



Improving Human Milk Provision in a Level IV NICU: Project HOME

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 Egston NICU

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 Egston NICU



Disclosures

- Kacey Nation: No financial disclosures; Emory Conference on Breastfeeding Planning Committee Member
- Anthony Piazza: Has no financial disclosure but is an executive board member for CHNC and leader of CHNC CIQI Collaboratives
- Data for use in this presentation were supplied by Children's Hospitals Neonatal Consortium, Inc. (CHNC). Any analysis, interpretation, or conclusion based on these data is solely that of the authors, and CHNC specifically disclaims responsibility for any such analysis, interpretation, or conclusion.

Objectives

- Understand the Level IV NICU environment and the challenges that exist in supporting Human Milk Use and Lactation in the Level IV NICU
- Understand how Quality Improvement can be used to facilitate increased use of Human Milk in a Level IV NICU
- Demonstrate the support for QI in the national collaborative Project HOME

Agenda

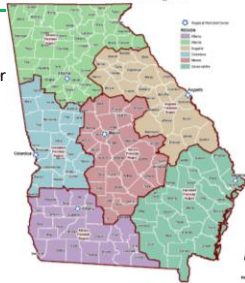
- Overview of Egleston NICU
- Factors that impact supporting lactation at a non-birthing children's hospital NICU
- Brief overview of Quality Improvement concepts
- Quality Improvement through CHNC Project HOME
- Discuss how Human Milk provision can be supported in even the most critical scenarios: case studies



Egleston NICU

- Emory/Atlanta's Region
 - Egleston, Grady, Emory Midtown
 - 32 perinatal hospitals; 1 birthing center
 - Additional support to other regions
- Facilitate transport
 - Neonatal RN and RT
 - Provide mini-NICU on transport
 - TH, INO, HFOV, pressors, CT
- Outreach Education
 - kim.case@emory.edu
 - Scan to receive newsletter

Georgia Regional Perinatal Centers and Perinatal Regions



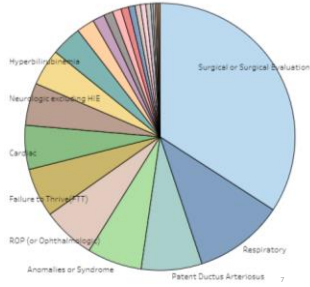
Egleston NICU

- Tertiary Nonbirthing Hospital**
- Patient Population**
 - Birth age, birth weight, DGA, at admission, and cCR vary
 - Complex conditions/medical problems
 - Specialized NICU resources
- Surgical Treatment**
 - Complex congenital or acquired conditions
 - General, ENT, Neurosurgery, Cardiothoracic, Urology
 - Pediatric Anesthesia
- Medical Subspecialists**
 - Cardiology
 - Neurology
 - Endocrinology
 - Hepatology
 - Rheumatology
 - Pulmonology
 - Infectious Disease
- Fetal Care Consult Service**
- ECMO**
- Research**



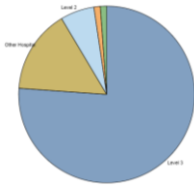
Most Common Reasons for Admission (2022-2023)

- 30% Surgical Eval/Surgery
- 10% Respiratory
- 9% PDA
- 8% Neuro (not HIE)
- 7% FTT
- 7% Anomalies/Syndrome
- 5% Cardiac
- 1% ECMO eval
- 0.5% Cooling



Most Common Referral Sources

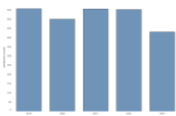
- 77% Level III NICU
- 5% Level II NICU
- 2% Level I/Other



Top Referring Hospitals		
Referral Hospital Name	#	Count %
Emory University Midtown Hospital	119	
Grady Memorial Hospital	85	
Emory Decatur Hospital	43	
Columbus Regional Midtown Piedmont	38	
Fayette Piedmont	29	
Carle Winnetka	28	
CHOA @Scottish Rite	27	
Athens Regional, Piedmont	28	
Floyd Medical Center	15	
Southern Regional	21	
Rockdale, PIEDMONT	16	
Piedmont Hospital, Atlanta	18	
Northside Hospital, Atlanta	41	
Northside Gwinnett	25	
Northside Forsyth	12	
Northwest Georgia Medical Center, Gainesville	17	
Memorial Health University, MC, Savannah	13	
Medical Center Hancock Health (MCCO)	18	
Kennesaw Wesleyan	16	
Henry Piedmont	38	

Current State

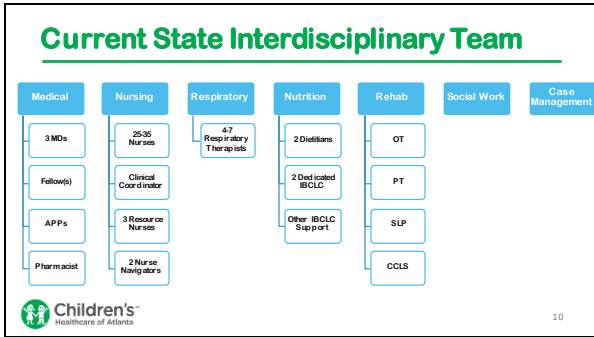
- 50 beds
- Private, semi-private, and open rooms
- 3 "sections" that have historically been used to separate patients by acuity
- ~ 550 admissions/yr
- Designated by GA a level IV NICU by state per AAP national standards



Future State

- 60 beds
- Open with 55 beds
- Incrementally increase to 60
- Room to expand up to 72 beds total
- All private rooms
- Opens September 29, 2024

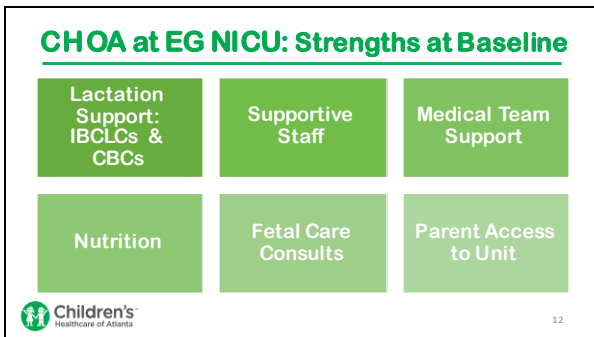




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- **Factors that impact supporting lactation at a non-birthing children's hospital NICU**
- Brief overview of quality improvement concepts
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- Discuss how Human Milk provision can be supported in even the most critical scenarios: case studies

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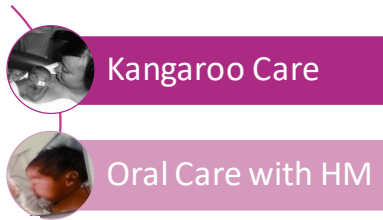


Hospital Support

- Lactation diet (3 meals a day)
- Lactation station & microwave for steaming
- Pumping rooms
- Donor human milk program
- Bedside "Hospital Grade" Pumps
- Human Milk Room
- Milk Management System



Supportive Interventions



Kangaroo Care: Impact on Human Milk

Kangaroo care positively impacts rates of Human Milk feeding and breastfeeding during hospitalization, at discharge, and after discharge

Dose-dependent relationship between KC and BF at DC has been identified

Kangaroo Care: Exclusions

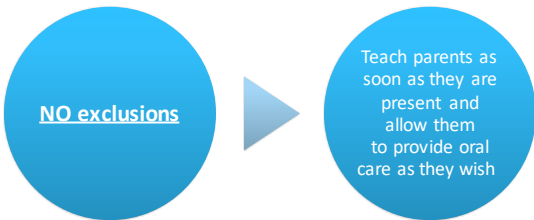
- Major surgical procedure within last 24 hours
- Within 72 hours of a new tracheostomy
- Poorly controlled pain

- Eligibility for more unstable patients, including those with critical airways, CDH, chest tubes, physiologic instability, on HFOV, post code events, or any other concerns



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Oral Care with Human Milk



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Oral Care Story: Miley



"Being able to offer my baby my milk in the smallest amount but that would benefit her and me so much made my heart skip. I love that I am able to be a part of her recovery. The bonding is a little different but it ***connects me to her.***"

Presented with Permission



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EG NICU: Challenges

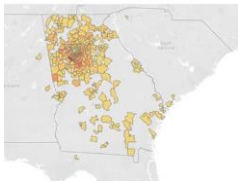
Distance

Resources/Transportation

Amplified anxiety/other mental health concerns

Lack of resources

Prenatal intent



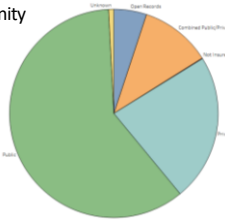
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EG NICU: Challenges

- Varied SES
- Support at OSH & in community

Payor At Discharge

- Open Records
- Combined Public/Private
- Not Insured, Self-Pay
- Private
- Public
- Unknown



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EG NICU: Challenges

Complex Diseases

- Prolonged NPO
- LDA
- Surgeries

P.O Delays

- Maturity
- Missing out on/delay of developmental milestones
- Tube feeding culture
- Volume-focused culture

Extensive LOS

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Quality Improvement Definition

“In health care, quality improvement (QI) is the framework we use to systematically improve the ways care is delivered to patients. Processes have characteristics that can be measured, analyzed, improved, and controlled...”

Agency for Healthcare Research and Quality



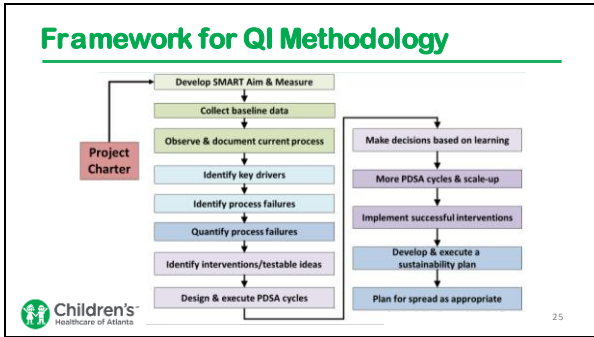
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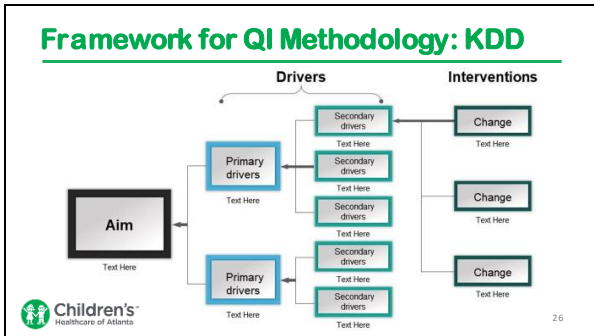
IHI Model for Improvement

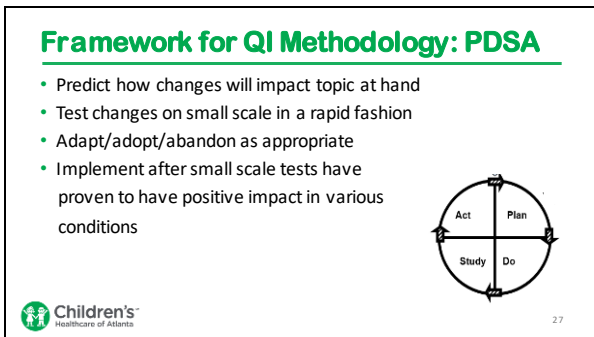
Model for Improvement



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Framework for QI Methodology: Iterative Changes

Wheels in Motion: Continuous Quality Improvement

Wheels in Motion: Continuous Quality Improvement

John M. Road Map for QI

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Challenges to Improve Level IV NICU's Care

- Small disease-specific populations at each center**
 - Minimal data
 - 25 years behind in knowledge
 - Poor definitions of diseases
 - Difficult to develop RCTs
 - Use eminence rather than evidence
 - Extrapolate best care practices from other populations (neo/ped/adult)
- Benchmark complications of prematurity are pre-existing at admission**
 - ROP, NEC, IVH, BPD
- Medical complexity**
 - Need for surgery or other significant intervention

Large Regional NICU Patients

Referrals

Most Perinatal NICUs

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CHNC History: Improving Level IV NICU Care

Neonatal Databases

Benchmarking for NICUs
Large Improvements in Care
Decreased Complications of Common Neonatal Diseases

Vermont Oxford Network (VON)
RDS
IVH
ROP

Missing

Essential data for infants with less common diseases & surgical needs



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CHNC History

Vision Begins

2006
Grassroots Consortium
7 sites
Identification of gaps in knowledge + needs
Begin development of data fields and definitions (Manual of Procedures)
12/06-12/08: 16 in-person meetings of leadership group

Registry (CHND) launch

2008: 17 sites founding members
Consensus on data fields and definitions (MOP)
Partnered with CHCA
2010: data registry launch: 25 sites
Annual member meeting begin
CIQ: SLUGBUG
Collaborative begins

Other activities begin

2011-2016
CIQ: STEPP In (Peri-op)
Publications begin
Data Coordinator Program
5 Focus groups established
MOP improvements
External grants
RFP for new registry vendor

CHNC becomes independent NFP

2017-2019
WCG-Velos new registry vendor
CIQ: Next STEPPs (Peri-op care) #1 and #2 Projects
9th-11th Annual CHND Meetings
7 Focus/Interest Groups
TEF module rollout
2017: CHND 2.0 Released
2018: CHND Compare release

2019-2023

48 sites US/Canada
28 Focus Groups
>85 publications to date
CIQ: ERAISE PAIN Project
CIQ: Project Home
15th Annual Symposium 2023
Compare reporting developments
Research Database created
CIQ: Project HOME launch
First hire of staff in CHNC
Genetics Module for 2024
>50 sites by mid 2024

2006 - 2007
Start-up

2008 - 2010
Begin to improve care

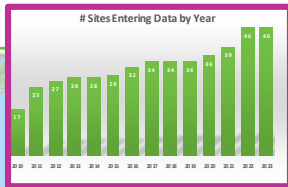
2011 - 2016

2017 - 2018

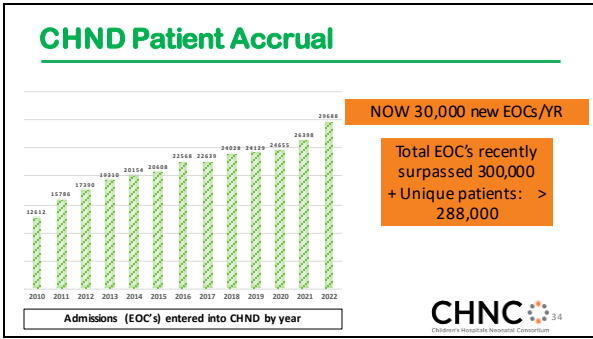
2019 - 2023

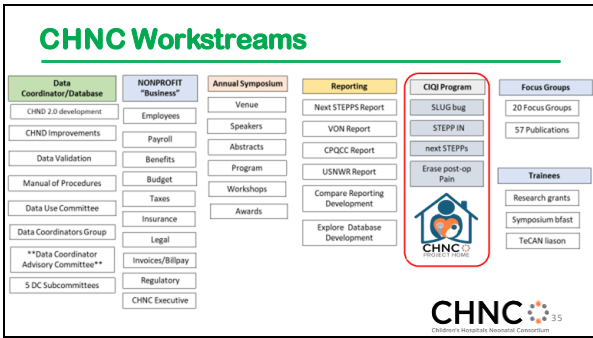
Transition to NFP + rapid growth

CHNC Member Hospitals



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- ### CHNC CIQI Collaboratives
- Infrastructure and history of successful "collaborative" QI projects
 - Support from QI experts
 - QI education and mentorship
 - Database for some measures
 - Data entry, display and analysis platform
 - Resource from all members in the collaborative
 - Monthly meetings and Huddles
 - Listserv
 - Multidisciplinary
 - Similar barriers
 - All levels of QI knowledge and activities
 - Transparency and collaboration
- CHNC**
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CHNC Project HOME

Primary Goal: improve number of NICU patients who are DC on HM

18 months action period with 6 months of sustain

Use some data from CHNC database and additional measures

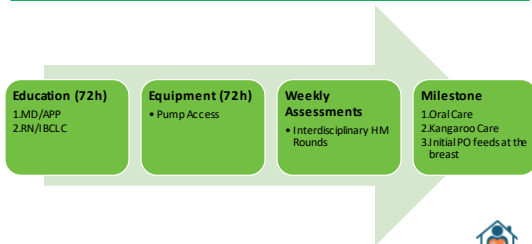


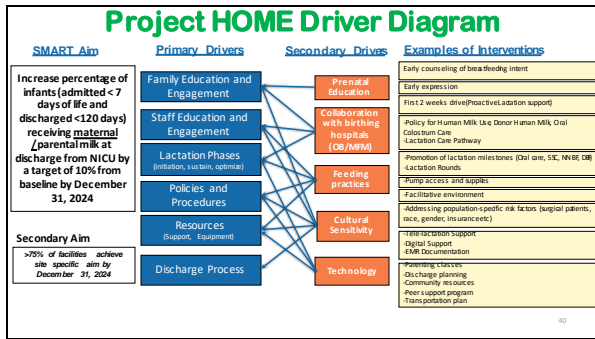
PROJECT HOME Measures

- HOME-1: Human Milk at Discharge
- HOME-3: Human Milk at 28 days of life
- HOME-4: Physician/APP feeding education to lactating parent (72 hrs)**
- HOME-5: Education to lactating parent with 72 hrs
- HOME-6: Documented needs assessment within 72 hrs
- HOME-7: Weekly multi-disciplinary rounds related to Human Milk
- HOME-8: HM oral care
- HOME-9: Skin-to-skin/kangaroo care
- HOME-10: First oral attempts to be at breast
- HOME-11 (optional): Human milk at 14 days of life
- HOME-12: Human Milk exposure error rate



Process Measures





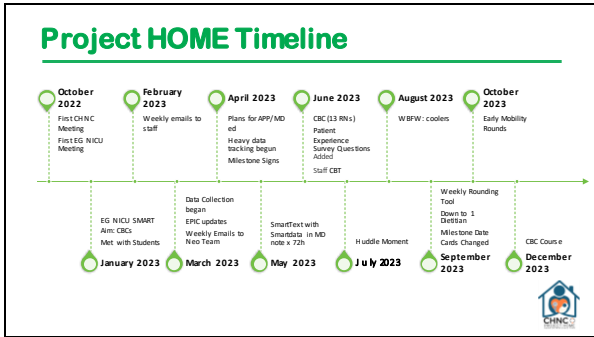
PROJECT HOME SMART Aim

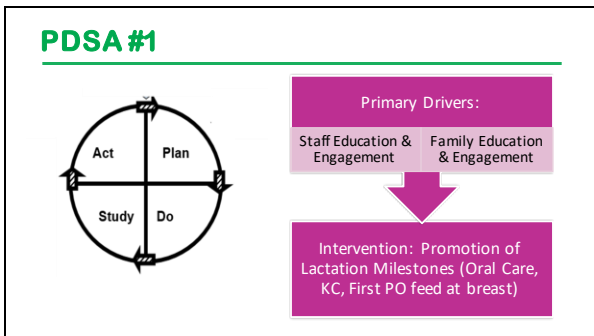
Increase percentage of infants (admitted ≤ 7 days and discharged ≤ 120 days) receiving parental milk at discharge from NICU by a target of 10% from baseline by Dec 31, 2024

Baseline	Recommended Goal
≥ 80%	Maintain or increase rate
≥ 70%	80%
≥ 60%	70%
≤ 59%	60%

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- ### Egleston SMART Aim
1. Maintain our discharge on human milk rate at 80% or increase the rate by December 31, 2024
 2. Increase healthcare professional education on supporting lactating parent to provide human milk
 - **Nursing**
 - Increase number of CBCs from 8% to 15% by end of year 2024
 - **Attendings, fellows and APPs**
 - **30% of attendings** to complete lactation-related education by end of 2024
 - **100% of neo fellows** to complete lactation-related education
 - **30% of APPs** to complete lactation-related education
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PDSA #1: Promote Milestones

Project HOME

I should receive oral care with human milk by August 26.

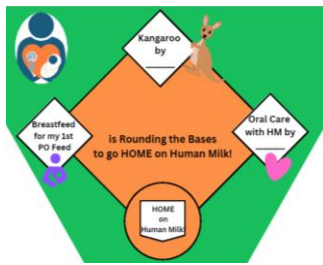
I should kangaroo with my parent who is pumping by September 5.

When it's time for me to eat by mouth, please offer breastfeeding first!

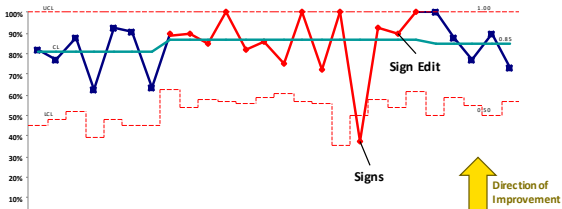
PDSA #1: Promote Milestones

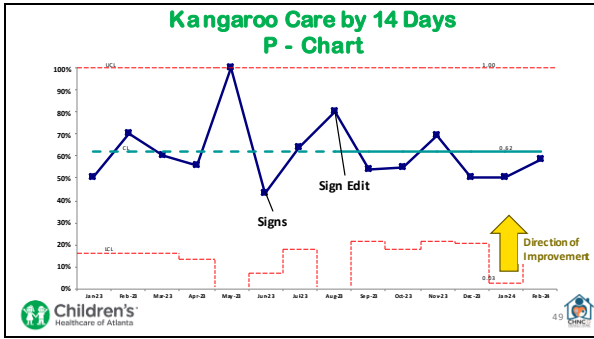
	Cycle 1	Cycle 2	Cycle 3
Unit Description:	Milestone: Oral Sips	Milestone: Oral Sips	Milestone: Oral Sips
Unit Population:	EG NICU	EG NICU	EG NICU
Location of Unit:	EG NICU	EG NICU	EG NICU
Date of Test:	Jan 2023	July 2023	August 2023
Unit Conditions:	<ul style="list-style-type: none"> Final Milestone: Oral Sips at 8 weeks or sooner based on nurse reports with data applicable to the patient 	<ul style="list-style-type: none"> Final Milestone: Oral Sips at 8 weeks or sooner based on nurse reports with data applicable to the patient 	<ul style="list-style-type: none"> Final Milestone: Oral Sips at 8 weeks or sooner based on nurse reports with data applicable to the patient
Unit Results:	<ul style="list-style-type: none"> 214 eligible for Oral Care with HM by 4 Days of Admission received by 4 Days (50%) 315 eligible for KC by 14 days of admission received by 14 days (63%) 318 eligible for first PO feed at breast fed at breast for first PO feed (50%) 	<ul style="list-style-type: none"> 89 eligible received Oral Care prior to 4 days of admission (100%) 477 eligible for KC between 14 days of admission received by 14 days (77%) 25 eligible for first PO feed at breast completed first PO feed at breast (40%) 	<ul style="list-style-type: none"> 710 eligible for Oral Care before 4 days of admission received oral care by 4 days (73%) 314 eligible for KC by 14 days of admission received by 14 days (75%) 213 PO fed at breast for first PO feed (66%)

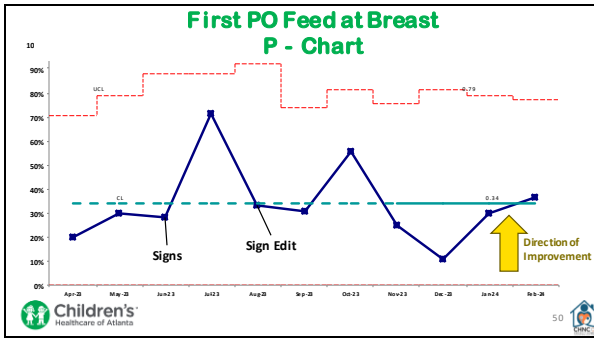
PDSA #1: Promote Milestones, Engage Families

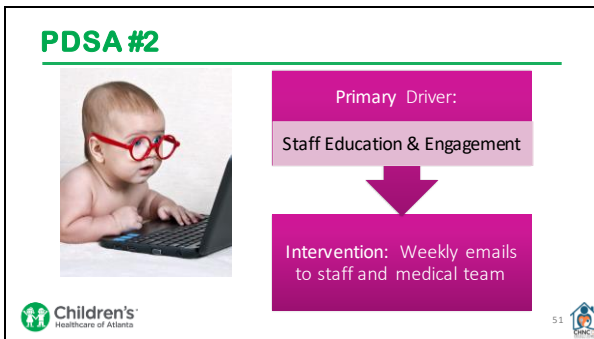


Oral Care with Milk by 4 Days P - Chart











PDSA #2: Weekly emails to staff/providers

Included information about milestones and data



Early on, served to educate/remind

Abandoned because unsustainable by the owners

Other PDSAs

- Milestone collages
- Development of an interactive App with student team
- Patient family liaison engagement
- Provider emails
- EMR build for documentation
- Partner with **EPIC® Breastfeeding Program** for provider education
- Coolers for parents
- Bathroom poster
- CBC class for nurses
 - Increased from 12 to 26 CBCs
- Bedside oral care kits
- Transport coolers for admissions
- Bi-weekly RedCap Survey
- Resource nurse engagement

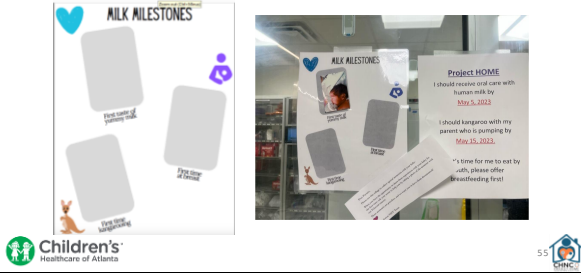
PDSA: Quality Moment Calendar



Please read the color-coded card that coincides with the topic for that day during the 0200 and 3000 huddle!




PDSA: Lactation Milestone Collages

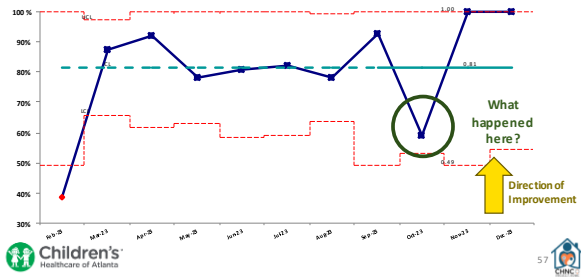


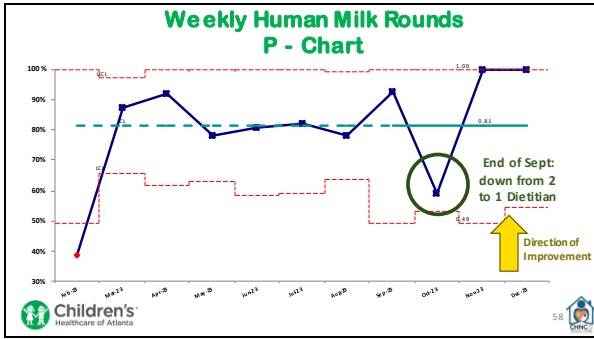
PDSA: Weekly Human Milk Rounds

- Weekly Human Milk Rounds with Interdisciplinary Team
 - Audited by dietitians
 - Documented in MD/APP progress note



Weekly Human Milk Rounds P - Chart



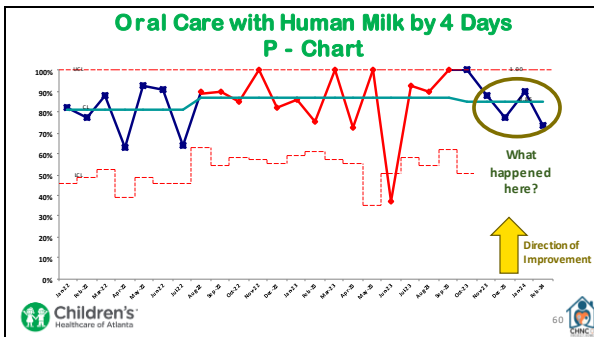


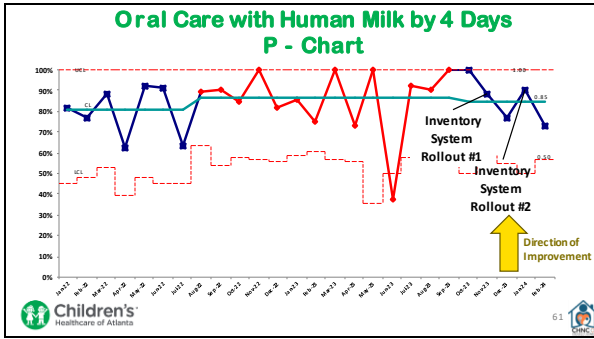
QI Sustainability: Team Member Ownership

Reliance on small number of people may impact sustainability

Longevity is impacted by resource allocation

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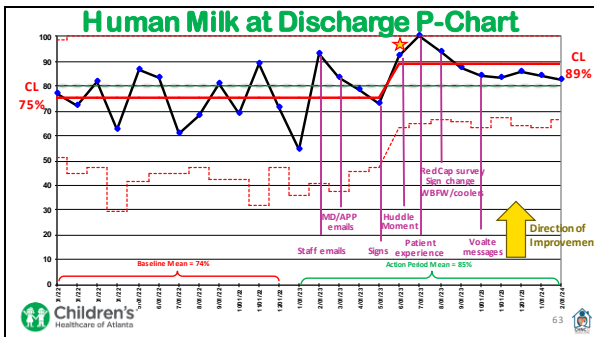
Process Changes

Good or Bad






Impacts entire system or parts of your system

Here, the attempted roll out of the milk management system impacted other pieces of our system

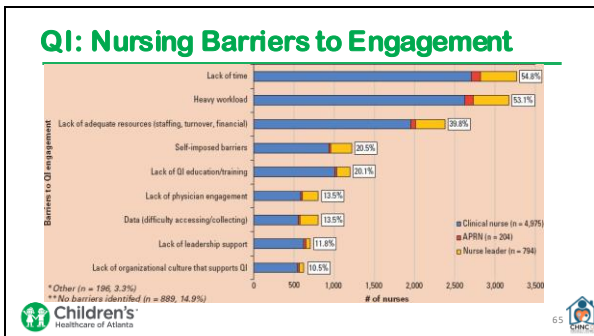
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Biggest Challenges

-  RN champion early knowledge of QI processes
-  Information dissemination – large staff & medical team
-  Macrosystem support
-  Staff engagement
-  Small project team
 - Ownership/Delegation
 - Sustainability of activities
 - Staff Transitions

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QI: What is driving improvement?

- Early MD/APP conversations
- Early IBCLC contact & pump securement
- Family involvement with oral care with HM
- Conversations occurring among interdisciplinary team due to the promotion of the process measures/milestones

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QI: Spread and Adoption by Others



QI involves small changes approached in a systematic way

Best changes are sustainable after ramping up & easily spread/adopted



Can adapt the process to your time/resources/system

Minimal # of cases/patients
Smallest possible changes
Use "early adopters"



Don't have to know everything about QI

Theories
Tools
Creating Charts



IHI: How to Improve



IHI: Tools



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Case Study #1: Emily

- Born 9/21 in Savannah at 33wk6d GA; prenatally diagnosed coarc & microarray positive for Wolf Hirschhorn Syndrome
- 27 y.o. G1
- Cesarean due to worsening PIH
- IUGR; BW 1.36kg
- CPAP at delivery
- Transferred 9/22 11:17am to EG from Savannah for management of CHD




Case Study #1



- Transported by Savannah's Transport Team
- UVC/UAC: TPN, PGEs
- CPAP
- Cardiology workup: EKG, ECHO
 - Severe hypoplastic arch, severe CoA, dysplastic PV, and moderate to severe tricuspid regurgitation
 - Guarded prognosis, uncertain cardiac surgery candidacy in the future



Case Study #1

2:35pm 

Pump within 6 hours of birth? Yes!



Bring milk when you/your family comes!

Current volumes

Pump at home?

Supply & Demand!

Supported at OSH? Yes!



Case Study #1

September 23
worsening apnea, intubated
UVC removed

September 24
NeoPICC placement
Dad & grandparents have been visiting—brought MOM
First Oral Care with HM

September 25
Mom visits for the first time

September 26
IBCLC meets with mother at bedside
• Assists with hospital pump setup and use
Weekly Human Milk Rounds
• Physician inquires about pumping & encourages KC
• Kangaroo Care facilitated (ETT, UAC, PICC)

Case Study #1



September 23
worsening apnea, intubated
UVC removed

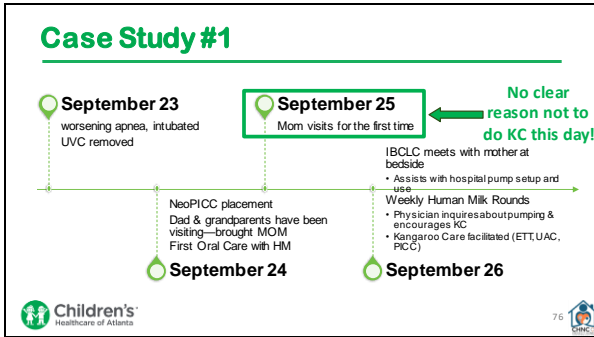
September 24
NeoPICC placement
Dad & grandparents have been visiting—brought MOM
First Oral Care with HM

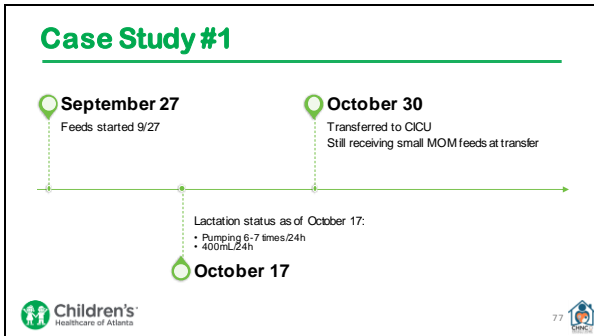
September 25
Mom visits for the first time

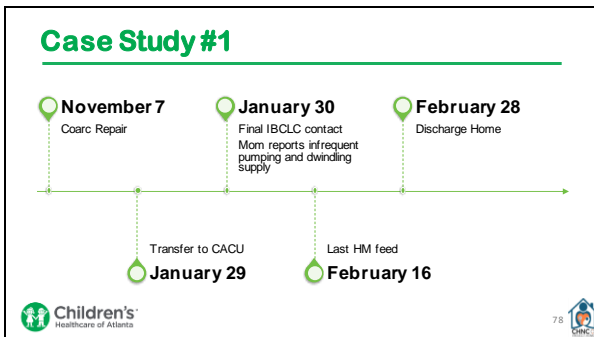
September 26
IBCLC meets with mother at bedside
• Assists with hospital pump setup and use
Weekly Human Milk Rounds
• Physician inquires about pumping & encourages KC
• Kangaroo Care facilitated (ETT, UAC, PICC)

← **What did we miss here?**







Case Study #1: Challenges



C-Section



From Savannah
(staying at RMH)



Intubated



Multiple
lines with a
critical drip



Case Study #1

LOS: 159
days

Pumping:
appx 130
days

Human Milk
feeds: 142
days ±



Case Study #1: Successes



- Mother began pumping within 6 hrs of birth @ OSH
- Parents had resources & ability to be at Egleson/stay at RMH
- Early contact by Egleson IBCLC
- Inquiry about pumping & encouragement to kangaroo by physician
- Oral care ASAP
- Kangaroo care facilitated when mother was ready by team



Case Study #2: Jane



- Born 9/28 at 38w4d via cesarean
 - Oligohydramnios, IUGR, gastroschisis
- 17 y.o. G1; BW 3.06kg
- Transferred immediately after birth from SW Atlanta by Angel II Transport Team for gastroschisis care



Case Study #2

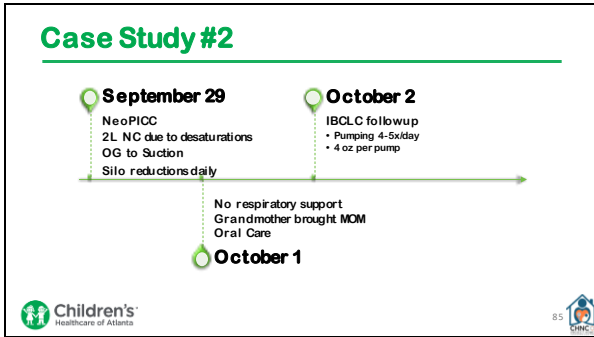
- Arrived 9/28 @ 5:21pm
- PIV: TPN
- No respiratory support
- Surgery at bedside and placed silo on 9/28 @ 7:45pm

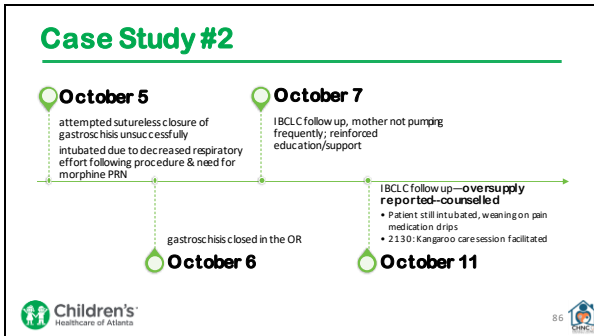


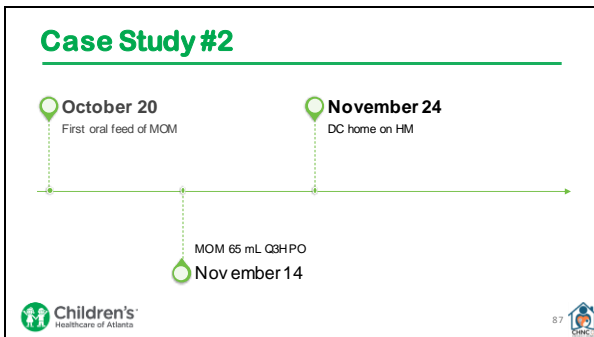
Case Study #2

- Lactation Consultant calls mom 9/29 10:00am
 - Did not pump within 6 hours of delivery
 - Does not have a pump at the OSH yet
 - Education about pumping, supply/demand
 - Inquiry about access to a pump at home
 - Requests milk be brought to EG when she comes









Case Study #2: Challenges

The infographic features five icons representing challenges: a surgical incision for C-Section, a baby in a medical setting for Complicated Gastroschisis/Pain Management, a clock for Pumping Inconsistencies, a woman holding a baby for Young Mother, and a sun for Missed the Golden Hour. The Children's Healthcare of Atlanta logo is in the bottom left, and a small icon with the number 88 is in the bottom right.

Case Study #2: Successes

The infographic features four blue boxes with white text: 'Mother initiated milk expression upon IBCLC intervention', 'Mother at bedside often/consistently', 'Oral care ASAP', and 'Kangaroo care facilitated by team as soon as baby could tolerate'. The Children's Healthcare of Atlanta logo is in the bottom left, and a small icon with the number 89 is in the bottom right.

Summary


- Human milk and lactation is important across the spectrum of NICU care
- Human milk provision is impacted by multiple factors and processes within the level IV NICU
- Quality Improvement is a feasible approach to improving human milk provision, support, and human milk at discharge

The Children's Healthcare of Atlanta logo is in the bottom left, and a small icon with the number 90 is in the bottom right.

Q&A







THANK YOU!!!

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<https://www.chc.org/phys/pediatrics/locations/emory-washburn-pediatric>

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