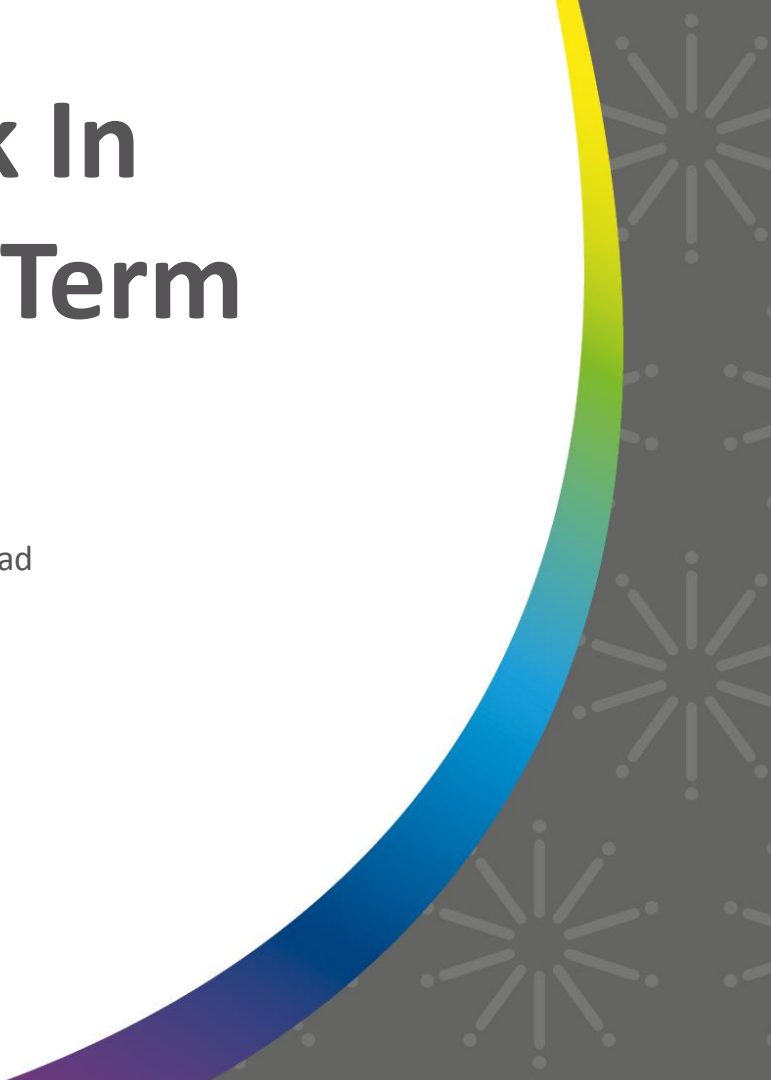


# Breast Milk In Preterm & Term Babies

Dr Colin Peters

MCQIC Neonatal National Clinical Lead



# Exclusive breastfeeding

- All healthy infants should be breastfed exclusively for the first six months of life
- Exclusive breastfeeding is defined as "an infant's consumption of human milk with no supplementation of any type (no water, no juice, no nonhuman milk, and no foods) except for vitamins, minerals, and medications."

# Benefits of breast milk to the baby

- Breast milk and human colostrum are made for babies
- Easily digested and well absorbed
- Contains essential amino acids
- Rich in essential fatty acids
- Better bioavailability of iron and calcium
- Reduced mortality
  - comparing never breast fed vs exclusively breast fed

# Benefits of breast milk

- Protects children from a vast range of illnesses
  - Infection
  - Diabetes
  - Asthma
  - Heart disease
  - Obesity
  - Leukaemia
  - Sudden Infant Death Syndrome
- Improved performance in intelligence tests

<https://doi.org/10.1111/apa.13133>  
<https://doi.org/10.1111/apa.13132>  
<https://doi.org/10.1111/apa.13139>

# Protection against infection



# Benefits of breast milk to the mother

- Lowers risk of breast and ovarian cancer
- Protective against heart disease
- Supports the mother-baby relationship
- Supports the mental health of both baby and mother.
  - Less postpartum depression
- Less type 2 Diabetes
- Free

# Benefits of wider society

- **Contributes to child survival**
  - Near universal breastfeeding worldwide would prevent 823,000 deaths per year in under 5s
- **Saves money**
  - Costs reduced through fewer childhood illnesses
  - Fewer GP consultations and hospital admissions
    - Otitis Media 2x less frequent in exclusively breast fed
- **Environment friendly**

# Caution

- Evidence difficult to interpret
  - Exclusive vs Never vs Mixed
  - Frequency of feeding
  - Duration of breastfeeding
  - Mode of delivery
- Most literature is cross-sectional retrospective
  - RCT not ethical
  - Recall of participant
- Confounding socio-economic status

# **WHO HIGHLIGHTS IMPORTANCE OF SAFEGUARDING BREASTFEEDING FOR CHILDREN UP TO THREE YEARS OF AGE**

6 December 2018

**In this Information Note, the World Health Organization (WHO) highlights the importance of safeguarding breastfeeding and ending inappropriate marketing and distribution of breastmilk substitutes for children up to three years of age.**

# But why

- It's just food!!
- Water, Fat, Protein, Carbohydrates, Vitamins, Minerals etc
- **It's not just food**
- Microbes, Immunoglobulin, Hormones, Functional proteins
- Breast fed and formula fed babies have different gut bacteria profiles



3 IN 5 BABIES NOT BREASTFED IN FIRST HOUR, NEW  
UNICEF/WHO REPORT SHOWS

[Home](#) > [3 in 5 babies not breastfed in first hour](#)

31 July 2018

**Unicef and WHO's new report, *Capture the Moment*, estimates that 78 million babies – or three in five – are not breastfed within the first hour, putting them at higher risk of disease and making them less likely to continue breastfeeding.**

# Preterm Benefits of Mum's Milk

- **GI: Reduced NEC**
- NEC incidence among ELBW infants
  - receiving  $\geq 98\%$  human milk 1.3%
  - 11.1% among infants fed only PF
  - 8.2% among infants fed a mixed diet ( $P = .002$ )
- Protective mechanism
  - Human milk can inhibit cells signalling and immune response therefore reduces inflammation.
- Have a guideline (and use it)

<https://doi.org/10.1016/j.jpeds.2016.03.040>

<https://doi.org/10.1016/j.neuroimage.2018.09.045>

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[10.1016/j.jpeds.2016.06.045](https://doi.org/10.1016/j.jpeds.2016.06.045)

# Preterm Benefits of Mum's Milk

- **Infection: Reduced Sepsis**
- “Well established”
- Study of 118 infants <33wks
  - Fewer infants in the MEBM group developed LOS (9 vs 19,  $P<0.05$ )
  - Due to shorter line duration??
- Systematic review 2004: VLBW infants not shown to have fewer sepsis episodes.

<https://dx.doi.org/10.1136/adc.2003.045682>  
[10.1016/j.jpeds.2016.06.045](https://doi.org/10.1016/j.jpeds.2016.06.045)

# Preterm Benefits of Mum's Milk

- **Neurology: Structure**
- Reduced PVL
  - Periventricular leukomalacia (PVL) more common in formula fed (4 vs 0,  $P=0.04$ ) than in infants fed maternal EBM
- Increased white matter
- Improved structural connectivity of developing networks

<https://doi.org/10.1016/j.neuroimage.2018.09.045>

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[10.1016/j.jpeds.2016.06.045](https://doi.org/10.1016/j.jpeds.2016.06.045)

# Preterm Benefits of Mum's Milk

- **Improved Neurodevelopmental Outcomes**
- Social interaction in NICU
- Predominantly breast fed infants in the first 28 days reviewed at 7 years. Better performance on IQ, mathematics, working memory.
  - (There are conflicting studies)

<https://doi.org/10.1016/j.neuroimage.2018.09.045>

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[10.1016/j.jpeds.2016.06.045](https://doi.org/10.1016/j.jpeds.2016.06.045)

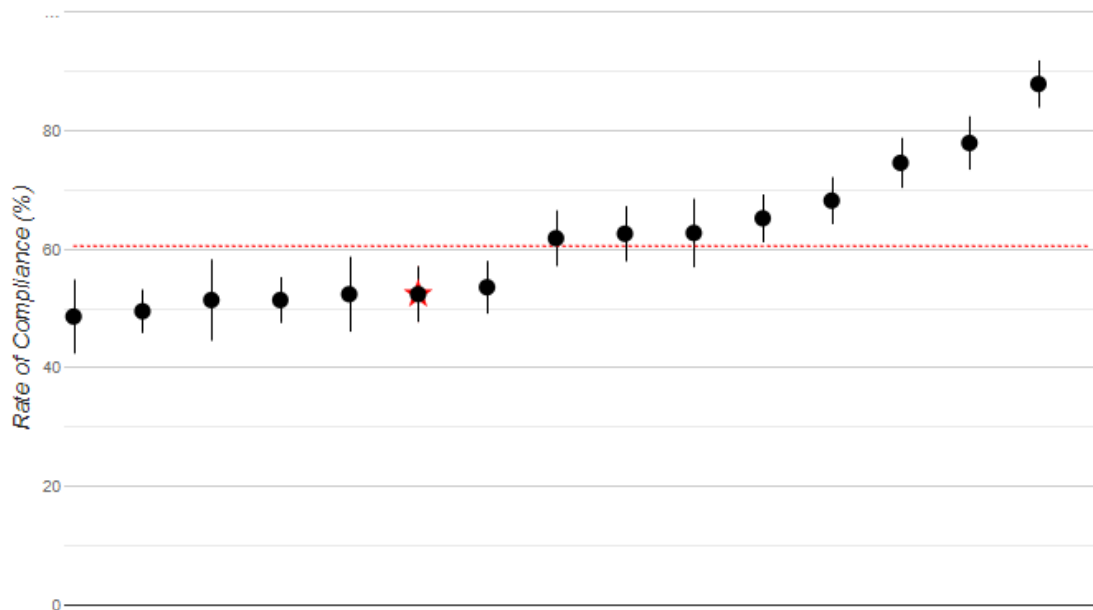
# NNAP 2017 data

	Enteral feeds at the time of discharge				
	Eligible babies	Number of eligible babies with outcome	Feeding with any Mother's milks (as % of eligible babies)	Feeding without Mother's milk (as % of eligible babies)	Missing Data (as % of eligible babies)
DUMFRIES & GALLOWAY ROYAL INFIRMARY	3	3	3 (100.0%)	0 (0.0%)	0 (0.0%)
FORTH VALLEY ROYAL HOSPITAL	47	47	29 (61.7%)	18 (38.3%)	0 (0.0%)
RAIGMORE HOSPITAL, INVERNESS	18	17	6 (35.3%)	11 (64.7%)	1 (5.6%)
ROYAL ALEXANDRA HOSPITAL, PAISLEY	27	27	17 (63.0%)	10 (37.0%)	0 (0.0%)
ABERDEEN MATERNITY HOSPITAL	53	53	33 (62.3%)	20 (37.7%)	0 (0.0%)
AYRSHIRE MATERNITY UNIT, CROSSHOUSE	32	32	18 (56.3%)	14 (43.8%)	0 (0.0%)
NINEWELLS HOSPITAL, DUNDEE	48	48	24 (50.0%)	24 (50.0%)	0 (0.0%)
PRINCESS ROYAL MATERNITY, GLASGOW	67	67	36 (53.7%)	31 (46.3%)	0 (0.0%)
ROYAL HOSPITAL FOR CHILDREN, GLASGOW	61	61	31 (50.8%)	30 (49.2%)	0 (0.0%)
VICTORIA HOSPITAL, FIFE	53	53	25 (47.2%)	28 (52.8%)	0 (0.0%)
WISHAW GENERAL HOSPITAL	46	46	15 (32.6%)	31 (67.4%)	0 (0.0%)
BORDERS GENERAL HOSPITAL, MELROSE	2	2	2 (100.0%)	0 (0.0%)	0 (0.0%)
Scotland Neonatal Network	457	456	239 (52.4%)	217 (47.6%)	1 (0.2%)
All participating units	6418	6394	3866 (60.5%)	2528 (39.5%)	24 (0.4%)

# NNAP 2017 Scotland

Proportion of babies admitted to a NNAAP participating unit with gestation at birth less than 33 weeks who received any of their mother's milk at discharge (excludes babies transferred to or from the unit) (2017)

★ Selected Networks   ● Network   ..... National Rate of Compliance   --- NNAP standard



## Early breastmilk feeding

*Does a baby born at less than 32 weeks gestational age receive any of their own mother's milk at day 14 of life?*

**Change to audit measure for 2019 data year:** None, new measure for the 2019 data year.

### **NNAP standard**

**Developmental standard:** Benchmarking only.

### **Inclusion criteria**

- Babies born at less than 32 weeks gestational age who survive to their 14<sup>th</sup> day of life.
- Babies who experienced their final neonatal discharge in the calendar year of analysis.

### **Attribution**

- Babies will be attributed to their location of care at 48 hours of life, which is intended as a proxy measure of the intention to provide ongoing care for a baby in a given neonatal unit.
- When a baby is in transit between units at 48 hours the baby will be assigned to the transferring hospital. When multiple admission locations exist at 48 hours of life, the baby will be attributed to the earliest associated admission time.

### **Deriving outcomes**

Babies will be classified as meeting the NNAP standard if they are noted to have received any of the following types of enteral feed on their 14<sup>th</sup> day of life.

- Suckling at the breast
- Mother's fresh expressed breastmilk
- Mother's frozen expressed breastmilk

# Examples of QI



# Examples of QI

doi: 10.7326/080111

## • Team established

www.jpnm.com Open Access eISSN: 2281-0692  
Journal of Pediatric and Neonatal Individualized Medicine 2019;8(1):e080111  
doi: 10.7363/080111  
Received: 2018 Mar 30; revised: 2018 Oct 18; accepted: 2018 Nov 19; published online: 2018 Dec 03

Original article

## A quality improvement project to improve human milk feeding rate in hospitalized neonates

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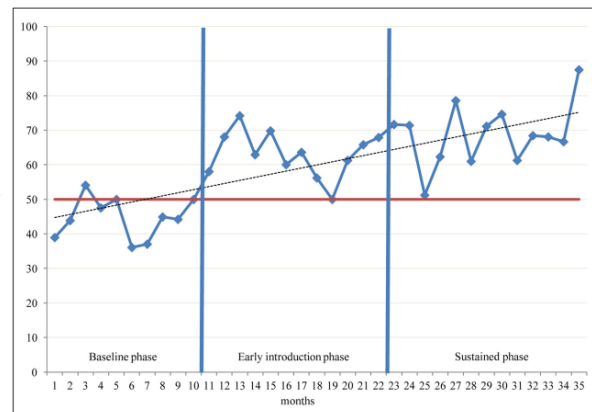


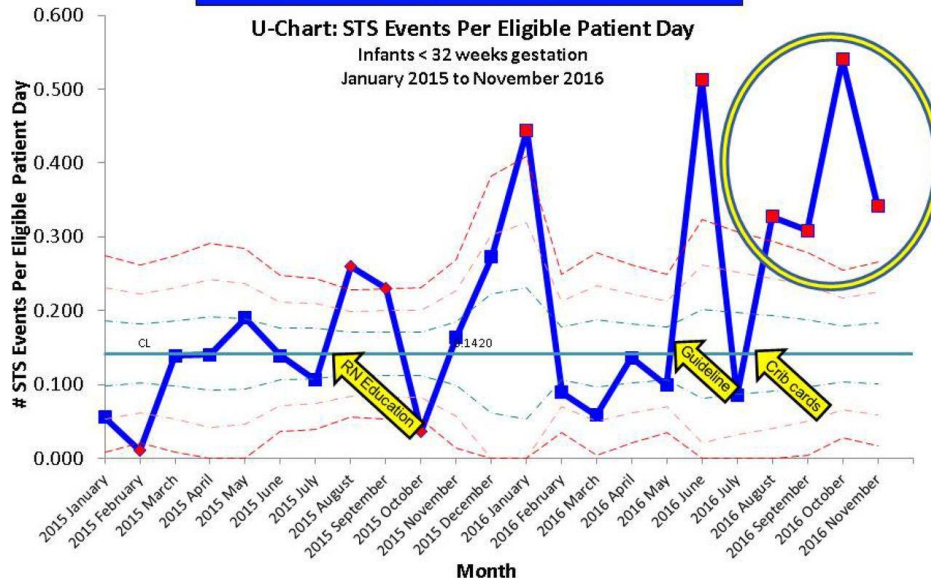
Figure 1. Percentage of infants receiving > 50% of maternal breast milk during hospital stay.

# Examples of QI

any breast milk use at time of discharge in this population increased from baseline 80% pre-intervention to 89% after the first interventions

- Cot Cards to highlight STS

## Process Measure: STS Event Rate



# Liquid Gold



# Summary

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- Benefits well recognised
- Term & Preterm
- **QI focus**
- Systems and processes
- Communication