Research in Patient Services

RESEARCH AND TRAINING DETAILS

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
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<tbody>
<tr>
<td>Faculty</td>
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<td>Joint Appointment Faculty</td>
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<td>Research Fellows</td>
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<td>Research Students</td>
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<td>Support Personnel</td>
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<td>Direct Annual Grant Support</td>
<td>$645,039</td>
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<td>Peer Reviewed Publications</td>
<td>83</td>
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Research Highlights

Rita Pickler, PhD, RN, PNP-BC, FAAN
In April of 2015, Dr. Pickler was appointed to the Science Committee with The Council for the Advancement of Nursing Science.

Ian M. Windmill, PhD
In March 2015, Dr. Windmill was named president-elect of the American Academy of Audiology. He also serves on the
steering and executive committee of the Communication Sciences Research Center.

David Moore, PhD
In March 2015, Dr. Moore won the editor's award from Ear and Hearing. He is also a member of the American Auditory Society and the Communications Sciences Research Center.

In December 2014, Dr. Moore was awarded the 2015 Career Award for Hearing Balance from the American Auditory Society.

Catherine Quatman-Yates, PT, DPT, PhD
In February 2015, Dr. Quatman-Yates was awarded the 2014 Excellence in Research Award, Sports Physical Therapy Section of the American Physical Therapy Association.

Sandra Staveski, PhD, RN, APRN
In February, Dr. Staveski won the 10th annual Nurse Scientist Award at the Cardiology 2015 conference.

Heather Tubbs Cooley, PhD, RN
Dr. Tubbs Cooley published a paper in the Journal of Advanced Nursing in 2015 entitled, "A Descriptive Study of Nurse-Reported Missed Care in Neonatal Intensive Care Units".

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**Significant Publications**


Missed nursing care is an important phenomenon because preventable adverse patient outcomes are theoretically and empirically linked to nursing care quality, yet there is little information about the frequency and nature of missed nursing care in pediatric settings such as the neonatal intensive care unit. The researchers found that nurses most often reported missing specific patient care activities ‘occasionally’ or ‘rarely’; very few reported missing any patient care activity ‘frequently’ on their last shift worked and that interruptions were the most significant reason for missed care. Additional research is needed to understand whether missed nursing care in neonatal intensive care units contributes to adverse infant outcomes and if so, the system and nurse characteristics that predict its occurrence.


This paper is the first to reveal the participation of neural circuits related to executive functions in reading and reading remediation in typical developing children and dyslexic readers. Its importance is by the implications of including an executive functions focused remediation for children with reading difficulties. It is also the pioneer paper, for four other publications focusing on the role of executive functions in reading in children with reading difficulties and the neural circuits supporting these abilities.


Elsayed et al. 2015: Infants who fail newborn hearing screening may have permanent or temporary hearing loss, and it can be hard to diagnose these types of hearing loss in newborns. To avoid the risk of sedation, a diagnostic test is needed that is able to provide accurate results in newborns who cycle between awake, lightly asleep, and restless states. Our study showed that with new technology called “Kalman weighting” to reduce muscle artifacts, we were able
to obtain recordings across these sleep states, and this is the first normative study using this approach. This technology is now being used in the Audiology clinics at Cincinnati Children’s.


This paper is significant in demonstrating a major link between genetics, infectious disease, and a mechanism by which breastfeeding can protect infants. First-authored by Dr. Rebecca Currier, an MD/PhD student, this paper represents a collaboration between Cincinnati Children’s and the Centers for Disease Control and Prevention. The study shows that major strains of norovirus, which cause about 20% of acute diarrhea in the United States, are significantly increased in children who are genetically positive for the fucosyltransferase 2 (FUT2) gene. These noroviruses cause diarrhea by binding to gut surface carbohydrates made by the FUT2 gene enzyme. Mother’s milk protects infants through similar FUT2-synthesized carbohydrates that bind noroviruses and thereby prevent infection.


The incidence of repeat injury after ACL reconstruction is much higher than once thought in young, active patients. These data highlights the concern that our current outcome after ACL reconstruction is sub-optimal with a high re-injury rate (nearly 30%) in as little as two years after return to sports. With this knowledge, it is imperative that we challenge the current paradigm of management after ACL injuries and seek out a more effective system of care for these patients. Future work focused on the design and implementation of novel interventions as well as more efficacious systems of care for this population to reduce second injury risk and improve patient outcome after ACL reconstruction.

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**Division Publications**


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**Faculty, Staff, and Trainees**

**Faculty Members**

Scott Holland, PhD, Professor  
**Leadership** Director - Research in Patient Services  
**Research Interests** Advanced neuroimaging applications of MRI in pediatrics

Nancy Daraiseh, PhD, Assistant Professor  
**Research Interests** Occupational health and safety; human factors; patient safety; health outcomes

Dimitar Deliyski, PhD, Associate Professor  
**Leadership** Associate Director  
**Research Interests** Voice and vocal cord research related to otolaryngology surgery

Andrew Dimitrijevic, PhD, Assistant Professor  
**Research Interests** Electroencephalography related to cochlear implant patients

Lisa Hunter, PhD, FAAA, Associate Professor  
**Leadership** Scientific Director Pediatric Audiology  
**Research Interests** Middle ear physiology; newborn hearing screening; childhood hearing loss diagnosis

Ann Kummer, PhD, Professor  
**Leadership** PhD, CCC-SLP, ASHA-F  
**Research Interests** Speech and resonance disorders secondary to cleft palate; craniofacial and orofacial
anomalies; velopharyngeal dysfunction

**David Moore, PhD**, Professor  
*Leadership* Director - Communication Sciences Research Center  
**Research Interests** Psychoacoustic research and how it affects hearing

**Rita Pickler, PhD, RN, PNP-BC, FAAN**, Professor  
*Leadership* Scientific Director in Nursing  
**Research Interests** Preterm infant care; prematurity prevention; transition to home; biobehavioral research

**Heather Tubbs-Cooley, PhD, RN**, Assistant Professor  
**Research Interests** Outcomes research; health services research; improvement and implementation science; nursing workforce research

**Sandra Staveski, PhD, RN, APRN, CPNP-AC**, Assistant Professor  
**Research Interests** Pediatric cardiac surgery, cardiovascular nursing care; preventable harm

**Karen Harpster, PhD, OTR/L**, Assistant Professor  
**Research Interests** Intervention research to improve functional outcomes for children with neurodevelopmental disabilities

**Jennifer Schmit, PT, DPT, PhD**, Assistant Professor  
**Research Interests** Comparative efficacy of physical therapy interventions for children with Cerebral Palsy

**Joint Appointment Faculty Members**

**Tzipi Horowitz-Kraus, PhD**, Assistant Professor (General Pediatrics)  
**Research Interests** Program Director - Reading and Literacy Discovery Center. Language executive function in typical children and those with reading difficulties

**Jason Long, PhD**, Assistant Professor (Director - Motion Analysis Lab)  
**Research Interests** Motion analysis; biomechanics; cerebral palsy; foot and ankle pathology

**Ardythe Morrow, PhD**, Professor (Neonatology and Pulmonary Biology)  
**Research Interests** Scientific Director of Nutrition Research. Human milk; child health and nutrition

**Mark Paterno, PT, PhD, MBA, SCS, ATC**, Assistant Professor (Sports Medicine)  
**Research Interests** Physical therapy management; ACL and sports overuse injuries; patellofemoral pain

**Catherine Quatman-Yates, PT, DPT, PhD**, Assistant Professor (Sports Medicine)  
**Research Interests** Postural sway as biomarker for concussion; upper extremity injuries

**Alexander Vinks, PharmD, PhD, FCP**, Professor (Clinical Pharmacology)  
**Research Interests** Scientific Director of Pharmacy Research. Population pharmacokinetics, pharmacokinetic-pharmacodynamic modeling, pharmacogenetics/genomics, clinical trial design and simulation, pharmacometric/systems pharmacology

**Trainees**

- **Alaaeldin Elsayed, MD, AuD**, Missouri State University, Springfield, MO
- **Rola Farah, PhD, CCC-A**, University of Cincinnati, Cincinnati, OH
- **Dobrinka Georgieva, PhD**, University of Bulgaria, Bulgaria
- **Maria Golla, MSP, CCC-SLP**, University of Cincinnati, Cincinnati, OH
- **Edith Morris, MSN, PhD**, University of Cincinnati, Cincinnati, OH
- **Yingying Wang**,  University of Cincinnati, Cincinnati, OH
- **J'ai Watson, MS**, University of Cincinnati, Cincinnati, OH
- **Yang-soo Yoon, PhD**, House (Ear) Research Institute, Los Angeles, CA
- **Stephanie Zacharias, AuD, PhD**, University of Cincinnati, Cincinnati, OH
- **JiHye Han, PhD**, University of Cincinnati, Cincinnati, OH
- **Periakaruppan Manickam, MD**, University of Cincinnati

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### Grants, Contracts, and Industry Agreements

<table>
<thead>
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<th>Grant and Contract Awards</th>
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#### Brady, W

**Effects of Virtual Realty Simulation on Worker Emergency Evacuation of Neonates**

Agency for Healthcare Research and Quality (Wright State University)

| R18 HS023149 | 9/30/2014-9/29/2017 | $34,790 |

#### Courter, J

**Implementation of Antimicrobial Stewardship Interventions in Children's Hospitals using Benchmarking**

Pfizer, Inc. (Children's Mercy Hospital)

| 9/1/2013-8/31/2015 | $14,952 |

#### Daraiseh, N

**Just-in-Time Methods for Understanding Near-Misses, Injuries and Risk Factors**

National Institutes of Health

| R21 OH010035 | 9/1/2013-8/31/2015 | $152,529 |

#### Hunter, L

**Collaboration between WIC and EHDI to Improve Follow-up of Newborn Hearing Screening in Greater Cincinnati**

Disability Research & Dissemination Center (University of South Carolina)

| U01 DD001007 | 9/30/2013-9/29/2015 | $92,593 |

#### Jaeger, S

**HMG Hospital Based Regional Child Find**

Ohio Department of Health
<table>
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<th>Project Title</th>
<th>PI Name</th>
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<td>Patterned Experience in Preterm Infants</td>
<td>Pickler, R</td>
<td>National Institutes of Health</td>
<td>R01 NR012307</td>
<td>1/1/2012-2/29/2016</td>
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<td>Palliative Cancer Care: Music Video for AYA-Parent Communication and Resilience</td>
<td>Palliative Cancer Care: Music Video for AYA-Parent Communication and Resilience</td>
<td>National Institutes of Health (Indiana University)</td>
<td>R01 CA162181</td>
<td>06/15/2014-05/31/2016</td>
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<td>Technical Assistance and Training for Maryland Project SEARCH Sites, Staff, and Stakeholders</td>
<td>Rutkowski, S</td>
<td>Maryland Developmental Disabilities Council</td>
<td>R01 CA162181</td>
<td>8/1/2014-7/31/2015</td>
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<td>Total</td>
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Future ACL Injury Risk Runs High After Reconstructive Surgery

Youth athletes who undergo ACL reconstructive knee surgery have a significantly higher rate of suffering a second ACL injury within two years. In addition, girls appear to face greater risk than boys for injuring their other ACL during that time.


“The incidence of repeat injury is much higher than once thought in young, active patients,” says Mark Paterno, PhD, Scientific Director in the Division of Occupational Therapy and Physical Therapy and Associate Professor in the Division of Sports Medicine. “Essentially, this highlights the concern that our current outcome after ACL reconstruction is sub-optimal. With this knowledge, it is imperative that we challenge the current management after ACL injuries.”

Thirty areas of patient care at Cincinnati Children’s work within Patient Services, ranging from OT/PT and ambulatory services to audiology and outpatient clinics. In the field of sports medicine, numerous studies have examined the prevalence of second ACL injuries within the first year of post-reconstruction, but none have reported the incidence normalized to athletic exposure further out. The team found that, overall, 29.5 percent of these young athletes suffered a second ACL injury within two years of returning to sports.

The proportion of athletes reinjuring the same ACL during this period of time was similar between girls and boys. However, 23.7 percent of girls with such an injury later injured the other ACL, compared to just 10.5 percent of boys.
Young athletes who received one anterior cruciate ligament reconstruction (ACLR) were much more likely than non-injured athletes to suffer a subsequent ACL injury upon returning to pivoting or cutting sports activities. This Kaplan-Meier survival curve of ACL integrity shows that more than 30 percent of once-injured athletes experienced a second ACL injury within 20 activity exposures and 52 percent were injured within 72 exposures. Conversely, none of the athletes in the control group were injured in their next 20 exposures and only one was injured in less than 72 exposures.