers are able to deliver the highest levels of patient care, and patients are the recipients of satisfying, healing, and high quality healthcare services. Amanda has gained diverse experience in healthcare operations, working at healthcare organizations, and focusing on areas such as facility design, patient experience, clinical operations and quality improvement, decision support, process improvement, revenue enhancement, managed care contracting, and nursing. An industrial and systems engineer as well as a registered nurse, Amanda has served as a consultant during most of her career.

Amanda has a Master of Science in Health Systems and a Bachelor of Science in Industrial and Systems Engineering from Georgia Institute of Technology, as well as a Bachelor of Science in Nursing from Georgia State University. Amanda is a registered nurse (RN) and is certified in pediatric nursing (CPN). She is pragmatic marketing certified in product management (PMC) and also a certified professional of healthcare information management systems (CPHIMS).

Amanda is a Diplomate in the Society for Health Systems (DSHS) and is currently serving on the board as past-President. She served as Conference Chair for the 2013 Healthcare Systems Process Improvement Conference. She is a Fellow in the Healthcare Information Management Systems Society (HIIMSS), and served on the board of the Georgia HIMSS chapter from 2000 to 2008, including serving as President in 2007. Amanda is a Senior Member in the Institute for Industrial & Systems Engineers (IISE), and served as the health systems track coordinator for IISE’s Annual Conference in May 2011 and May 2014 and the Engineering Lean & Six Sigma Conference in October 2015. She has presented on industry topics at several healthcare conferences.

Chelsey Richards, MD, MPH, FACP
Centers for Disease Control and Prevention (CDC)
Deputy Director for Public Health Scientific Services; Director, Office of Public Health Scientific Services (OPHSS)

Dr. Richards is a key advisor to the CDC Director and oversees the National Center for Health Statistics, publication of the MMWR, The Guide to Community Preventive Services, and Vital Signs. He also is responsible for the Epidemic Intelligence Service and other scientific training programs and a broad range of cross cutting epidemiology, public health surveillance, and laboratory services. OPHSS has approximately 1,000 staff and campuses in Atlanta, Georgia; Hyattsville; Maryland; and Research Triangle Park, North Carolina.

Previously, Dr. Richards served CDC in a variety of roles including Director of the Immunization Services Division in the National Center for Immunization and Respiratory Diseases and Deputy Director of the Division of Healthcare Quality Promotion in the National Center for Preparedness, Detection, and Control of Infectious Diseases. Before coming to CDC, Dr. Richards served as the Chief of General Internal Medicine and Associate Director for Internal Medicine Residency Training at the Medical College of Georgia. Dr. Richards has also been a reviewer for several leading medical and public health journals and has published more than fifty journal articles and chapters. He is currently a Clinical Associate Professor in the Division of General Medicine and Geriatrics at Emory University. Dr. Richards’s professional interests include healthcare quality, preventive services, public health surveillance, health policy, and public health leadership.
Bill Todd
Georgia Institute of Technology
Professor of the Practice, Scheller College of Business

Since returning to his alma mater in 2011, Bill Todd developed two courses in Healthcare Management. He teaches Management in the Healthcare Sector each semester, and has written four original cases with his students. He also teaches Principles of Management for the non-management majors, and has taught the Entrepreneurship Forum and Strategic Management. He also serves as Faculty Guide in the Stamps Leadership Scholars Program.

He has been invited to teach in the Study Abroad Program at Worcester College at the University of Oxford in 2013 and 2015. He has received excellence in teaching awards from both the College and the Institute. Todd joined the Scheller College of Business faculty after serving as president and CEO of the Georgia Cancer Coalition for eight years. Under his leadership, the Georgia Cancer Coalition raised and invested more than $300 million to support research and prevention efforts to reduce cancer deaths.

Todd's 40-year career has focused on health care and technology management in Atlanta, Georgia. He was the founding president of the Georgia Research Alliance in 1990, nurturing the independent not-for-profit organization that has helped build Georgia's reputation as a center for discovery and invention and fostered major advances in science, medicine and technology. He also founded Encina Technology Ventures in 2000. Todd began his career at Emory University hospitals, clinics and the medical school, where he held a variety of administrative posts over two decades, ultimately serving as assistant vice president for Medical Administration at the Robert W. Woodruff Health Sciences Center. A 1971 graduate of Georgia Tech's College of Management, Todd attended the Institute for Educational Management at Harvard University. In 2000, he received an honorary doctor of science degree from the University of Ulster in Northern Ireland. In 2010, Georgia Tech awarded Todd the Ivan Allen, Jr. Prize for Progress and Service, and he now serves on the Nominating Committee for the Ivan Allen Prize for Social Courage.

Todd is past board chairman of the Georgia Tech Alumni Association and an emeritus board member of the Georgia Tech Foundation. He is past member the boards of the Georgia and Atlanta Chambers of Commerce, the American Cancer Society and Georgia Tech Ireland. He is a past president of the Rotary Club of Atlanta and a member of Druid Hills and East Lake Golf Clubs. A fourth generation Atlantan, he was named one of the "100 Most Influential People in Georgia" by Georgia Trend for seven years.

Kristin Goin, MSHS (GA Tech)
Shepherd Center
Senior Improvement Consultant

Goin leads clinical and operations teams to drive system wide process improvements to increase efficiency and effectiveness, enhance care delivery, and drive improved patient outcomes. Previously, Goin has been working with Children's Healthcare of Atlanta (Children's) as a strategy and planning consultant, leading system efforts to drive innovation and improvements in pediatric care across the organization.

Goin has been making a positive impact in the healthcare industry since she was a student in the Stewart School of Industrial and Systems Engineering (ISyE). She originally partnered with Children's during her graduate studies at ISyE through a joint venture with the Georgia Tech Health Systems Institute, Children's, and ISyE's Center for Humanitarian Logistics in the Supply Chain & Logistics Institute. On the project, Goin worked with a team of other master's students to optimize patient flow at Children's at Egleston.
Goin, along with her partners at Children’s, published two papers in the Society for Critical Care Medicine that won the 2010 Scientific and Administration awards, and she was selected to present at the 2009 and 2010 Society for Health Systems conferences.

**Leanne Metcalfe, PhD**  
Blue Cross and Blue Shield (IL, TX, OK, NM, MT)  
Senior Director of Consultative Data Science

Metcalfe oversees the Center for Collaborative Studies with HCSC (BCBS of TX, IL, MT, NM, OK) where she is responsible for elevating our internal analytics to publication level. Previously, she has had 15 years of experience in all facets of the healthcare industry starting with Merck and Company in pharmaceuticals as an engineer, and then transitioning to research and EMR implementation with Georgia Tech and Children's Healthcare of Atlanta.

**Michael Polak**  
Ingenious Med  
Vice President for Product Management

Mike recently became the Portfolio Architect for Ingenious Med, a venture backed healthcare IT company in Atlanta. He was formerly the founder for a startup healthcare IT consulting firm and previously responsible for marketing and strategy for Memorial University Medical Center in Savannah. Overall, he has more than twenty years of information technology experience. He is also currently an Adjunct Professor in the School of Public Policy at Georgia Tech.

Mike served in the Georgia General Assembly from 1993 to 2002. He was Chairman of the Senate’s Science and Technology Committee and Chairman for the Science and Technology Appropriations Subcommittee responsible for the State’s technology investments and served on the Higher Education and Health legislative committees for ten years. One of his more significant legislative achievements was authoring and passing legislation to put into law Georgia’s Hope Scholarship Program in 1998.

He is a graduate from Georgia Tech with a Bachelor’s degree in Industrial Engineering and a Master’s degree in Marketing from Georgia State University. He has served on numerous Advisory Boards at Georgia Tech and other universities including the Georgia Tech College of Engineering, Georgia Tech Research Institute (GTRI), Georgia Tech Savannah Campus, Georgia Southern School of Information Technology, Savannah State College of Science and Technology and the Emory Board of Visitors. In 1999, he was selected to the Georgia Tech Council of Outstanding Young Engineers.
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### Poster Abstracts

1. **Multidimensional Measures of Health Disparity**  
   Shatakshee Dhongde (Georgia Tech)

   Health disparities refer to population-specific differences in the presence of disease, health outcomes, quality of health care and access to health care services that exist across racial, ethnic, regional groups. In order to successfully reduce health disparities we need to accurately measure the extent of health deprivations in different groups. In this project, I develop an innovative multidimensional framework to measure health disparities. The new approach takes into account the interdependence between health outcomes, provision and quality of health care and socio-economic factors influencing the quality of health. High levels of disparities continue to exist among racial and ethnic groups of the elderly in the U.S. I demonstrate the value and feasibility of the proposed approach, by undertaking a pilot study comparing health disparities among individuals aged 55 and above, by race. By using data from the American Community Survey on more than 1 million elderly adults, I find that American Indians and Blacks were the most deprived population subgroups.

2. **Optimal Multi-Modality Screening Policies for Women at High Risk of Breast Cancer**  
   Caglar Caglayan, Turgay Ayer (Georgia Tech)

   Women with breast density, family history of breast or ovarian cancer, or BRCA1 and BRCA2-mutation-carriers are at higher risk of breast cancer. For such women, non-mammographic modalities such as ultrasound or MRI, adjunct to or instead of mammogram, can be beneficial but they lead to an increased screening cost. Considering both potential health benefits and financial aspects, we study this multi-modality breast cancer screening problem and identify cost-effective optimal screening policies.

3. **An Analytics Approach to Hypertension Management**  
   Anthony Bonifonte, Turgay Ayer, Ben Haaland; Peter Wilson (Georgia Tech; Emory University)

   Blood pressure (BP) is a significant controllable risk factor for cardiovascular diseases, the leading cause of death worldwide. Antihypertensive drug treatment can control elevated blood pressure and reduce the risk of future cardiovascular outcomes. While a limited number of intervention strategies has been evaluated via randomized controlled trials (RCTs) previously, considering all possible combinations of systolic and diastolic BP to initiate treatment or intensify treatment through RCTs would be prohibitive.
In this work, we propose models that use statistics and optimization to identify the optimal systolic/diastolic BP threshold levels for initiating BP or for increasing the treatment dosage. Unlike many other conditions where screening at regular time intervals is in place (e.g., cancer screening, chronic disease surveillance), BP measurements can be made at arbitrary time points (e.g., during any office visit for any reason). In that regard, unlike many of the existing models proposed for medical decision making, our models may be parametrized by arbitrarily timed observations, and predict the effects of treatment options for arbitrary time into the future. We carefully parameterize and calibrate our models using the Framingham heart study, one of the key studies in CVD domain. Our findings indicate that consideration of multiple threshold levels instead of a single threshold value for initiating and intensifying treatment might improve the overall health outcomes, which may guide the development of further trials in this area.

4. Optimizing Human Waste Collection to Improve Sanitation

Jan Vlachy; Brian McInnis; Ivana Petrovic; Kevin Lo, Jen Helsby, Joe Walsh (Georgia Tech; Cornell University; Brown University; University of Chicago)

Sanergy is a franchise-based sanitation service that licenses toilets to local entrepreneurs in Nairobi. Entrepreneurs apply to operate a Sanergy toilet within the informal settlements, at markets, bus stops and schools, and Sanergy contracts to collect and treat the human waste. This economic model expands access to clean sanitation for those who dwell within the informal settlements, while supporting local economy. Currently, Sanergy operates about 700 toilets and collected over 1,500 tonnes of feces and about as much urine in 2015 alone.

We focused on improving the collection operations and particularly the Sanergy’s collection schedule. In the past, Sanergy had collected each toilet every day. While this was possible when there were a few hundred toilets, Sanergy has grown to outpace its collection strategy. Additionally, not every toilet needs to be collected every day because some toilets fill more slowly.

Recently, Sanergy has started to experiment with different scheduling schemes. To support such flexible collection schedules, we have implemented a model to construct weekly collection schedules in a data-driven way, such that Sanergy picks up low-fill toilets only occasionally. At the same time, this collection model ensures that toilets do not exceed the capacity too often and that they are collected frequently enough so as not to smell. The collection model uses as an input the waste model, which predicts how much feces and urine accumulate in each toilet every day.

We further implemented a data-driven staffing model. This model produces a spreadsheet indicating how many workers Sanergy will need for every route in the coming week on basis of the collection model and the waste model. We expect that these changes will help Sanergy break even on their logistics operations and expand more rapidly to provide more people in informal settlements with toilet access.

5. POLSA Algorithm and Surface Surveillance

Benjamin Ide, Sung Ha Kang, Haomin Zhou, Eric Sabo, Seong Jun Kim (Georgia Tech)

This research investigates the problem of finding a globally shortest possible path for a sensor to follow to survey a specified region. We consider sensors that have a finite range and regions with obstacles to both the sensor’s movement and sensing ability.

Motivating this is the quickly declining price of drones and potential applications to surveying e.g., for heartbeats in disaster areas, mines in war zones, et cetera. We are also motivated by the unsolved asteroid surveying problem and finding a better solution than that provided by Zalgaller.
The path optimization with limited sensing ability (POLSA) algorithm developed by Kang et al. is extended to surveillance of surfaces of objects in a 3D region with promising results that imply usefulness in the previously mentioned motivating cases. Here we present the POLSA algorithm itself.

6. Value of Inventory Information in Allocating Flu Vaccines with Limited Supply
   Zihao Li, Pinar Keskinocak, Julie Swann (Georgia Tech)

   Influenza has resulted in approximately 970 thousand hospitalizations in the United States during 2015 alone, and 3 to 49 thousand deaths annually. Timely vaccination can significantly reduce the disease burden and save lives. However, flu vaccine supply is often limited, in part due to the production process. We study the allocation of limited vaccine supply when the uptake rates vary geographically. We derive strategies that use inventory information to determine where vaccines should be sent and compare them to strategies that are population based. We quantify how many cases of flu can be prevented, how much wasted inventory is saved, and the unmet demand under both policies. The results emphasize the need for greater visibility in public health supply chains.

7. Prioritizing Hepatitis C Treatment in U.S. Prisons
   Turgay Ayer, Can Zhang, Anthony Bonifonte; Anne Spaulding; Jagpreet Chhatwal (Georgia Tech; Emory University; Harvard Medical School)

   About one out of six inmates in the United States (U.S.) is infected with hepatitis C virus (HCV). The high prevalence of HCV in prison systems offers a unique opportunity to control the HCV epidemic. New HCV treatment drugs are very effective but providing treatment to all inmates is prohibitively expensive, which precludes universal HCV treatment in prison systems. As such, current practice recommends prioritizing treatment for HCV. In this study, we propose a restless bandit modeling framework to support hepatitis C treatment prioritization decisions in U.S. prisons. We first prove indexability for our problem and derive several structural properties of the well-known Whittle's index, based on which, we derive a closed-form expression of the Whittle's index for patients with advanced liver disease. From the interpretation of this closed-form expression, we anticipate that the performance of the Whittle's index would degrade as treatment capacity increases; and to address this limitation, we propose a capacity-adjusted closed-form index policy. We parameterize and validate our model using real-world data. We test the performance of our proposed policies using a detailed, clinically-realistic simulation model and show that our policy can significantly improve the overall effectiveness of hepatitis C treatment. Our results also shed light on several controversial issues in hepatitis C treatment prioritization in the prison setting: 1) considering remaining sentence length of inmates and injection drug use status in addition to liver health state in prioritization decisions can lead to a significant performance improvement; 2) patients with longer remaining sentence lengths should not always be prioritized, and prioritizing patients with shorter remaining lengths may be preferable especially when linkage-to-care rate outside prison system is limited while treatment capacity in prison system is relatively large; and 3) among patients with advanced liver disease, IDUs should not be prioritized unless their reinfection is very-well controlled.

8. Identification and Allocation of Increased-Risk Encephalitis Organs
   Hannah K. Smalley, Nishi Anand, Dylan Buczek, Nicholas Buczek, Pinar Keskinocak, Timothy Lin, Tanay Rajore, Joel Sokol, Muriel Wacker; Sridhar Basavaraju, Brian Gurbaxani, Teresa Hammert, Matthew Kuehnert (Georgia Tech; Centers for Disease Control and Prevention)

   We developed two decision-support tools to aid organ transplant physicians (and patients) in the identification and allocation of organs that carry the risk of infectious encephalitis. The Infectious Encephalitis Risk Calculator assesses whether a donor (and his/her organs) may have infectious versus non-infectious encephalitis, using statistical imputation, cross-validation, and several regression techniques. Compared to current practices used by physicians to distinguish between infectious and non-infectious
encephalitis, the Infectious Encephalitis Risk Calculator improves the prediction accuracy from 70% to 92%.
The Liver Transplant Decision Aid helps patients and physicians evaluate the trade-offs between accepting
and rejecting an increased-risk encephalitis (IRE) liver, using Cox Proportional Hazards models. 53% of the
patients who died on the waitlist in 2006 would have had a higher one-year survival probability if they had
taken an IRE liver with an infection risk of 100% versus remaining on the waitlist. Thus, the Liver Transplant
Decision Aid can enable a better allocation of high-risk organs and reduce the number of deaths on the
waitlist. Finally, we also present descriptive models to provide wait times customized to patient
characteristics.

9. Infusion Center Process Improvement and Patient Wait Time Reduction
Joseph Baek, Tony Li, Allen Liu, Jimmy Miceli, Jack Sun, Mo Shen, Emilie Wurmser, Pinar Keskinocak
(Georgia Tech)

The objective of this project is to reduce the patient wait time of the ambulatory infusion center of Emory
Winship Cancer Institute. We developed a Real-time Visibility Tool and a Check-in Folder Policy based on
the results of scenario analysis via Simio simulation model incorporating time series data sets both from
Emory Winship Cancer Institute and manual time study. After implementing the proposed policies on site for
a month, we observed a 28% decrease in patient wait time. Scenario analysis via simulation successfully
isolated the bottlenecks of the treatment flow and derived the solutions that reduced the wait time of the
patients at the infusion center.

10. Design of efficient pulse configurations for heart stimulation. A Theoretical, numerical and
experimental study.
Neil Hardy, Flavio Fenton (Georgia Tech); Hila Dvir (Tel Aviv University)

We aim to find the optimal waveform for pacemaker use, and to offer a theoretical explanation for its
advantage. We show that a truncated exponential wave form is much more effective than a square pulse
with the same charge. we demonstrate the optimized wave form in numerical experiments as well as in
vitro using rabbit hearts. We found that tissue can be excited with a truncated exponential that uses 10%
the current of a square pulse.

11. The Physical Exam - How Often Should You Go?
Thomas Henderlong, Quinn Dolan, Kyle Seebohm, Kristen Olivera, Michelle Jeng, Kasey Joyce, Zach
Meyer (Georgia Tech)

While 44 million Americans schedule a periodic physical exam every year, there is currently no agreement
that the costs of these exams result in measurable health benefits. Low-risk asymptomatic adults may be
receiving expensive, unnecessary screenings while high-risk or undiagnosed asymptomatic adults may not
be receiving the screenings that could potentially detect a preventable chronic disease. Studies have
been done assessing the overall effectiveness of physical exams, however, this project targets subgroups of
people that could benefit from varying levels of screening at a periodic health exam. The objective is to
quantify the costs and benefits to make recommendations on the frequency of periodic physical exams
and how they can be better utilized for these different subgroups.

The approach uses a Markov chain model with discrete states and transition probabilities representing a
patient’s progression through diabetes, depression, and cardiovascular disease. The results were analyzed
with a focus on quantifying cost and quality of life benefits for these sub-populations with different risk
factors.
The simulation model's results demonstrated that an annual screening interval is the most cost-effective for low income subgroups. Two year screenings are recommended for the rest of the population. The value of the model's recommendations is derived from the difference in the potential cost savings and quality of life benefits of these screening frequencies compared to the current use of the physical exam. There is a significant disparity between the model recommendations and current utilization for the lowest income subgroups. Having these patients follow the model-recommended annual frequency rather than the 3-4 year current state interval would result in measurable quality of life benefits. More than 65% of high income adults are currently being screened annually and could save costs by following the model's 2 year interval recommendation.

12. **Quantifying and Understanding Adherence to Recommended Care Practices for Pediatric Asthma Care**  
   Yuchen Zheng, Ross Hilton, PhD, Nicoleta Serban, PhD (Georgia Tech)

**Background:** Disadvantaged populations, specifically Medicaid-insured children, have historically utilized the care system disparately, without following evidenced-based care practices.

**Objectives:** To quantify and understand adherence to basic recommended care for pediatric asthma in the Medicaid system, comparing Georgia (GA) and North Carolina (NC).

**Methods:** Sequence clustering is used to profile patient-level utilization. The model output is used to visualize transitions between providers, quantify cost-savings of interventions for improving adherence and evaluate the impact of geographic access on patient-level utilization using multinomial regression.

**Results:** Although GA and NC have different coordinated-care Medicaid systems but similar demographics, the asthma healthcare utilization is similar with >50% children utilizing primary care (PC) and <15% utilizing emergency department (ED); the transition probabilities from ED or hospitalizations to PC are low. Cost-savings of improving adherence to follow-up PC visits after ED encounters at 25% improvement level are $205 and $110 per-patient in GA and NC, respectively. Geographic access to asthma care and other community-level factors are significantly associated to utilization (p-value <0.001).

**Conclusions:** We find more similarities than dissimilarities in pediatric asthma healthcare utilization for GA and NC Medicaid systems. It is most efficient for policy-makers to focus on interventions raising the levels of adherence for patients visiting ED regularly. The potential costs associated with such interventions can be offset by the cost-savings in the Medicaid payments for GA but possibly not for NC. One contributor to prevalent ED utilization is lower geographic access to asthma care while controlling for clinical risk group and other patient-level characteristics.