Emergency Medicine

Division Details

RESEARCH AND TRAINING DETAILS

<table>
<thead>
<tr>
<th>Faculty</th>
<th>46</th>
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<tbody>
<tr>
<td>Joint Appointment Faculty</td>
<td>3</td>
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<tr>
<td>Total Annual Grant Award Dollars</td>
<td>$2,804,011</td>
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<td>Total Publications</td>
<td>105</td>
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CLINICAL ACTIVITIES AND TRAINING

| Staff Physicians | 32 |
| Clinical Fellows | 12 |
| Outpatient Encounters | 173,277 |

Research Highlights

Jacqueline Grupp-Phelan, MD, MPH-ED, - Screening and Brief Mental Health Intervention

The National Center for Injury Prevention and Control invited Dr. Grupp-Phelan, MD, MPH, along with other highlighted R01 funded investigators, based on her work “Suicidal Teens Accessing Treatment in the ED”. The grant tested the effectiveness of a brief treatment engagement intervention for adolescent emergency department (ED) patients with non-psychiatric presenting complaints who by screening identified to be at risk for suicidal behaviors. Dr Grupp-Phelan along with nationally known suicidology experts Dr. Cheryl King, PhD, from the University of Michigan, and Dr. David Brent, MD, from Western Psychiatric Institute of Pittsburgh, are multi-principal investigators who received a Supplemental Grant to support additional aims for the UO1 Emergency Department Screen for Teens at Risk for Suicide (ED-STARS). This multi-site collaborative study with the Pediatric Emergency Care and Applied Research Network (PECARN) will determine prospectively the optimal suicide risk screening strategy for youth who present to the pediatric ED and develop and validate a parsimonious algorithm for risk stratification to facilitate the triage of youth to “acute risk,” “at risk,” and “no further follow-up needed” groups, with recommendations for each group.

FY16 Highlights National Leaders

Highlights from our successful FY16 year showcase a division rich with national leaders in emergency medicine with individual and team-based success in research.

Important national leadership roles for division members in FY16 include: Dr. Nathan Timm, MD, serving on the Committee for Pediatric Emergency Medicine at the American Academy of Pediatrics (AAP), the leading policy group for our specialty; Dr. Javier Gonzalez del Rey, MD, MEd, who is now the chair-elect of the Section of Emergency Medicine at the AAP and the President-Elect of the Association for Pediatric Program Directors; and Dr. Holly Depinet, MD, MPH, who holds key roles for the newly formed Children’s Hospital Association’s...
Improving Pediatric Sepsis Outcomes (IPSO) collaborative (Expert Advisory Committee and Steering Committee). This “collaborative of collaboratives” involves hospital-wide work in 36 hospitals for the next three years, and takes an innovative approach to improving all aspects of sepsis care (including prevention) across the spectrum of disease.

Emergency Medicine Research

Pediatric emergency medicine at Cincinnati Children’s continues in a key leadership role for the research consortium PECARN (Pediatric Emergency Care Applied Research Network). Cincinnati Children’s has been a member of the Health Resources and Service Administration (HRSA)/Maternal and Child Health Bureau (MCHB) funded PECARN since 2001, and has been one of six nodes since 2011. Cincinnati Children’s has once again received funding as the nodal center with Dr. Richard Ruddy, MD, as the nodal principal investigator (PI) through 2019. The node includes the Emergency Department from Cincinnati Children’s, Children’s Hospital of Wisconsin and St. Louis Children’s Hospital at Washington University. Nicole McClanahan is the nodal administrator and secretary elect of the PECARN Steering Committee, Dr. L. Babcock, MD, MS, is the site PI for Cincinnati. Dr. Hamilton Schwartz, MD, is the pre-hospital scientific advisor for the next four years.

Important studies underway include:

- Electronic Health Record registry (E. Alessandrini, MD, MSCE, as Co-I) implementing all ED records and making a quality report card by site and provider.
- Probiotics for Acute Gastroenteritis (Seema Bhatt, MD, and R. Ruddy as site PI) – RCT for healthy children less than 4 years of age with gastroenteritis.
- Suicide Screening (J. Grupp-Phelan, MD, MPH, as U01 co-PI) – below.
- Knowledge Translation of PECARN Head Injury Rule (E. Alessandrini as co-I) – use of decision support to reduce CT rates in very low risk children with head injury.
- Alcohol Screening in Teens (J. Grupp-Phelan as site PI) – validate the Center for Disease Control (CDC) Alcohol screening questions and perform follow up for a cohort.
- Biosignatures in Infants < 2 months with Fever (R. Ruddy as site PI) – with second RO1 to continue the work just receiving funding.
- Prehospital and ED Validation of Risk for Cervical Spine Injury (H. Schwartz as site PI) – a nodal study.
- Safety in the ED (R. Ruddy as site PI).

The Division of Emergency Medicine FY17 Scientific Agenda

The Division of Emergency Medicine embraces a scientific agenda that honors the generalist nature of our sub-specialty and our unique opportunity to intervene and improve health across 170,000 patient visits at our sites for ED-based care and urgent care. With the arrival of new Division Director Dr. Stephen Porter, the academic portfolio in pediatric emergency medicine (PEM) is being re-imagined as a matrix of scientific discovery in the areas of Brain/Behavior and Infection/Inflammation, and systematic investigations in the “Science of Everyday Care” which unifies our research efforts in simulation, quality improvement, informatics, and communication science.

Melinda Mahabee-Gittens, MD, MS - Tobacco Cessation Intervention

in August 2015, Dr. Mahabee-Gittens, MD, MS, CTTS, received funding from the National Institute of Child Health and Human Development (NICHD) (R01HD083354) to conduct a randomized trial to test the efficacy of a multi-level tobacco cessation intervention designed to reduce smoke exposure in children compared to an active control condition. This study is actively recruiting 750 caregivers who smoke, and who bring their children into the Emergency Department, or Urgent Care, with a potentially smoke exposure-related illness. Using the child’s illness as a motivator to quit smoking, caregivers randomized into the Screening, Brief Intervention, and Referral to Treatment (SBIRT) group receive motivational interviewing-based counseling and medication to help them quit smoking as a way to improve their child’s health. Researchers assess caregivers at baseline, 6-weeks, and 6-months. In addition to collecting behavioral measures, this study is collecting biological and environmental samples to assess secondhand and third hand smoke exposure in enrolled children. Outcomes include caregiver cessation and child smoke exposure. If effective, this research model has the potential to
reach at least one million smokers a year and could result in significant reductions in smoke-related pediatric illness, caregivers' tobacco use, and related costs in this population.

**Todd Florin, MD, MSCE, - Biomarkers and Risk Stratification in Pneumonia**

In 2015, Dr. Todd Florin, MD, MSCE, received a K23 mentored career development award from the National Institute of Allergy and Infectious Diseases entitled "Biomarkers and Risk Stratification in Pediatric Community-Acquired Pneumonia." Community-acquired pneumonia is a leading cause of hospitalization and substantial cause of morbidity for children in the United States. The decision to hospitalize a child, the most important decision in the management of pneumonia, requires accurate assessment of disease severity and prediction of clinical outcomes. By defining risk factors for hospitalization and using objective diagnostic tests to evaluate pneumonia severity in children, this study will develop a practical clinical scoring tool that will combine clinical factors with biomarkers to improve our ability to predict risk for significant clinical outcomes and guide treatment decisions by identifying which children with pneumonia require hospitalization. Ultimately, this work will improve clinical outcomes by targeting those at risk for significant disease while reducing unnecessary hospitalization and resource use in those at low-risk. The K23 grant leverages the ongoing prospective cohort study (primary investigator (PI): Florin), Catalyzing Ambulatory Research in Pneumonia Etiology and Diagnostic Innovations in Emergency Medicine (CARPE DIEM), that has enrolled children 3 months to 18 years of age in the Cincinnati Children's emergency department with community-acquired pneumonia since July 2013. CARPE DIEM has received funding from several internal Cincinnati Children's mechanisms, including a CCTST KL2 (PI: Florin), Division of Emergency Medicine Small Grant (PI: Florin), Trustee Award (PI: Lilliam Ambroggio, PhD, Division of Hospital Medicine), and an Academic Research Committee grant (PI: Ambroggio), and externally from the Gerber Foundation (PI: Florin). The mentorship team on the K23 includes faculty in the Divisions of Emergency Medicine (Richard Ruddy, MD), Hospital Medicine, Infectious Diseases (Samir Shah, MD, MSCE), and Critical Care Medicine (Hector Wong, MD).

**Significant Publications**


In this retrospective longitudinal cohort study of Emergency Department (ED) visits from 2003-2013 across 31 pediatric hospitals, 1,319 children with VP shunt placed in 2003 visited the ED 6,636 times during the subsequent decade. Cranial computed tomography (CT), performed in half of these visits, with 20% of ED visits with CT scans associated with VP shunt revision. A very small percentage (6%) of the patients received 10 or more CT scans, yet these patients accounted for almost 40% of all of the ED visits with imaging. Importantly, the mean number of CT scans per patient varied 20-fold across hospitals, with the individual hospital accounting for the majority of variation in CT utilization. Strategies need to identify those children at risk of shunt malfunction to reduce variability in CT utilization and radiation exposure in the ED.


This project is the first prospective study to investigate screening for occult cardiac injury in this population. This case-control study showed that troponin I is more often elevated in children with non-accidental trauma than uninjured healthy controls. Twenty-six percent of children > 3 months of age with suspected non-accidental trauma had elevation of troponin I. Elevation of troponin I in this population has the potential to illustrate the extent of injury to these young patients. The results of this study have been the impetus for including troponin I as part of the standard non-accidental trauma work-up at Cincinnati Children's and multiple other centers.


This study demonstrated that Emergency Department (ED) adolescents contacted regarding sexually transmitted infection (STI) with positive results did not have significantly different ED return visits rates for STI testing than those not contacted. However, among adolescents who returned to any setting, one third returned to non-ED settings for STI care suggesting that a post-visit contact from a healthcare provider may be one strategy to improve linkage to a primary medical home.

This clinical trial successfully provided a brief emergency department based cessation intervention to 200 low income caregivers who smoke. Caregivers were highly nicotine dependent (90%), and children were highly smoke exposed as 60% and 76% of caregivers allowed smoking in the home and car, respectively. Encouragingly, at follow-up, we found that our brief intervention prompted a substantial number of quit attempts and resulted in significant reductions in cigarette consumption, increased smoking bans, and reduced smoking prevalence among this underserved population. This intervention was viable to incorporate during the busy emergency department visit, acceptable by caregivers, and provided a basis for conducting future large cessation trials in the emergency department setting.

Division Publications


67. Pomerantz W, Weiss S. Systemic Inflammatory Response Syndrome (Sirs) and Sepsis in Children: Definitions, Epidemiology, Clinical Manifestations, and Diagnosis. Watham MA: UpToDate; 2015.


78. Scheller RL, Depinet HE, Ho ML, Hornung RW, Reed JL. **Utility of Pediatric Appendicitis Score in Female Adolescent Patients.** *Acad Emerg Med.* 2016; 23:610-5.


## Grants, Contracts, and Industry Agreements

### Annual Grant Award Dollars

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<th>Investigator</th>
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<td>Evaline A Alessandrini, MD</td>
<td>Improving the Quality of Pediatric Emergency Care Using an Electronic Medical Record Registry and Clinician Feedback</td>
<td>Agcy for Healthcare Research and Quality (Northwestern University Medical School)</td>
<td>R01 HS020270</td>
<td>11/23/2013 - 9/29/2016</td>
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<td>Lynn Babcock, MD</td>
<td>Established Status Epileptics Treatment Trial (ESETT)</td>
<td>National Institutes of Health (University of Virginia)</td>
<td>U01 NS088034</td>
<td>9/30/2014 - 6/30/2019</td>
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<td>Berkeley L Bennett, MD</td>
<td>Clinical Decision Rules to Discriminate Bruising Caused by Physical Child Abuse</td>
<td>National Institutes of Health (Lurie Children's Hospital of Chicago)</td>
<td>R01 HD060997</td>
<td>5/30/2011 - 3/31/2016</td>
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<td>Seema Bhatt, MD</td>
<td>HIV Testing in Ohio Emergency Departments</td>
<td>Ohio Department of Health</td>
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<td>Seema Bhatt, MD</td>
<td>Impact of Emergency Department Probiotic Treatment of Pediatric Gastroenteritis</td>
<td>National Institutes of Health (Washington University)</td>
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<td>Seema Bhatt, MD</td>
<td>Arginine Therapy for the Treatment of Pain in Children with Sickle Cell Disease</td>
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<td>Michelle Eckerle, MD</td>
<td>Metabolite Profiles in Viral Respiratory Illness among Malawian Children</td>
<td>Thrasher Research Fund</td>
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<td>MSCE, Todd A Florin, MD</td>
<td>Procalcitonin and Risk Stratification in Pediatric Pneumonia</td>
<td>The Gerber Foundation</td>
<td>Gerber - Florin, Todd</td>
<td>1/1/2014 - 12/31/2016</td>
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<td>MSCE, Todd A Florin, MD</td>
<td>Biomarkers and Risk Stratification in Pediatric Community-Acquired Pneumonia</td>
<td>National Institutes of Health</td>
<td>K23 AI121325</td>
<td>1/15/2016 - 12/31/2019</td>
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<td>Michael A Gittelman, MD</td>
<td>Healthy Tomorrows Partnership For Children Program</td>
<td>Health Resources &amp; Services Admin (American Academy of Pediatrics)</td>
<td>AAP - Gittelman, Mich</td>
<td>7/1/2013 - 6/30/2018</td>
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<td>Jacqueline M Grupp-Phelan, MD</td>
<td>Teen Alcohol Screening in the Pediatric Emergency Care Applied Research Network</td>
<td>National Institutes of Health (Rhode Island Hospital)</td>
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<td>Jacqueline M Grupp-Phelan, MD</td>
<td>Emergency Department Screen for Teens at Risk for Suicide (ED-STARS)</td>
<td>National Institutes of Health (University of Michigan)</td>
<td>U01 MH104311</td>
<td>9/1/2014</td>
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<td>Jacqueline M Grupp-Phelan, MD</td>
<td>Ohio Valley Node-Network National Institutes of Health (University of Cincinnati)</td>
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<td>UG1 DA013732</td>
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<td>An Intervention to Reduce SHS Exposure among Pediatric Emergency Patients</td>
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<td>E Melinda Mahabee-Gittens, MD-MS</td>
<td>Pediatric Emergency Department Decision Support System to Reduce Secondhand Smoke</td>
<td>National Institutes of Health</td>
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<td>Jennifer Reed, MD</td>
<td>Decreasing Teen STI Prevalence through Universal Emergency Department Screening</td>
<td>National Institutes of Health</td>
<td>K23 HD075751</td>
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<td>Tara Devi Rhine, MD</td>
<td>Novel Predictors of Recovery from Early Brain Injury</td>
<td>National Institutes of Health (University of Cincinnati)</td>
<td>KL2 TR001426</td>
<td>8/14/2015</td>
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<td>Richard M Ruddy, MD</td>
<td>RNA Biosignatures: A Paradigm Change for the Management of Young Febrile Infants</td>
<td>National Institutes of Health (Wayne State University)</td>
<td>R01 HD085233</td>
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<td>Richard M Ruddy, MD</td>
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<td>Charles J Schubert, MD</td>
<td>City of Cincinnati Immunization Project</td>
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<td>Daniel J Schumacher, MD</td>
<td>American Board of Medical Specialties Research and Education Foundation Visiting Scholars Program Grant</td>
<td>The Amer Bd of Med Spec Res &amp; Educ Fdn</td>
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<td>Hamilton Parker Schwartz, MD</td>
<td>Pilot Study to Develop a Pediatric Cervical Spine Injury Risk Assessment Tool</td>
<td>National Institutes of Health (Nationwide Children's Hospital)</td>
<td>R21 HD076108</td>
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<td>Richard Thomas Strait, MD</td>
<td>Infant Specific-IgE,</td>
<td>National Institutes of Health</td>
<td>R01 AI114552</td>
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Rhinovirus-C Bronchiolitis, and Incident Asthma in MARC-35

Richard Thomas Strait, MD
Prospective Cohort Study of Severe Bronchiolitis and Risk of Recurrent Wheezing
National Institutes of Health (Massachusetts General Hospital)
U01 AI087881
$3,689

Total Annual Grant Award Dollars $2,804,011