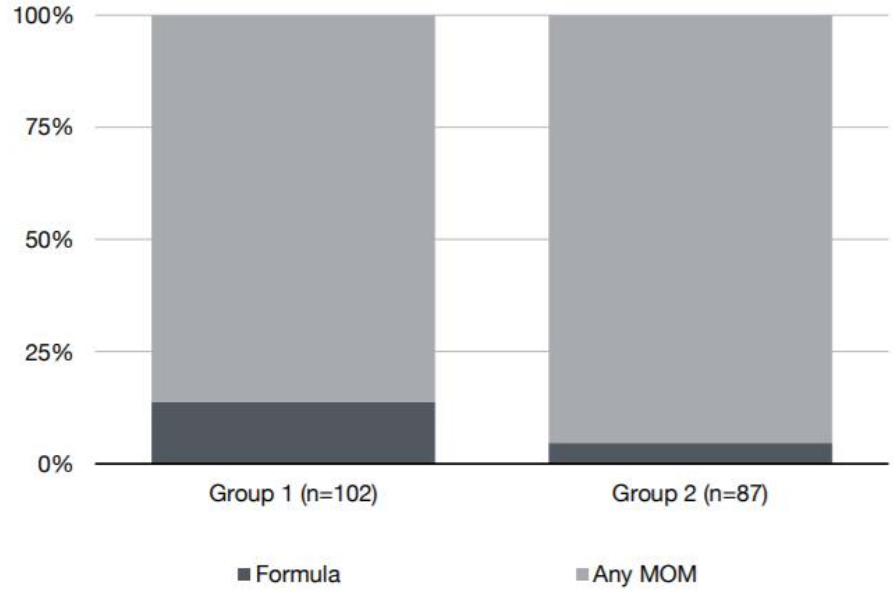
September 17th, 2021 08:30 - 10:30

PARALLEL SESSION 23 - NUTRITION 3

ID 67. Prolonged Oropharyngeal Colostrum Administration to Very Low Birth Weight Infants

Professor Mariana Oliveira[2], MD, MSc Desirée Volkmer[1], MD, MSc Marôla Scheeren[1]
[1]Hospital Moinhos de Vento, Porto Alegre, Brasil, [2]UFCSPA - Federal University of Health Sciences of Porto Alegre, Porto Alegre, Brasil

BACKGROUND
Oropharyngeal colostrum (OPC) may be safely applied as immunological modulation therapy for very low birth weight (VLBW) infants. Most studies have described the safety of short-term application (5-7 days), with no differences in rates of necrotizing enterocolitis (NEC), infection, death or type of feeding. This study aims to investigate if the implementation of prolonged oral colostrum (POPC) administration protocol (from birth to oral transition) is associated with the reduction of morbidities or type of feeding at NICU discharge in VLBW infants.
METHODS
We carried out a quasi-experimental study, with an intervention group using prolonged oropharyngeal colostrum (POPC) administration and historical control before the introduction of the practice. The intervention group received OPC as soon as available and continued until achieving oral transition of feedings. All VLBW infants admitted to the NICU and who had no contra-indications to human milk were included. The main outcome was survival without morbidities, including severe intraventricular haemorrhage (IVH), chronic lung disease at 33 weeks (CLD), necrotizing enterocolitis (NEC), any late infection or cystic periventricular leukomalacia (PVL). The secondary outcome was the administration of any volume of mother's own milk (MOM) at discharge.
RESULTS
In total, 381 VLBW infants were included. Group 1 (control) had 200 patients and Group 2 (treatment) had 181 patients. Patients in the control group had lower birth weight (1081±314g vs 1165±280g, p.01). There were no differences regarding gestational age, the number of multiples, antenatal steroids administration, and the number of extremely preterm (EPT) (<30 weeks) infants. In total, 348 (92.8%) infants survived hospitalization. At discharge, 324 (93.8%) were being breastfed at least once a day. POPC administration was associated with an increased chance of receiving any MOM volume at discharge in EPT infants (RR=2.98, CI95% 1.02-8.73; p=.04) (Fig.1). There were no differences in surviving without morbidities. There were no complications associated with the practice.
CONCLUSION
Prolonged oral colostrum administration is safe, feasible, and increased the frequency of receiving any volume of MOM at hospital discharge. Extreme preterm infants might be more benefitted by this practice.



Any volume of MOM at discharge in < 30 weeks preterm infants (n=189)
None declared

ID 302. Insights into patterns of breastfeeding in preterm babies up to six months of actual age from the last UK National Infant Feeding Survey

Doctor Ilana Levene[1]
[1]*National Perinatal Epidemiology Unit, Oxford, United Kingdom*

Background
There is minimal representative data available on long-term breastfeeding outcomes of preterm babies in the UK, particularly those born <34 weeks' gestation. The last national Infant Feeding Survey is an unexplored source of data.

Method
A series of questionnaires were sent to a representative sample of those giving birth in Aug/Sept 2010; the final questionnaire was sent at 7-9 months of actual age. The dataset is freely available for academic purposes in the UK Data Archive and this is covered by the original ethical approvals. Data is presented as means and standard deviation. Error bars were constructed using binomial proportion confidence intervals. Categorical data was analysed using chi squared tests.

Results
Final data was available for 10,064 term babies, 429 late preterm (mean gestation 35.3±0.8 weeks) and 148 babies born <34 weeks' (mean gestation 30.9±2.1 weeks). Breastmilk initiation was highest in babies born <34 weeks' (89% compared to 81% for term babies, p=0.02) but any & exclusive breastmilk rates drop below those for term babies by around two months actual age (near term corrected age; Figure 1). 25% receive any breastmilk at six months actual age, compared to 34% of term babies (p=0.02). In contrast, babies born at 34-36 weeks' gestation have the worst breastmilk feeding outcomes throughout, with initiation of 77%, exclusive breastmilk on day one of only 48% and an absolute difference of up to 29% in exclusive breastmilk rate between gestation categories (p<0.00001 at all timepoints up to 4 months of age).

Conclusion
Despite limited power, useful relationships were seen in this previously unexplored data. Babies born <34 weeks' have the highest breastmilk initiation rate of all groups, likely due to an understanding of the value of breastmilk in this setting. By around term corrected age they receive less breastmilk than term babies, showing the challenges of establishing and maintaining a sustainable milk supply. The data supports that of Bonnet et al 2018 showing that the UK is one of the worst in Europe in breastmilk outcomes for very preterm babies at six months. Late preterm babies have the worst outcomes of all, emphasising their need for tailored feeding support.

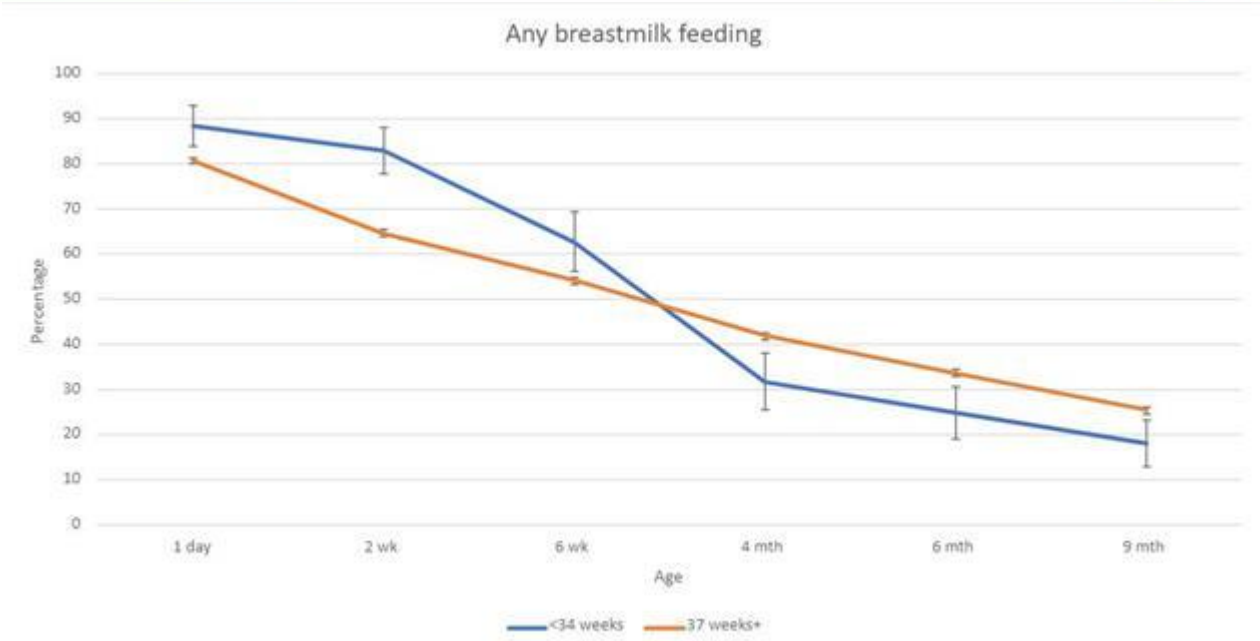


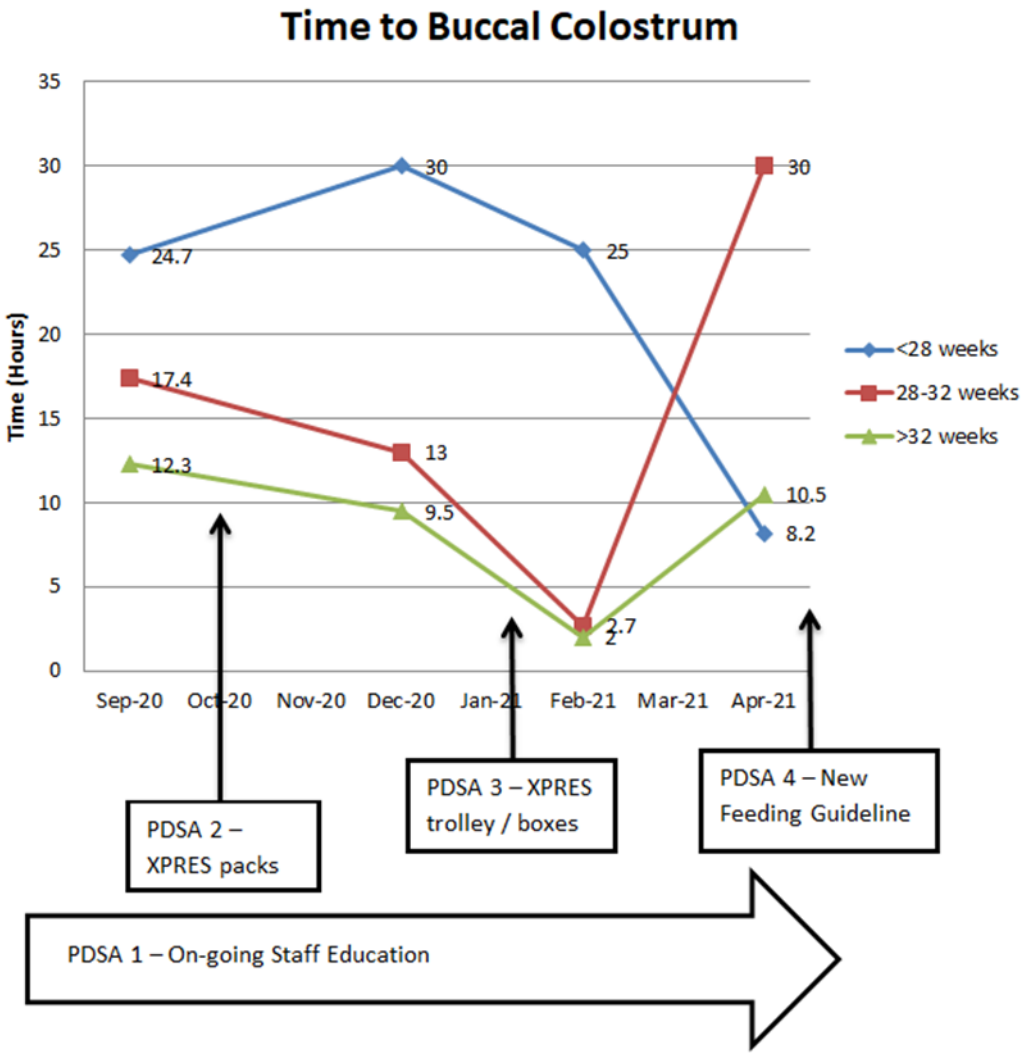
Figure 1: Rate of any breastmilk feeding over time in babies born <34 weeks' gestation, compared to term babies

Co-chair of a national knowledge sharing and advocacy group in the UK (the Hospital Infant Feeding Network). Receives funding from the National Institute for Health Research (Clinical Doctoral Fellowship)

ID 444. XPRES QI INITIATIVE – REDUCING THE TIME TO FIRST COLOSTRUM ON A NEONATAL INTENSIVE CARE UNIT (NICU).

Mrs Sarah Kent[1], Dr Anandini Arumugam[1], Dr Heather-Leigh Davies[1], Dr Sarah Williamson[1], Dr Henna Tan[1], Mrs Colette Fox[1], Mrs Jo Bradshaw[1], Dr Arthi Lakshmanan[1]
[1]University Hospitals Coventry & Warwickshire NHS Trust, coventry, United Kingdom

Background:
Human colostrum obtained in the first few days following delivery is rich in essential immunological components. Early administration of colostrum reduces the risk of severe necrotising enterocolitis and increases the breast feeding rate at discharge. British Association of Perinatal Medicine (BAPM) recommends that buccal colostrum should be administered within 6 hours of birth.
Our aim was to reduce the time to first colostrum administration in a Neonatal Intensive Care Unit (NICU) in the United Kingdom by 20%.
Methods:
XPRES, a multi-professional quality improvement group, was formed to identify the key drivers for change. These included staff education as well as better provision of equipment. Process mapping highlighted the importance of a multi-disciplinary team approach.
We have completed 3 PDSA cycles:
PDSA 1: September 2020 – On going staff education via road shows was introduced for the neonatal and midwifery teams.
PDSA 2: October 2020 – XPRES packs were introduced containing colostrum syringes and parental information. These were delivered during antenatal counselling or during the parental first visit.
PDSA 3: January 2021 – A 'XPRES trolley' was introduced which can be wheeled to the patient's cot side and contains expressing equipment and parent information. 'XPRES boxes' were introduced on delivery suite and the postnatal wards containing the same tools.
Prospective data collection was carried out to monitor the impact of our change ideas.
Results:
In September 2020 the mean time to colostrum administration was 18 hours for all infants <34 (For <28 weeks gestation, 24.7 hours; 28-32 weeks gestation, 17.4 hours; 32–34 weeks gestation 12.3 hours). Since completing our 3 PDSA cycles we have seen an improving trend in time to administration (Figure 1). This has been especially evident in our extreme preterm population (<28 weeks), showing a 67% improvement (24.7 hours to 8.2 hours).
Conclusion:
Increased awareness and education of multidisciplinary stakeholders, as well as better provision of expression equipment has improved the time to first colostrum administration on the NICU. Although extreme preterm babies are receiving colostrum earlier, there is still work to be done and hence a new feeding guideline with more focussed staff/parent education has been planned.



Time to buccal colostrum and PDSA cycles

None declared

ID 489. Cytomegalovirus and neonatal cholestasis in preterm infants

MD Jonas Teng[1], MD Anne Elwin[2], MD Soley Omarsdottir[3], MD Giulia Aquilano[4], MD Mireille Vanpee[5], Professor Antal Nemeth[6], Associate Professor Afsar Rahbar[7], MD Kajsa Bohlin[8], Professor Björn Fischler[9], Professor Cecilia Söderberg-Nauclér[10]

*[1]Division of Pediatrics, Department of Clinical Science, Intervention and Technology (CLINTEC), Karolinska Institutet; Department of Pediatrics, Södertälje Hospital, Stockholm, Sweden, [2]Division of Pediatrics, Department of Clinical Science, Intervention and Technology (CLINTEC), Karolinska Institutet; Department of Neonatology, Karolinska University Hospital, *Shared contribution, Stockholm, Sweden, [3]Department of Medicine, Microbial Pathogenesis Unit, BioClinicum, Karolinska Institute, *Shared contribution, †Deceased in 2021, Stockholm, Sweden, [4]Department of Neonatology, Karolinska University Hospital, Stockholm, Sweden, [5]Department of Women's and Children's Health, Karolinska Institutet and Karolinska University Hospital, Stockholm, Sweden, [6]Division of Pediatrics, Department of Clinical Science, Intervention and Technology (CLINTEC), Stockholm, Sweden, [7]Department of Medicine, Microbial Pathogenesis Unit, BioClinicum, Karolinska Institute; Department of Neurology, Karolinska University Hospital, Stockholm, Sweden, [8]Division of Pediatrics, Department of Clinical Science, Intervention and Technology (CLINTEC), Karolinska Institutet; Department of Neonatology, Karolinska University Hospital, Stockholm, Sweden, [9]Division of Pediatrics, Department of Clinical Science, Intervention and Technology (CLINTEC), Karolinska Institutet; Department of Pediatrics, Karolinska University Hospital, #Shared contribution, Stockholm, Sweden, [10]Department of Medicine, Microbial Pathogenesis Unit, BioClinicum, Karolinska Institute; Department of Neurology, Karolinska University Hospital, #Shared contribution, Stockholm, Sweden*

Background: Human cytomegalovirus (CMV) is one of the most common viral infections in the neonatal period and is known to affect the liver. The objective of this study was to evaluate the prevalence of CMV in preterm infants with cholestasis.

Methods: Preterm (<37 weeks) cholestatic infants in neonatal wards at Karolinska University Hospital were included and sampled in peripheral mononuclear blood cells (PBMC), plasma and urine for CMV DNA using quantitative PCR. Any missing samples were assumed to be negative, and the infants were regarded as positive for CMV if any sample tested positive. Their mothers were tested for CMV serostatus simultaneously. Later, a reference group of preterm infants (and their mothers) without cholestasis were included and tested in the same manner when at least 3 weeks old (but less than 6 weeks). Cholestatic infants were compared to the reference group regarding CMV DNA prevalence, and cholestatic CMV positive infants were compared to cholestatic CMV negative infants.

Results: 45 cholestatic preterm infants and 24 non-cholestatic were included. 69% (31/45) of the cholestatic infants were CMV positive versus 13% (3/24) of the non-cholestatic (p<0.00001). Cholestatic infants had similar gestational age but were generally sicker with more cases of necrotizing enterocolitis, need for mechanical ventilation and parenteral nutrition. After adjusting for necrotizing enterocolitis, parenteral nutrition and gestational age using logistic regression, being CMV positive remained significantly associated with cholestasis. Among the cholestatic infants, the CMV positive and negative did not differ regarding baseline characteristics or neonatal morbidity, except for necrotizing enterocolitis, occurring in 55% (17/31) of CMV positive and in 21% (3/14) of CMV negative, bordering on significance (p=0.054). Eight CMV positive infants died versus none of the CMV negative (p=0.044).

Conclusion: CMV DNA was detected in two out of three cholestatic preterm infants, by far more often than in age-matched controls. Samples from several locations may be needed to test to detect viral DNA. Cholestasis with simultaneous detection of CMV DNA may be associated with a more severe outcome.

Characteristics and CMV Status of Cholestatic and Non-Cholestatic Infants.

	Cholestatic (n=45) [a]	Non-cholestatic (n=24) [a]	p [b]
Mother and pregnancy			
Maternal age, years	31 (27, 35)	33 (29.5, 35)	0.32
Singleton	36/45 (80.0)	20/24 (83.3)	1.00
Steroids, antenatal	39/45 (86.7)	23/24 (95.8)	0.41
Caesarian incision	33/45 (73.3)	16/24 (66.7)	0.59
Neonatal characteristics			
Gestational age, week + days	26+5 (25+4, 29 + 1)	26+4 (24+6, 27+3)	0.31
Birth weight, kg	0.963 (0.738, 1.194), n=44	0.777 (0.606, 1.002)	0.053
Small for gestational age	15/44 (34.1)	8/24 (33.3)	1.00
Female gender	21/45 (46.7)	10/24 (41.7)	0.80
Neonatal course			
Mechanical ventilation, days	23 (12, 36)	5.5 (0, 11)	<0.0001*
Erythrocyte transfusions	14 (11, 21)	6 (3.5, 8)	<0.000001*
Sepsis	28/45 (62.2)	8/24 (33.3)	0.026*
Patent ductus arteriosus	29/45 (64.4)	9/24 (37.5)	0.043*
NEC, ≥stage 2	20/45 (44.4)	1/24 (4.2)	<0.001*
Nutrition and growth			
Parenteral nutrition, ≥2 weeks	42/45 (93.3)	11/24 (45.8)	<0.0001*
Maternal breast milk, fed at any time	86.7 (36/45)	95.8 (23/24)	0.408
Donor breast milk, fed at any time	72.7 (32/44)	95.2 (20/21)	0.046*
Outcomes			
BPD grade 2 or higher	24/40 (60.0)	8/24 (33.3)	0.070
ROP stage 3 or higher	12/42 (28.6)	4/24 (16.7)	0.375
Deceased	8/45 (17.8)	1/24 (4.2)	0.15
Infant CMV DNA PCR			
PBMC +	12/45 (26.7)	3/24 (12.5)	0.23
Urine +	6/30 (20)	0/21 (0.0)	0.036*
Plasma +	27/45 (60)	0/18 (0.0)	0.000007*
Positive in any sample	31/45 (68.9)	3/24 (12.5)	<0.000009*
Age at blood sampling (PBMC, plasma), days	32 (19, 41), n=41	29 (27, 38), n=22	0.53

a n/N (%) for proportions, median ([IQR:] 25th percentile, 75th percentile) for continuous variables.
b Fisher exact test for proportions, Mann-Whitney U-test for continuous variables.
* Statistical significance.
None declared