ISLC IMPACT REPORT

2019-2024



Letter from Our Leaders

Dear colleagues,

We are excited to present this five-year summary of the remarkable achievements of the Improvement Science Leadership Course. Through continuous learning and iterative change, and thanks to continuous support from the Department of Pediatrics, the ISLC is now a premier leadership and improvement science training program! We are proud of our steadfast commitment to develop leaders who can meet the demands required to deliver the highest quality care to our patients.

The accomplishments of our participants are truly inspiring. ISLC graduates not only achieve measurable and sustained improvements in their projects but also showcase their work on national platforms, including earning prestigious quality awards and delivering featured presentations on critical topics such as health equity. These successes highlight the dedication of our trainees and the durable impact of this program.

This report highlights:

- Success across the six domains of quality: patient safety, health equity, efficiency, effectiveness, timeliness, and patient-centered care
- Broad skill and leadership development: benefiting fellows, clinical and research faculty, medical directors, nursing and administrative staff
- Impact of collaboration: engaging with entities across our health system and beyond, including national quality and safety organizations

Looking ahead, we are committed to fostering an "all teach, all learn" environment that supports innovation, continuous improvement, and developing resilient leaders. Our vision is to continue shaping individuals who will drive meaningful change, inspire excellence, and set new benchmarks in healthcare quality.

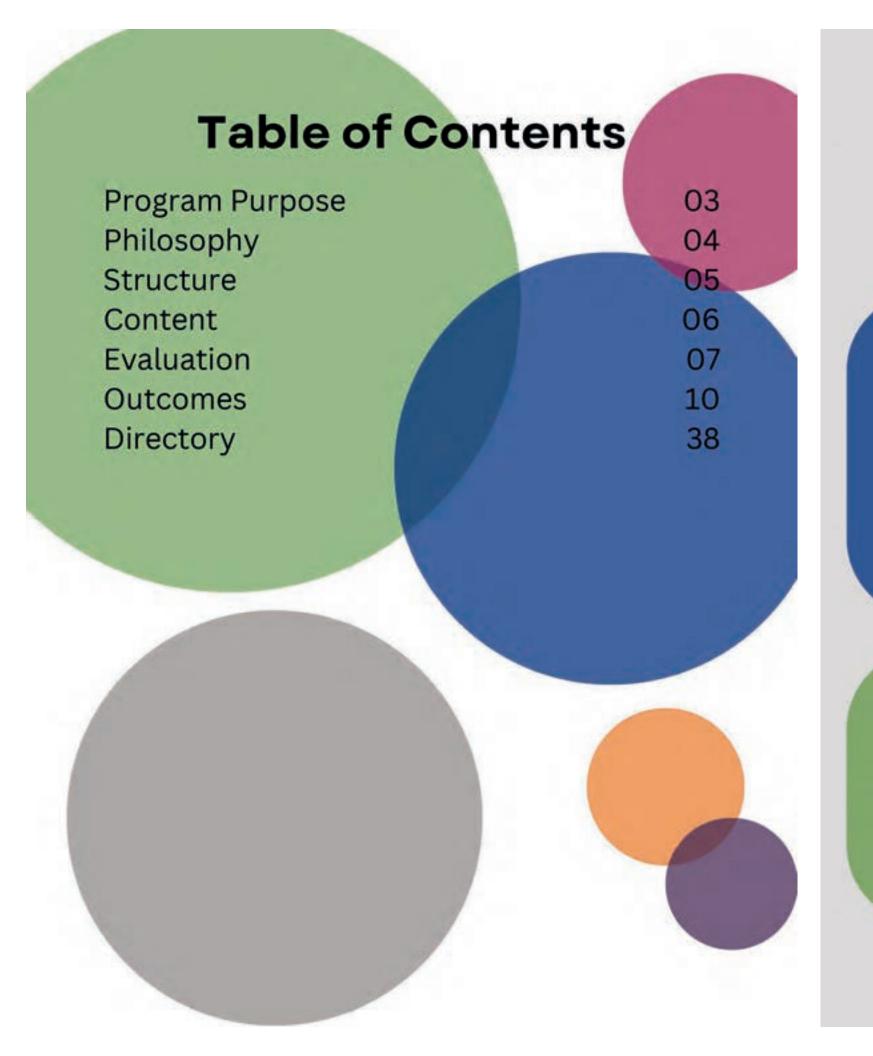
We extend our heartfelt gratitude to the Department of Pediatrics leadership for their unwavering support throughout our journey. Their commitment is instrumental in enabling the ISLC to thrive and in fostering an environment where our leaders can flourish.

With gratitude,

Emily C. Sterrett, MD Director of Improvement Science, Pediatrics

Heather McLean, MD Vice Chair of Quality, Pediatrics





Purpose

To develop **proficient leaders** who will **role model and apply** their skills to **execute** improvement, to **lead** project teams, and **achieve** measurable results

To grow our culture and capability to meet the expectations of our patients, peers, and the evolving climate of quality-based healthcare

Philosophy

All teach, all learn – Everyone is an expert at something, and everyone has something to learn! Maintain an open and humble classroom dialogue



Sharing – Regular, structured project presentations allow for longitudinal exposure and vicarious learning from a variety of project and problem subtypes

Classroom didactics – Fundamental principles must be taught using a structured approach





Coaching – Everyone and every team has different challenges, requiring the dynamic and professional skill of a dedicated coach

Project-based learning – Strengthens the investment by applying concepts to local priority problems

Structure

Competitive Application Process

Applicant-Identified Project Proposal

9-month Academic Calendar

Learn & Participate through:

Monthly Full-Day Classroom Sessions Inter-Session Coaching Calls Project-based Application of Learning Structured Monthly Project Reports

> Assigned a: QI Coach, Management Engineer

Culmination: Grand Rounds Presentation, Abstracts & Manuscripts



Classroom Content

A3

Run Charts Variation Reliability Theory Statistical Control Change Management Charters Profound Knowledge **SQUIRE 2.0** Data over Time **Business Case FMEA** Common Causes Special Causes Pareto Analysis Root Causes PDSA Cycles SMART Aims PDSA Ramps Leadership **Key Drivers Process Maps Humble Inquiry** Value Stream Disparity & Equity Model for Improvement Waste Fishbone Standard Work Measures Lean

Six Sigma

Evaluation

Impact on individuals - measured serially during the course using Kirkpatrick's 4-Level Model for Evaluating Training Programs (reaction to the participants' learning, behavior, and results)

Project progress - aim to achieve successful tests of change and measurable improvement prior to course completion, according to IHI Project Progress Assessment Scale

Sustainable engagement in QI - goal for participants to initiate, complete, or sponsor an additional project within one year of course completion

On average, participants' knowledge of common improvement tools went from minimal knowledge to capability for analysis and application.

KNOWLEDGE	Before	After
Model for improvement	2.43	4.17
Lean improvement	1.51	3.57
Six sigma	1.71	3.4
A3 thinking	1.4	3.89
Variation in data	1.69	3.91
Fishbone diagram	2.57	4.2
Pareto chart	1.77	4.21
Run chart	2.31	4.32
Statistical process control	1.49	3.8
Key driver diagram	2.37	4.33
Project charter	1.91	3.8
Process measure	2.51	4.15
Outcome measure	2.63	4.21
Balancing measure	2.26	4.12
Failure modes effect analysis	1.43	3.8
Process mapping	2.31	4.11
PDSA cycle and ramping	2.71	4.3
Squire guidelines	1.46	3.17
Root cause analysis	2.26	3.77
5 Whys	1.66	4.09

Knowledge score values: 1=No knowledge, 2=Knowledge, 3=Basic application, 4=Analysis & application, 5=Highly experienced, 6=Expert.

All changes statistically significant with p<0.001.

CONFIDENCE		After	
Identifying gaps in health quality	2.91	3.63	
Describng the model for improvement	2.37	3.69	
Identifying characteristics of effective teams	2.83	3.69	
Identifying effective and efficient strategies to conduct team meeting:		3.71	
Writing an aim statement for a QI project		4.06	
Choosing an appropriate process modeling method	2.2	3.71	
Describing one model for identifying measures for improvement		3.83	
Describing the difference between common and special cause variat		3.66	
Interpreting the basic components of run charts		4.06	
Applying plan-do-study-act cycle methodology		4.11	
Collaborating effectively with other professionals	3.49	4.23	

Score values: 1=Not confident at all, 2=Not confident, 3=Reasonably confident, 4=Confident, 5=Very confident. All changes statistically significant with p<0.001.

On average, participants' confidence with improvement concepts went from minimally confident to very reasonably confident.





SAFE



PATIENT-CENTERED



EFFICIENT



EQUITABLE



EFFECTIVE



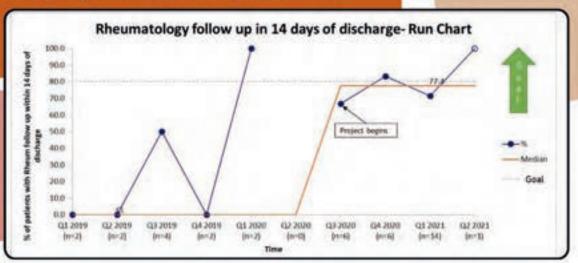
TIMELY



Safety

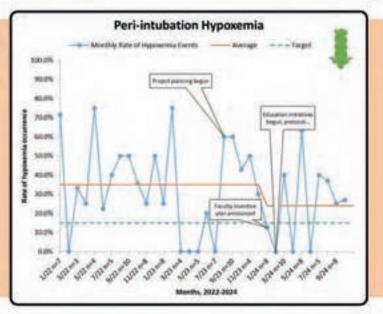
Kawasaki Disease

Improved access to outpatient follow up and echocardiogram for the highest risk population of patients



Optimizing Strategies for Airway Intubation Safety

Decreased the rate peri-intubation hypoxemia events by over 10%



Penicillin Allergy

Delabeling

Laura Hampton Kristina Nazareth-Pidgeon

Improving the Documentation of Penicillin Allergy Labels Among Pediatric Inpatients

ARREST RECEDEND AND ORDERED SHOWING above is the sea

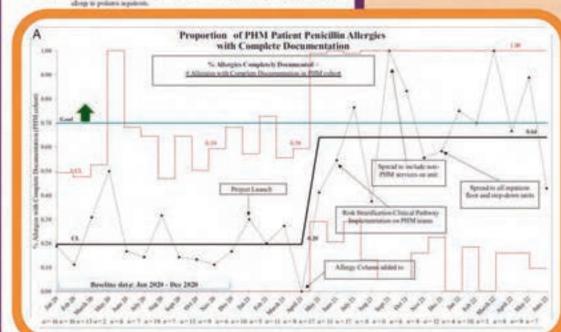
Association of Sociodemographic Factors With Reported Penicillin Allergy in Pediatric Inpatients





In the first 12

months, 100



"ISLC provided a transformative experience, equipping me with practical QI tools and a deep understanding of improvement science that I could immediately apply to my work. Participating in ISLC was invaluable; I gained insights from top experts and learned structured approaches to effectively lead quality improvement initiatives. ISLC has empowered me to mentor others in quality improvement, enriching my ability to drive meaningful changes in patient care."

-Kristina Nazareth-Pidgeon





Laura Hampton, MD

Assistant Professor, Pediatric Hospital Medicine Medical Director, Children's Hospital Quality Improvement Wellstar MCG Health Children's Hospital of Georgia Medical College of Georgia



Kristina Nazareth-Pidgeon, MD

Assistant Professor of Pediatrics Chair of the PHM Quality Committee Co-chair of the Duke Safe Sleep Taskforce Co-Lead for Duke AAP IMPWR Project



Mary Buckley, MD

Assistant Professor, Pediatric Rheumatology
Associate Director, Pediatric Rheumatology Fellowship



"The course transformed QI from 'something you have to do' to an integral and complementary part of clinical medicine. It took an innate drive to do things better and gave it structure and purpose...

I now see QI as a part of my career path and am excited about the future possibilities."



Reeti Kumar, MD

Assistant Professor, Pediatric Nephrology Program Director, Pediatric Nephrology Fellowship Regional Medical Director of Creekstone Clinic

"I learned how to carry out an impactful QI project from conception to fruition. I will never forget to 'go to the Gemba'! ... The course helped me make meaningful connections across Duke and network with colleagues within the Department of Pediatrics and beyond."



Ruchi Doshi, MD

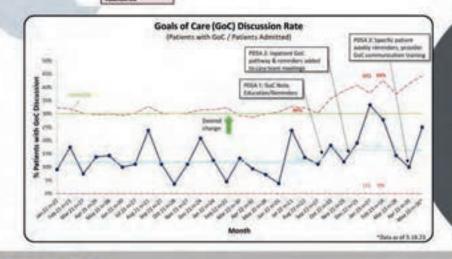
Assistant Professor of Medicine & Pediatrics Co-Medical Director, Med-Peds Service Line Director, Transition Taskforce

"The skills I gained through ISLC garnered invitations to join regional and national boards, to further promote the hospital-based care of adolescents and young adults with childhood onset chronic illness."



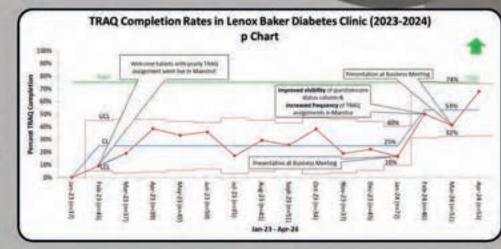
Patient Centered





Standardizing
Goals of Care
Conversations
for Complex
Care patients

Transition
readiness
assessment of
adolescents for
Type 1 and Type 2
diabetes in
outpatient clinics





Bryan Monroe, MD

Assistant Professor, Pediatric Hospital Medicine Wake Forest University School of Medicine Atrium Health Wake Forest Baptist Hospital

"ISLC has been hugely formative in my approach to patient care and scholarship. Not only was the course well-taught and enjoyable, it helped me lead a succesful, meaningful, and scholarly QI initiative."



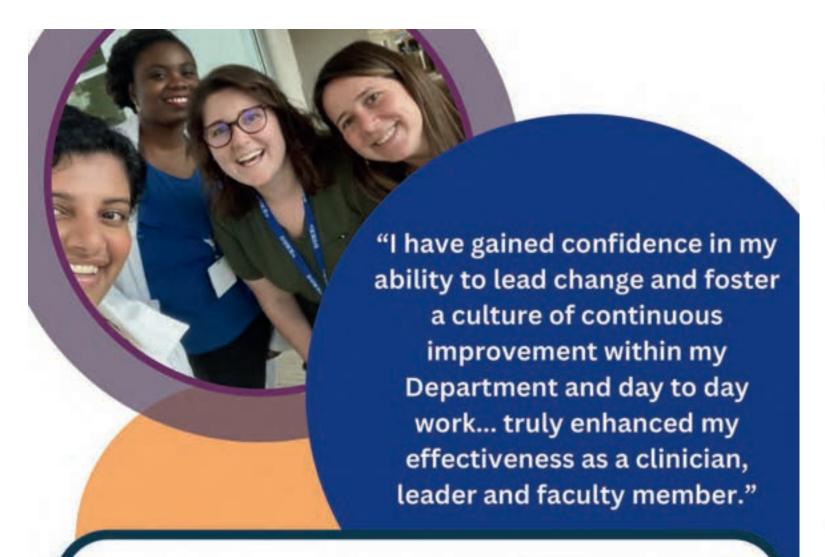


Alice Basin, MD

Pediatric Endocrinology Fellow PGY6
Endocrinology Rep - DUH Transition Taskforce
Pediatric Endocrine Rep - DUH Glycemic Safety Committee

"The project support I received inside and outside of the classroom helped build my confidence and expertise in QI research and further advance my project."

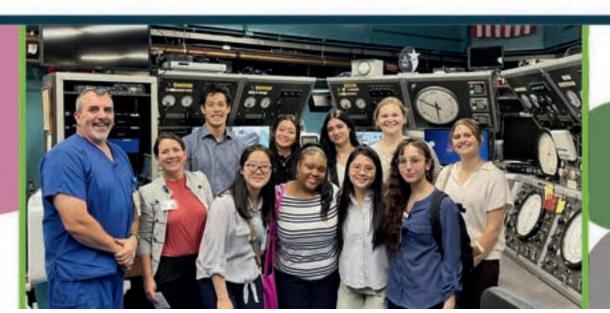






Melissa Campbell, MD

Assistant Professor, Pediatric Infectious Diseases, Associate Medical Director, Pediatric Infection Prevention Medical Director, Ambulatory Pediatric Infectious Diseases

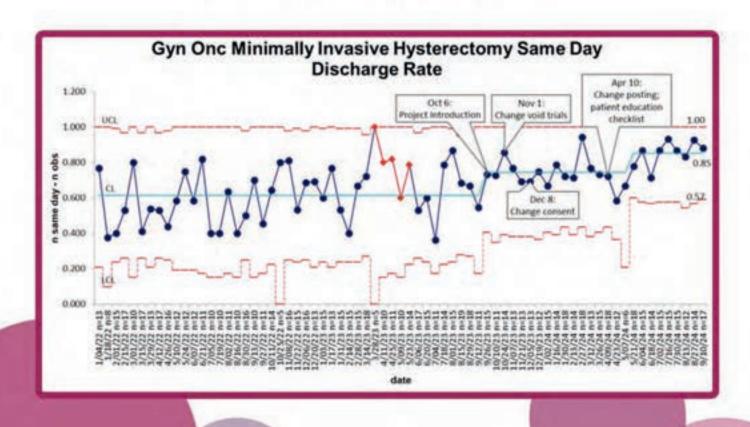




Efficient

Same Day Discharge Rates for Minimally Invasive Hysterectomies in Gyn - Onc

Decreased length of stay and increased the same day discharge rate for minimally invasive hysterectomies following evidence-based, safe, and cost-effective care

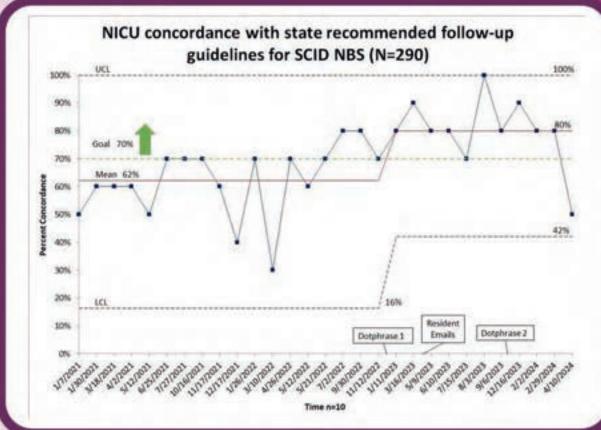


Improving CAre in SCID Screening: ICASS

Geoffrey Hall
Talal Mousallem



Reduced waste of SCID screening by improving concordance with national guidelines by a statistically significant 20%





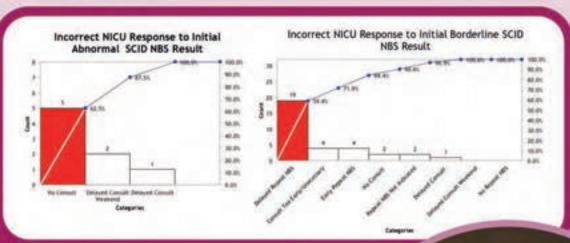
Geoffrey Hall, DO

PGY6 Allergy and Immunology Fellow



Talal Mousallem, MD

Associate Professor of Pediatrics, Allergy and Immunology Associate Program Director, Allergy and Immunology Fellowship



Received the 2023 AAAAI
Quality Adherence and Outcome
Committee Award

Abstract presentation at the 2024 Annual Meeting of the American Academy of Allergy, Asthma & Immunology ANNUAL MEETING

Improving Compliance with State-Recommended Guidelines for SCID NBS in the ICN

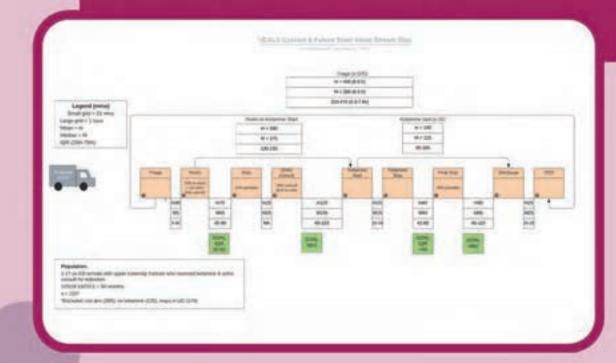
Geoffrey Halt, DO
Alliergy & Immonology Fellow, PGY7
Dulie University
February 24th, 2034

Decreasing ED Average Length of Stay: DEALS

Emily Greenwald & Neel Subramanian



Reduced ED length of stay by 1 hour using value stream mapping

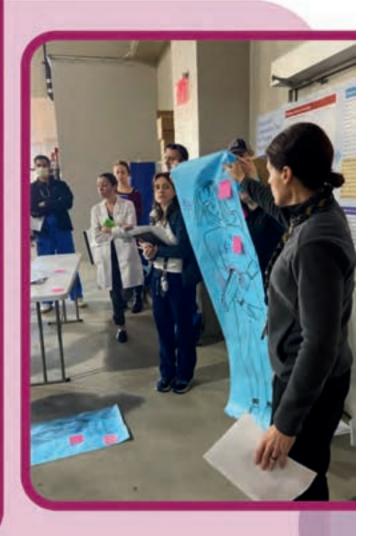


Awarded the Fulkerson Award at 2023 Duke Health Quality & Safety Conference

"ISLC not only imparted leadership skills to me, but also provided opportunities to work on significant projects that involved multiple stakeholders.

Through these projects, I gained valuable experience in developing and leading teams, effectively collaborating to address complex issues."

-Neel Subramanian





Emily Greenwald, MD

Assistant Professor of Pediatrics Medical Director DUH Pediatric Emergency Medicine



Neel Subramanian, MD

Assistant Professor, Pediatric Emergency Medicine Emergency Services EPIC Champion, DUHS

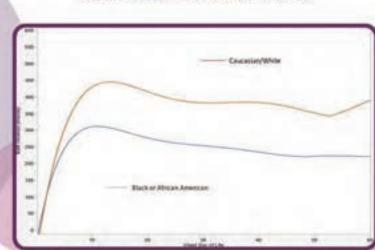




Equitable

Mother's Own Milk

Improved discharges with mother's own milk to over 80%



Social Determinant Screening

Over 1,200 inpatients have been screened in multiple domains including food insecurity, financial strain, housing instability, and transportation barriers

Started a meal tray program to provide free meal trays to families throughout their hospital stay who screen positive for financial strain or food insecurity and have provided more than 4,500 meals to patients' caregivers

Postpartum Blood Pressure Monitoring



Kathleen Zacherl Laura Havrilesky Maddie Morello

Ensuring safe and equitable discharge: a quality improvement initiative for individuals with hypertensive disorders of pregnancy

> Kathleen M. Zacherl 👵, 1 Emily Carper Sterrett, 1 Brenna L. Hughes, 1 Karley M Whelan, James Tyler-Walker, Samuel T Bauer,

represented introduce use. care is shallenging in the USA and hypertensive disorders of programop are a major contributor to method by	PARKET SPECIFICATION IN PRODUCTION	TOTAL
from \$1% to 20% to assert party and mortality. Shades on individual	others of programing (MEP), regimentated installment seed, go paladomia, repolujal combre in Ma makedualis, auto (EMF) the procura- completed SP chedra within 7-days. How BOSA, to 2008, ht assertio work.	care is challenging in the USA and hypertensive disorders of pregnancy

Race	Odds Ratio	Confidence Interval	P value
Black vs. White (pre-intervention)	2.2	1.36-3.60	0.001
Black vs. White (post-intervention)	1.6	0.74-3.49	0.228

Awarded the Kirkland Award at 2023 Duke Health **Quality & Safety** Conference.

Implementing interventions to address the large difference in no show rates for non-hispanic Black patients, Kathleen's team eliminated this disparity between Black and White patients.

"In a medical environment traditionally limited by the silo effect, I am truly grateful for the opportunity to experience this program and to contribute collaboratively across departments." -Laura Havrilesky





Kathleen Zacherl, MD

Assistant Professor, Obstetrics & Gynecology Vice Chair of Quality, Obstetrics & Gynecology Medical Director, Labor & Delivery Chair, Perinatal QA/PI Committee UConn Health



Laura Havrilesky, MD

Professor, Gynecologic Oncology, Department of Ob/Gyn Director, Fellowship in Quality & Safety in Women's Health Associate Chair, Quality, Safety & Peer Review Committee Medical Director, 6300, DUH



Maddie Morello

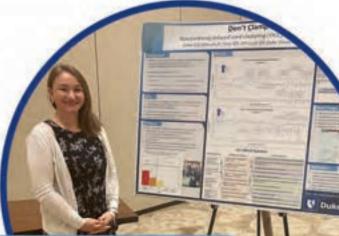
Manager of Quality & Safety, Department of Ob/Gyn

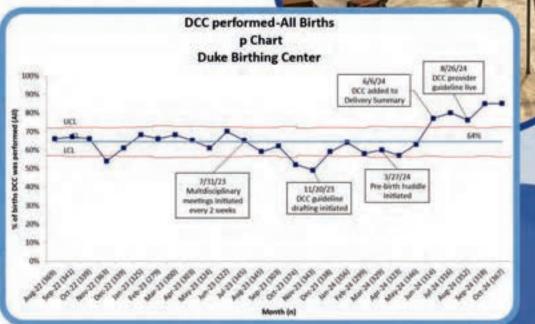


Effective

NICU Cord Clamping

Increased evidence based compliance with delayed cord clamping for over 80% of all births







Pneumococcal Vaccine in Outpatient Clinics

Nephrology outpatient clinics have vaccinated almost 400 patients



Keyaria Gray, MD

Assistant Professor, Neonatal-Perinatal Medicine
Associate Medical Director, NICU

"The ISLC program helped me evaluate everyday processes through the lens of quality improvement.

I look for opportunities to use QI tools within administrative meetings to understand the needs of our staff and patient families.

My goals have shifted to creating processes that result in sustainable change."



Shatha Yousef, MD

Assistant Professor, Pulmonology & Sleep Medicine Director, Pediatric Cystic Fibrosis Center

"ISLC reshaped my vision on how to look at processes in our practice, where no process is perfect and every outcome may have an improved pathway!" "The ISLC course has played an integral role in my career... It provided me with the skillset to meld my interests in clinical research and patient safety... I have become a leader of quality improvement within the pediatric intensive care unit, and have had opportunities to share and disseminate this work throughout Duke University Hospital."





Andrew McCrary, MD

Associate Professor, Division of Pediatric Cardiology Director, Cardiology Quality Improvement Associate Director, Non-invasive Imaging Program Co-director, Single Ventricle Care Program

"In addition to the tools, ISLC connects early career faculty with department and health system leadership and resources enhancing career development potential."



Palen Mallory, MD

Assistant Professor, Division of Pediatric Critical Care





Kamlesh Athavale, MD

Associate Professor, Neonatal-Perinatal Medicine Medical Director, Special Care Nursery, Duke Regional Hospital Neonatal Medical Control, Duke LifeFlight



"The course content was exceptionally lucid and relatable since all the instructors are immersed in QI delivery in healthcare... With teams tackling a diverse range of topics, everyone had the opportunity to listen and learn from each other's endeavors, thereby amplifying the collective knowledge... The most remarkable aspect is that the instructors continually refine and adapt course material based on participant feedback, enhancing the course perpetually."

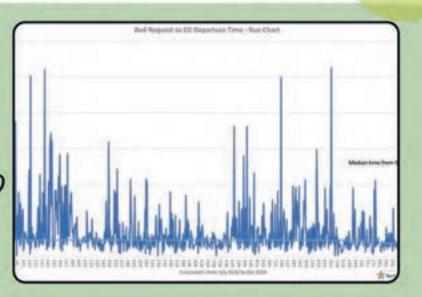
Timely

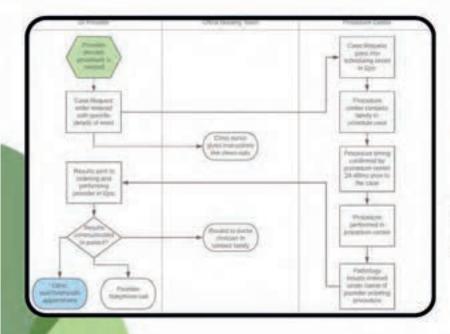
Status Epilepticus in the ED

Reduced the time from first-line medication to second-line anti-seizure medication by 75%

Patient Transfers from ED to PICU

Reduced median time from bed request to ED departure time by 20 minutes





Gastroenterology Scheduling

Reduced the number of steps in their process to streamline procedure scheduling in clinics



Carolyn Avery, MD

Pediatric Director, Population Health Management Office Co-Director Population Health, NC Integrated Care for Kids Medical Director, Duke Med-Peds Residency Continuity Clinic Co-chair, Duke Children's Primary Care Quality Collaborative

"ISLC allowed me to advance my QI training while pursuing a project important to clinical care and residency education. Having such an opportunity within Duke, rather than needing to go external to the institution, allowed me to create relationships with future partners in the Department, project support staff, and technology services."



Exciting times ahead!
Opportunities to spread our reach, develop our leaders, improve the experience of our staff and the outcomes of our patients - that's our future!



Duke Health Medical Directors

Children's - Pop Health - DHIP - Med-Surg - Emergency - DHTS



Omar Alibrahim



Kamlesh Athavale DRH Special Care Nursery



Carolyn Avery NC Integrated Care for Kids Med-Peds - Continuity Clinic



Melissa Campbell

Ambulatory Pediatric

Infectious Prevention



Michael Campbell DCT 3A, Cardiac Imaging



Katherine Cashen
Quality Improvement Ped Cardiac Critical Care



Ruchi Doshi Med-Peds Service Line



Emily Greenwald

DUH Ped Emergency Dept



Keyaria Grey NICU



Laura Havrilesky рин 6300



Reeti Kumar Creekstone Clinic



John Lyles CHC Valvano Day Hospital



Andrew McCrary

Quality Improvement

Cardiology, Imaging



Kristina Nazareth-Pidgeon DCT 1A/2A,4B, Complex Care



Jennifer Sherwin



Neel Subramanian Emergency Services Maestro Champion



Shatha Yousef Cystic Fibrosis Center



Muhammad Zafar Epilepsy Monitoring Unit

Thank You!

Dr. Ann Reed Susan Kline Dr. Keith Mann Dr. Angelo Milazzo Aekta Raja **Pediatric Division Chiefs** Children's Service Line Senior Leadership Department of Obstetrics & Gynecology **Duke Quality System** Performance Excellence Dr. Victoria Parente Dr. Lindsay Terrell



Staff

Management Engineers

Program management, coaching, lecturing, and data collection

Past Management Engineer support: Jason Deboy, Kelly Gagnon, & Madeline Crow



Camille DiCarlo Blair Woody MISE



Advisory Board



Keith Mann VP of Continuing Certification, ABP



Katy Bartlett Vice Chair, Faculty Development



Lisa Parnell Past Medical Director for PHM, Complex Care



Kyle Rehder Vice Chair, Education



Sameer Kamath CMO, Duke Children's



Susan Kline Vice Chair, Admin & Finance

Administrative Assistants

Coordinating classroom resources, CME & scheduling Cohorts 1-5: Brittany Beverly, Winnie Watson, Pearlie Turner

Cohort 1 - 2019-2020



Kevin Rathke, Peter Malinosky -Neurology Coach: Emily Sterrett Reducing epilepsy clinic appointment

lead times



Kristin Page, Christy Ragan - Pediatric Transplant and Cellular Therapy Coach: Sameer Kamath Establishing long-term outpatient follow-up for BMT patients



Carolyn Avery, Emily McCormick, Sara Page, Kiana Dailey - Primary Care

Coach: Katy Bartlett Improved resident continuity in newborn well visits

Cohort 2 - 2020-2021



Kamlesh Athavale, Cheryn Johnson – Neonatology

Coach: Emily Sterrett

Reducing unnecessary NICU admissions for

neonatal hypoglycemia



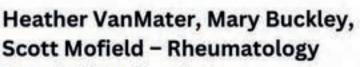
Andrew McCrary – Cardiology Coach: Lisa Parnell Improved feeding program for infants after heart surgery



Mary Boruta, Peter Malinosky – Gastroenterology
Coach: Heather McLean
Improved patient-level communication around
invasive GI procedures



Laura Hampton & Kristina NazarethPidgeon - Hospital Medicine
Coach: Sameer Kamath
Reduce unnecessary penicillin
allergy labels for low/no-risk
inpatients



Coach: Katy Bartlett Improved outpatient follow-up for Kawasaki disease

Cohort 3 - 2021-2022



Richard Chung - Adolescent Medicine

Coach: Carolyn Avery

Improving adolescent well visit completion rates



Colby Feeney - Hospital Medicine
Coach: Sameer Kamath
Increasing social determinants of
health screening in pediatric inpatients



Reeti Kumar - Nephrology
Coach: Katy Bartlett
Increasing rates of transition readiness screening for adolescents with stage 3-4 chronic kidney disease



Deesha Mago-Shah – Neonatology Coach: Lisa Parnell Increasing rates of NICU discharge on mother's own milk feedings



Neel Subramanian, Emily Greenwald Emergency Medicine
Coach: Heather McLean
Decreased length-of-stay for patients requiring sedated fracture reductions

Cohort 4 - 2022-2023





Bryan Monroe & Mark Chandler Hospital Medicine

Coach: Kristina Nazareth-Pidgeon Goals of Care planning in pediatric complex care services



Geoffrey Hall & Talal Mousallem Allergy & Immunology
Coach: Katy Bartlett
Management of abnormal SCID newborn
screening in the ICN



Loryn Wilson - Nephrology Coach: Reeti Kumar Pneumococcal vaccination in chronic kidney disease



Muhammad Zafar - Neurology

Coach: Emily Greenwald

Efficiency in seizure management in the ED



Kathleen Zacherl & Laura Havrilsky & Maddie Morello - Obstetrics & Gynecology Coach: Emily Sterrett
Postpartum hypertension monitoring after hospital discharge



Shatha Yousef - Pulmonology

Coach: Heather McLean

Sleep Disorder screening in Cystic Fibrosis

Cohort 5 - 2023-2024



Laura Calvo & Keyaria Gray - Neonatology Coach: Emily Greenwald Increase delayed umbilical cord clamping for preterm infants



Palen Mallory - Critical Care
Coach: Emily Sterrett
Reduce oxygen desaturation
events during endotracheal
intubation



Brianna ter Haar & Melissa Campbell Infectious Diseases
Coach: Colby Fenney
Increase guideline concordant HIV testing
and PrEP in primary care



Caitlin Pinotti - Rheumatology
Coach: Mary Buckley
Increase capture of patientreported outcomes among those
receiving methotrexate

Cohort 5 - 2023-2024



Alice Basin & Ruchi Doshi Endocrinology & Med-Peds
Coach: Carolyn Avery
Establish adult transition care for adolescents with diabetes



Pamela Peters - Gynecologic Oncology,
Obstetrics & Gynecology
Coaches: Heather McLean & Laura Havrilesky
Reduce unnecessary post-operative
hospitalizations following minimally invasive
surgical procedures



Leonid Bederman & Omar Alibrahim Critical Care
Coach: Katy Bartlett
Reduce transfer delays from the
Pediatric ED to Pediatric ICU

Cohort 6 - 2024-2025



Reshma Patel & John Lyles Gastroenterology
Coach: Kristing Nazareth-Pic

Coach: Kristina Nazareth-Pidgeon
Improve completeness & effectiveness
of bowel preparation prior to
colonoscopy



Samuel Littlejohn & Michael Jay Campbell - Cardiology Coach: Katy Bartlett

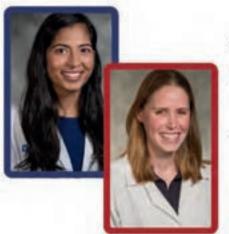
Improve access and reduce no-show rates for cardiac MRI exams



Jennifer Sherwin & Katherine Cashen -Cardiac Critical Care

Coach: Kyle Rehder
Improve oral feeding among congenital
cardiac infants before Stage 1 palliation

Cohort 6 - 2024-2025



Shital Patel & Kelly Rang - Neurology
Coaches: Mary Buckley
Improve access to Child Neurology clinic
after first-time seizure



Vanessa Ford - Critical Care
Coach: Heather McLean
Improve blood culture testing
stewardship in PICU



Chelsea Lockyear & Jamie Johnson -Neonatology

Coach: Emily Sterrett Improve use of primary CPAP among preterm infants in the delivery room



Joseph Lafferty - Obstetrics & Gynecology

Coach: Laura Havrilesky
Improve environmental
sustainability through re-usable
tools for gynecologic exams



