

Division Details

Division Data Summary

Research and Training Details

Number of Faculty	43
Number of Joint Appointment Faculty	2
Number of Research Fellows	4
Number of Research Students	2
Number of Support Personnel	48
Direct Annual Grant Support	\$1,537,210
Direct Annual Industry Support	\$38,536
Peer Reviewed Publications	54

Clinical Activities and Training

Number of Clinical Staff	36
Number of Clinical Fellows	7
Number of Other Students	1
Outpatient Encounters	147,360

Division Photo



Row 1: W Pomerantz, S Reeves
Row 2: J Dexheimer, E Murtagh Kurowski, M Fitzgerald, T Byczkowski, M Gittelman
Row 3: S Iyer, L Babcock, J Grupp-Phelan
Row 4: R Ruddy, J Luria, C McAneney, E Duma, N Timm B Sobolewski

Significant Accomplishments

PECARN Research Grows

Cincinnati Children's is one of 18 institutions in the Pediatric Emergency Care Applied Research Network (PECARN). Richard Ruddy, MD, is a principal investigator and is the Vice Chair, Steering Committee. We enroll in four network studies including defining the biosignatures in febrile infants and a knowledge implementation project to reduce CT scan use in mild head injury. Our node is sponsoring a proposed study to examine the use of probiotics in gastroenteritis.

Clinical and Prevention Research

Findings from a study led by Lynn Babcock, MD, MS, on predictors of post-concussion syndrome were published online June 22 in *Brain Injury*. Benjamin Kerrey, MD, Matthew Mittiga, MD, Gary Geis, MD, and Andrea Rinderknecht, MD, conducted a video review of rapid sequence intubation that revealed failed attempts and adverse effects were more common than previously reported. Their findings, published online March 15 in the *Annals of Emergency Medicine*, prompted our division to trial a bundle of improvements to decrease complications. Gregory Faris, MD, received a Young Investigator Award for his project on predictors of post-concussion syndrome.

In prevention research, division members continued important work in smoking prevention, led by Melinda Mahabee-Gittens, MD, MS; cultural issues across ethnic groups, led by Lisa Vaughn, PhD; injury control, led by Mike Gittelman, MD, and Wendy Pomerantz, MD; mental health screening by Jacqueline Grupp-Phelan, MD,

MPH and teen STIs, led by Jennifer Reed, MD.

Quality Improvement Research

Srikant Iyer, MD, MPH, was awarded the best scientific paper at the Institute for Healthcare Improvement meeting for his work on “Flow in the ED Fast Track.” Evaline Alessandrini, MD, MSCE, presented her work on “Time to Critical Intervention in High Risk Cancer Patients” at the Pediatric Academic Societies annual meeting in Boston.

Clinical Program

Joseph Luria, MD, had a second year of strong performance from the clinical leadership team of physicians and APNs. Highlights included completing the improvement project to deliver antibiotics to oncology patients with fever and neutropenia, reducing length of stay in the ED and reducing patient experience failures. All of this was accomplished while treating more than 145,000 patients at our two EDs and three urgent care sites.

Awards and Education Highlights

Mike Gittelman, MD, and Wendy Pomerantz, MD, were the first recipients of the Annual Faculty Award for Advocacy. The Division also received the Pediatric Residency Teaching Award and Brad Sobolewski, MD, was named Pediatric Residency Faculty Teacher of the Year. Matthew Mittiga, MD, was appointed Associate Program Director for the PEM Fellowship and Sobolewski was appointed the Director of Resident Education.

The second year of PEM morning education meetings was highly successful and it continues to include a PEM conference, hands-on simulation and case discussions. Dr. Sobolewski began developing a new video orientation process, as well as a new online process to facilitate evaluation of direct observations and trauma/medical resuscitation orientation. Highlights include a workshop at the Society of Academic Emergency Medicine Annual Meeting on Conflict Management, led by Dr. Ruddy and Gonzalez del Rey, MD, MEd, and hosting the annual PEM fellowship conference. Internationally, the Division is partnering with Global Health and the Pediatric Residency program to develop a rotation in Malawi for trainees. The Division completed a year-long development program for emerging leaders with Scott Steel, from Education and Learning, and 14 fellows and faculty. Drs. Gonzalez del Rey and Ruddy co-authored with faculty in Bilbao, Spain on the development of an international program in PEM.

Significant Publications

Alessandrini EA, Alpern ER, Chamberlain JM, et al. **Developing a Diagnosis-based Severity Classification System for Use in Emergency Medical Services for Children.** *Academic Emergency Medicine.* 19(1):70-78. Jan 2012.

Children receive emergency care in a variety of settings, in many geographic locations, and from practitioners with differences in training and experience, resulting in significant variation in care delivery and quality. In order to compare outcomes of emergency care, it is important to have a severity of illness scale that is applicable to *all* pediatric emergency patients. To address the need for a system that can easily be applied to existing ED data, we developed a diagnosis driven, resource-focused, severity of illness classification system for EMSC using ICD-9 diagnosis codes. Our goal is to utilize and examine severity-adjusted outcomes across patient populations so that EDs may improve the quality of care delivered.

Bennett BL, Mahabee-Gittens M, Chua MS, et al. **Elevated cardiac troponin I level in cases of thoracic nonaccidental trauma.** *Pediatric Emergency Care.* 27(10):941-944. Oct 2011

This report was the first to document elevation of cardiac Troponin I levels in young children with thoracic non-accidental trauma. Troponin I level was elevated in 7 (70%) of 10 patients with levels between 2 and 50 times the upper limit of normal. The elevation of this specific biomarker may be indicative of sufficient chest trauma to result in the heart being injured, independent of the presence of cardiac decompensation or shock from other causes.

Kennebeck SS, Timm NL, Kurowski EM, et al. The association of emergency department crowding and time to antibiotics in febrile neonates. *Academic Emergency Medicine*. 18(12):1380-1385. Dec 2011.

This study assessed the association of ED crowding on time to antibiotic administration for neonates presenting with fever in a pediatric ED. There was significant delay demonstrated in the crowded PED. This was the first study in the literature that evaluated multiple markers of ED crowding on a specific pediatric clinical outcome.

Mahabee-Gittens EM, Xiao Y, Gordon JS, et al. The role of family influences on adolescent smoking in different racial/ethnic groups. *Nicotine & Tobacco Research*. 14(3):264-273. Mar 2012.

This secondary data analysis demonstrated that when there are high levels of family factors such as connectedness, monitoring, and consequences for smoking behavior, these practices translate into lower levels of smoking initiation in teenagers. Our study also found that lower levels of protective factors were present in smoking initiators, even prior to initiation, which suggests that parents are differentially providing less strong parenting practices to youth not only when they have already started smoking, but prior to smoking onset. Regardless of the timing of these parenting practices, we found that a decrease in perceived punishment in all youth and decreases in connectedness and monitoring in minority youth were associated with increased smoking initiation. These findings are consistent with the concept that these parenting practices should be kept strong even as youth get older and are exposed to outside influences.

Vaughn LM, Jacquez F. Characteristics of newly immigrated, Spanish-speaking Latinos who use the pediatric emergency department: preliminary findings in a secondary migration city. *Pediatric Emergency Care*. 28(4):345-350. Apr 2012.

Similar to many other secondary migration hubs across the U.S., our city has experienced dramatic growth in its Latino population in the last several years. Although health care providers anecdotally report increased service to Spanish-speaking populations, very little is known about the health care experience of Latino families in our area. The purpose of this article was to assess Latino immigrant usage, access, and reason for coming to the pediatric ED and clarify parental perceptions, barriers and concerns regarding Latino children's health.

Division Publications

1. Adams JA, Starling SP, Frasier LD, Palusci VJ, Shapiro RA, Finkel MA, Botash AS. **Diagnostic accuracy in child sexual abuse medical evaluation: Role of experience, training, and expert case review. *Child Abuse and Neglect*. 2012; 36:383-92.**
2. Ahrens R, Osterfeld H, Wu D, Chen CY, Arumugam M, Groschwitz K, Strait R, Wang YH, Finkelman FD, Hogan SP. **Intestinal mast cell levels control severity of oral antigen-induced anaphylaxis in mice. *Am J Pathol*. 2012; 180:1535-46.**
3. Alder MN, Timm NL. **A "rare" case of melena in a 3-year-old. *Pediatr Emerg Care*. 2011; 27:1084.**
4. Alessandrini EA, Alpern ER, Chamberlain JM, Shea JA, Holubkov R, Gorelick MH. **Developing a Diagnosis-based Severity Classification System for Use in Emergency Medical Services for Children. *Acad Emerg Med*. 2012; 19:70-78.**
5. Anderson JB, Iyer SB, Beekman RH, Jenkins KJ, Klitzner TS, Kugler JD, Martin GR, Neish SR, Rosenthal GL, Lannon CM. **National pediatric cardiology quality improvement collaborative: Lessons from**

- development and early years.** *Progress in Pediatric Cardiology*. 2011; 32:103-109.
6. Benito J, Mintegi S, Ruddy RM, Gonzalez del Rey JA. **Changing Clinical Practices and Education in Pediatric Emergency Medicine Through Global Health Partnerships.** *Clinical Pediatric Emergency Medicine*. 2012; 13:37-43.
 7. Bennett BL, Chua MS, Care M, Kachelmeyer A, Mahabee-Gittens M. **Retrospective review to determine the utility of follow-up skeletal surveys in child abuse evaluations when the initial skeletal survey is normal.** *BMC Res Notes*. 2011; 4:354.
 8. Bennett BL, Mahabee-Gittens M, Chua MS, Hirsch R. **Elevated cardiac troponin I level in cases of thoracic nonaccidental trauma.** *Pediatr Emerg Care*. 2011; 27:941-4.
 9. Boat BW, Dixon CA, Pearl E, Thieken L, Bucher SE. **Pediatric Dog Bite Victims: A Need for a Continuum of Care.** *Clin Pediatr (Phila)*. 2012; 51:473-7.
 10. Bond GR, Ho M, Woodward RW. **Trends in hepatic injury associated with unintentional overdose of paracetamol (Acetaminophen) in products with and without opioid: an analysis using the National Poison Data System of the American Association of Poison Control Centers, 2000-7.** *Drug Saf*. 2012; 35:149-57.
 11. Bond GR, Woodward RW, Ho M. **The growing impact of pediatric pharmaceutical poisoning.** *J Pediatr*. 2012; 160:265-270 e1.
 12. Burton KS, Pendergrass TL, Byczkowski TL, Taylor RG, Moyer MR, Falcone RA, Geis GL. **Impact of simulation-based extracorporeal membrane oxygenation training in the simulation laboratory and clinical environment.** *Simul Healthc*. 2011; 6:284-91.
 13. Castillo J, Castillo H, Ayoub-Rodriguez L, Jennings JE, Jones K, Oliver S, Schubert CJ, Dewitt T. **The resident decision-making process in global health education: appraising factors influencing participation.** *Clin Pediatr (Phila)*. 2012; 51:462-7.
 14. Chambers PL, Mahabee-Gittens EM, Leonard AC. **Vulnerable child syndrome, parental perception of child vulnerability, and emergency department usage.** *Pediatr Emerg Care*. 2011; 27:1009-13.
 15. Dexheimer JW, Talbot TR, 3rd, Ye F, Shyr Y, Jones I, Gregg WM, Aronsky D. **A computerized pneumococcal vaccination reminder system in the adult emergency department.** *Vaccine*. 2011; 29:7035-41.
 16. Dixon CA, Mahabee-Gittens EM, Hart KW, Lindsell CJ. **Dog bite prevention: an assessment of child knowledge.** *J Pediatr*. 2012; 160:337-341 e2.
 17. Dotson K, Timm N, Gittelman M. **Is spontaneous pneumothorax really a pediatric problem? A national perspective.** *Pediatr Emerg Care*. 2012; 28:340-4.
 18. Fieldston ES, Alpern ER, Nadel FM, Shea JA, Alessandrini EA. **A qualitative assessment of reasons for nonurgent visits to the emergency department: parent and health professional opinions.** *Pediatr Emerg Care*. 2012; 28:220-5.
 19. Fiks AG, Mayne S, Localio AR, Alessandrini EA, Guevara JP. **Shared decision-making and health care expenditures among children with special health care needs.** *Pediatrics*. 2012; 129:99-107.
 20. Guiot A, Klein M, Peltier C, McAneney C, Lehmann C. **Webpage for Third Year Medical Students Pediatric Clerkship: Is Improved Access Information Useful and Educational?.** *The Open Medical Education Journal*. 2011; 4:12-17.
 21. Guo L, Hariharan S. **Patients are Not Cars and Staff are Not Robots: Impact of Differences between Manufacturing and Clinical Operations on Process Improvement.** *Knowledge and Process Management*. 2012; 19:53-68.
 22. Iyer SB, Anderson JB, Slicker J, Beekman RH, Lannon C. **Using Statistical Process Control to Identify Early Growth Failure Among Infants With Hypoplastic Left Heart Syndrome.** *World Journal for Pediatric and Congenital Heart Surgery*. 2011; 2:576-585.

23. Kennebeck SS, Timm NL, Kurowski EM, Byczkowski TL, Reeves SD. **The association of emergency department crowding and time to antibiotics in febrile neonates.** *Acad Emerg Med.* 2011; 18:1380-5.
24. Khodoun MV, Strait R, Armstrong L, Yanase N, Finkelman FD. **Identification of markers that distinguish IgE- from IgG-mediated anaphylaxis.** *Proc Natl Acad Sci U S A.* 2011; 108:12413-8.
25. Klein M, Vaughn LM, Baker RC, Taylor T. **Welcome back? Frequent attenders to a pediatric primary care center.** *J Child Health Care.* 2011; 15:175-86.
26. Kline-Krammes S, Reed C, Giuliano JS, Jr., Schwartz HP, Forbes M, Pope J, Besunder J, Gothard MD, Russell K, Bigham MT. **Heliox in children with croup: a strategy to hasten improvement.** *Air Med J.* 2012; 31:131-7.
27. Kline-Krammes S, Wheeler DS, Schwartz HP, Forbes M, Bigham MT. **Missed opportunities during pediatric residency training: report of a 10-year follow-up survey in critical care transport medicine.** *Pediatr Emerg Care.* 2012; 28:1-5.
28. Kucuk ZY, Strait R, Khodoun MV, Mahler A, Hogan S, Finkelman FD. **Induction and suppression of allergic diarrhea and systemic anaphylaxis in a murine model of food allergy.** *J Allergy Clin Immunol.* 2012; 129:1343-8.
29. Leonard JC, Kuppermann N, Olsen C, Babcock-Cimpello L, Brown K, Mahajan P, Adelgais KM, Anders J, Borgialli D, Donoghue A, Hoyle JD, Jr., Kim E, Leonard JR, Lillis KA, Nigrovic LE, Powell EC, Rebella G, Reeves SD, Rogers AJ, Stankovic C, Teshome G, Jaffe DM. **Factors associated with cervical spine injury in children after blunt trauma.** *Ann Emerg Med.* 2011; 58:145-55.
30. Leonard JC, Scharff DP, Koors V, Brooke Lerner E, Adelgais KM, Anders J, Brown K, Babcock L, Lichenstein R, Lillis KA, Jaffe DM. **A Qualitative Assessment of Factors That Influence Emergency Medical Services Partnerships in Prehospital Research.** *Acad Emerg Med.* 2012; 19:161-173.
31. Mahabee-Gittens EM, Huang B, Chen C, Dorn LD, Ammerman RT, Gordon JS. **The Association of Parental Self-Efficacy and Parent-Youth Connectedness With Youth Smoking Intentions.** *Journal of Prevention & Intervention in the Community.* 2011; 39:194-208.
32. Mahabee-Gittens EM, Khoury JC, Huang B, Dorn LD, Ammerman RT, Gordon JS. **The Protective Influence of Family Bonding on Smoking Initiation in Adolescents by Racial/Ethnic and Age Subgroups.** *J Child Adolesc Subst Abuse.* 2011; 20:270-287.
33. Mahabee-Gittens EM, Xiao Y, Gordon JS, Khoury JC. **The role of family influences on adolescent smoking in different racial/ethnic groups.** *Nicotine Tob Res.* 2012; 14:264-73.
34. Mills AM, Huckins DS, Kwok H, Baumann BM, Ruddy RM, Rothman RE, Schrock JW, Lovecchio F, Krief WI, Hexdall A, Caspari R, Cohen B, Lewis RJ. **Diagnostic characteristics of S100A8/A9 in a multicenter study of patients with acute right lower quadrant abdominal pain.** *Acad Emerg Med.* 2012; 19:48-55.
35. Reed JL, Huppert JS. **Adolescent Sexually Transmitted Infections: A Community Epidemic.** *Journal of Prevention & Intervention in the Community.* 2011; 39:243-255.
36. Reed JL, Strait RT, Kachelmeyer AM, Byczkowski TL, Ho ML, Huppert JS. **Biomarkers to distinguish surgical etiologies in females with lower quadrant abdominal pain.** *Acad Emerg Med.* 2011; 18:686-91.
37. Rhine T, Gittelman M, Timm N. **Prevalence and trends of the adult patient population in a pediatric emergency department.** *Pediatr Emerg Care.* 2012; 28:141-4.
38. Schwartz HP, Haberman BE, Ruddy RM. **Hyperbilirubinemia: current guidelines and emerging therapies.** *Pediatr Emerg Care.* 2011; 27:884-9.
39. Spellman Kennebeck S, Timm N, Farrell MK, Spooner SA. **Impact of electronic health record implementation on patient flow metrics in a pediatric emergency department.** *J Am Med Inform Assoc.* 2012; 19:443-7.
40. Strait RT, Hicks W, Barasa N, Mahler A, Khodoun M, Kohl J, Stringer K, Witte D, Van Rooijen N, Susskind BM,

- Finkelman FD. **MHC class I-specific antibody binding to nonhematopoietic cells drives complement activation to induce transfusion-related acute lung injury in mice.** *J Exp Med.* 2011; 208:2525-44.
41. Suchdev PS, Shah A, Derby KS, Hall L, Schubert C, Pak-Gorstein S, Howard C, Wagner S, Anspacher M, Staton D, O'Callahan C, Herran M, Arnold L, Stewart CC, Kamat D, Batra M, Gutman J. **A proposed model curriculum in global child health for pediatric residents.** *Acad Pediatr.* 2012; 12:229-37.
42. Timm N, Bouvay K, Scheid B, Defoor WR, Jr.. **Evaluation and management of sexually transmitted infections in adolescent males presenting to a pediatric emergency department: is the chief complaint diagnostic?** *Pediatr Emerg Care.* 2011; 27:1042-4.
43. Timm NL, Gneuhns M. **The pediatric hospital incident command system: an innovative approach to hospital emergency management.** *J Trauma.* 2011; 71:S549-54.
44. Timm NL, McAneney C, Alpern E, Macy M, Ruddy R. **Is pediatric emergency department utilization by pregnant adolescents on the rise?** *Pediatr Emerg Care.* 2012; 28:307-9.
45. Vaughn L. **Parental Health Attributions of Childhood Health and Illness: Development of the Pediatric Cultural Health Attributions Questionnaire (Pedi-CHAQ).** *Journal of Prevention & Intervention in the Community.* 2011; 39:223-254.
46. Vaughn L. **Pediatric Prevention and Intervention in the Community.** *Journal of Prevention & Intervention in the Community.* 2011; 39:177-181.
47. Vaughn LM, Jacquez F. **Characteristics of newly immigrated, Spanish-speaking Latinos who use the pediatric emergency department: preliminary findings in a secondary migration city.** *Pediatr Emerg Care.* 2012; 28:345-50.
48. Vaughn LM, McLinden D, Jacquez F, Crosby L, Slater S, Mitchell M. **Understanding the social networks of parents of children with sickle cell disease.** *J Health Care Poor Underserved.* 2011; 22:1014-29.
49. Vaughn LM, Nabors L, Pelley TJ, Hampton RR, Jacquez F, Mahabee-Gittens EM. **Obesity screening in the pediatric emergency department.** *Pediatr Emerg Care.* 2012; 28:548-52.
50. Weidner NJ, Cameron M, Lee RC, McBride J, Mathias EJ, Byczkowski TL. **End-of-life care for the dying child: what matters most to parents.** *Journal of Palliative Care.* 2011; 27:279-86.
51. Williams JR, Ho ML, Grupp-Phelan J. **The acceptability of mental health screening in a pediatric emergency department.** *Pediatr Emerg Care.* 2011; 27:611-5.
52. Yin S. **Malicious use of nonpharmaceuticals in children.** *Child Abuse Negl.* 2011; 35:924-9.
53. Yin S, Shen Z, Zhou P, Zou X, Che S, Wang W. **Quantifying air pollution attenuation within urban parks: an experimental approach in Shanghai, China.** *Environ Pollut.* 2011; 159:2155-63.
54. Yin S, Wahl M. **Intentional Coricidin product exposures among Illinois adolescents.** *Am J Drug Alcohol Abuse.* 2011; 37:509-14.

Faculty, Staff, and Trainees

Faculty Members

Richard M. Ruddy, MD, Professor

Leadership Division Director; Nodal PI - Pediatric Emergency Care Applied Research Network (PECARN), Hospitals of the Midwest Emergency Research Node (HOMERUN)

Research Interests Pediatric Emergency Care Applied Research Network Multicenter Trials, Respiratory Disease and Quality Research

Javier Gonzalez del Rey, MD, MEd, Professor

Leadership Associate Director, Division Of Emergency Medicine; Director, Pediatric Residency Training

Programs

Research Interests Medical Education and Training

Jacqueline Grupp-Phelan, MD, MPH, Professor

Leadership The Richard Ruddy and Barbara Wriston-Ruddy Endowed Chair for Pediatric Research; Associate Director, Division of Emergency Medicine; Director of Research and Prevention Research Focus Team Leader

Research Interests Mental Health Services and Treatment Engagement; Health Services Research, Cost-Effectiveness, Clinical Effectiveness and Utilization

Joseph Luria, MD, Professor

Leadership Associate Director, Division of Emergency Medicine; Medical Director, Emergency Department; Clinical Leadership Team

Research Interests Improvement Related to ED Quality; Patient Safety, and Flow

Constance McAneney, MD, MS, Professor

Leadership Associate Director, Division of Emergency Medicine; Director, Pediatric Emergency Medicine Fellowship; Director, Education for the Division of Emergency Medicine

Research Interests Medical Education

Lynn Babcock, MD, MS, Associate Professor

Leadership Clinical Research Focus Team Leader; Site PI, HOMERN/PECARN

Research Interests Traumatic Brain Injury (translational research combining neuroimaging, biomarkers, and functional outcomes) and Injury Prevention

Berkeley L. Bennett, MD, MS, Assistant Professor

Leadership Medical Director of the Northern Kentucky Advocacy Center

Research Interests Cardiac Injury in Association with Non-Accidental Trauma, Child Abuse

Seema Bhatt, MD, MS, Assistant Professor

Research Interests Education, Management of Dehydration

G. Randall Bond, MD, Professor

Leadership On-Site Faculty, CCHMC Malawi Program

Research Interests Improvement of Outcomes in Victims of Acute Poisoning

Ted Brenkert, MD, Assistant Professor

Research Interests Utilizing Multimedia in Resident Education

Holly Brodzinski, MD, MPH, Assistant Professor

Research Interests Sedation, Safety, Decision Support in Acute Appendicitis, Health Services, Global Health

Terri L. Byczkowski, PhD, MBA, Assistant Professor

Research Interests Family Centered Care in PEM, Transition to Adult Focused Care.

Patricia Chambers, MD, Assistant Professor

Research Interests Communication in Healthcare, Humanism in Medicine

Judith Dexheimer, PhD, Instructor

Research Interests Clinical Decision Support Applications in the Pediatric Emergency Department

Cinnamon Dixon, DO, MPH, Assistant Professor

Research Interests Global Injury Epidemiology and Trauma Surveillance, Mobile Health Interventions for Injury Prevention, and Dog Bite Prevention Education

Elena Duma, MD, Assistant Professor

Leadership Clinical Staff Coordinator; Director, PED 4th Year Medical Student Clerkship

Research Interests Pediatric Emergency Medicine, Child Abuse

Michael FitzGerald, PhD, Assistant Professor

Leadership Education Research Focus Team Leader

Research Interests Feedback in Medical Education, Assessment and Evaluation of Medical Learners

Gary L. Geis, MD, Associate Professor

Leadership Assistant Medical Director, The Cincinnati Children's Center for Simulation and Research

Research Interests Medical Simulation, Resuscitation, Sepsis

Michael Gittelman, MD, Associate Professor

Leadership Co-Director, Comprehensive Children's Injury Center; Co-Director, Injury Free Coalition for Kids;
Director, Injury Prevention and Advocacy Resident Course

Research Interests Injury Control, Behavior Change Counseling, Community Prevention

Todd Glass, MD, MS, Associate Professor

Leadership Medical Director, Liberty Campus Emergency Department; Clinical Leadership Team

Research Interests Pediatric Trauma, Traumatic Brain Injury, Care Delivery Systems Design and Improvement

Selena Hariharan, MD, Assistant Professor

Leadership Clinical Leadership Team

Research Interests Prevention

Carolyn Holland, MD, MEd, Assistant Professor

Research Interests Adolescent ED Health Issues, Medical Education

Richard Hornung, DrPH, Professor

Research Interests Study Design, Exposure Assessment Modeling, Longitudinal Data Analysis, Epidemiologic
Methods, and Risk Estimation

Srikant Iyer, MD, MPH, Assistant Professor

Research Interests Systems and Process Improvement, Patient Flow, and Acute ED Pain Management

Laurie H. Johnson, MD, Assistant Professor

Research Interests Asthma and Resuscitation

Stephanie Kennebeck, MD, Assistant Professor

Leadership EPIC IT Leadership

Research Interests Quality Care, Overcrowding in ED

Benjamin Kerrey, MD, MS, Assistant Professor

Research Interests Improving the Process and Outcomes of Intubation of Pediatric Emergency Patients, the
Use of High-Fidelity Simulation to Study and Improve Systems of Care for Critically Ill Pediatric Emergency
Patients

Melinda Mahabee-Gittens, MD, MS, Professor

Research Interests Adolescent Tobacco Prevention, Adult Tobacco Cessation, Intervention Development

Matthew Mittiga, MD, Assistant Professor

Leadership Associate Fellowship Director; Coordinator, Emergency Department Resident Education

Research Interests Resuscitation Team Training and Communication, Critical Care in the Pediatric ED, Pediatric Airway Management/Complications, Resident and Fellow PEM Education

Eileen Murtagh Kurowski, MD, Assistant Professor

Research Interests Emergency Care of Adult Patients with Chronic Childhood Illness, Implementation of Evidence-Based Care and Quality Improvement

Wendy Pomerantz, MD, MS, Professor

Leadership Co-Director, Injury Free Coalition for Kids; Co-Director, Safety Resource Center

Research Interests Injury and Poison Prevention, Epidemiology, Geographic Information Systems, Playground Related Injuries and Emergency Medical Services

Jennifer Reed, MD, Associate Professor

Research Interests Adolescent ED Health Issues, STI Testing & Treatment, Adolescent Research Consent Challenges, Quality Improvement

Scott Reeves, MD, Associate Professor

Leadership Liberty Campus ED Medical Director; Quality Research Focus Team Leader

Research Interests Quality Care, Evidence-Based Care, Acute ED Pain Management

Andrea Rinderknecht, MD, Assistant Professor

Research Interests Critical Care in the Pediatric ED, Resuscitation Team Training & Communication, Pediatric Airway Management/Complications, Health Services ED Use Across Diseases/Referrals

Charles J. Schubert, MD, Professor

Leadership Associate Director, Pediatric Residency Training Program - Global Health

Research Interests Global Child Health and Vulnerable Populations

Hamilton P. Schwartz, MD, Assistant Professor

Leadership Medical Director, Transport Team; Medical Director, Statline; Pediatric Medical Director, Cincinnati Fire Department

Research Interests Pediatric EMS and Transport Medicine

Jennifer Setlik, MD, Assistant Professor

Research Interests Abuse of Prescription Medications, Injury Prevention

Brad Sobolewski, MD, Associate Professor

Research Interests Education, Technology and Multimedia

Richard Strait, MD, Associate Professor

Research Interests Early Immunologic Response to Infectious Disease, Immunologic Response to Anaphylaxis, Procedural Sedation

Nathan Timm, MD, Associate Professor

Leadership CCHMC Emergency Preparedness Officer

Research Interests Hospital Emergency Management, Quality Care, Overcrowding in ED

Lisa Vaughn, PhD, Associate Professor

Research Interests Cross-Cultural Psychology Issues Especially with Latinos, Women and Children; Community-Based Participatory Research; International Global Studies; Social Psychology Related

Shan Yin, MD, MPH, Assistant Professor

Leadership Medical Director, Drug and Poison Information Center

Research Interests Pediatric Toxicology

Joint Appointment Faculty Members

Evaline Alessandrini, MD, MSCE, Professor (James M. Anderson Center for Health Systems Excellence)

Research Interests Outcomes and Risk-Adjustment in Pediatric Emergency Care, Quality Measurement

Robert Allan Shapiro, MD, Professor (Director, Mayerson Center for Safe and Healthy Children)

Research Interests Sexually Transmitted Disease, Fractures Caused by Abuse

Clinical Staff Members

- **Catherine Gouldin, MD**,
PEM Trained
- **Lisa Lewis, MD**,
PEM Trained
- **Margaret Orcutt-Tuddenham, DO, Clinical Leadership Team**,
PEM Trained ;Medical Director, Urgent Cares ;Clinical Leadership Team;
- **Kristen Paddon, MD**,
PEM Trained
- **Kirsten Ahrens, MD**
- **Amber Anastasi, MD**
- **Arash Babaooff, MD**
- **Eunice Blackmon, MD**,
3rd Year Medical Student Ed Rotation
- **Kamali Bouvay, MD**
- **Mary Carol Burkhardt, MD**
- **Michael Chua, MD**
- **Jenny Lynn DeBruer, MD**
- **Kristen DeMarco, MD**
- **Emily Eagen, MD**
- **Michelle Eckerle, MD**
- **Kerry Gorman, MD**
- **Laura Howell, MD**
- **Jeanine Jennings, MD**
- **Matthew Kenney, MD**
- **Pamela Kingma, MD, PhD**
- **Joy Lippe, MD**
- **Gregory Middleton, MD, Clinical Leadership Team**,
ED Clinical Leadership Team
- **Sara Murdick, MD**
- **Joanna Nacopoulos, MD**
- **Janice Roeder, MD**
- **Rima Rusnak, MD, Clinical Leadership Team**,
ED Clinical Leadership Team
- **Lori Schroeder, MD, PhD**
- **Radhika Shah, MD**
- **Kristin Stackpole, MD**
- **Kathryn Stordahl, MD**
- **Karen Szczepanski, MD**
- **Elizabeth Templin, MD**

- **Evan Yeung, MD**
- **Angela Brown, RN, CNP**
- **Rachael Ekstrand, RN, CNP**
- **Karen Ford, RN, CNP**
- **Jamie Gerdemann, RN, CNP**
- **Kristina Kaufmann, RN, CNP**
- **Michelle Schrand, RN, CNP**
- **Molly Stenger, RN, CNP**
- **Anika Surratt, RN, CNP**
- **Michelle Widecan, RN, CNP Clinical Leadership Tm,**
ED Clinical Leadership Team;

Trainees

- **Daniel Schumacher, MD**, PL-VII, University of Wisconsin Hospitals & Clinics, Madison, WI
- **Cory Showalter, MD**, PL-VII, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
- **Samuel Delaune, MD**, PL-VI, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
- **Kurtis Dotson, MD**, PL-VI, Medical University of South Carolina, Charleston, SC
- **Tara Rhine, MD**, PL-V, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
- **Corinne Bria, MD**, PL-VI, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
- **Jessica Kanis, MD**, PL-VI, Medical University of South Carolina, Charleston, SC
- **Brian Wagers, MD**, PL-VI, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
- **Brit Anderson, MD**, PL-IV, Children's Memorial Hospital McGaw Northwestern, Chicago, IL
- **Michelle Eckerle, MD**, PL-V, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
- **Greg Faris, MD**, PL-V, Children's Memorial Hospital McGaw Northwestern, Chicago, IL
- **Kari Schneider, MD**, PL-V, St. Louis Children's Hospital, St. Louis, MO

Division Collaboration

Bereavement Services » Michael Fitzgerald, PhD, Claudia J. Borgman, MSW, LISW, and Marcela Cameron, MSW, LISW-S

Survey study to identify bereavement services being offered and types of operational practices at other institutions.

Center for Clinical and Translational Science and Training » Cinnamon Dixon, DO, MPH and Christopher Lindsell, PhD

Dog bite prevention education knowledge screening and desires.

Center for Global Health » Cinnamon Dixon, DO, MPH and Mark Steinhoff, MD, MPH

International pediatric injury and trauma surveillance and prevention.

Center for Global Health » Charles Schubert, MD and Mark Steinhoff, MD, MPH

Global child health program for the residency program.

Center for Innovation in Chronic Disease » Terri Byczkowski, PhD and Maria Britto, MD, MPH

Asthma Innovation Lab: Improving outcomes for adolescents with asthma.

Center for Simulation and Research; Division of Critical Care Medicine » Gary Geise, MD and Derek Wheeler, MD

Implementation of in-situ simulations: Mock codes on clinical units. Improvement in identification of sepsis,

therapeutic hypothermia and cardiac arrest.

Center for Simulation and Research; Section of Neonatology, Perinatal and Plumonary Biology » Gary Geis, MD, Beth Ann Johnson, MD, and Beth Haberman, MD

Provide education in the simulation lab for CCHMC RCNIC staff in order to improve both clinical and behavioral outcomes and subsequently improve the quality and safety of care that neonatal patients receive at CCHMC.

Department of Education and Learning » Michael Fitzgerald, PhD and Daniel McLinden, EdD

Development of a knowledge test for evaluating internal QI training programs.

Department of Hospital Medicine » Michael Fitzgerald, PhD, Corinne Lehmann, MD, and Amy Guiot, MD, FAAP

Survey study to evaluate the effectiveness of changes Pediatric Clerkship Curriculum.

Division of Adolescent Medicine; Anderson Center for Health Care Quality; Division of Surgery » Jennifer Reed, MD, Terri Byczkowski, PhD, Evaline Alessandrini, MD, MSCE, Jill Huppert, MD, MPH, and Jessica Kahn, MD, MPH

Research on using text messaging for notification of STI results to adolescents and methods to improve partner notification.

Division of Allergy and Immunology » Richard Strait, MD and Simon Hogan, PhD

Intestinal mast cell levels control severity of oral antigen-induced anaphylaxis in mice.

Division of Allergy and Immunology » Richard Strait, MD and Yesim Kuck, MD

Desensitization of LgE and LgG mediated anaphylaxis.

Division of Allergy and Immunology » Laurie Johnson, MD, Richard Strait, MD, Richard Ruddy, MD, and Gurjit Khurana Hershey, MD, PhD

Gene expression profiles of acute asthma and subphenotypes of treatment response.

Division of Anesthesiology » Berkeley Bennett, MD, MS, Jennifer Setlik, MD, and Jaqueline Morillo-Delerme, MD

Development of program for emergency medicine faculty to maintain intubation skills.

Division of Anesthesiology » Michael Fitzgerald, PhD, Carrie Morgan, MD, and Norbert Weidner, MS

Survey study to assess physician attitudes and practices related to Palliative Sedation Therapy.

Division of Biomedical Informatics » Stephanie Kennebeck, MD, Imre Solti, PhD, Nancy Crimmins, MD, and John Harley, MD

Emerge Grant: Obesity phenotype with genotyping.

Division of Biomedical Informatics » Judith Dexheimer, PhD and Imre Solti, MD, PhD

Patient identification in the Pediatric Emergency Department using national language processing methodologies.

Division of Cardiology; Clinical Laboratory » Berkeley Bennett, MD, MS, Paul Steele, MD, Russel Hirsch, MD, Melinda Mahabee-Gittens, MD, MS, Elena Duma, MD, and Michael Chua, MD

Prospective study of Troponin I to detect cardiac insult in non-accidental trauma.

Division of Child Psychiatry; Division of Biomedical Informatics » Jacqueline Grupp-Phelan, MD, MPH, John Pestian, PhD, MBA, and Robert Kowatch, MD, PhD

Suicide risk assessment and prevention.

Division of Child Psychiatry; Psychiatry Intake Response Team » Jacqueline Grupp-Phelan, MD, MPH, Linda Richey, LISW, Sergio Delgado, MD, and Robert Ammerman, PhD

Screening and engagement into services for adolescents with suicidal ideation in the Emergency Department.

Division of Critical Care Medicine; Center for Simulation and Research » Constance McAneney, MD, MS,

Selena Hariharan, MD, Gary Geis, MD, Matthew Mittiga, MD, Hector Wong, MD, and Kenneth Tegtmeyer, MD
Simulation boot camp for PEM and critical care fellows.

Division of Endocrinology; General and Community Pediatrics » Michael Gittelman, MD, Amy Bernard, PhD, Christopher Balling, MD, David Klein, MD, PhD, Mona Ho, MS, and Wendy Pomerantz, MD

Screen and provide a program to reduce the obesity problem among youth in Avondale, providing after school curriculum.

Division of Epidemiology; Biostatistics and Behavioral Medicine » Melinda Mahabee-Gittens, MD, MS, Jane Khoury, PhD, and Robert Ammerman, PhD, APBB

Parental tobacco cessation and adolescent smoking prevention.

Division of GI » Richard Strait, MD and Lee Denson, MD

Exploring human IgG-mediated anaphylaxis.

Division of Immunobiology » Richard Strait, MD and Jeorg Kohl, PhD

Immunopathology of Transfusion Related Acute Lung Injury (TRALI).

Division of Immunobiology » Richard Strait, MD, Markat Khodoun, PhD, and Fred Finkelman, MD

Role of IgG1 in arthritis, role of Ig G1 in cryoglobulinemia induced glomerulonephritis, immunopathology of Transfusion Related Acute Lung Injury (TRALI), rapid desensitization of IgE and IgG mediated anaphylaxis, exploring human IgG-mediated anaphylaxis.

Division of Neonatology; Division of Critical Care » Hamilton Schwartz, MD, Derek Wheeler, MD, Becky Baute, RN, and Beth Haberman, MD

Assessing utility of video television in the acute care setting.

Division of Nephrology; Division of Surgery » Richard Strait, MD, Jill Huppert, MD, MPH, Michael Bennett, PhD, and Jennifer Reed, MD

Proteomics in appendicitis.

Division of Neurosurgery » Lynn Babcock, MD, MS and Togg Maugans, MD

Pediatric concussion: Pilot study using advanced magnetic resonance imaging techniques.

Division of Oncology » Evaline Alessandrini, MD, MSCE, Nathan Timm, MD, Majaram Nagarajan, MD, MS, and Denise Adams, MD

Decreasing time to antibiotics in febrile, neutropenic patients.

Division of Otolaryngology; Center for Simulation and Research; Emergency Services » Benjamin Kerrey, MD, Jennifer Oehler, RN, Kaalan Johnson, MD, Mary Dewald, and Gary Geis, MD

Monitoring the implementation of a novel system of care for critical airway obstruction in the Emergency Department.

Division of Pathology » Richard Strait, MD and Keith Stringer, MD

Immunopathology of Transfusion Related Acute Lung Injury (TRALI), role of IGG1 in cryoglobulinemia induced glomerulonephritis.

Division of Pediatric Rehabilitation and Medicine » Lynn Babcock, MD, MS, Bradley Kurowski, MD, and Shari Wade, PhD

Diffuse Tensor Imaging and TBI (Axonal Injury).

Division of Pediatric Rehabilitation and Medicine » Lynn Babcock, MD, MS, Shari Wade, PhD, and Bradley Kurowski, MD

Axonal injury in mild TBI: SMART trial.

Division of Pediatric and Thoracic Surgery » Gary Geis, MD, Terri Byczkowski, PhD, MBA, and Richard Falcone, Jr., MD, MPH

Evaluating the use of simulation training on technical and teamwork skills of personnel, care processes, and serious safety events of Extracorporeal Membrane Oxygenation.

CCHMC Proteomics Core; UC Proteomic Core » Lynn Babcock, MD, MS, Prasad Devarajan, MD, and Ken Greis, PhD

Anoxal injury in mild TBI.

Division of Radiology » Lynn Babcock, MD, MS and Daniel Podberesky, MD

CT scan with contrast alone (CT IV): The role of intra-abdominal fat (IAF) on the sensitivity of CT IV to visualize the normal appendix.

Division of Radiology; Division of Pediatric Neuroimaging » Lynn Babcock, MD, MS, Weihong Yuan, PhD, James Leach, MD, and Blaise Jones, MD

Axonal injury.

Division of Rheumatology » Richard Strait, MD and Sherry Thornton, PhD

Role of IgG1 in collagen induced arthritis.

Division of Surgery » Jennifer Reed, MD and Jill Huppert, MD, MPH

Research on improving notification of STI results to adolescents and feasibility of universal STI screening in the ED.

Education and Learning Department » Lisa Vaughn, PhD and Daniel McLinden, EdD

Cultural health attributions, concept mapping methodology, social network analysis

Education and Learning Department » Hamilton Schwartz, MD, Dan McLinden, EdD, Ken Crank, NEMT-P, and Lynn Standen

Development of on-line pediatric education for EMTs and paramedics.

Division of General Pediatrics; House Staff Office » Charles Schubert, MD, Andy Beck, MD, Michael Gittelman, MD, Melissa Klein, MD, Javier Gonzalez del Rey, MD, MEd, Wendy Pomerantz, MD, and Ndiddi Unakada, MD

Advocacy for residents and house staff including injury prevention and advocacy course.

Division of General Pediatrics; Division of Community Pediatrics » Lisa Vaughn, PhD and Melissa Klein, MD

Social determinants of health, poverty.

Division of General Pediatrics; Division of Community Pediatrics » Stephanie Kennebeck, MD, Andrew Spooner, MD, MS, FAAP, Michael Farrell, MD, and Nathan Timm, MD

Examining methods to improve efficiency during implementation of electronic medical record systems.

James M. Anderson Center for Health Systems Excellence » Terri Byczkowski, PhD, MBA and Evaline Alessandrini, MD, MSCE

The Pediatric Emergency Department experience: Measurable family centered care.

James M. Anderson Center for Health Systems Excellence » Srikant Iyer, Md, MPH and Carole Lannon, MD, MPH

Improvement advisor for the Joint Commission on Congenital hear disease improvement collaborative.

Ohio Chapter of AAP » Michael Gittelman, MD, Wendy Pomerantz, MD, MS, and Mike Fitzgerald, PhD

Injury prevention anticipatory guidance quality improvement project with practicing pediatricians in Ohio.

James M. Anderson Center for Health Systems Excellence; Division of BMI; Division of Surgery; Division of Radiology » Holly Brodzinski, Md, MPH, Andrew Spooner, MD, MS, FAAP, Evaline Alessandrini, MD, MSCE, Alex

Towbin, MD, and Dan von Allmen, MD

Risk stratification to efficiently diagnose appendicitis.

James M. Anderson Center for Health Systems Excellence » Terri Byczkowski, PhD and Evaline Alessandrini, MD, MSCE

The Pediatric Emergency Department experience: Measurable family centered care.

Mayerson Center for Safe and Healthy Children » Berkeley Bennett, MD, MS, Kathi Makoroff, MD, and Michael Chua, MD

Clinical decision rules to discriminate bruising caused by physical child abuse from bruising caused by accidental trauma.

Psychiatry Intake Response Team » Jacqueline Grupp-Phelan, MD, MPH and Linda Richey, LISW

An assessment of voluntary adolescent mental health screening and referral in a children's hospital emergency department.

Division of Pediatric Rehabilitation; Division of Sports Medicine; Division of Neurosurgery; Division of Trauma Services; Division of General Pediatrics; Division of Radiology » Michael Gittelman, MD, Richard Falcon, MD, MPH, Lynn Babcock, MD, MD, Blaise Jones, MD, Bradley Kurowski, MD, Chuck Mehlman, DO, MPH, Kieran Phelan, MD, MSc, Wendy Pomerantz, MD, Kim Price, MA, CHES, CPST, Robert Shapiro, MD, Earl Siegel, PharmD, and Shari Wade, PhD

Comprehensive Children's Injury Center (CCIC)

Division of Trauma Services » Michael Gittelman, MD, Deatra Green, MS, Dawne Gardner-Davis, and Wendy Pomerantz, MD

Injury Free Coalition for Kids of Cincinnati (Emergency Medicine) and Safe Kids Coalition (Trauma) working together on multiple community outreach programs, including Walk Child to School.

Division of Trauma Services » Gary Geis, MD, Matthew Mittiga, MD, Richard Falcone, MD, MPH, and Andrea Rinderknecht, MD

Crew resource management in trauma care through use of simulation.

Division of Trauma Services; Division of General Pediatrics » Michael Gittelman, MD, Kieran Phelan, MD, MSc, Richard Falcone, MD, MPH, and Wendy Pomerantz, MD

Population Health Injury Prevention: Goal to reduce injuries in specific Hamilton County neighborhoods by 30% in five years.

Division of Trauma Services; Division of Pediatric Rehabilitation » Michael Gittelman, MD, Bradley Kurowski, MD, Richard Falcone, MD, MPH, and Wendy Pomerantz, MD

concussion education in the HS setting.

Division of Trauma Services; Division of Sports Medicine; Division of Pediatric Rehabilitation; Division of Neurosurgery; Division of Neurology » Michael Gittelman, MD, Todd Arthur, MD, Abigail Johnson, PhD, Richard Falcone, MD, MPH, Terri McCambridge, MD, Bradley Kurowski, MD, and Wendy Pomerantz, MD

Head Injury Clinic

James M. Anderson Center for Health Systems Excellence » Jennifer Reed, MD, Srikant Iyer, MD, MPH, and Joy Lippe, MD

Expanded HIV testing in Ohio Emergency Departments - Grant through the Ohio Department of Health Quality Improvement project in which rapid HIV testing was implemented in a pediatric emergency department; a sustainable plan for ongoing testing is now being created.

Grants, Contracts, and Industry Agreements

Grant and Contract Awards

Annual Direct

ALESSANDRINI, E

Implementation of the PECARN Traumatic Brain Injury Prediction Rules for Children Using Computerized Clinical Decision Support: An Interrupted Time Series Trial

Columbia University Medical Center

S02 MC 19289 09/01/10-08/31/13 \$50,092

Improving the Quality of Pediatric Emergency Care Using an Electronic Medical Record

Agency for Healthcare Research and Quality(Children's Hospital of Philadelphia)

R01 HS 020270 09/30/11-09/29/16 \$35,877

BABCOCK CIMPELLO, L

Progesterone for Traumatic Brain Injury in Children: Planning a Safety and Efficacy Trial

Health Resources & Services Admin(University of Michigan)

H34 MC 19353 09/01/10-08/31/12 \$3,624

BENNETT, B

Clinical Decision Rules to Discriminate Bruising Caused by Physical Child Abuse

National Institutes of Health(Children's Memorial Hospital)

R01 HD 060997 05/30/11-03/31/16 \$113,965

BYCZKOWSKI, T

The Pediatric Emergency Department Experience

Agency for Healthcare Research and Quality

R03 HS 019037 07/01/10-06/30/12 \$9,994

GRUPP-PHELAN, J

Cincinnati Center for Clinical/Translational Sciences & Training

National Institutes of Health(University of Cincinnati)

UL1 RR 026314 04/30/09-03/31/14 \$49,344

HORNUNG, R

Familial Intracranial Aneurysm Study II

National Institutes of Health(University of Cincinnati)

R01 NS 039512 09/15/09-08/31/12 \$18,314

LIPPE, J

Expanded HIV Testing in Ohio Emergency Departments (EDs)

Ohio Department of Health

03130012HT0112 08/01/11-09/29/12 \$80,000

MAHABEE-GITTENS, M

Exploring a Cessation Intervention for Low Income Smokers in an Emergency Setting

National Institutes of Health

K22 CA 163747 09/22/11-08/31/14 \$179,931

REED, J

Improving STI Results Notification and Partner Services

National Institutes of Health(University of Cincinnati)

K12 HD 051953 11/01/10-06/30/12 \$108,000

RUDDY, R

Emergency Medical Services for Children: Network Development Demonstration Project

Health Resources & Services Admin

U03 MC 22684	09/01/11-08/31/15		\$544,271
RNA Biosignatures in the Emergency Evaluation of Febrile Infants			
National Institutes of Health(Wayne State University)			
R01 HD 062477	01/01/11-05/31/13		\$3,491
SCHUBERT, C			
City of Cincinnati Immunization Project			
City of Cincinnati			
25x0194	01/01/12-12/31/16		\$33,374
STRAIT, R			
IGG Isotype Regulation of Antibody-Mediated Disorders			
National Institutes of Health(University of Cincinnati)			
R01 AI 072040	08/15/07-07/31/12		\$55,766
Prospective Cohort Study of Severe Bronchiolitis and Risk of Recurrent Wheezing			
National Institutes of Health(Massachusetts General Hospital)			
U01 AI 087881	09/01/11-08/31/16		\$22,608
GEIS, G			
Acceleration to Expertise: Simulation as Tool to Improve the Recognition of Sepsis			
Agency for Healthcare Research and Quality			
R18HS020455	4/1/2011-3/31/2014		\$228,559
Current Year Direct			\$1,537,210
Industry Contracts			
BHATT, S			
Baxter Healthcare Corporation			
Current Year Direct Receipts			\$38,536
Total			\$1,575,746