# Optimizing Newborn Nutrition in Georgia

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# Disclosures

- Noveome, Scientific Advisory Board
- Infant Bacterial Therapeutics/Premier Research, DSMC

# Objectives

- Discuss the Motivation for Optimizing Newborn Nutrition
- Review Key Measures of Newborn Nutrition in Georgia
- Discuss Our Model for Improvement
- Report on Performance of Key Measures to Date
- Share our Future Goals for 2024-2025

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# The GaPQC Neonatal Journey

**2011-2012**

Creation of GAPQC

**2013-2014**

Pilot initiatives

**2014-2016**

Congenital heart disease screening

**2017-2018**

Antibiotic Stewardship (with VON)

**2019-2021**

Neonatal abstinence syndrome (with VON)

**2022-2025**

Optimizing Nutrition for Georgia Newborns
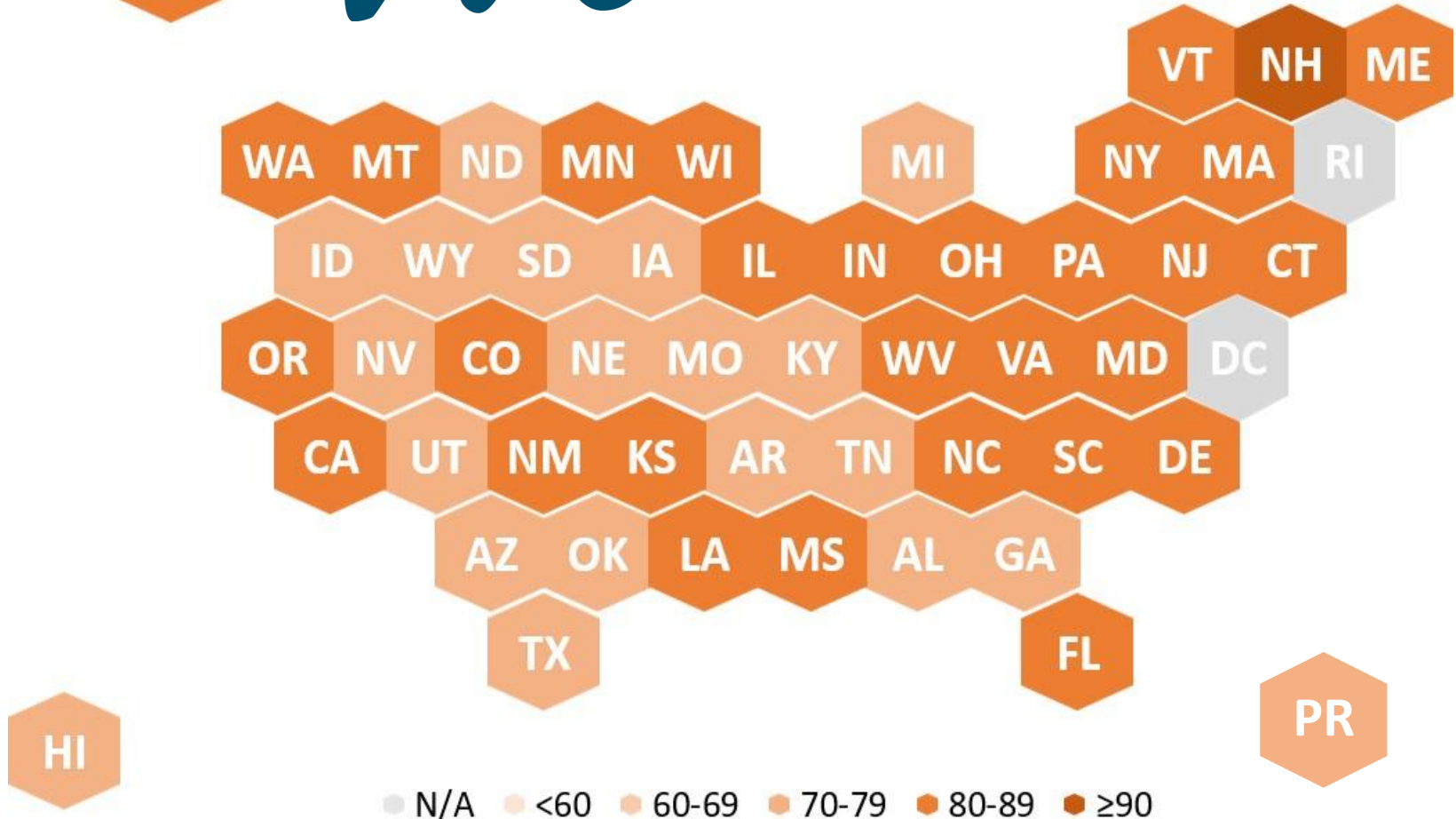
# How is Georgia doing with newborn nutrition?

mPINC

AK

National = 81

Georgia = 75

mPINC 2020 data

VT  NH  ME

WA  MT  ND  MN  WI          MI          NY  MA  RI

ID  WY  SD  IA    IL  IN  OH  PA  NJ  CT

OR  NV  CO  NE  MO  KY  WV  VA  MD  DC

CA  UT  NM  KS  AR  TN  NC  SC  DE

AZ  OK  LA  MS  AL  GA

TX                          FL

HI                                          PR

N/A    <60    60-69    70-79    80-89    ≥90

KRISTIN J. MARKS
US Public Health Svc. Corps,
CDC

# What is mPINC?

- Maternity Practices in Infant Nutrition and Care (mPINC)
- Measures care practices and policies that impact newborn feeding, feeding education, staff skills, and discharge support

mPINC

# Breastfeeding Rates (2018)

| | Ever breastfed | Breastfeeding at 6 months | Breastfeeding at 12 months | Exclusive breastfeeding through 3 months | Exclusive breastfeeding through 6 months | Breastfed infants receiving formula before 2 days of age |
|---|---|---|---|---|---|---|
| National | 83.9 | 56.7 | 35.0 | 46.3 | 25.8 | 19.4 |
| Georgia | 80.9 | 52.9 | 36.2 | 43.6 | 24.3 | 19.3 |

Source: CDC National Immunization Survey (NIS), among 2018 births.     Slides courtesy of Dr. Kristin Marks, CDC

# What can Georgia and GaPQC improve?

## Strengths

- >80% of Georgia hospitals have the ideal response for...
  - Transition
  - Glucose monitoring
  - Post-discharge follow up visit
  - Post-discharge breastfeeding support
  - Documentation of exclusive breastfeeding

## Areas for Improvement

- Response rate (56%)
- <40% of Georgia hospitals have the ideal response for...
  - Mother-infant separation for procedures
  - Formula-feeding of breastfed infants
  - Written policies

*Slides courtesy of Dr. Kristin Marks, CDC*

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  - **Mother-infant separation for procedures**
  - **Formula-feeding of breastfed infants**
  - **Written policies**

Slides courtesy of Dr. Kristin Marks, CDC

# Rooming In

| Rooming-In | National Subscore: 76 | Georgia Subscore: 68 | US Hospitals with Ideal Response | Georgia Hospitals with Ideal Response |
|---|---|---|---|---|
| Mother-infant dyads are rooming-in 24 hours/day | | | 81% | 70% |
| Routine newborn exams, procedures, and care occur in the mother's room | | | 32% | 30% |
| Hospital has a protocol requiring frequent observations of high-risk mother-infant dyads | | | 76% | 65% |

# Institutional Management

| Institutional Management | National Subscore: 71 | Georgia Subscore: 68 | US Hospitals with Ideal Response | Georgia Hospitals with Ideal Response |
|---|---|---|---|---|
| Nurses are required to demonstrate competency in assessing breastfeeding, assisting with breastfeeding, teaching hand expression & safe formula preparation/feeding, and demonstrating safe skin-to-skin practices | | | 68% | 65% |
| Hospital requires nurses to be formally assessed for clinical competency in breastfeeding support/lactation management | | | 59% | 56% |
| Hospital records/tracks exclusive breastfeeding throughout the entire hospitalization | | | 92% | 84% |
| Hospital pays a fair market price for infant formula | | | 48% | 51% |
| Hospital has 100% of written policy elements | | | 33% | 37% |

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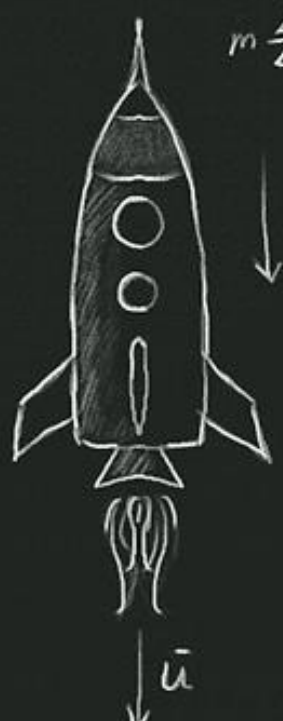
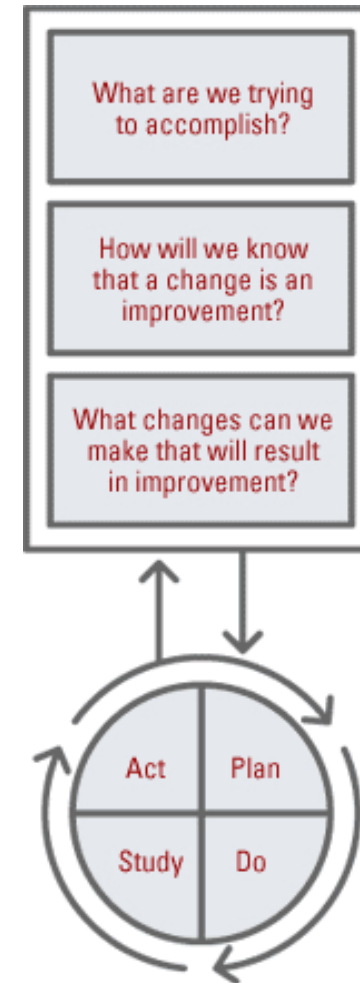- Share our Future Goals for 2024-2025

# HOW can *WE* improve?

# QI Methodology is Not Rocket Science



$$\neq$$

What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in improvement?
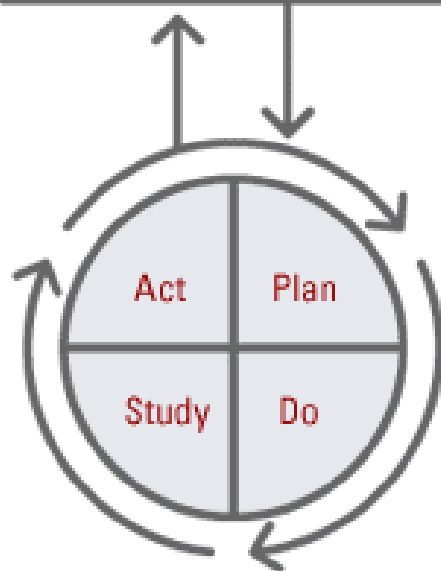
Act | Plan
Study | Do

IHI Model for Improvement

**SMART Aim**

What are we trying to accomplish?

How will we know that a change is an improvement?

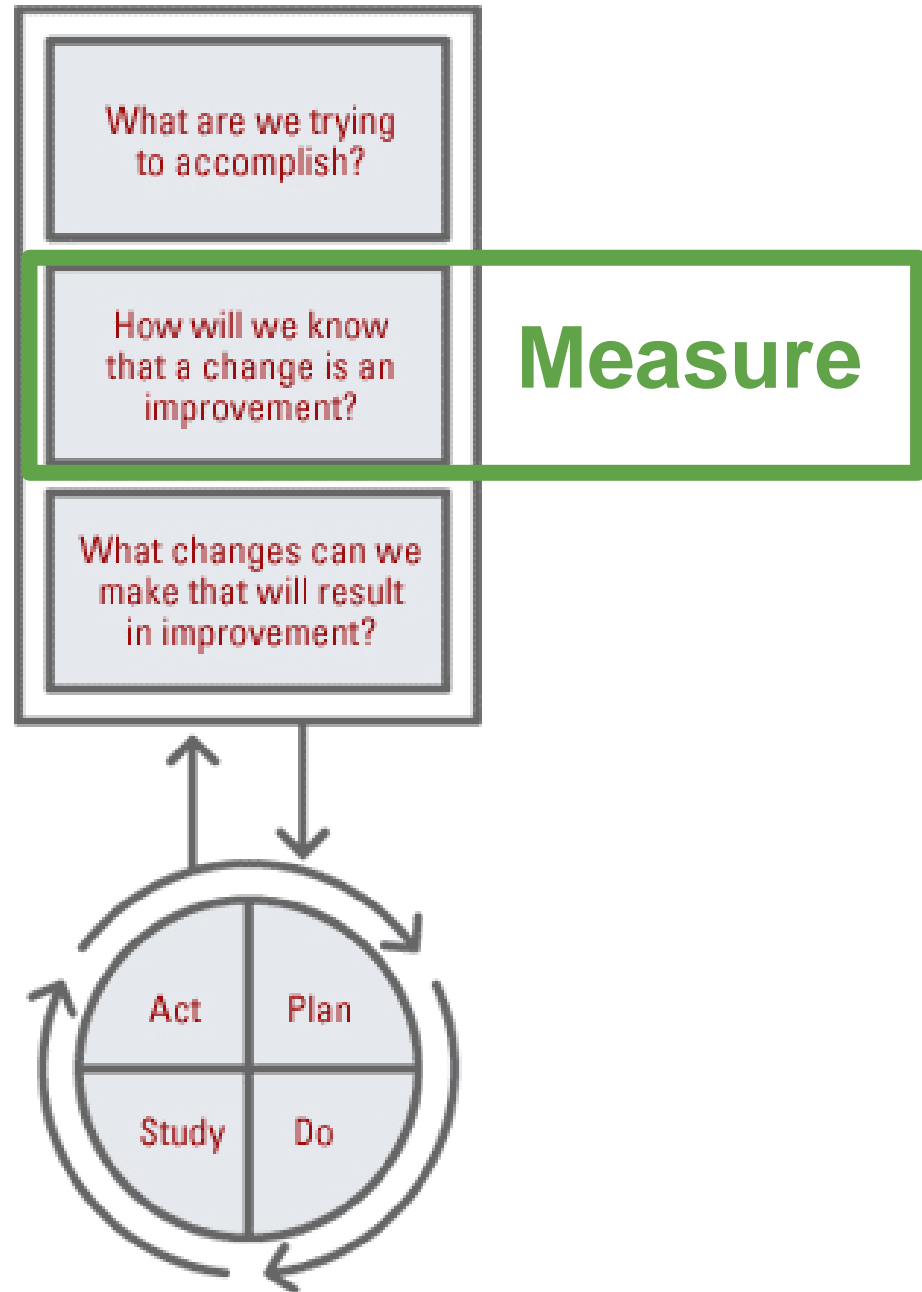What changes can we make that will result in improvement?

Act | Plan
Study | Do

**Increase % of newborns in GaPQC hospitals with human milk as the first feeding by 10% from 73% to 80% by 9/1/25**

GaPQC
GEORGIA PERINATAL QUALITY COLLABORATIVE

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# Studied and Learned from Others

- Reviewed target population, metrics, approach, duration, data frequency and structure of other PQCs

- Perinatal quality collaborative initiatives in California, Ohio, Tennessee, North Carolina, Illinois, Massachusetts, and Florida

# Two Tiers –Improving and Learning

- Active Improvement Team (3 requirements)

- Learning Collaborative (no requirements)

**Georgia Chapter**

**American Academy of Pediatrics**

DEDICATED TO THE HEALTH OF ALL CHILDREN®
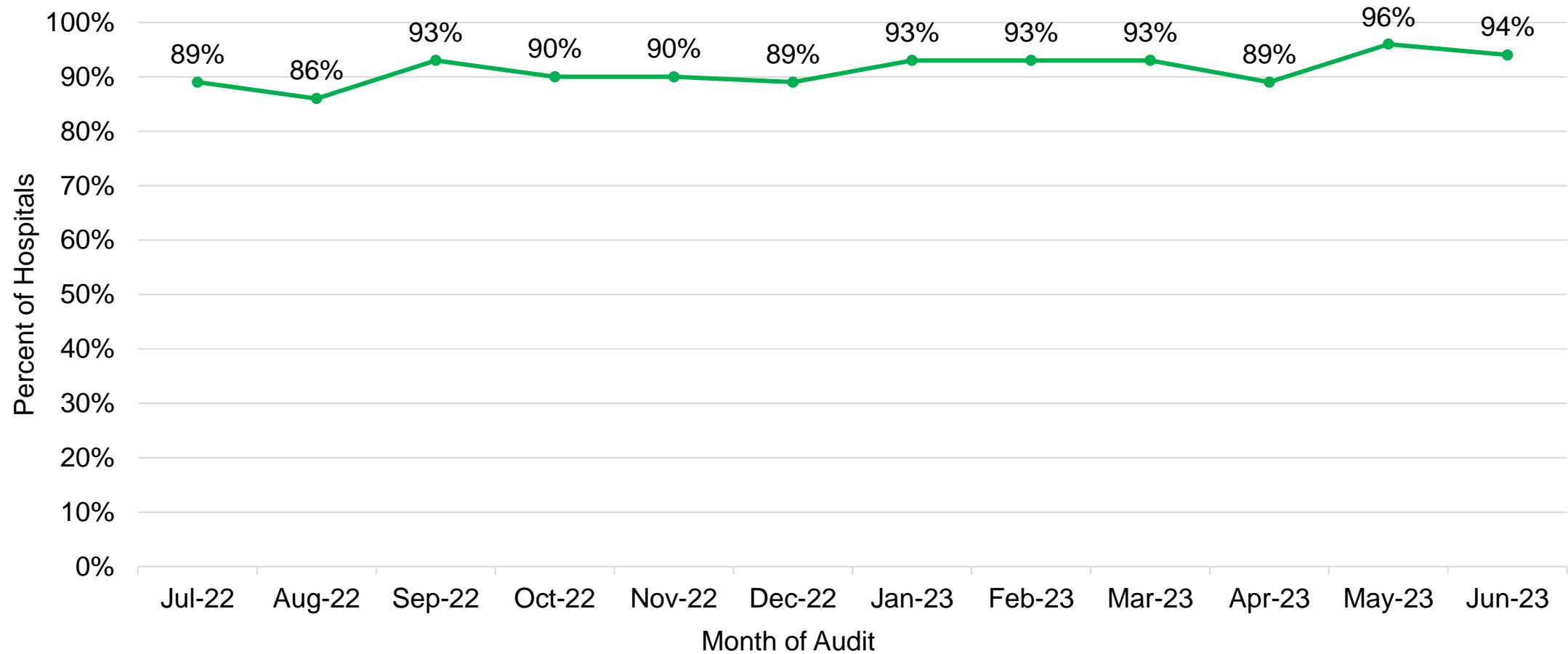
**Claire Eden, IBCLC**
Georgia AAP
EPIC Breastfeeding
Director

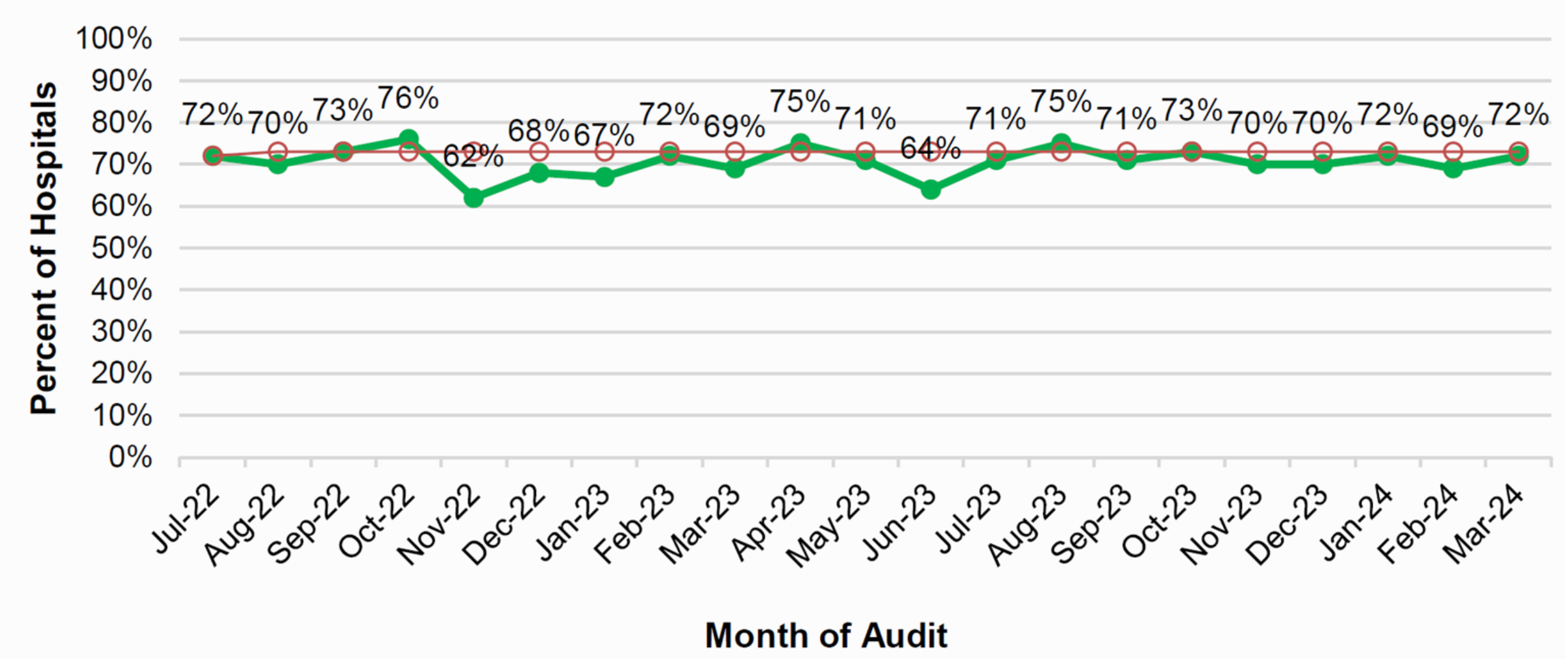**Tarayn Fairlie, MD, MPH, FAAP, IBCLC**
Georgia AAP
Breastfeeding Committee Chair

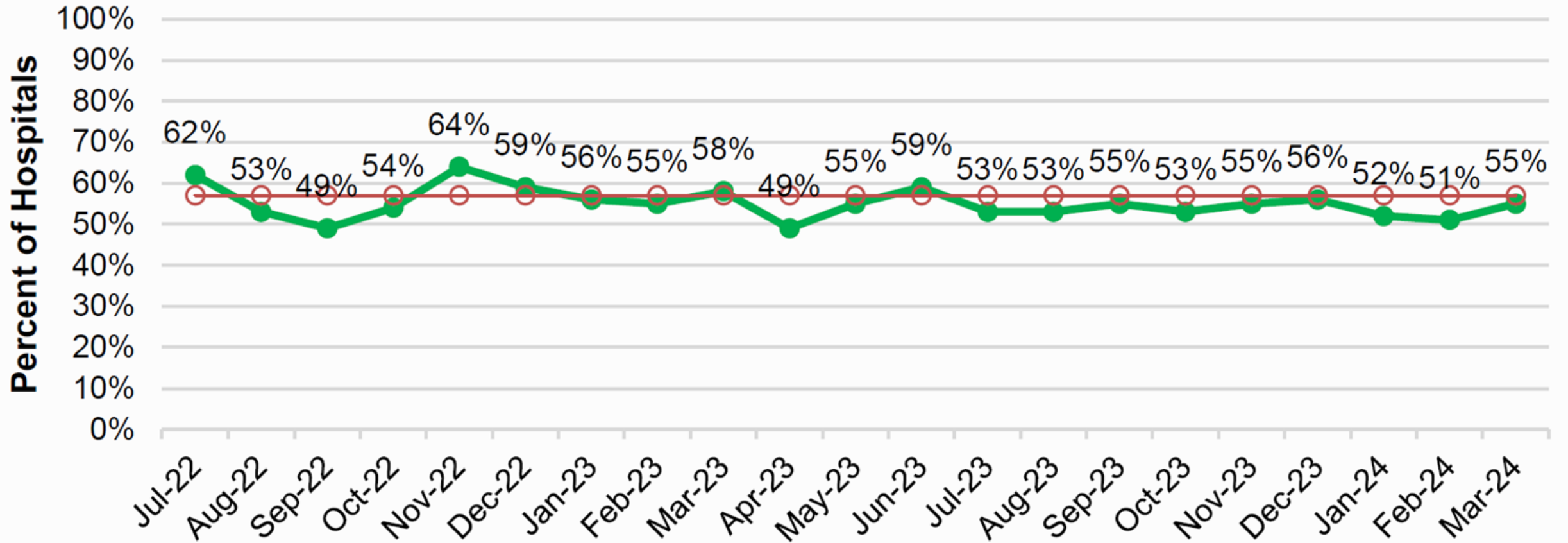# Hospital Audit Completion Rate



Thank you to the hospitals and **Linda (Tran) Pham, MPH**, Perinatal Data Manager at DPH !

# Human Milk as First Feeding
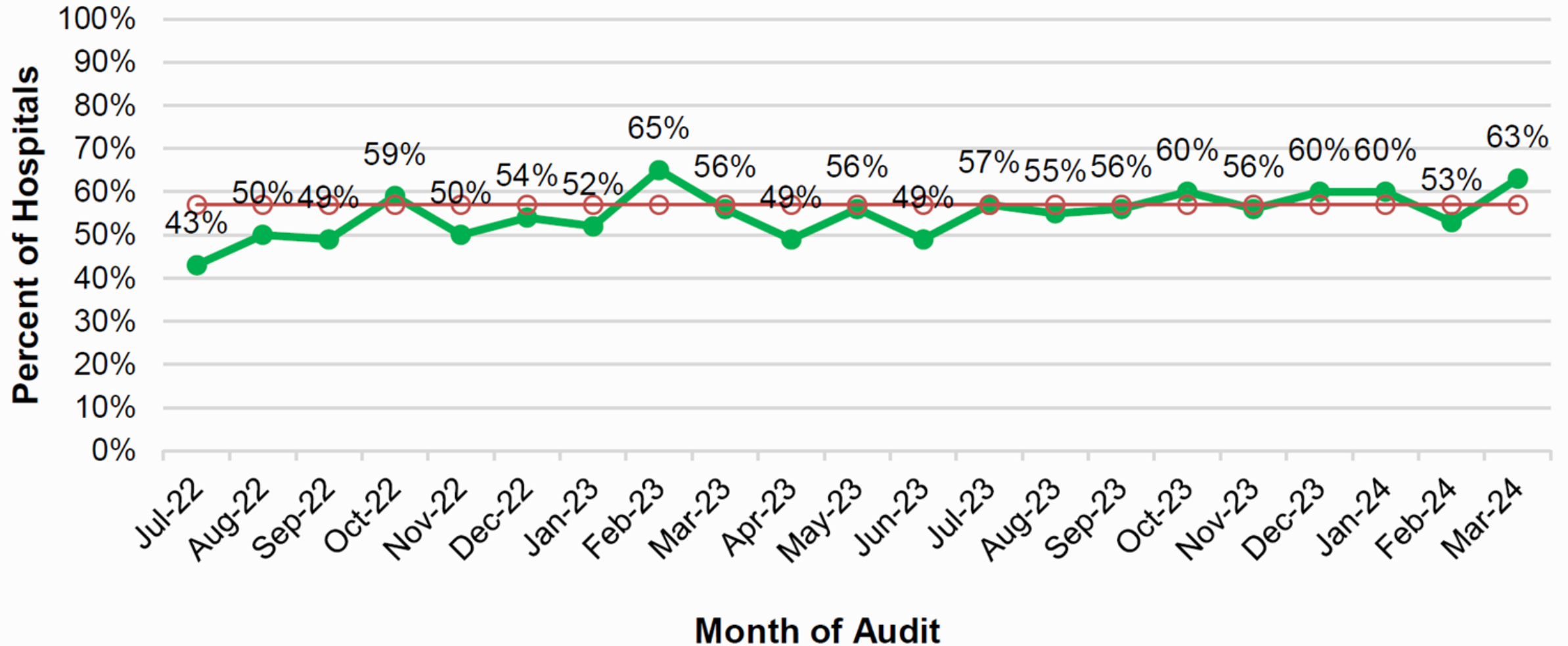
# Formula in Last Week
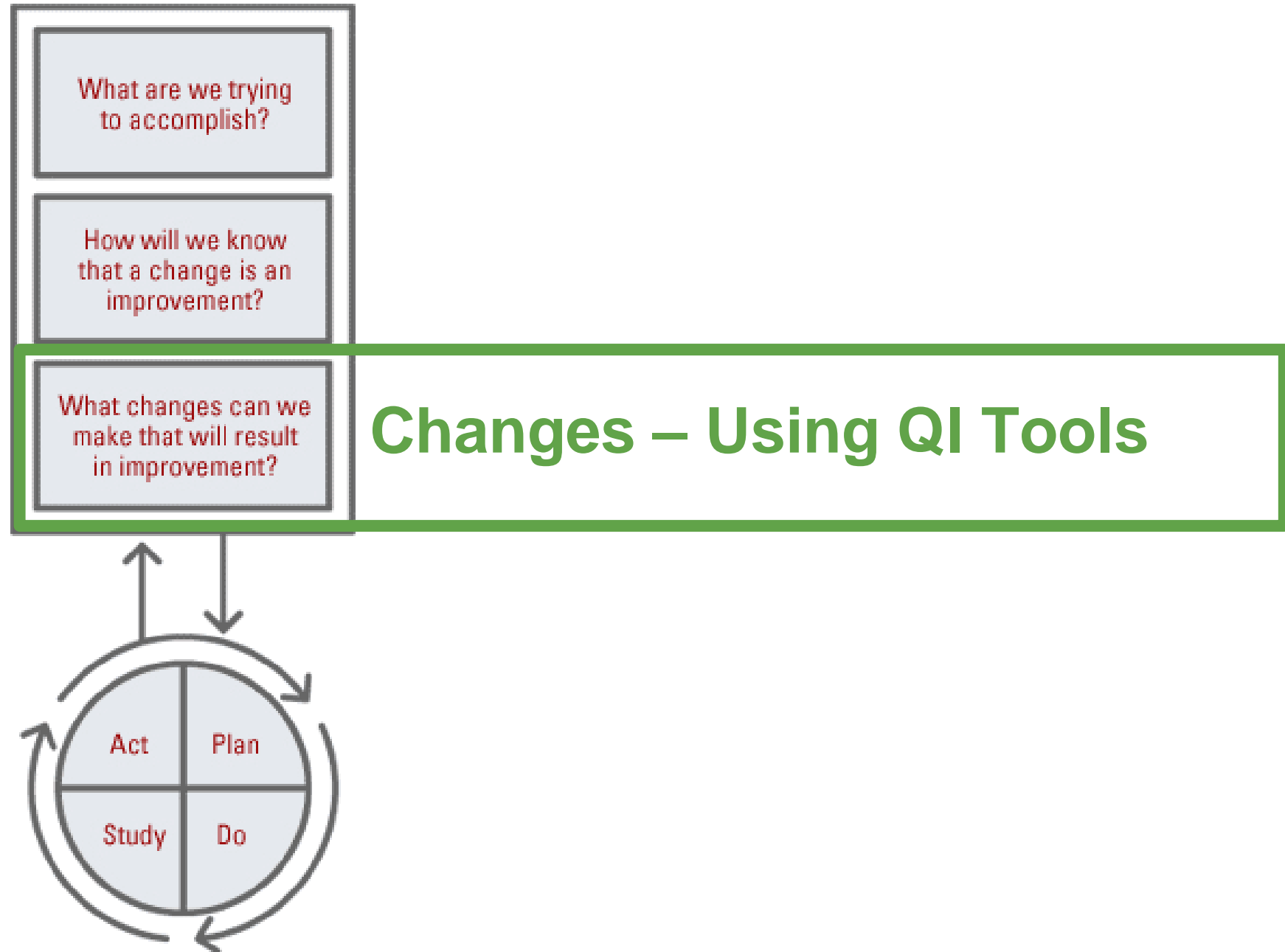
# Breastfeeding/Expression < 6 Hours

SMART Aim

What are we trying to accomplish?

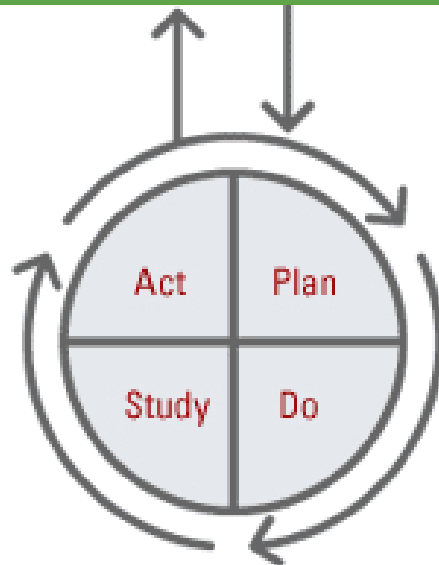How will we know that a change is an improvement?

What changes can we make that will result in improvement?

Measure: Monthly Audits

Goal of Monthly Webinars Are to Give Teams Change Ideas

**Process Improvement Tools**
1. **Key Driver Diagram**

Act | Plan

Study | Do

# Key Driver Diagram: Optimizing Newborn Nutrition

**GaPQC** — GEORGIA PERINATAL QUALITY COLLABORATIVE
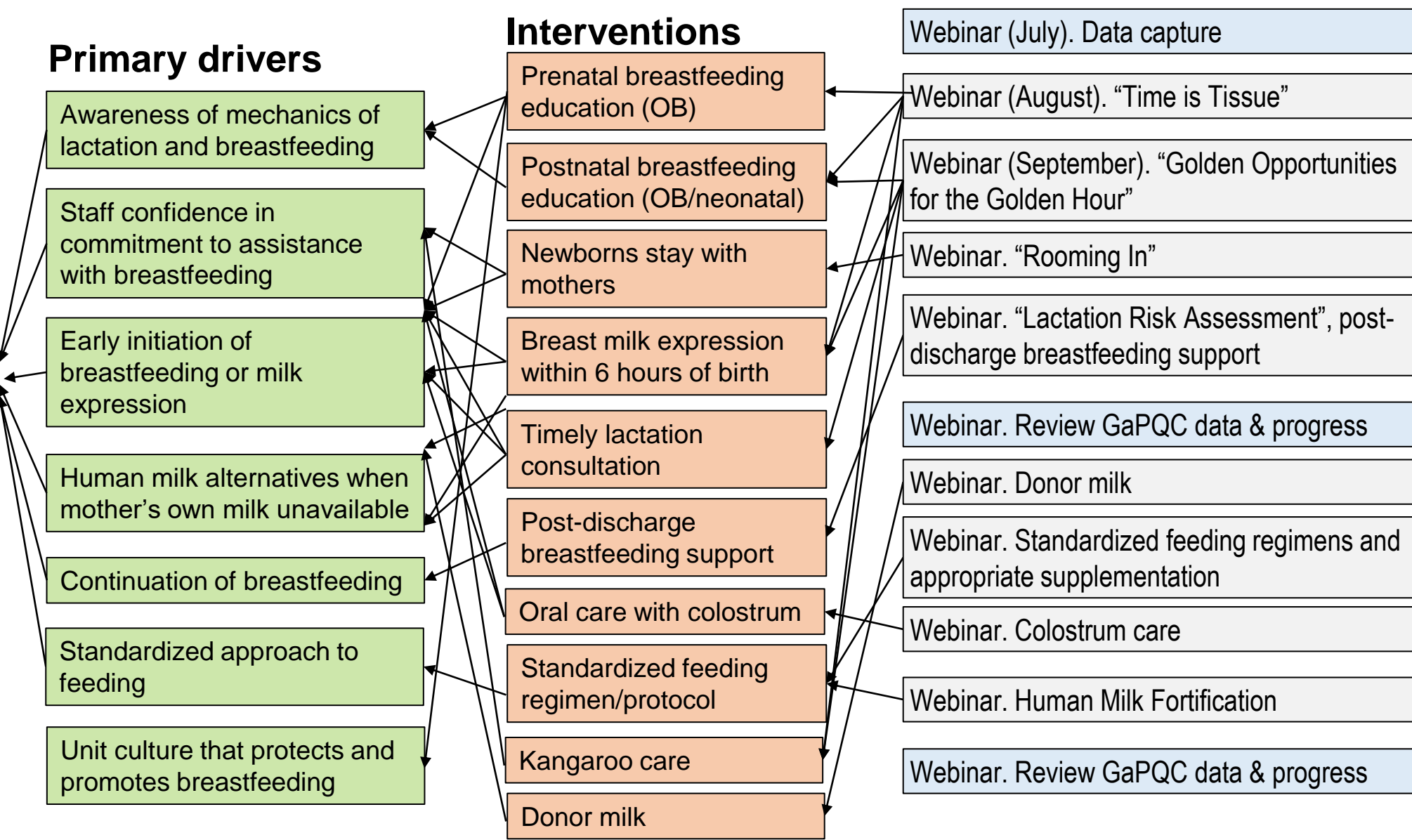
## Primary drivers

- Awareness of mechanics of lactation and breastfeeding
- Staff confidence in commitment to assistance with breastfeeding
- Early initiation of breastfeeding or milk expression
- Human milk alternatives when mother's own milk unavailable
- Continuation of breastfeeding
- Standardized approach to feeding
- Unit culture that protects and promotes breastfeeding

## Interventions

- Prenatal breastfeeding education (OB)
- Postnatal breastfeeding education (OB/neonatal)
- Newborns stay with mothers
- Breast milk expression within 6 hours of birth
- Timely lactation consultation
- Post-discharge breastfeeding support
- Oral care with colostrum
- Standardized feeding regimen/protocol
- Kangaroo care
- Donor milk

## Monthly Webinars

- Webinar (July). Data capture
- Webinar (August). "Time is Tissue"
- Webinar (September). "Golden Opportunities for the Golden Hour"
- Webinar. "Rooming In"
- Webinar. "Lactation Risk Assessment", post-discharge breastfeeding support
- Webinar. Review GaPQC data & progress
- Webinar. Donor milk
- Webinar. Standardized feeding regimens and appropriate supplementation
- Webinar. Colostrum care
- Webinar. Human Milk Fortification
- Webinar. Review GaPQC data & progress

## SMART Aim

Increase % of newborns in GaPQC hospitals with human milk as the first feeding from 73% to 80% by 9/1/2025

Other outcome Measures:
1. Any formula
2. Breastfeeding or expression in 6 hours

## Global Aim

Improve breastfeeding and outcomes for babies and mothers in Georgia hospitals

SMART Aim

What are we trying to accomplish?

How will we know that a change is an improvement?

Measure: Monthly Audits

What changes can we make that will result in improvement?

Goal of Monthly Webinars Are to Give Teams Change Ideas

Act   Plan

Study   Do

Test Changes in PDSA cycles

# PDSA Cycles

- Plan
  - State the test objective and make a prediction about what will happen.
  - Develop the plan (Who? What? When? Where? What data?)
- Do
  - Carry out the test and *document problems and unexpected observations*.
- Study
  - Analyze the data and summarize what was learned.
- Act
  - Adopt, Adapt or Abandon based on what was learned.
  - Plan next test, consider testing in a larger group or different setting.
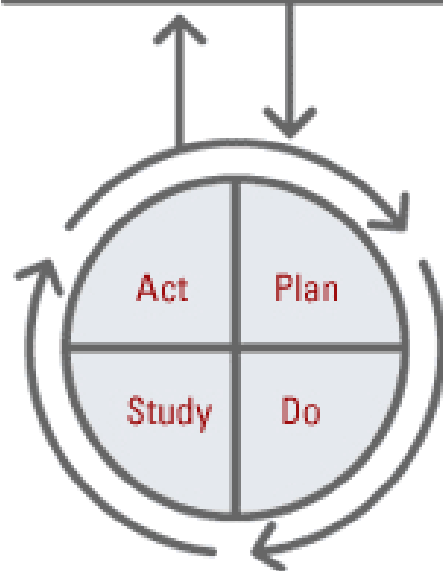
# RULE:

# Testing ≠ implementation

**SMART Aim**

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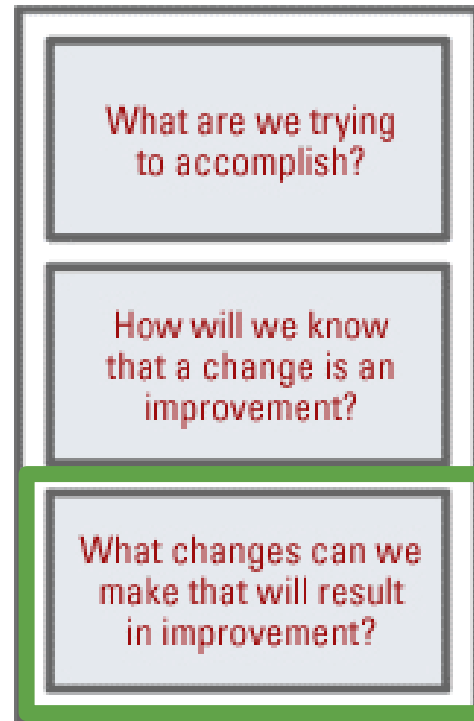
**Changes**

50% of GaPQC hospitals report changes to care processes, policies, or procedures in the past year !

Act | Plan
Study | Do
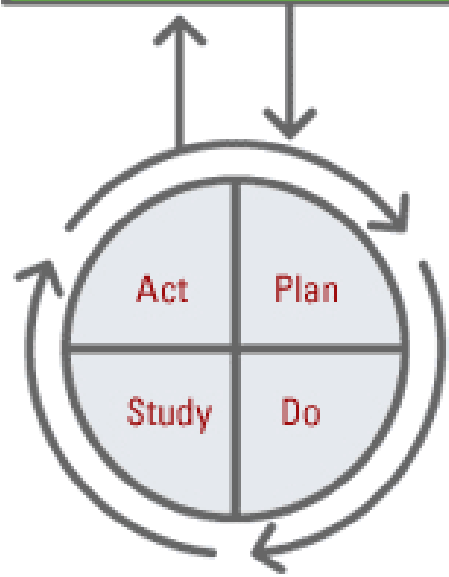
# Georgia Has Been Busy !

"A lot. Each unit (NICU, LD, and MB for each campus) has a breastfeeding goal as their unit metric. Each unit participated in creating the key driver diagram (KDD). The KDD and monthly stats are discussed at each monthly Women and Children Leadership meeting to discuss what's working and what is not working. Metrics and charts are made into slides to present to each unit for their staff meeting with a tip on what to work on using "Know-Do-Say" method ... Directors communicate with staff individually on if there were circumstances that lead to not meeting goal, what is seen in the chart, and what improvements can be made."

# Georgia Has Been Busy !

"Allowed for donor milk up to 34 weeks and the weight of 1800s grams, rather than cutting off at 32 weeks and 1500 grams."

"Updated donor milk policy to expand use of donor milk in the NICU, MBU and L&D."

"Initiating lactation and breast-feeding education within 24 hours of admission, and routine follow up. More frequent use of donor EBM."

"Updated feeding protocols, advancing feeds faster"

# Georgia Has Been Busy !

"Breastfeeding checklist for nursing to fill out.  Hand expression trainings to nursing staff from our lactation specialist.  Implementing a NICU specific lactation specialist."

"Encouraging rooming- in. Educational information about rooming in given to OB office to be handed out.  Educational flier about rooming-in placed in all rooms."
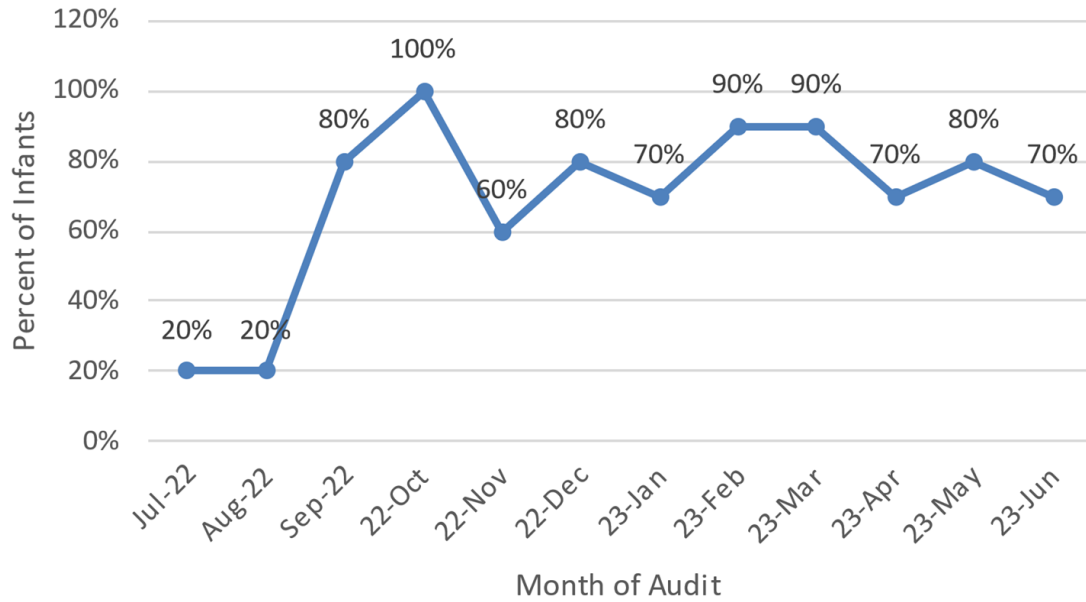
"Director speaks to any nurse leaving formula in rooms that did not request formula."

**NICU: Human Milk as First Feeding**

| Month of Audit | Percent of Infants |
|---|---|
| Jul-22 | 20% |
| Aug-22 | 20% |
| Sep-22 | 80% |
| 22-Oct | 100% |
| 22-Nov | 60% |
| 22-Dec | 80% |
| 23-Jan | 70% |
| 23-Feb | 90% |
| 23-Mar | 90% |
| 23-Apr | 70% |
| 23-May | 80% |
| 23-Jun | 70% |

**Breastfeeding/ Expression Within 6 Hours**

| Month of Audit | Percent of Infants |
|---|---|
| Jul-22 | 60% |
| Aug-22 | 50% |
| Sep-22 | 80% |
| 22-Oct | 60% |
| 22-Nov | 40% |
| 22-Dec | 90% |
| 23-Jan | 90% |
| 23-Feb | 100% |
| 23-Mar | 80% |
| 23-Apr | 100% |
| 23-May | 90% |
| 23-Jun | 100% |
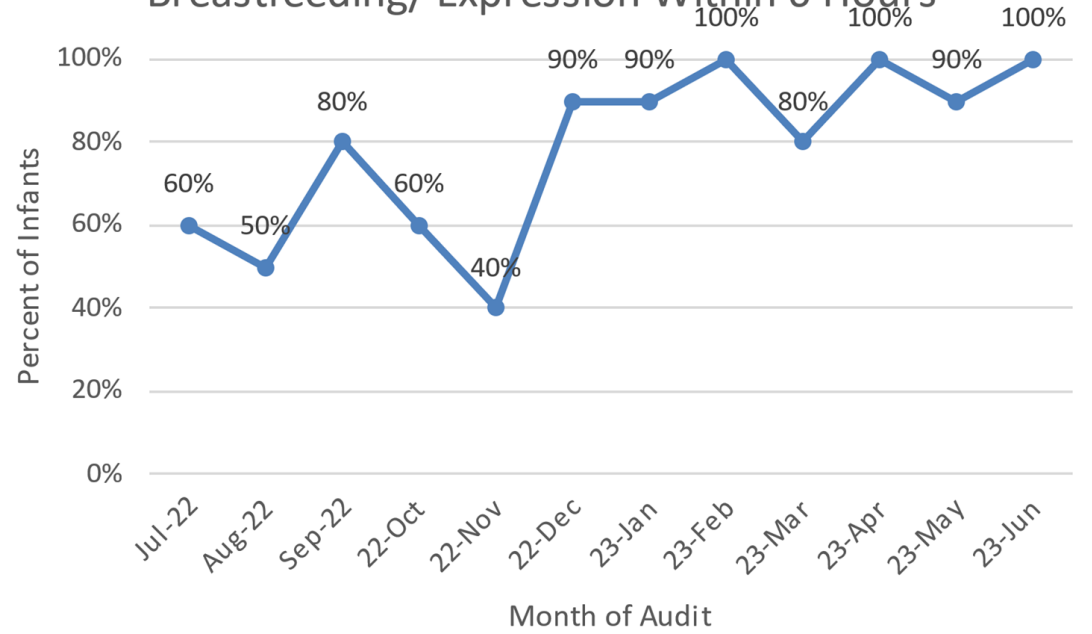
**NICU: Formula Supplementation in Last Week**

| Month of Audit | Percent of Infants |
|---|---|
| Jul-22 | 80% |
| Aug-22 | 80% |
| Sep-22 | 60% |
| 22-Oct | 60% |
| 22-Nov | 70% |
| 22-Dec | 60% |
| 23-Jan | 60% |
| 23-Feb | 40% |
| 23-Mar | 60% |
| 23-Apr | 40% |
| 23-May | 40% |
| 23-Jun | 30% |

**NICU: Breastfeeding/ Expression Within 6 Hours**

| Month of Audit | Percent of Infants |
|---|---|
| Jul-22 | 10% |
| Aug-22 | 20% |
| Sep-22 | 80% |
| Oct-22 | 60% |
| Nov-22 | 50% |
| Dec-22 | 50% |
| Jan-23 | 80% |
| Feb-23 | 80% |
| Mar-23 | 100% |
| Apr-23 | 90% |
| May-23 | 100% |
| Jun-23 | 100% |
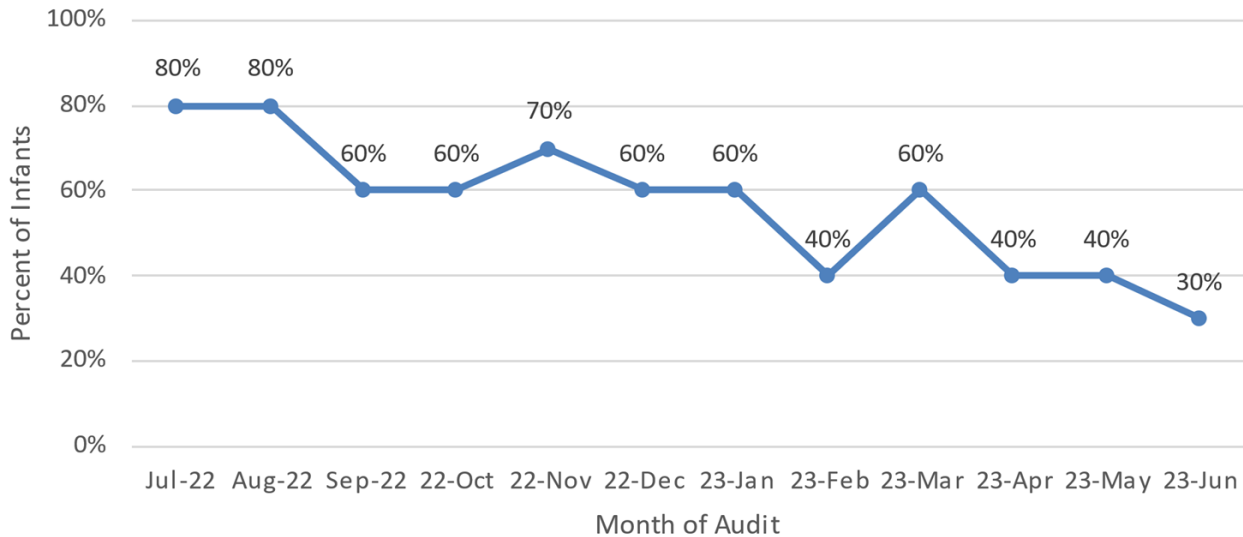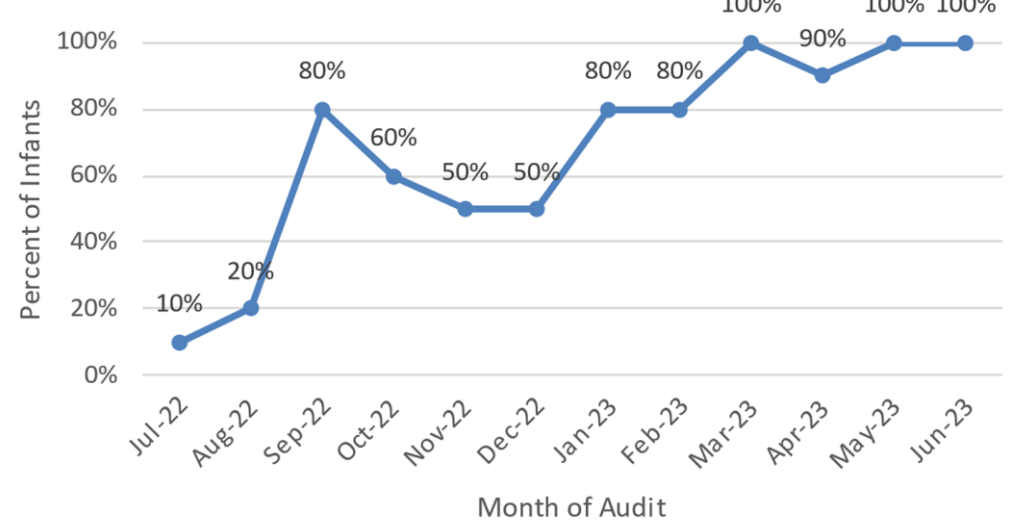
# Sustainment is Important to Monitor



Breastfeeding/ Expression Within 6 Hours
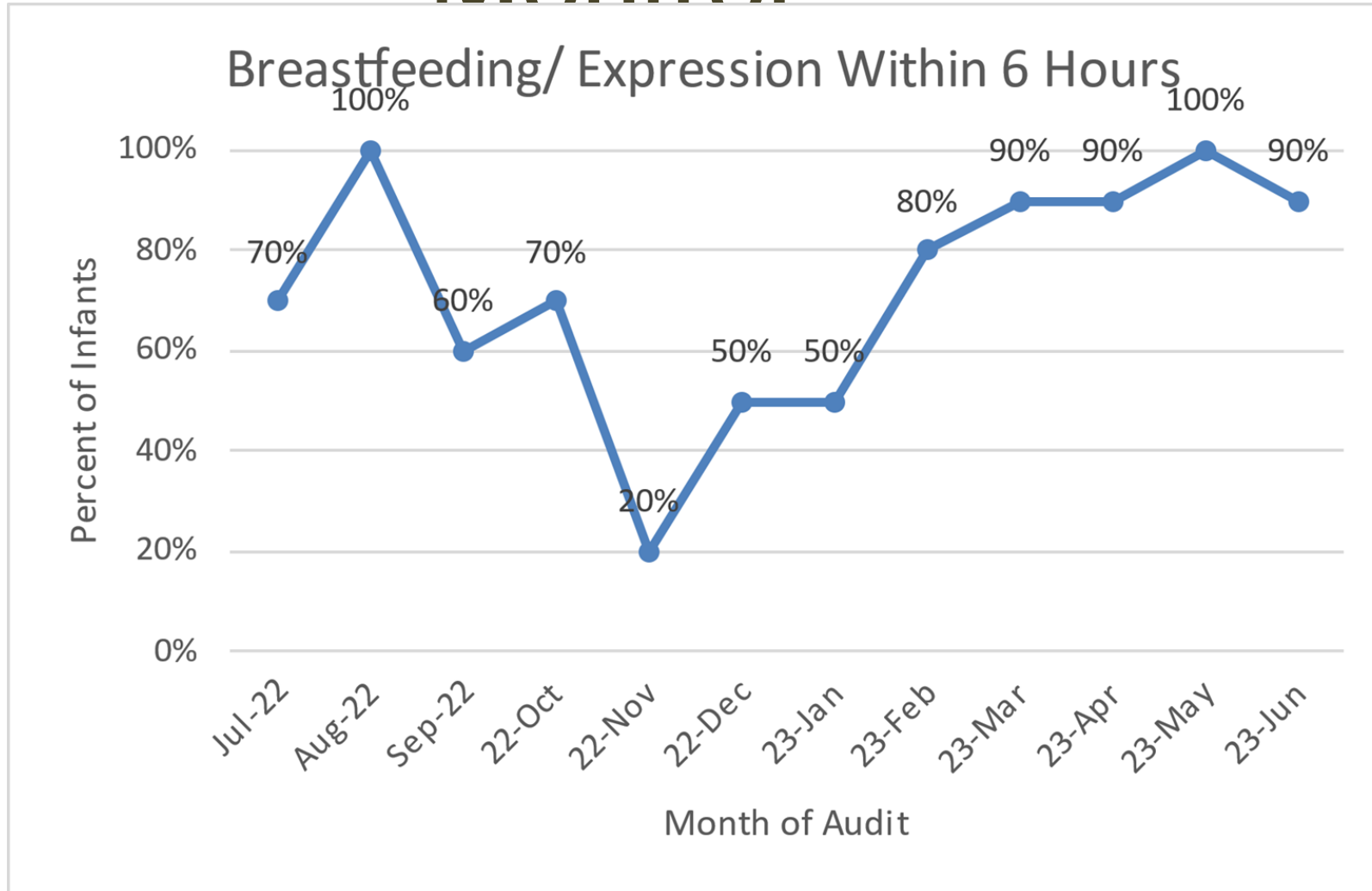
# Policies to Implement Change

| Structure Questions | Jul-22 | Jan-23 |
|---|---|---|
| Policy on milk collection, storage and administration | 93% | 79% |
| Physicians on the team | 79% | 87% |
| Policy on breast pump access, teaching and use | 68% | 86% |
| Policy on hand expression of milk | 68% | 68% |
| Policy supporting routine newborn care in the mother's room | 68% | 95% |
| Policy on donor milk use? | 64% | 64% |
| Policy on skin-to-skin care and early lactation | 61% | 91% |
| Policy requiring breastfeeding education for new staff and continuing education | 57% | 78% |
| Policy on supplementation that lists medical indications and guidance for supplementation of breastfed/breast milk | 50% | 70% |

22 hospital units responded in July 2022 and 25 responded in Jan 2023

# Engagement and learning

5,770 infants audited

>90% GaPQC hospitals reporting every month

**Engagement and learning**

15+

webinars

Participants

from 47

hospitals

**Engagement and learning**

24 educational microlesson developed

979 viewed by providers to help

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**Table 1 – Characteristics of past and currently active US-based statewide QI human milk collaboratives.**

| State | Dates active | Number of participating hospitals | Target population | Overall project aim | Overall structure | Data reports | Funding | Contact |
|---|---|---|---|---|---|---|---|---|
| California[73,74] | 10/2009 to 09/2010 | 11 level 3 NICUs | 401–1500 g and 22–29 wk (n = 1833) | Increase any human milk in 24 h prior to discharge/transfer from an avg of 52–65% | Toolkit; QI coaching | Transparent; monthly | Team funded; CPQCC | Henry Lee, MD hclee@stanford.edu |
| Ohio[75] | 2011–2013 (active); 2014–2016 (sustain) | 23 NICUs | 22–29 wk | Reduce late onset infections to <10% | In-person conferences, webinars; QI coaching; adapted IHI Breakthrough Series Model | Monthly reports | Grant funding (Ohio Department of Health and Ohio Department of Medicaid) | Heather Kaplan, MD info@opqc.net |
| Tennessee[76] | 2009–2012 | 17 level 3 NICUs | VLBW infants | Improve provision of MOM at the first feed by 50% above baseline | Toolkit, in-person conferences and webinars; QI coaching | Monthly reports | None | Reddy Dhanireddy, MD rdhanire@uthsc.edu |
| North Carolina[77] | 2011–2013 | 11 level 2s and 3s | VLBW infants (n = 1564) | Increase exclusive MOM through 28 d by 50% | Monthly webinars, quarterly in-person mtgs; QI coaching, site visits; weekly newsletters | Monthly (initial), then real-time reporting | Grant funding (BCBSNC, State Office Rural Health Comm Care; DPH-maternal block grant) | Martin McCaffrey, MD martin_mccaffrey@med.unc.edu |
| Illinois[78] | 01/2014 to 12/2014 | 18 | 401–1500 g (n = 1165) | Decrease the avg rate of SGA at discharge to the lowest VON quartile | Toolkit; twice annual in-person conferences; webinars | Transparent; monthly | Grant funding (CHIPRA and CDC) | Akihiko Noguchi, MD noguchi@slu.edu |
| Massachusetts | 01/2015 to 12/2017 | 10 level 3 NICUs | 401–1500 g and 22–29 wk, that were deemed eligible to receive MOM | Increase any human milk in 24 h prior to discharge/transfer from an avg of 65% to ≥75% | No toolkit; twice annual in-person meetings; 4×/year webinars; QI coaching; site visits; monthly newsletters | Transparent; bimonthly | Grant funding (Kellogg Found; CDC) | Margaret Parker, MD; margaret.parker@bmc.org |
| Florida[79] | 05/2016 to 12/2017 | 24 level 2s and 3s | VLBW infants | ≥50% of VLBWs to have ≥50% mother's milk at initial disposition | Toolkit, in-person meetings and webinars; QI coaching | Monthly | Grant (DPH, Florida Blue Found) | Emily Bronson ebronso1@health.usf.edu |

QI = quality improvement; CPQCC = California Perinatal Quality Care Collaborative; VLBW = very low-birth weight; CMS = Centers for Medicare and Medicaid Services; MOM = mother's own milk; BCBSNC = Blue Cross Blue Shield of North Carolina; DPH = department of public health; SGA = small for gestational age; CHIPRA = Children's Health Insurance Program Reauthorization Act; CDC = Centers for Disease Control.

**Table 2 – Metrics of past and currently active US-based statewide QI human milk collaboratives.**

| State | Parental education | Initiation | Continuation | MOM & DM differentiated | Post-discharge | NEC or Late Onset Sepsis | Other |
|---|---|---|---|---|---|---|---|
| California[73,74] | Human milk benefits by physicians at 1st contact<br>Importance of breast milk volume | Time to 1st pump (continuous) | STS performed at weekly chart audits | No | None | NEC only | Length of stay<br>Growth: % SGA at time of discharge<br>Staff education<br>% Shifts when ≥1 lactation expert available |
| Ohio[75] | Human milk benefits by NICU team<br>Pumping | % Receiving human milk at 1st feed<br>Time to 1st pump (continuous) and % <6 h<br>STS in 1st 72 h | Any and % MOM, DM, or formula) at DOL 21<br>Any STS in 1st 21 DOL | Yes | None | Both | |
| Tennessee[76] | None | % Receiving human milk at 1st feed | % Receiving human milk at 1st full volume feed | No | None | | |
| North Carolina[77] | Human milk benefits by physician or NP<br><br>Lactation consult by 24 h after delivery | Both initiation and continuation: In first 28 days of life, on each nursing shift- STS, Any MOM or DM, frequency of pumping and volumes of MOM produced<br>Initiation: Avg time to 1st pump after delivery<br>Continuation: % with > 500mL of MOM per day at week 2 | | Yes | Pumping frequency after discharge | Both | Presence of home oxygen<br><br>Any human milk in the 24 h prior to discharge/ transfer |
| Illinois[78] | Lactation consultation on NICU admission<br>Hand expression and milk collection | % Receiving human milk (MOM or DM) at 1st feed | Use of a pumping log<br><br>% with > 50% human milk (MOM or DM) on DOL 7 and 28, at 36 weeks PMA, and at discharge.<br>DOL (and PMA) of 1st STS and 1st non-nutritive breastfeed | No | No | NEC only | Growth: z-score change from birth to discharge for weight, length and head circumference |
| Massachusetts | Physician or NP education of human milk benefits in prenatal consultation | Time to 1st pump/ hand expression (continuous) and % <6 h | Any and % MOM, DM, and formula given on DOL 7, 14, 21, 28, 42, 56 and prior to discharge/ transfer | Yes | Rate of any breastfeeding up to 1 y corrected age among mothers | Both | Growth: z-score change from birth to discharge for weight, length and head circumference |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Time of 1st lactation consultant visit | Time to 1st human milk (MOM and/or DM) (continuous) and % <24 h of life | STS on DOL 7, 14, 21, 28, 42, 56 and prior to discharge/transfer | | | attending WIC only | |
| Florida[79] | Lactation consult by 24 hours after admission | % Time to 1st pump ≤ 6 hrs | Volume MOM, DM, and formula on DOL 7, 14, and 28 | Yes | Hospital pump at discharge | NEC | % Non-nutritive sucking documented |
| | Documentation of informed decision to provide MOM | % MOM available by DOL 3 | % STS by DOL 10 | | | | Growth: % <3rd percentile for weight at birth and first disposition |

STS = skin to skin; NEC = necrotizing enterocolitis; SGA = small for gestational age; NICU = neonatal intensive care unit; MOM = mother's own milk; DM = donor milk; DOL = day of life; NP = nurse practitioner; PMA = post-menstrual age;

# Setting and Focus for Improving Nutrition

| | Partner here | Focus here | Partner here |
|---|---|---|---|
| **Setting** | | | |
| **Population** | Term or Preterm | | |
| | | | AAP - EPIC |
| **Timing** | Antenatal | Birth hospitalization | Post-discharge |
| | GOGS – Breastfeeding Committee | | GOGS – Breastfeeding Committee |

Health Equity

Health Equity

Focus here

Partner here

Partner here

Setting

Outpatient | Inpatient (hospital) | Outpatient

Population

Term or Preterm

AAP - EPIC

Timing

Antenatal | Birth hospitalization | Post-discharge

GOGS – Breastfeeding Committee

GOGS – Breastfeeding Committee
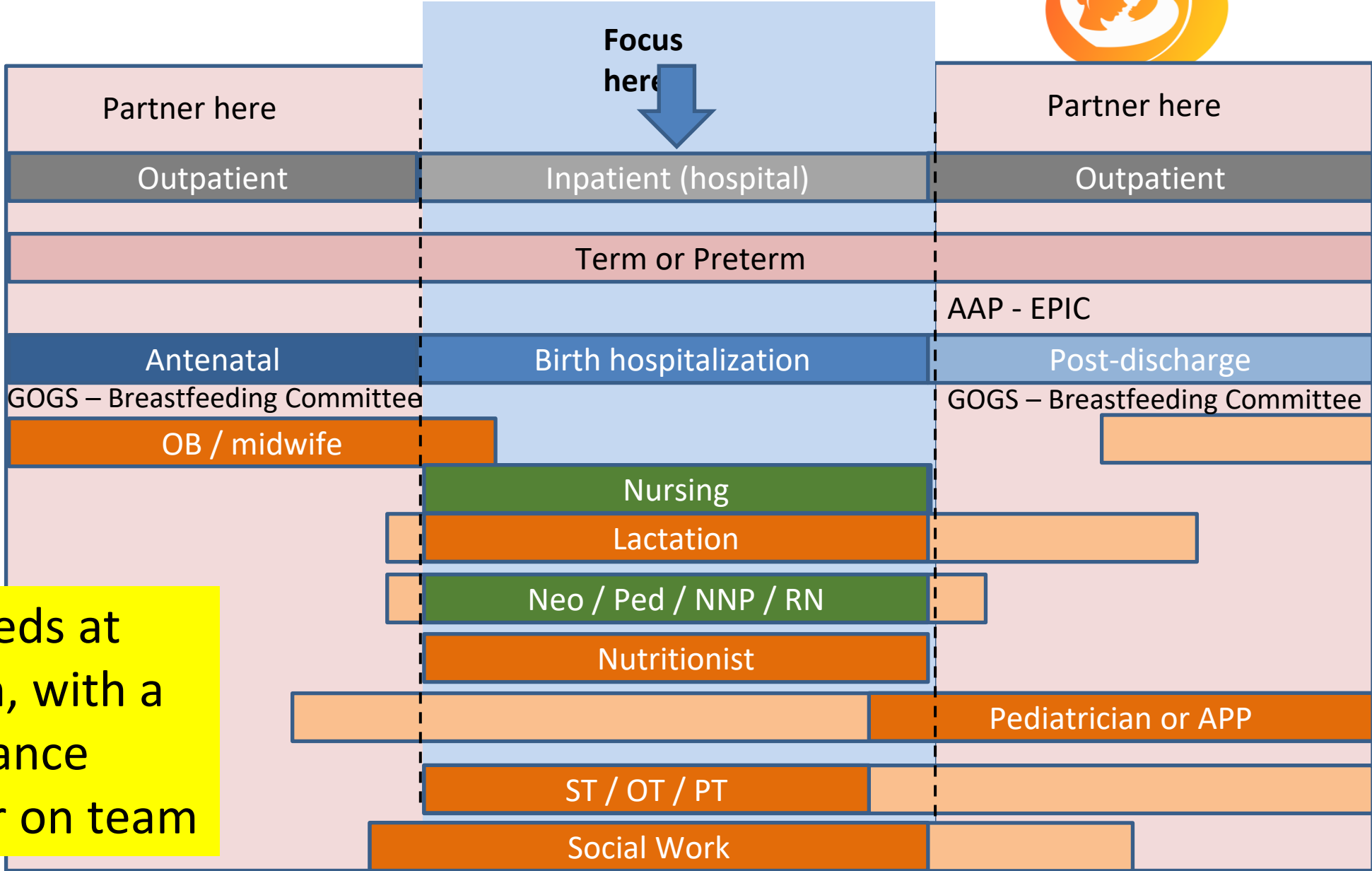
Providers

OB / midwife

Nursing

Lactation

Neo / Ped / NNP / RN

Nutritionist

Pediatrician or APP

ST / OT / PT

Social Work

Each hospital needs at least 1 champion, with a physician or advance practice provider on team

# Optimizing Nutrition for Georgia's Newborns

## Quality improvement at core

## **Minimal data collection**

## Mother-baby or NICU

## Can join to only

Goal

**1 hour**

Per month

Wheels in Motion:
Continuous Quality Improvement

Improvement

**Implement once you have removed barriers & are confident change will work**

**Scale up as you learn from testing**

Changes that results in improvement

**Start small "n of 1"**

Jain M. Road Map for QI

Ideas

Wheels in Motion:
Continuous Quality Improvement

Improvement

4. Pumps get left in room. New process to move with patient with transport checklist.

3. Not enough pumps in L&D. More pumps ordered.

Changes that results

2. Learned mother often still in Labor & Delivery and not in Post-partum room when pumps are. Trial in L&D

1. Breast pump moved into patient room of preterm infant within 3 hours of birth

Jain M. Road Map for QI

Ideas

# PDSAs are more than just ....

- Collecting data
- An educational program
- Developing policies or protocols
- Implementing a solution

- Want to test something until your team is reasonably confident process will actually happen as intended

# Implement changes that work

- Develop written policies
- Incorporate into standard workflow
- Provide unit-wide or practitioner-wide training
- Make necessary investments
  – Purchase items, hire new people, change schedules, etc.
- Will require some day-to-day feedback before it becomes part of the standard process and may require more PDSAs

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