CARDIOLOGY 2024

Can a Learning Network Improve Outcomes?

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Intermountain Children's Health | U HEALTH UNIVERSITY OF UTAH

OBJECTIVES

- Describe a Learning Network
- Define the concept of collaboration
- Provide examples/tools of learning improvement

WHAT IS A LEARNING NETWORK?

- Members work together to study a health condition and improve patient care
- Gathering data about treatments through QI and research
- Members include:
  - Patients/families and community organizations
  - Healthcare providers
  - Researchers


action
ADVANCED CARDIAC THERAPIES
PROJECT SINGULAR
Hope Through Research For Single Ventricle Hearts
PediPERForm
LEARNING NETWORK
PEDIATRIC PERFUSION REGISTRY
FONTAN
OUTCOMES NETWORK
CARDIAC NETWORKS
UNITED
CNOC
PEDIATRIC CARDIAC CRITICAL CARE CONSORTIUM
PC4 Improving outcomes and quality through collaboration
PAC3
Pediatric Acute Care Cardiology Collaborative
CCRC
CONGENITAL CARDIAC RESEARCH COLLABORATIVE
National Pediatric Cardiology
Quality Improvement Collaborative
CARDIOLOGY
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WHAT IS THE VALUE OF A NETWORK?

- Expands knowledge
- Help to grow/educate teams
- Provide higher quality, safer, more efficient care for your patients
- Collaboration between sites allow best practices to be identified and improvement to made across sites

Proceedings of the 6th Scientific Meeting of the World Society for Pediatric and Congenital Heart Surgery

Power of a Learning Network in Congenital Heart Disease

World Journal for Pediatric and Congenital Heart Surgery
2019, Vol. 10(1) 66-71

DOI: 10.1177/2150135118815023
journals.sagepub.com/home/pch
SAGE

Jeffrey B. Anderson, MD, MPH, MBA[1,2], David W. Brown, MD[3], Stacy Lihn, BS[2,4], Colleen Mangeot, MS[5], Katherine E. Bates, MD[6], Andrew H. Van Bergen, MD[7], Nancy A. Rudd, MS, CPNP[8], Samuel Hanke, MD[1,2], Jim Tweddell, MD[1], and Carole Lannon, MD[2]; for the National Pediatric Cardiology Quality Improvement Collaborative

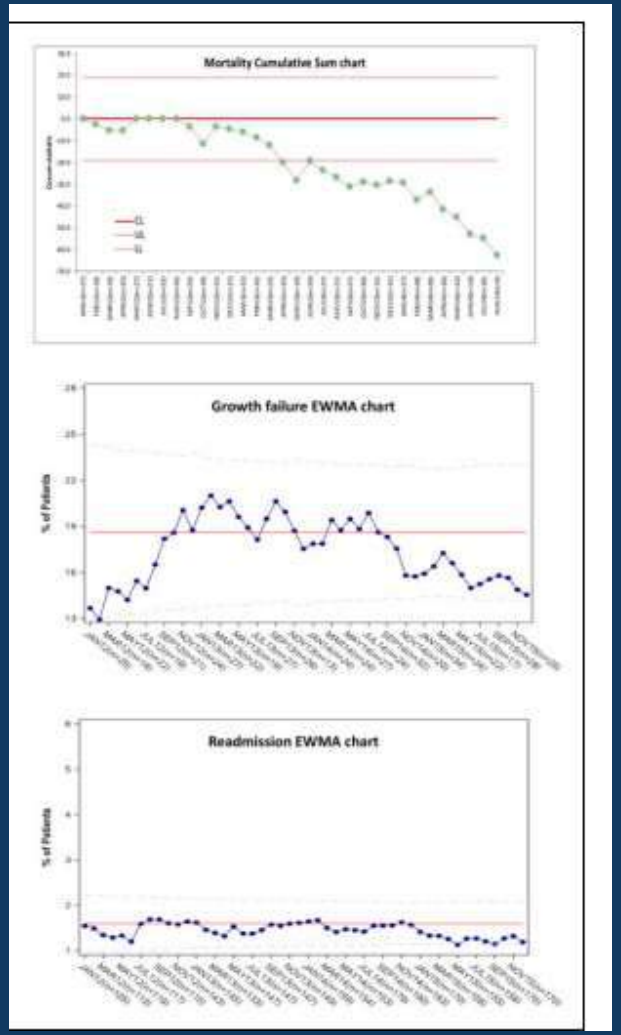
National Pediatric Cardiology
Quality Improvement Collaborative

"The NPC-QIC's initial efforts led to improvements in interstage growth and mortality. The NPC-QIC has modeled the use of data for improvement and research, the value of co-production with parents, and the concept "all teach, all learn," demonstrating the power of the learning network model."

-Interstage Mortality deceased by 40% from 9.5% to 5.3%

-Use of the nutrition bundle improved growth a 28% reduction in growth failure

-Serious hospital readmissions was low and did not significantly change



J Am Heart Assoc. 2016 Jan; 5(1): e002376.
Published online 2016 Jan 11. doi: 10.1161/JAHA.115.002376
PMCID: PMC4859359
PMID: 26755552

Digoxin Use Is Associated With Reduced Interstage Mortality in Patients With No History of Arrhythmia After Stage I Palliation for Single Ventricle Heart Disease

David W. Brown, MD,[1] Colleen Mangeot, MS,[2] Jeffrey B. Anderson, MD,[2] Laura E. Peterson, BSN, SM,[3] Eileen C. King, PhD,[2] Stacey L. Lihn, BA, Steven R. Neish, MD,[4] Craig Fleishman, MD,[5] Christina Phelps, MD,[6] Samuel Hanke, MD,[2] Robert H. Beekman, III, MD,[2] Carole M. Lannon, MD, MPH,[2] and the National Pediatric Cardiology Quality Improvement Collaborative

National Pediatric Cardiology
Quality Improvement Collaborative

Randomized Controlled Trial > Pediatr Cardiol. 2018 Aug;39(6):1200-1209.
doi: 10.1007/s00246-018-1884-x. Epub 2018 May 24.

Digoxin Use in Infants with Single Ventricle Physiology: Secondary Analysis of the Pediatric Heart Network Infant Single Ventricle Trial Public Use Dataset

Dongngan T Truong [1], Shaji C Menon [2], Linda M Lambert [3], Phillip T Burch [4], Xiaoming Sheng [5], L LuAnn Minich [2], Richard V Williams [2]

Pediatric Heart Network

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INTERSTAGE CHANGE PACKAGE

- Improve care and outcomes during the “Interstage” Period
- Outlines strategies for clinicians, parents and researchers to advance QI improvement efforts

Pediatr Cardiol. 2022 Jun;43(5):1141-1155. doi: 10.1007/s00246-022-02837-9. Epub 2022 Feb 14.

Assessing the Association Between Pre-operative Feeding and the Development of Oral Feeding Skills in Infants with Single Ventricle Heart Disease: An Analysis of the NPC-QIC Dataset

E Sagiv [1], Y L Tjoeng [2 3], M Davis [4], E Keenan [5], J Fogel [4], K Fogg [6], N Slater [7], S Prochaska-Davis [8], K D Frontier [9], J Fridgen [2], T Chan [2 3]

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"Pre-operative feeding of infants with single ventricle heart disease was not associated with early achievement of tube-free feeding in the first year of life. However, pre-operative oral feeding was also not associated with increased risk of NEC, suggesting that it can be safely offered among appropriate patients"

NPC-QIC Toolkit

Oral Feeding Prior to Stage 1 Palliation

"The "Preoperative Feeding Project" was established to improve the quality of life for infants with single ventricle heart disease and their families by increasing opportunities for nutritional and neurodevelopmental oral feeding experiences prior to Stage I surgical palliation"

Cardiol Young. 2020 Nov;30(11):1603-1608. doi: 10.1017/S1047951120003522. Epub 2020 Oct 23.

Variations in practice in cardiac neurodevelopmental follow-up programs

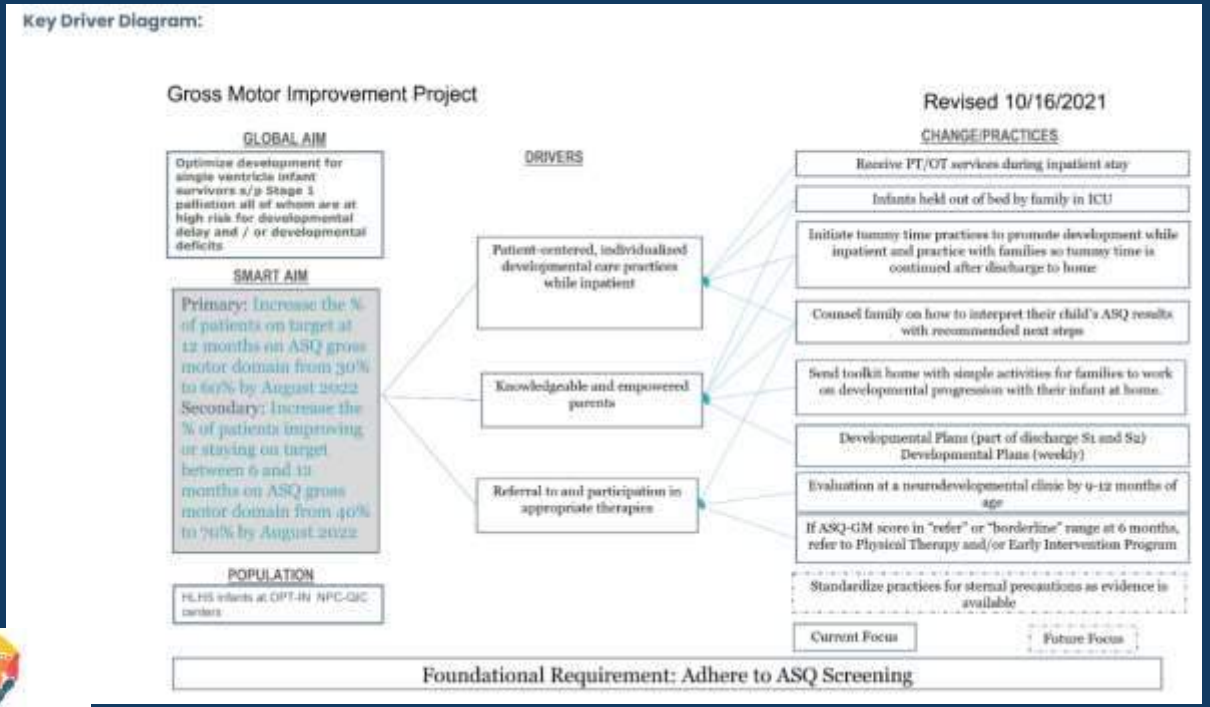
Thomas A Miller [1], Anjali Sadhwani [2], Jacqueline Sanz [3], Erica Sood [4], Dawn Ilardi [5], Jane W Newburger [2], Caren S Goldberg [6], David Wypij [7], J William Gaynor [8], Bradley S Marino [9]

- In response to clinical need and published guidelines, many centers have established formal cardiac neurodevelopmental follow-up programs
- Centers vary considerably in their approaches to routine screening and objective testing, with many focusing their resources on younger age patients

GROSS MOTOR IMPROVEMENT PROJECT

Improve quality of life for infants with single ventricle congenital heart disease and their families through the development of gross motor skills in the first year

Key Driver Diagram:



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Strengthening Hearts And Bodies: A Multi-center Quality Improvement (qi) Initiative To Improve Gross Motor Skills In Infants With Single-ventricle Congenital Heart Disease Participating In The National Pediatric Cardiology Quality Improvement Collaborative (npc-qic)

Author Block: S. C. Butler[1], L. Malik[2], P. Kuhnell[3], L. Lambert[2], N. Kasparian[3], J. Briend[4], J. Anixt[3];

[1]Boston Children's and Harvard Medical, Boston, MA, [2]Primary Children's Hospital, Salt Lake City, UT, [3]Cincinnati Children's Medical Center, Cincinnati, OH, [4]Sisters by Heart, El Segundo, CA.

- Increase in the rate of developmental plan provision:
  - 4 weeks post Stage 1 surgery (61% to 71%)
  - Stage 2 surgery discharge (54% to 76%)
- Referral to early intervention by age 6 months (65% to 82%)
- All sites with a shift in the centerline indicating significant improvement
- Protocols created to support infant holding and mobilization in CICU
  - 81% of sites engaging in mobilization efforts (20% prior to project)

NEURODEVELOPMENT AND SUPPORTING INFANT GROSS MOTOR

"Parents are eager to support their baby's development. Too often parents feel that their concerns about development are not prioritized by care teams. Development takes the back seat when babies have such serious heart conditions. Parents want strategies and therapies to support their babies as early as possible."
— Jennie Briend, Parent

Ann Thorac Surg. 2020 Jul;110(1):221-227. doi: 10.1016/j.athoracsur.2019.09.078. Epub 2019 Nov 21.

Center Variation in Chest Tube Duration and Length of Stay After Congenital Heart Surgery

Katherine E Bates [1], Nicolas L Madsen [2], Lara Khadr [3], Zhiqian Gao [2], Kari Crawford [4], Michael Gaies [3], Margaret Graupe [2], Samuel P Hanke [2], Anthony M Hlavacek [5], Evonne Morell [6], Sara K Pasquali [3], Jennifer L Russell [7], Susan K Schachtner [8], Ronn E Tanel [9], Adam L Ware [10], Alaina K Kipps [11]

Variation in CT removal practices after congenital heart surgery across centers. One site appeared to be a + deviant with ⬇ CT duration, which was associated with ⬇ LOS and no ⬆ CT re-insertion. Utilizing this model site project aimed at ⬇ CT duration ⬇ and LOS

doi: 10.1161/JAHA.121.020730. Epub 2021 Oct 29.

Successful Reduction of Postoperative Chest Tube Duration and Length of Stay After Congenital Heart Surgery: A Multicenter Collaborative Improvement Project

Katherine E Bates [1 2], Chloe Connelly [3], Lara Khadr [1 2], Margaret Graupe [4 5], Anthony M Hlavacek [6], Evonne Morell [7], Sara K Pasquali [1 2], Jennifer L Russell [8], Susan K Schachtner [9 10], Courtney Strohacker [1 2], Ronn E Tanel [11 12], Adam L Ware [13], Sharyl Wooton [3], Nicolas L

"We successfully lowered postoperative CT duration and LOS across 9 centers using collaborative learning methodology. We plan to spread this project to other PAC3-PC4 centers"

Session CH.AOS.7sk - Multicenter Research in Pediatric Cardiology

323 - Sustaining and Spreading Success: Longer Term Outcomes and Spread of a Multi-Center Quality Improvement Project to Reduce Post-operative Chest Tube (CT) Duration (on Behalf of the Pediatric Acute Care Cardiology Collaborative and Pediatric Cardiac Critical Care Consortium)

on-demand

Topics
+21/55 Pediatric Congenital Heart Disease

Keywords
Pediatric cardiology Quality improvement,Postoperative Outcomes,Congenital heart surgery,pediatric

Authors
Shreya S Sheth, Baylor Coll of Med, Houston, TX; Alaina Kipps, Stanford Univ, Palo Alto, CA; Nicolas L Madsen, Cincinnati Children's Hosp, Cincinnati, OH; Lara Khadr, Univ of Michigan, Ann Arbor, MI; Margaret Graupe, Cincinnati Children's Hosp Medical Ctr, Cincinnati, OH; Kristin Tignor, Cincinnati Children's Hosp Medical Ctr, Cincinnati, OH; KAYTEE FIGUEROA, WUSM, ST. LOUIS, MO; Lawrence Greiner, Arkansas Children's Hosp, Little Rock, AR; Stephen Hart, Nationwide Children's Hosp, Columbus, OH; Megan Jensen, Children's Mercy Hosp, Kansas City, MO; Jennifer Aiden Maurer, Texas Children's Hosp, Houston, TX; Taylor Morse, Children's Medical Ctr Dallas, Dallas, TX; Madalina Patel, Nicklaus Children's Hosp, Miami, FL; Amelia St John, Children's Healthcare of Atlanta, Atlanta, GA; David Saudek, Children's Wisconsin, Milwaukee, WI; Katherine E Bates, UNIVERSITY OF MICHIGAN, Ann Arbor, MI

In this multicenter prospective interventional cohort study, reductions in CT duration and LOS were sustained in 9 centers following a collaborative learning model, without adverse events

PEDIATRIC CARDIAC CRITICAL CARE CONSORTIUM

PAC3 Pediatric Acute Care Cardiology Collaborative

CONCLUSION

- Learning networks provide a platform for continuous improvement for children with CHD
- Collaboration between all stakeholder-clinicians, researchers, parents and families is key
- Integration of the various networks provides the ability in pediatric and congenital heart disease to foster novel science and accelerate translation of discovery to improvements in care

THANK YOU!

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