

James M. Anderson Center for Health Systems Excellence

RESEARCH AND TRAINING DETAILS


[Click to view members](#)

| | |
|-----------------------------|-------------|
| Faculty | 12 |
| Joint Appointment Faculty | 15 |
| Direct Annual Grant Support | \$8,077,255 |
| Peer Reviewed Publications | 52 |

[Download Report in PDF Format](#)
[Visit James M. Anderson Center for Health Systems Excellence](#)

Research Highlights

Learning Networks (Carole Lannon MD, MPH, Faculty Lead)

Learning Networks are multisite collaborations that engage patients, families, clinicians and researchers to improve care and outcomes for children. The five networks supported by Cincinnati Children's connect 362 clinical teams from 246 pediatric hospitals, including 43 states and three countries. Additional networks are in the design phase. These Learning Networks provide collaborative laboratories that have identified effective clinical bundles, developed and tested shared decision-making tools, assessed dissemination and implementation strategies, used comparative effectiveness design to understand effective therapies, analyzed social network and used factorial design to identify dose-response of effective therapies. The five networks have 62 publications to date. Specific research efforts and results include:

- The Solutions for Patient Safety network found that hospitals that reliably implemented recommended care bundle elements had significant reductions in hospital acquired conditions (HACs). Hospitals that did not implement specific elements had significantly poorer HAC outcomes than hospitals that did. Evidence-based best practices were identified for five HACs.
- The Ohio Perinatal Quality Collaborative (OPQC) undertook a large-scale study of dissemination to examine how to effectively spread successful practice changes across the state. Using a stepped wedge design, OPQC identified a successful model for quality improvement at scale where OPQC can develop and test change strategies in a small group of innovator hospitals and then rapidly spread across Ohio. We also showed that research could be successfully embedded in ongoing OPQC activities in an unobtrusive way.
- Studies on adult patients who have Crohn's disease have shown a comparative benefit of anti-TNF α versus placebo and thiopurines. These same studies have not been done in children, because of time, cost and ethical (withholding an efficacious treatment) challenges. The study analyzed ImproveCareNow Network registry data collected from April 2007 to March 2012 as a sequence of non-randomized trials in which patients with moderate-to-severe CD (Short Pediatric Crohn's Disease Activity Index (sPCDAI) ≥ 30) were classified as initiators or non-initiators of anti-TNF α therapy. Main outcome measures were clinical remission, defined as sPCDAI <10 , and corticosteroid-free remission were the outcomes. Anti-TNF α therapy administered in routine practice to children with Crohn's disease was more effective than usual care at achieving clinical and corticosteroid-free remission. This study showed that using data from the ImproveCareNow learning health system for observational research is feasible and produces valuable evidence.
- The National Pediatric Cardiology Quality Improvement Collaborative (NPC-QIC) documented a 40 percent reduction in interstage mortality for infants with hypoplastic left heart syndrome across the network's 55 centers. The improvement is multifactorial and likely related to improved reliability of care processes related to mortality as no new medications or therapies were introduced during the study period. (Anderson et al, Circulation Cardiology and Outcomes, Circ Cardiovasc Qual Outcomes. 2015;8:1-2.)
- With the care centers of the Pediatric Rheumatology Care and Outcomes Improvement Network (PR-COIN), a shared decision making (SDM) tool was developed for visits with patients facing decisions about medications for juvenile idiopathic arthritis. Use of the SDM tool increased from 0% (pre-implementation) to a median of 35%. The SDM tool was used as intended during a median of 71% of these visits. Parents reported feeling confident that the right choice had been made for their child.

The Anderson Center Learning Networks Core has external collaborations with the [American Board of Pediatrics](#), the [Autism Treatment Network](#), the national [Children's Hospital Association](#), the [Ohio Children's Hospital Association](#), the [Ohio Hospital Association](#), the [Ohio Department of Health](#) and the [Ohio Department of Medicaid](#).

Within Cincinnati Children's, network partnerships connect the James M. Anderson Center for Health Systems Excellence Learning Networks core with the Divisions of [Developmental and Behavioral Pediatrics](#); [Endocrinology](#); [Gastroenterology, Hepatology and Nutrition](#); [General and Community Pediatrics](#); [Gastroenterology, Hepatology and Nutrition](#); [Nephrology and Hypertension](#); [Pulmonary Medicine](#); [Rheumatology](#); and the [Cancer and Blood Diseases Institute](#); the [Heart Institute](#); and the [Perinatal Institute](#).

Funding for the networks comes from the [Agency for Healthcare Research and Quality](#); the [Centers for Education and Research on Therapeutics](#); the Centers for Disease Control and Prevention (CDC); the [Children's Heart Association of Cincinnati](#); [Ohio Department of Health](#); [Ohio Department of Medicaid](#); Patient Centered Outcomes Research Institute (PCORI); and fees from participating institutions. The Learning Networks core project received a FY15 Cincinnati Children's Academic and Research Committee award to further develop the infrastructure to support existing and emergent networks.

Health Services Research (Peter Margolis MD, PhD, Faculty Lead)

Faculty in the James M. Anderson Center for Health Systems Excellence does research across a range of health services research topics, however the emphasis tilts towards interventions – the design, implementation and testing of complex interventions to improve health and care. Since 2015 the focus has been on three areas: 1. Expanding and training of division-based Health Services Research (HSR) research faculty; 2. Building health services research infrastructure (integrated design, biostatistics, data management, IT, project management) to support growing community of researchers and full range of HSR; and 3. Creating Cincinnati Children's clinical sites and networks as real-time health services research laboratories. Over the past year, research revenue has continued to grow at about 20 percent with a diversity of funding sources including federal, foundation and state support. Work includes large scale studies including the Cincinnati Home Injury Prevention (CHIP) randomized control trial (RCT) (Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/U.S. Department of Housing and Urban Development (HUD)); the [Ohio Perinatal Quality Collaborative](#) (funded by [Ohio Medicaid](#)); [Solutions for Patient Safety \(CMMI\)](#); the [Collaborative Chronic Care Network Project](#) (National Institutes of Health Transformative Research Award Program (NIH TR01)). There are also several program awards including the Center for Education and Research in Therapeutics (CERTs), two Patient Powered Research Networks (PCORI) ([ImproveCareNow](#) and [PR-COIN/PARTNERS](#)) and one [PCORI Clinical Data Research Network \(PEDSnet\)](#). These networks are resulting in multiple studies focused on improvement science and the creation of important data sharing capability across multiple institutions. There are also numerous health services research projects taking place at Cincinnati Children's focused on a diverse range of topics and engaging investigators from more than 15 divisions. Topics include hospital and ambulatory safety, formal studies of dissemination and implementation approaches, technology enabled tools to promote patient engagement, the impact of missed care among nurses, methods to support N of one studies, and situational awareness. Robust faculty development support continues with over 15 faculty participating, a group of eight quality scholars from a diverse range of divisions. New areas of emphasis are the use of formal design methods to support the development of learning health systems.

Safety (Kathleen Walsh, MD, Research Lead; Stephen Muething, MD, Operational Lead)

This has been a great year for safety research at Cincinnati Children's. In the last year, the learning network Solutions for Patient Safety had a key publication accepted to [Pediatrics](#) for the national network- entitled "Surgical Site Infection Reduction by the Solutions for Patient Safety Hospital Engagement Network". Grants were received for our work on successful family involvement in rapid response teams and continued spread of Ninja to eight additional hospitals. Received a very competitive score on the third project from National Library medicine (NLM) testing algorithms to prevent infusion and investigating smart pump errors in the Newborn Intensive Care Unit (NICU). Received \$2.9 million in additional funding from the Solutions for Patient Safety (SPS) for the 2015 calendar year. Investigation continues in the ideal model for huddle leadership to optimize situational awareness and spread best practices.

Significant Publications

Anderson JB, Beekman RH 3rd, Kugler JD, Rosenthal GL, Jenkins KJ, Klitzner TS, Martin GR, Neish SR, Darbie L, King E, [Lannon C](#), National Pediatric Cardiology Quality Improvement Collaborative. [Use of a learning network to improve variation in interstage weight gain after the norwood operation](#). *Congenit Heart Dis*. 2014 Nov-Dec;9(6):512-20.

Infants with univentricular congenital heart disease (CHD), including those with hypoplastic left heart syndrome (HLHS), regularly pose dilemmas in decision-making because their anatomy and physiology is often unique and variable. While improvement in surgical techniques and post-operative care has led to dramatic improvement in survival of such infants in the past several decades, until recently the mortality in the first several months of life for these infants was still quite high. The period of time between the first two palliative surgeries, termed the "interstage", is a known period of high mortality.

The National Pediatric Cardiology Quality Improvement Collaborative (NPC-QIC) was established in 2006 and is the first multicenter learning network within pediatric cardiology. NPC-QIC was established with the goal to improve care and outcomes for children with CHD through a national quality improvement collaborative network. This study evaluated improvement in outcomes in interstage mortality at centers participating in NPC-QIC. Using statistical process control methodology a significant improvement in center compliance with discharge and clinic visit process measures felt likely to be related to improvement in mortality was demonstrated. More importantly, centers involved in the collaborative showed an interstage mortality reduction of 43 percent; from 9.8 percent to 5.5 percent, a reduction that has now been sustained for over 12 months. This is the first report of reduction in mortality using collaborative methods and is the lowest documented interstage mortality in the literature.

Forrest CB, **Margolis P**, Seid M, Colletti RB. **PEDSnet: how a prototype pediatric learning health system is being expanded into a national network.** *Health Aff (Millwood)*. 2014 Jul;33(7):1171-7.

The Institute of Medicine envisions for a Learning Health System in which physicians, researchers, patients and caregivers work together to generate and apply knowledge to improve health outcomes. Achieving a transition to an LHS model requires a number of significant changes including creating processes, tools and technology to enable care to be standardized across multiple care sites, ways to enable knowledge (evidence) and know-how to be shared and applied, and expanding ways to harness the insights and expertise of all stakeholders, including patients and families, clinicians and teams and researchers, to participate in all aspects of care. In recent years, numerous studies from the Anderson Center have demonstrated that collaborative pediatric learning networks can achieve marked improvement in the quality of care, safety and outcomes of children. This paper reports how the ImproveCareNow Network served as the prototype to extend the model to a consortium of pediatric institutions to create a collaborative research infrastructure called PEDSnet.

Forrest CB, Crandall WV, Bailey LC, Zhang P, Joffe MM, Colletti RB, Adler J, Baron HI, Berman J, del Rosario F, Grossman AB, Hoffenberg EJ, Israel EJ, Kim SC, Lightdale JR, **Margolis PA**, Marsolo K, Mehta DI, Milov DE, Patel AS, Tung J, Kappelman MD. **Effectiveness of anti-TNF α for Crohn disease: research in a pediatric learning health system.** *Pediatrics*. 2014 Jul;134(1):37-44.

Studies on adult patients who have Crohn disease have shown a comparative benefit of anti-TNF α versus placebo and thiopurines. These same studies have not been done in children, because of time, cost, and ethical challenges (withholding an efficacious treatment). This study showed that anti-TNF α therapy administered in routine practice to children with Crohn disease was more effective than usual care at achieving clinical and corticosteroid-free remission. Using data from the ImproveCareNow learning health system for observational research is feasible and produces valuable evidence.

Dandoy CE, Davies SM, Flesch L, Hayward M, Koons C, Coleman K, Jacobs J, McKenna LA, Olomajeye A, Olson C, Powers J, Shoemaker K, Jodele S, **Alessandrini E**, Weiss B. **A team-based approach to reducing cardiac monitor alarms.** *Pediatrics*. 2014 Dec;134(6):e1686-94.

Physiologic monitoring systems generate visual and audible alarm signals to alert staff to changes in the patient's clinical status. Each patient can generate hundreds of alarms per day, resulting in thousands of alarms overall for the unit. Providers feel overwhelmed as they differentiate between the large amount of alarms, and they may become desensitized causing "alarm fatigue." The authors created and implemented a standardized cardiac monitor care process (CMCP) on the Cincinnati Children's Hospital Medical Center Bone Marrow Transplant (BMT) Unit. The aim of this project was to decrease monitor alarms through the use of team-based standardized care and processes. Using small tests of change, a standardized CMCP was developed and implemented that included: (1) a process for initial ordering of monitor parameters based on age-appropriate standards; (2) pain-free daily replacement of electrodes; (3)

daily individualized assessment of cardiac monitor parameters; and (4) a reliable method for appropriate discontinuation of monitor. The model for improvement was used to design, test, and implement changes. From January to November 2013, percent compliance with each of the four components of the CMCP increased. Overall compliance with the CMCP increased from a median of 38 percent to 95 percent. During this time, the median number of alarms per patient-day decreased from 180 to 40. Implementation of the standardized CMCP resulted in a significant decrease in cardiac monitor alarms per patient day. Aspects of the CMCP have been applied throughout Cincinnati Children's, multiple adult and pediatric hospitals throughout the United States, and in multiple international institutions.

Lannon CM, Levy FH, Moyer VA. The need to build capability and capacity in quality improvement and patient safety. *Pediatrics*. 2015 Jun;135(6): e1371-3.

A pediatrics commentary, *The need to build capability and capacity in quality improvement and patient safety*, was developed through discussions among The American Board of Pediatrics, the Children's Hospital Association and faculty within the Anderson Center for Health Systems Excellence (Evaline Alessandrini, Uma Kotagal, and Carole Lannon).

The use of quality improvement (QI) methods and safety principles can improve child health outcomes and reduce harm. Yet, despite the best efforts of many, significant variations in care and outcomes, and gaps in the capability of physicians to engage in and lead QI, continue to exist. Building sufficient capability (competence) and capacity (sufficient numbers) in QI across pediatrics could address these deficiencies. Increasing the availability of improvement curricula, training opportunities, and skilled faculty are needed. An integrated approach to building capacity for quality and safety would connect children's hospitals and their academic partners, addressing alignment of quality priorities and resources across organizations, education and training for physicians in the science of improvement, and recognition of the legitimacy of QI activities for professional development and career progression.

All pediatricians must be proficient in QI and a critical mass of experts will need to be trained. A significant increase in the number of leaders with QI expertise is required to accelerate the pace of improvement, sustain the gains, and provide the required mentorship to trainees and clinical teams. The authors encourage partnerships among institutions and organizations that can help us go further and get there faster.

Division Publications

1. Adams WG, Phillips BD, Bacic JD, Walsh KE, Shanahan CW, Paasche-Orlow MK. **Automated conversation system before pediatric primary care visits: a randomized trial.** *Pediatrics*. 2014; 134:e691-9.
2. Alessandrini EA, Wright JL. **The continuing evolution of pediatric emergency care.** *JAMA Pediatr*. 2015; 169:523-4.
3. Aliu O, Auger KA, Sun GH, Burke JF, Cooke CR, Chung KC, Hayward RA. **The effect of pre-Affordable Care Act (ACA) Medicaid eligibility expansion in New York State on access to specialty surgical care.** *Med Care*. 2014; 52:790-5.
4. Anderson JB, Beekman RH, 3rd, Kugler JD, Rosenthal GL, Jenkins KJ, Klitzner TS, Martin GR, Neish SR, Darbie L, King E, Lannon C, National Pediatric Cardiology Quality Improvement C. **Use of a learning network to improve variation in interstage weight gain after the Norwood operation.** *Congenit Heart Dis*. 2014; 9:512-20.
5. Aronson PL, Thurm C, Williams DJ, Nigrovic LE, Alpern ER, Tieder JS, Shah SS, McCulloh RJ, Balamuth F, Schondelmeyer AC, Alessandrini EA, Browning WL, Myers AL, Neuman MI, Febrile Young Infant Research C. **Association of clinical practice guidelines with emergency department management of febrile infants**

- days of age.** *J Hosp Med.* 2015; 10:358-65.
6. Auger KA, Jerardi KE, Sucharew HJ, Yau C, Unaka N, Simmons JM. **Effects of the 2011 duty hour restrictions on resident education and learning from patient admissions.** *Hosp Pediatr.* 2014; 4:222-7.
 7. Auger KA, Kahn RS, Davis MM, Simmons JM. **Pediatric asthma readmission: asthma knowledge is not enough?.** *J Pediatr.* 2015; 166:101-8.
 8. Bevans KB, Moon J, Carle AC, Mara CA, Lai JS, DiMarco L, Muller N, Woods D. **Patient reported outcomes as indicators of pediatric health care quality.** *Acad Pediatr.* 2014; 14:S90-6.
 9. Brady PW, Schondelmeyer AC. **Safe and efficient discharge in bronchiolitis: how do we get there?.** *J Hosp Med.* 2015; 10:271-2.
 10. Brady PW, Zix J, Brill R, Wheeler DS, Griffith K, Giaccone MJ, Dressman K, Kotagal U, Muething S, Tegtmeyer K. **Developing and evaluating the success of a family activated medical emergency team: a quality improvement report.** *BMJ Qual Saf.* 2015; 24:203-11.
 11. Brown CM, Perkins J, Blust A, Kahn RS. **A neighborhood-based approach to population health in the pediatric medical home.** *J Community Health.* 2015; 40:1-11.
 12. Brown DW, Cohen KE, O'Brien P, Gauvreau K, Klitzner TS, Beekman RH, 3rd, Kugler JD, Martin GR, Neish SR, Rosenthal GL, Lannon C, Jenkins KJ. **Impact of prenatal diagnosis in survivors of initial palliation of single ventricle heart disease: analysis of the national pediatric cardiology quality improvement collaborative database.** *Pediatr Cardiol.* 2015; 36:314-21.
 13. Dandoy CE, Davies SM, Flesch L, Hayward M, Koons C, Coleman K, Jacobs J, McKenna LA, Olomajeye A, Olson C, Powers J, Shoemaker K, Jodele S, Alessandrini E, Weiss B. **A team-based approach to reducing cardiac monitor alarms.** *Pediatrics.* 2014; 134:e1686-94.
 14. Daymont C, Bonafide CP, Brady PW. **Heart rates in hospitalized children by age and body temperature.** *Pediatrics.* 2015; 135:e1173-81.
 15. Ellison AM, Thurm C, Alessandrini E, Jain S, Cheng J, Black K, Schroeder L, Stone K, Alpern ER. **Variation in pediatric emergency department care of sickle cell disease and fever.** *Acad Emerg Med.* 2015; 22:423-30.
 16. Fiks AG, Zhang P, Localio AR, Khan S, Grundmeier RW, Karavite DJ, Bailey C, Alessandrini EA, Forrest CB. **Adoption of electronic medical record-based decision support for otitis media in children.** *Health Serv Res.* 2015; 50:489-513.
 17. Forrest CB, Crandall WV, Bailey LC, Zhang P, Joffe MM, Colletti RB, Adler J, Baron HI, Berman J, del Rosario F, Grossman AB, Hoffenberg EJ, Israel EJ, Kim SC, Lightdale JR, Margolis PA, Marsolo K, Mehta DI, Milov DE, Patel AS, Tung J, Kappelman MD. **Effectiveness of anti-TNFalpha for Crohn disease: research in a pediatric learning health system.** *Pediatrics.* 2014; 134:37-44.
 18. Forrest CB, Margolis P, Seid M, Colletti RB. **PEDSnet: how a prototype pediatric learning health system is being expanded into a national network.** *Health Aff (Millwood).* 2014; 33:1171-7.
 19. Forrest CB, Margolis PA, Bailey LC, Marsolo K, Del Beccaro MA, Finkelstein JA, Milov DE, Vieland VJ, Wolf BA, Yu FB, Kahn MG. **PEDSnet: a National Pediatric Learning Health System.** *J Am Med Inform Assoc.* 2014; 21:602-6.
 20. Grosseohme DH, Szczesniak RD, Britton LL, Siracusa CM, Quittner AL, Chini BA, Dimitriou SM, Seid M. **Adherence Determinants in Cystic Fibrosis: Cluster Analysis of Parental Psychosocial, Religious, and/or Spiritual Factors.**

Ann Am Thorac Soc. 2015; 12:838-46.

21. Hibbert PD, Hallahan AR, Muething SE, Lachman P, Hooper TD, Wiles LK, Jaffe A, White L, Wheaton GR, Runciman WB, Dalton S, Williams HM, Braithwaite J. **CareTrack Kids-part 3. Adverse events in children's healthcare in Australia: study protocol for a retrospective medical record review.** *BMJ Open.* 2015; 5:e007750.
22. Kotagal M, Carle AC, Kessler LG, Flum DR. **Limited impact on health and access to care for 19- to 25-year-olds following the Patient Protection and Affordable Care Act.** *JAMA Pediatr.* 2014; 168:1023-9.
23. Kuo DZ, Goudie A, Cohen E, Houtrow A, Agrawal R, Carle AC, Wells N. **Inequities in health care needs for children with medical complexity.** *Health Aff (Millwood).* 2014; 33:2190-8.
24. Laker LF, Froehle CM, Lindsell CJ, Ward MJ. **The flex track: flexible partitioning between low- and high-acuity areas of an emergency department.** *Ann Emerg Med.* 2014; 64:591-603.
25. Lannon CM, Levy FH, Moyer VA. **The need to build capability and capacity in quality improvement and patient safety.** *Pediatrics.* 2015; 135:e1371-3.
26. Larson DB, Froehle CM, Johnson ND, Towbin AJ. **Communication in diagnostic radiology: meeting the challenges of complexity.** *AJR Am J Roentgenol.* 2014; 203:957-64.
27. Li Q, Melton K, Lingren T, Kirkendall ES, Hall E, Zhai H, Ni Y, Kaiser M, Stoutenborough L, Solti I. **Phenotyping for patient safety: algorithm development for electronic health record based automated adverse event and medical error detection in neonatal intensive care.** *J Am Med Inform Assoc.* 2014; 21:776-84.
28. Li Q, Spooner SA, Kaiser M, Lingren N, Robbins J, Lingren T, Tang H, Solti I, Ni Y. **An end-to-end hybrid algorithm for automated medication discrepancy detection.** *BMC Med Inform Decis Mak.* 2015; 15:37.
29. Lipstein EA, Brinkman WB, Fiks AG, Hendrix KS, Kryworuchko J, Miller VA, Prosser LA, Ungar WJ, Fox D. **An emerging field of research: challenges in pediatric decision making.** *Med Decis Making.* 2015; 35:403-8.
30. Lipstein EA, Dodds CM, Britto MT. **Real life clinic visits do not match the ideals of shared decision making.** *J Pediatr.* 2014; 165:178-183 e1.
31. Mayer-Davis EJ, Seid M, Crandell J, Dolan L, Lagarde WH, Letourneau L, Maahs DM, Marcovina S, Nachreiner J, Standiford D, Thomas J, Wysocki T. **Flexible Lifestyles for Youth (FL3X) behavioural intervention for at-risk adolescents with Type 1 diabetes: a randomized pilot and feasibility trial.** *Diabet Med.* 2015; 32:829-33.
32. McMullen CK, Safford MM, Bosworth HB, Phansalkar S, Leong A, Fagan MB, Trontell A, Rumpitz M, Vandermeer ML, Centers for E, Research on Therapeutics Patient-Centered Medication Management Workshop Working G, Brinkman WB, Burkholder R, Frank L, Hommel K, Mathews R, Hornbrook MC, Seid M, Fordis M, Lambert B, McElwee N, Singh JA. **Patient-centered priorities for improving medication management and adherence.** *Patient Educ Couns.* 2015; 98:102-10.
33. Murtagh Kurowski E, Shah SS, Thomson J, Statile A, Sheehan B, Iyer S, White C, Ambroggio L. **Improvement methodology increases guideline recommended blood cultures in children with pneumonia.** *Pediatrics.* 2015; 135:e1052-9.
34. Ni Y, Kennebeck S, Dexheimer JW, McAneney CM, Tang H, Lingren T, Li Q, Zhai H, Solti I. **Automated clinical trial eligibility prescreening: increasing the efficiency of patient identification for clinical trials in the emergency department.** *J Am Med Inform Assoc.* 2015; 22:166-78.
35. Ni Y, Wright J, Perentesis J, Lingren T, Deleger L, Kaiser M, Kohane I, Solti I. **Increasing the efficiency of trial-**

- patient matching: automated clinical trial eligibility pre-screening for pediatric oncology patients.** *BMC Med Inform Decis Mak.* 2015; 15:28.
36. Osterman RL, Carle AC, Ammerman RT, Gates D. **Single-session motivational intervention to decrease alcohol use during pregnancy.** *J Subst Abuse Treat.* 2014; 47:10-9.
37. Patrick SW, Kaplan HC, Passarella M, Davis MM, Lorch SA. **Variation in treatment of neonatal abstinence syndrome in US Children's Hospitals, 2004-2011.** *J Perinatol.* 2014; 34:867-72.
38. Ralston SL, Lieberthal AS, Meissner HC, Alverson BK, Baley JE, Gadomski AM, Johnson DW, Light MJ, Maraqa NF, Mendonca EA, Phelan KJ, Zorc JJ, Stanko-Lopp D, Brown MA, Nathanson I, Rosenblum E, Sayles S, 3rd, Hernandez-Cancio S, American Academy of P. **Clinical practice guideline: the diagnosis, management, and prevention of bronchiolitis.** *Pediatrics.* 2014; 134:e1474-502.
39. Reed JL, Huppert JS, Gillespie GL, Taylor RG, Holland CK, Alessandrini EA, Kahn JA. **Adolescent patient preferences surrounding partner notification and treatment for sexually transmitted infections.** *Acad Emerg Med.* 2015; 22:61-6.
40. Reed JL, Huppert JS, Taylor RG, Gillespie GL, Byczkowski TL, Kahn JA, Alessandrini EA. **Improving sexually transmitted infection results notification via mobile phone technology.** *J Adolesc Health.* 2014; 55:690-7.
41. Schondelmeyer AC, Simmons JM, Statile AM, Hofacer KE, Smith R, Prine L, Brady PW. **Using quality improvement to reduce continuous pulse oximetry use in children with wheezing.** *Pediatrics.* 2015; 135:e1044-51.
42. Sebastian RA, Ramos MM, Stumbo S, McGrath J, Fairbrother G. **Measuring youth health engagement: development of the youth engagement with health services survey.** *J Adolesc Health.* 2014; 55:334-40.
43. Stockwell DC, Bisarya H, Classen DC, Kirkendall ES, Landrigan CP, Lemon V, Tham E, Hyman D, Lehman SM, Searles E, Hall M, Muething SE, Schuster MA, Sharek PJ. **A trigger tool to detect harm in pediatric inpatient settings.** *Pediatrics.* 2015; 135:1036-42.
44. Swensen SJ, Duncan JR, Gibson R, Muething SE, LeBuhn R, Rexford J, Wagner C, Smith SR, DeMers B, Morin RL, Santa J, Homer CJ. **An appeal for safe and appropriate imaging of children.** *J Patient Saf.* 2014; 10:121-4.
45. Thomson J, Ambroggio L, Murtagh Kurowski E, Statile A, Graham C, Courter JD, Sheehan B, Iyer S, White CM, Shah SS. **Hospital outcomes associated with guideline-recommended antibiotic therapy for pediatric pneumonia.** *J Hosp Med.* 2015; 10:13-8.
46. Toltzis P, O'Riordan M, Cunningham DJ, Ryckman FC, Bracke TM, Olivea J, Lyren A. **A statewide collaborative to reduce pediatric surgical site infections.** *Pediatrics.* 2014; 134:e1174-80.
47. Tubbs-Cooley HL, Pickler RH, Mark BA, Carle AC. **A research protocol for testing relationships between nurse workload, missed nursing care and neonatal outcomes: the neonatal nursing care quality study.** *J Adv Nurs.* 2015; 71:632-41.
48. Tubbs-Cooley HL, Pickler RH, Younger JB, Mark BA. **A descriptive study of nurse-reported missed care in neonatal intensive care units.** *J Adv Nurs.* 2015; 71:813-24.
49. Walsh KE, Biggins C, Blasko D, Christiansen SM, Fischer SH, Keuker C, Klugman R, Mazor KM. **Home medication support for childhood cancer: family-centered design and testing.** *J Oncol Pract.* 2014; 10:373-6.
50. Ward MJ, Ferrand YB, Laker LF, Froehle CM, Vogus TJ, Dittus RS, Kripalani S, Pines JM. **The nature and necessity of operational flexibility in the emergency department.** *Ann Emerg Med.* 2015; 65:156-61.

51. Ward MJ, Marsolo KA, Froehle CM. **Applications of Business Analytics in Healthcare.** *Bus Horiz.* 2014; 57:571-582.
 52. Zhai H, Brady P, Li Q, Lingren T, Ni Y, Wheeler DS, Solti I. **Developing and evaluating a machine learning based algorithm to predict the need of pediatric intensive care unit transfer for newly hospitalized children.** *Resuscitation.* 2014; 85:1065-71.
-

Faculty, Staff, and Trainees

Faculty Members

Uma Kotagal, MBBS, MSc, Professor

Leadership Director, Health Policy and Clinical Effectiveness; Senior Vice President, Quality and Transformation

Research Interests Using research methods and analysis to understand, diagnose and implement sustainable changes in care practices so as to meet all dimensions of the patients and families.

Evaline Alessandrini, MD, MSCE, Professor

Leadership Professor and Associate Chair of Outcomes, Department of Pediatrics; Assistant Vice-President Improvement Integration; Director, Quality Scholars Program in Health Care Transformation

Research Interests Define outcomes of quality emergency care, refine risk-adjustment tools to compare care quality, and develop system-level interventions to improve the delivery of emergency care to children

Adam Carle, MA, PhD, Associate Professor

Research Interests Utilizing statistical methods to improve health outcomes measurement, focus on children with special health care needs

David Hartley, MD, Associate Professor

Research Interests Computational and data-driven methods to understand and detect disease signals including safety events and infections; understanding the spread of ideas and innovations in health care delivery systems

Srikant Iyer, MD MPH, Associate Professor

Leadership AVP -HN Quality and Improvement

Research Interests Designing integrated systems of care delivery to improve population level outcomes and to decrease the costs of care

Jennifer Lail, MD, Associate Professor

Leadership Assistant Vice-President, Chronic Care Systems

Research Interests Chronic and complex care; coordination of care

Carole Lannon, MD, MPH, Professor

Leadership Co-Director, Center for Health Care Quality

Research Interests To understand how to most effectively design, implement and sustain collaborative learning networks that engage patients, families, clinicians and researchers in using data driven methods to improve care and outcomes for children and families.

Peter Margolis, MD, PhD, Professor

Leadership Co-Director, Center for Health Care Quality; Co-Director, Health Services Research Matrix; Acting Director, Quality Scholars Fellowship in Transforming Health Care

Research Interests The application and study of quality improvement methods in a broad range of areas including primary and sub-specialty care and public health settings to improve the health outcomes of children, families and communities

Steve Muething, MD, Associate Professor

Leadership Co-leader for the Ohio Children's Hospital Solutions for Patient Safety

Research Interests Patient and employee safety, high reliability theory and situation awareness

Kieran J. Phelan, MD, MSc, Associate Professor

Leadership Evidence-Based Clinical Practice Guidelines

Research Interests Effects of home visitation and housing on pediatric injury epidemiology and control, and the psychology of parental supervision and health care decision making

Kathleen Walsh, MD, MSc, Associate Professor

Leadership Director of Safety Research

Research Interests Pediatric patient safety, focusing on safe and effective medication use in children

Denise White, PhD, Assistant Professor

Research Interests Space utilization, capacity, and flow

Joint Appointment Faculty Members

Anne Boat, MD, Professor (Anesthesia)

Research Interests Patient and family experience.

Patrick Brady, MD, Assistant Professor (Hospital Medicine)

Research Interests Safety; situation awareness and predicting and preventing the deterioration of hospitalized children Patient- and family-centered design.

William Brinkman, MD MEd, Associate Professor (General Pediatrics)

Research Interests Shared decision-making between patients, parents, and clinicians to promote high value care that is evidence-based and family-centered; collaborates to develop interventions to facilitate shared decision-making across a wide-range of clinical context

Maria Britto, MD, MPH, Professor (Adolescent Medicine)

Research Interests Health care quality, especially for adolescents with chronic illness.

Sarah Corathers, MD, Assistant Professor (Endocrinology)

Research Interests Transition to adult care; type 1 diabetes in adolescents and adults; quality improvement.

Nancy Daraiseh, PhD, Assistant Professor (Center for Professional Excellence)

Research Interests Occupational safety, health, and human factors in healthcare.

Craig Froehle, PhD, Professor (UC College of Business)

Research Interests Healthcare operations research; work and patient flow analysis and improvement; service quality and the patient experience; operational technologies.

David Hooper, MD MS, Assistant Professor (Nephrology)

Research Interests Reliable and innovative chronic disease management, cardiovascular outcomes following kidney transplantation

Robert Kahn, MD, Professor (General Pediatrics)

Research Interests Population health; child health disparities; health systems transformation; community partnerships.

Heather Kaplan, MD, MSCE, Assistant Professor (Neonatology)

Research Interests Developing and testing innovative strategies for improving care delivery and studying quality improvement as a mechanism of improving systems of care and patient outcomes.

Esi Morgan Dewitt, MD, MSCE, Associate Professor (Rheumatology)

Research Interests Improving measurement of child health status using patient-reported outcomes; comparative effectiveness of therapeutics; application of quality improvement science.

Lisa Opiari-Arrigan, PhD, Associate Professor (Behavioral Medicine and Clinical Psychology)

Research Interests Improving health outcomes and quality of life for pediatric patients with chronic illnesses.

Michael Seid, PhD, Professor (Pulmonary Medicine)

Research Interests Measuring and improving pediatric health care quality and health-related quality of life for chronically ill children and understanding the interactions between vulnerable chronically ill children and the health care system, the barriers to care faced by these populations, and policies and programs to overcome these barriers to care.

Tom Sitzman, MD, Assistant Professor (Plastic Surgery)

Research Interests Variation in cleft lip/palate surgical outcomes; magnitude and predictors of variation; approaches to decreasing variation; comparative effectiveness research evaluating alternative treatment approaches for children with cleft lip/palate.

Heather Tubbs-Cooley, PhD RN, Assistant Professor (Center for Professional Excellence)

Research Interests Causal modeling of relationships between front-line workload, missed care, and clinical and safety outcomes in high-risk settings such as the neonatal intensive care unit.

Grants, Contracts, and Industry Agreements

Grant and Contract Awards

Annual Direct

Carle, A

Study to Evaluate the Validity and Reliability of Ohio's Comprehensive Assessment and Planning Model - Interim Solution (CAPMIS)

Ohio Department of Jobs and Family Services(University of Cincinnati)

1/26/2015-11/19/2016

\$15,661

Hartley, D

National Center for Food Protection and Defense

Dept of Homeland Security(University of Minnesota)

1/1/2015-6/30/2015

\$35,605

Lannon, C

Pursuing Perfection in Pediatric Therapeutics

Agency for Healthcare Research and Quality

U19 HS021114

9/30/2011-8/31/2016

\$554,260

State-based Perinatal Quality Collaboratives

Centers for Disease Control and Prevention

U38 DP005361

9/30/2014-9/29/2017

\$129,803

MEDTAP/BEACON Progesterone Quality Improvement Collaborative (ODM Federal Funding)

Center for Medicare/Medicaid Services(Ohio State University)

| | | |
|--|----------------------|-----------|
| | 10/9/2013-6/30/2015 | \$960,380 |
| State-Based Perinatal Quality Collaborative | | |
| Centers for Disease Control and Prevention(Ohio Department of Health) | | |
| | 12/1/2011-9/30/2014 | \$47,952 |
| Help Me Grow Home Visiting Quality Improvement Learning Collaborative Project | | |
| Ohio Department of Health | | |
| | 4/1/2014-10/31/2015 | \$205,000 |
| Improving Child Health by Disseminating Patient Centered Outcomes Research | | |
| Department of Health and Human Services(American Board of Pediatrics Foundation) | | |
| | 9/1/2013-6/30/2016 | \$11,525 |
| Autism Treatment Network | | |
| Health Resources & Services Administration(Massachusetts General Hospital) | | |
| | 9/1/2014-8/31/2017 | \$177,102 |
| MEDTAPP Statewide Quality Improvement Manager | | |
| Ohio Department of Jobs and Family Services(Ohio State University) | | |
| | 9/26/2011-6/30/2015 | \$145,560 |
| MEDTAPP Perinatal Quality Project | | |
| Ohio Department of Jobs and Family Services(Ohio State University) | | |
| | 11/16/2011-6/30/2015 | \$71,395 |
| MEDTAPP/BEACON QI Science Project FAM-32-858-01 | | |
| Ohio Department of Health(Ohio State University) | | |
| | 8/5/2013-6/30/2015 | \$89,213 |
| MEDTAPP/BEACON Perinatal Quality Project (ODH-State GRF Funds) | | |
| Ohio Department of Health(Ohio State University) | | |
| | 8/5/2013-6/30/2015 | \$32,983 |
| MEDTAPP/BEACON Progesterone Quality Improvement Collaborative (ODH-State GRF Funds) | | |
| Ohio Department of Health(Ohio State University) | | |
| | 10/9/2013-6/30/2015 | \$229,413 |
| MEDTAPP Neonatal Abstinence Syndrome (NAS) Project (ODM State GRF State Funding) | | |
| Ohio Department of Health(Ohio State University) | | |

| | | |
|--|----------------------|-------------|
| | 1/14/2014-6/30/2016 | \$146,536 |
| MEDTAPP Neonatal Abstinence Syndrome (NAS) Project (ODM Federal Funding) | | |
| Ohio Department of Health(Ohio State University) | | |
| | 1/14/2014-6/30/2016 | \$360,269 |
| Medtapp/Beacon Progesterone Project ODM | | |
| Ohio Department of Medicaid (Ohio State University) | | |
| | 10/9/2013-6/30/2015 | \$229,413 |
| Margolis, P | | |
| A Collaborative Chronic Care Network for Type-1 Diabetes | | |
| Jaeb Center for Health Research Foundation(Unitio, Inc.) | | |
| | 7/1/2014-6/30/2019 | \$577,184 |
| ImproveCareNow Improvement Collaborative | | |
| ImproveCareNow, Inc | | |
| | 10/1/2006-6/30/2015 | \$1,110,221 |
| A National Pediatric Learning Health System | | |
| Patient-Centered Outcome Research Institute(Children's Hospital of Philadelphia) | | |
| | 4/15/2014-10/14/2015 | \$286,826 |
| ImproveCareNow: A Learning Health System for Children with Crohn's Disease and Ulcerative Colitis | | |
| Patient-Centered Outcome Research Institute | | |
| | 3/14/2014-9/14/2015 | \$455,416 |
| Home Visiting Collaborative Improvement and Innovation Network | | |
| National Initiative for Children's Healthcare Quality, Inc | | |
| | 2/1/2014-12/31/2014 | \$7,354 |
| Aligning Forces for Quality | | |
| American Board of Medical Specialties(George Washington University) | | |
| | 9/1/2010-8/31/2014 | \$42,369 |

Muething, S

CMS Partnership for Patients Initiative

Department of Health and Human Services(Ohio Children's Hospitals' Solutions for Patient Safety)

12/9/2011-12/8/2018

\$904,508

Muething, S

Solutions for Patient Safety - State

Ohio Children's Hospitals' Solutions for Patient Safety

1/1/2012-12/31/2017

\$119,155

Solutions for Patient Safety - Federal

Ohio Children's Hospitals' Solutions for Patient Safety

1/1/2012-12/31/2017

\$547,652

Phelan, K

Injury Prevention in a Home Visitation Population

National Institutes of Health

R01 HD066115

9/28/2010-7/31/2015

\$469,092

Walsh, K

Mini Sentinel Iron Project

Food and Drug Administration(Harvard Pilgrim Health Care, Inc)

5/1/2013-7/31/2015

\$115,408

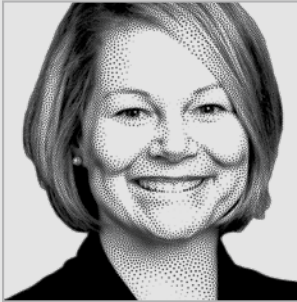
Current Year Direct

\$8,077,255

Total

\$8,077,255

Frequent Interruptions Most Common Cause of Lapsed Nursing Care in Neonatal ICUs



Heather Tubbs-Cooley, PhD, RN

PUBLISHED ONLINE NOV. 27, 2014
Journal of Advanced Nursing

Researchers examining nursing care lapses in neonatal intensive care units (NICUs), including missed rounds, found that the most commonly cited reasons were frequent interruptions and urgent situations involving other patients.

The lapses themselves were wide-ranging, including oral care for ventilated infants, educating and involving parents in care, and oral feedings. The least common lapses were hand hygiene, safety and physical assessment, and medication administration.

The study, first published online Nov. 27, 2014, in the *Journal of Advanced Nursing*, achieved significant national attention for calling attention to nursing care quality in NICUs.

The team was led by Heather Tubbs-Cooley, PhD, RN, a faculty member in Research in Patient Services with a secondary appointment with the James M. Anderson Center for Health Systems Excellence. The study focused on the frequency of nurse-reported missed care, and nurses' reports of factors contributing to missed care on their last shift worked. While previous studies highlighted the frequency of missed nursing care in adult settings, there was little or no such information on incidents in NICUs.

Using a cross-sectional web-based survey, researchers took a random sample of certified neonatal ICU nurses in seven states. Descriptive statistics constituted the primary analytic approach. The team concluded that system factors might have contributed to missed care. The most frequent reasons nurses cited were: frequent interruptions (73 percent), urgent patient situations (66 percent) and an unexpected rise in patient volume and/or acuity on the unit (61 percent).

Approximately half of respondents reported that an inadequate number of nurses and missing equipment/supplies were reasons for missed care.

Tubbs-Cooley and colleagues are analyzing data from a separate longitudinal study in one NICU to examine relationships between nurse workload, specific instances of missed care, and the occurrence of adverse events.

RESEARCH AND TRAINING DETAILS

| | |
|-----------------------------|------|
| Faculty | 12 |
| Joint Appointment Faculty | 15 |
| Direct Annual Grant Support | \$8M |
| Peer Reviewed Publications | 52 |

.....
Tubbs-Cooley HL, Pickler RH, Younger JB, Mark BA. A descriptive study of nurse-reported missed care in neonatal intensive care units. *J Adv Nurs*. 2015;71(4):813-824.



The neonatal intensive care unit (NICU) is home to extremely delicate lives. In caring for these patients, nurses are frequently interrupted, often to tend to other patients. In a study published in the *Journal of Advanced Nursing* that gained national attention, researchers used a cross-sectional web-based survey involving NICUs in seven states. The survey respondents? Nurses themselves.

Approximately half of respondents reported that an inadequate number of nurses and missing equipment/supplies were reasons for missed care.