SCIENTIFIC PROGRAM

emba
EUROPEAN MILK BANK ASSOCIATION

4th International Congress

European Milk Bank Association (EMBA)

GLASGOW

5th-6th October 2017

http://europeanmilkbanking.com

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08.00-08.30 a. m. **Registration**

08.30-09.00 a.m. **Welcome**
Pr JC Picaud, President of the EMBA

Opening of the conference
Ms Campbell, Minister for Public Health and Sport

09.00-10.30 a.m. SESSION 1: HM BANKING SUPPORTING GLOBAL HEALTH
Moderators: Jean-Charles Picaud, Debbie Barnett

Human milk banking in a global world
Kiersten ISRAEL-BALLARD (Path, USA)

Ethnographic Cultural Models of Milk Banking in the United Kingdom and Ireland
Tanya CASSIDY (Glasgow, Scotland)

Human milk banking in Poland - from neglect in the past to reimbursement in healthcare at present (15′ + 5′ disc)
Urszula BERNATOWICZ-LOJKO (Warsaw, Poland)

Who receives donated milk in Glasgow? (15′ + 5′ disc)
Judith SIMPSON (Glasgow, Scotland)

10.30-11.00 a.m. Coffee break

11.00 a.m-12.30 p.m. SESSION 2: HUMAN MILK FOR NUTRITION OF PRETERM INFANTS
Moderators: Sertac Arslanoglu, Enrico Bertino

Fortification of human milk: recommendations from the working groups of EMBA
Sertac ARSLANOGLU (Istanbul, Turkey)

Mediterranean diet and human milk
Enrico BERTINO (Turin, Italy)

Evaluation of a new human milk donkey fortifier: FORTILAT study
Paola TONETTO (Turin, Italy)

Donor human milk after two years of lactation – could it improve the macronutrients composition for preterm infants?
Czosnykowska-Lukacka MATYLDA et al. (Wroclaw, Poland)

12.30-01.20 p.m. Lunch break

01.20-02.00 p.m. POSTER SESSION 1

MODERATORS I:
Gillian WEAVER, Guido MORO

CURRENT PRACTICE AND BELIEFS: SURVEY OF BREAST MILK HANDLING ROUTINES IN GERMAN, SWISS AND AUSTRIAN NEONATAL UNITS REVEALS LARGE CENTRE SPECIFIC DIFFERENCES
Daniel Klotz

OUR JOURNEY TOWARDS UNICEF ACCREDITATION IN NICU IN GLASGOW
Bokwer Gillian

3QUALITY IMPROVEMENT PROJECT: IMPROVING DONOR MILK PRACTICES WITHIN THE NICU AT BIRMINGHAM WOMEN'S HOSPITAL
Wood Hannah

ENGAGING DONORS, HARNESSING TECHNOLOGY: THE DEVELOPMENT OF THE MILK BANK APP
Shenker Natalie

HUGG (HELPING US GROW GROUP): DEVELOPING A PROGRAMME OF NEONATAL FAMILY INTEGRATED CARE
Bokwer Gillian

BREAST MILK FROM REMUNERATED DONORS APPEARS TO BE AS SAFE AS THAT FROM UNREMUNERATED DONORS
Rechtman David

MODERATORS II:
Enrico BERTINO, Clair-Yves BOQUIEN

MILK DONATION AWARENESS OF PARENTS, HEALTH WORKERS AND LACTATION CONSULTANTS: SURVEY FINDINGS IN RUSSIA
Lukoyanova Olga

HUMAN-MILK DONATION SURVEILLANCE PROGRAM DEVELOPMENT OF QUALITY AND SAFETY CONTROL METHOD OF THE ACTIVITY OF A HUMAN MILK BANKS
Garcia Lara Nadia Raquel

ADOPTING A SYSTEMATIC APPROACH TO DEVELOPING OFF TO A GOOD START: A BREASTFEEDING INFORMATION RESOURCE FOR PARENTS, INCLUDING PARENTS OF BABIES IN NEED OF SPECIAL CARE
Woodman Kate

EXPLORING THE PARADOX OF PUMPING THROUGH ADOPTING A SYSTEMATIC APPROACH TO USING EVIDENCE TO SUPPORT BREAST(MILK) FEEDING IN NEONATAL UNITS IN SCOTLAND
Woodman Kate

NORTH WEST HUMAN MILK BANK DONOR SURVEY
Barnes Carol

IMPACT OF HUMAN MILK BANK – EXPERIENCE FROM A TERTIARY CARE TEACHING HOSPITAL, SOUTH INDIA
Bethou Adhisivam

WHY DONOR MILK BANKS? - A SHORT OVERVIEW OF THEIR HISTORY IN GERMANY
Anne Sunder-Plassmann

MODERATORS III:
Jean-Charles PICAUD, Sertac ARSLANOGLU

EARLY BREAST MILK PRIMING AND EXPRESSION TO IMPROVE OUTCOMES IN SICK OR PRETERM - A QUALITY IMPROVEMENT INITIATIVE.
Gardiner Gillian

EXPERIENCE WITH THE USE OF DONOR MILK IN VERY-LOW-BIRTH-WEIGHT(VLBW) INFANTS
Mizuno Katsumi

DONOR HUMAN MILK – TO WHOM, HOW MUCH AND HOW LONG?
Czosnykowska-Lukacka Matylda

JUST MATERNAL MILK FOR SICK AND PREMATURE BABIES: FIRST EXPERIENCE OF DONOR MILK BANK AT VILNIUS PERINATAL CENTER
Tamuliene Laima

UNDERSTANDING BARRIERS AND FACILITATORS FOR BREASTFEEDING, KANGAROO MOTHER CARE (KMC) AND DONOR HUMAN MILK (DHM) AMONG MOTHERS AND INFLUENCERS OF PRETERM AND SICK NEONATES IN INDIA
Manerkar Swati

02.00-04.00 p.m. SESSION 3: TREATMENT OF DONOR HUMAN MILK
Moderators: Guido Moro, Rachel Buffin

Recommendations from the working group of EMBA about the processing of human milk
Guido MORO (Milano, Italy)

The donated milk oligosaccharides are not affected by pasteurisation and freeze-drying
Kang NAM MI et al. (Chungju, Republic of Korea)

New achievements in high-pressure processing of human milk
Aleksandra WESOLOWSKA (Warsaw, Poland)

New prospectives of HTST pasteurisation
Laura CAVALLARIN (Torino, Italy)

Improving milk processing in North America: a mathematical modeling approach
Lisa MAILLART et al. (Pittsburgh, USA)

Antiviral activity in human colostrum and milk: do exosomes play a role?
David LEMBO (Torino, Italy)

04.00-04.30 p.m. Coffee break

04.30-06.00 pm. SESSION 4: RESEARCH
Moderators: Clair -Yves Boquien, Enrico Bertino

HMBs in support of research
Natalie SHENKER (Heart milk bank, England)

MiRNA in human milk: a state of the art (20′ + 10′ disc)
Clair-Yves BOQUIEN (Nantes, France)

Protective effect of donor human milk against retinopathy and lung injury (20′ + 10′ disc)
Sergio VERD (Barcelona, Spain)

06.00-07.00 p.m. **EMBA AGM**

08.00-10.00 p.m. **Gala Dinner**

08.00-08.30 a.m. **Registration**

08.30-10.00 a.m. SESSION 5: EPIDEMIOLOGY AND SUPPORT OF BREAST FEEDING
Moderators: A Grovslien, Linda Wolfson

Human Milk link: a new model for home collection of donor human milk
Guido MORO (Milano, Italy)

Biological integrity- ethics and control over human milk
Marion RICE et al. (Oregon, USA)

Epidemiology of breast feeding in France in term infants ELFE study
Blandine DE LAUZON-GUILLAIN (Paris, France)

Pragmatically presenting the evidence in support of breast(milk) feeding in neonatal units
Kate WOODMAN et al. (Glasgow, Scotland)

Comprehensive lactation management centre for improving human milk feeding: a needs evaluation study
Ruchika Sachdeva (Mumbai, India)

10.00-10.30 a.m. Coffee break

10.30 a.m.-12.30 p.m. SESSION 6: HUMAN MILK BANKING IN THE WORLD
Moderators: Gillian Weaver, Antoni Gaya

Recommendations from the working groups of EMBA on guidelines for implementing human milk banks
Gillian WEAVER (London, UK)

Guidelines for human milk banking in India
Sila DEB (India)

How milk banking can support breastfeeding and save lives in India
Anne GROVSLIEN (Norway)

Establishing and operating the first human milk bank in Vietnam (15′ + 5′ disc)
Hoang TRAN (Vietnam)

An alternative milk bank model in Turkey and its reflections: where are we now?
Sertac ARSLANOGLU (Istanbul, Turkey)

12.30-01.20 p.m. Lunch Break

01.20-02.00 p.m. POSTER SESSION 2

MODERATORS IV:
Antoni GAYA, Aleksandra WESOLOWSKA

PRESERVATION OF BIOACTIVE COMPONENTS IN HUMAN MILK BY HIGH-PRESSURE PROCESSING
Elena Sinkiewicz-Darol

DESIGN AND VALIDATION OF A HTST SYSTEM FOR PASTEURIZATION OF DONOR MILK IN A HUMAN MILK BANK SETTING
Escuder Vieco Diana

EFFECT OF HTST AND HOLDER PASTEURIZATION ON IMMUNOGLOBULINS, GROWTH FACTORS AND HORMONES IN DONOR MILK
Escuder Vieco Diana

INFLUENCE OF ADMINISTRATION TIME IN DONOR HUMAN'S MILK BACTERIAL COUNTS
Lozano Fuentes Marta

INFLUENCE OF THAWING METHOD ON MICROBIOLOGICAL COUNTS IN HUMAN MILK BANKS
Lozano Fuentes Marta

SIGNIFICANT LOSSES OF DONOR HUMAN MILK DUE TO PATHOGENIC BACTERIAL CONTAMINATION - THE PROBLEM REMAINS UNCHANGED
Ioannou Ioanna

MODERATORS V:
Ann GROVSLIEN, Debbie BARNETT

HUMAN MILK BANKING IN SPAIN
Gaya Antoni

CURRENT SCENARIO OF HUMAN MILK BANKS IN INDIA, 2016
Kandasamy Praveen

KENYA'S EXPERIENCE IN ESTABLISHMENT OF HUMAN MILK BANKS: A SYSTEMATIC APPROACH
Samburu Betty Mogesi

ANALYSIS OF RUSSIAN DONOR HUMAN MILK BANK WORK IN NICU
Belyaeva Irina

THE FIRST HUMAN MILK BANK IN LITHUANIA
Ivanauskienė Vilma

WHY IT IS SO DIFFICULT TO ESTABLISH THE FIRST HUMAN MILK BANK IN A SMALL COUNTRY LIKE SLOVENIA?
Domjan Arnsek Andreja

MODERATORS VI:
Sertac ARSLANOGLU, Enrico BERTINO

PROTEOMIC ANALYSIS OF KOREAN MOTHER POSTPARTUM BREAST MILK
Nam Mi Kang

HUMAN MILK BANKING PRACTICES IN THE U.K.: OPTIMISING LCPUFA CONTENT
Nessel Isabell

SERUM AND MILK VITAMIN D CONCENTRATION IN BREASTFEEDING WOMEN
Adamczyk Iwona

HOW TO INCREASE SUPPLY OF MILK TO MILK BANKS? - IMMUNOPROTECTIVE COMPOUNDS AND ANTIOXIDANT CAPACITY OF HUMAN MILK IN THE SECOND YEAR OF LACTATION
Sinkiewicz-Darol Elena

IN VITRO LIPOLYSIS KINETICS OF HUMAN MILKS IS DEPENDENT FROM FAT GLOBULE STRUCTURE
Boquien Clair-Yves

02.00-04.30 p.m. SESSION 7: HUMAN MILK AND MICROORGANISMS
Moderators: Jean Charles Picaud, Sertac Arslanoglu

Modulation of the human milk microbiota
Juan RODRIGUEZ (Madrid, Spain)

Bacillus Cereus neonatal sepsis and donor human milk: guilty or not guilty? (10' + 5' disc)
Jean-Charles PICAUD (Lyon, France)

Four years of microbiological controls of fortified milks from milk banks during preparation and administration processes (10' + 5' disc)
Héloïse ROUZÉ et al. (Lyon, France)

Two methods for cleaning the breast pump for human milk donations: randomised controlled trial
Beatriz FLORES-ANTÓN et al. (Madrid, Spain)

Donor human milk impact on premature newborn's (< 32 gestational weeks) intestinal microbiota
Maria GORMAZ et al. (Valencia, Spain)

04.30-05.00 p.m. **Conference End**

ORGANISING SECRETARIAT
Biomedia srl - Monica Arosio
Via L. Temolo 4, 20126 Milan
Ph.: +39 02 45498282; Fax +39 02 45498199
embacongress@biomedia.net - www.biomedia.net

OFFICIAL LANGUAGE
The official language of the Congress is English.

NAME BADGE
All participants will receive a name badge by email. This badge must be printed because only registered participants will be admitted to the lecture hall.

REGISTRATION
Full registration and Student/Volunteers and Unwaged person registration includes:

- Entrance to plenary session, poster session, the exhibition area
- Congress Information Package
- Certificate of attendance
- Coffee break and working lunch vouchers

Registrations available on the Congress Website.

REGISTRATION FEE

DELEGATE REGISTRATION FEE EMBA MEMBER	**€ 120,00**
DELEGATE REGISTRATION FEE NON EMBA MEMBER	**€ 150,00**
STUDENT/VOLUNTEER/UNWAGED	**€ 100,00**
CONFERENCE DINNER 5th October 2017	**€ 55,00**

*ATTENTION:
to obtain reduced fee you must be a current member (year 2017) of EMBA. It is also valid if you will register yourself at the Congress Venue.

SOCIAL DINNER
The Social dinner, which will be held on 5th October, is not included in the Congress fee. Those who intent to attend need to add €. 55,00 per person at the Congress Fee payment.

Location:
200 SVS
200 St Vincent Sstreet, Glasgow

PAYMENT: By Cash (Euro) or by Check

CANCELLATION
Cancellations will be accepted by the organizing secretariat strictly within Friday, 21st Septembet 2017 entitling the registrant to a 80% reimbursement of the fee paid. Although no reimbursements will be processed further to the cancellation deadline, registration may be turned over to another attendee, provided the name is communicated
in advance to the organizing secretariat.

CERTIFICATE OF ATTENDANCE
All registered participants will receive a certificate of participation.
The cetificate will not be delivered on paper but must be printed by the partecipant from October 6th (at the end of the congress) via the website www.biomedia.net. (area My login). For access you need username and password used at registration time. If you don't have username and password, please write to embacongress@biomedia.net asking for them.

AUDIOVISUAL CENTER
Speakers are kindly requested to bring their presentation to the Registration Desk at least two hours before the presentation is scheduled.

MEETING VENUE
The Grand Central Hotel
99 Gordon Street, Glasgow
http://www.thegrandcentralhotel.co.uk/

ABSTRACTS

MEDITERRANEAN DIET AND HUMAN MILK

Enrico Bertino[1], Adriano Decarli[2], Alessandra Tavani[3], Monica Ferraroni[2], Francesca Bravi[2], Frank Wiens[4], Bernd Stahl[4], Paola Tonetto[1], Paola Di Nicola[1], Giulia Ansaldi[1], Stefano Sottemano[1], Alberto Gatta[5], Guglielmo Salvatori[6], Claudio Profeti[7], Guido Moro[8].

[1] Neonatology and Neonatal Intensive Care Unit, Department of Public Health and Pediatrics, University of Turin, Italy
[2] Laboratory of medical statistics, biometry and epidemiology "GA MACCACARO", University of Milan
[3] Department of Epidemiology, Istituto di Ricerche Farmacologiche "Mario Negri", Milan, Italy
[4] Nutricia Research, Utrecht, Netherland
[5] TIN-Neonatology unit, IRCSS Casa Sollievo della Sofferenza, San Giovanni Rotondo, Italy
[6] Department of Neonatology, Bambino Gesù Children's Hospital, Rome, Italy.
[7] Neonatal Intensive Care Unit, A. Meyer Children's Hospital, Florence, Italy.
[8] Italian association of human milk bank, Milan, Italy

Introduction: Human milk has evolved as the natural exclusive food for newborns during their first months of postnatal life; it fulfils all the nutritional requirements and it is related to a better short and long term outcome [1]. Yet, between human populations there seems to have always existed differences in certain features of human milk composition, most notably in the distribution of fatty acid species in milk fat. The knowledge on how maternal diet and in particular the adherence to a Mediterranean-style diet may be reflected in distinct compositional properties of human milk is very limited. We know that maternal diet influences Fatty Acid (FA) composition of breast-milk with changes appearing within 8-10 hours after a meal intake. FA are important for neurodevelopment of newborn in early stages of extrauterine life [2]. The MediDiet multicenter study aims to evaluate how human milk antioxidative properties can be affected by the adherence to Mediterranean diet. Methods: We systematically sampled breast milk of 294 mothers from 5 sites to provide reference values of milk fatty acids in the population. In a period between 5 and 7 weeks after childbirth these women were asked to provide a sample of their freshly expressed breast milk and were interviewed on exposures to possible modulators of breast milk composition and milk's oxidative status A validated food frequency questionnaire was submitted to all the eligible patients included in the study. Results and discussion: The adherence to the Mediterranean diet was lower in the center and south of Italy than in the north. This result seems to be in line with the observation of a trend towards a decreasing adherence to the Mediterranean diet in Mediterranean countries in the last decades. [3] Milk fat contained on average 22.5% palmitic acid, 39.2% oleic acid, 10.9% linoleic acid, 0.5% ◘-linolenic acid, and 0.3% docosahexaenoic fatty acid. The ratio of n-6 to n-3 long-chain polyunsaturated fatty acids in milk fat was 2.4. Oleic acid content is among the highest reported for any geographical region of the world and similar to an earlier Italian study by Marangoni et al. (2002) [4] on a much lower number of samples. The ratio of n-6 to n-3 long-chain polyunsaturated fatty acids is also similar to the one reported by Marangoni et al. Compared with data from other Western countries this ratio is relatively low, but not as low as in some more traditional human societies. Women included in our study population adhered to a broad range of dietary styles. Future analyses will yield whether adherence to a more traditional pattern of the Mediterranean diet is associated with markedly lower than average n-6 to n-3 long-chain polyunsaturated fatty acid ratios in Italian human milk. Such low dietary ratios have been implied to provide specific benefits for cardio-metabolic health.

References:

1. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect, Victora CG et al. The Lancet. 2016, 387: 475–490
2. Genomics of lactation: role of nutrigenomics and nutrigenetics in the fatty acid composition of human milk. E. Sosa-Castillo et al. Br J Nutr. 2017 Aug; 118(3): 161-168
3. KIDMED test: prevalence of low adherence to the mediterranean diet in children and young. A systematic review. Cabrera G et al. Nutr Hosp. 2015: 32 (6):2390-2399
4. Polyunsaturated fatty acids in maternal plasma and in breast milk. Marangoni, F. et al. Prostaglandins, Leukotrienes and Essential Fatty Acids. May 2002, 66(5-6): 535 – 540

MIRNA IN HUMAN MILK: A STATE OF THE ART

Clair-Yves BOQUIEN

INRA – Nantes University, CRNH-West, Nantes University Hospital, EMBA, Nantes (FRANCE)

MicroRNAs (miRNAs) are endogenous non-coding 22 nucleotides RNAs that can play important regulatory roles in animals and plants by inhibiting gene expression at a post-transcriptional level. The number of human protein-coding genes that are considered to be targets of miRNAs is estimated to be 45,000 1.
MiRNAs have been isolated in high quantity from human milk. Skim milk has the lowest miRNA content amongst the three human milk fractions (cells, fat and skim milk). The number of unique miRNA identified at high abundance is variable (i.e. 288 2) but they are many more with miRNA at low abundance (602 3 to 898 2). The majority of the differentially expressed microRNAs are implicated in innate immunity.
The concept of miRNA regulation has led to the question of whether miRNA from human milk can regulate gene expression in infant and participate so to the "communication" between mother and her breastfed infant. Evidence is now accumulating that miRNAs are protected against degradation by being packaged in lipid vesicles or by being associated with protein or lipoprotein complexes. Milk miRNAs likely survive in infant gut. However how mother milk miRNAs can traverse the intestinal barrier and exert a regulatory function on infant gene expression is still debated.

References:

1. Friedman RC, KK-H Farh, Burge CB, Bartel DP. Most mammalian mRNAs are conserved targets of microRNAs. Genome Res 2009; 19: 92–105.
2. Liao Y, Du X, Li J, et al. Human milk exosomes and their microRNAs survive digestion in vitro and are taken up by human intestinal cells. Mol Nutr Food Res 2017 doi: 10.1002/mnfr.201700082[published Online First: Epub Date]|.
3. Zhou Q, Li M, Wang X, et al. Immune-related microRNAs are abundant in breast milk exosomes. International journal of biological sciences 2012;8(1):118-23

TITLE: ETHNOGRAPHIC CULTURAL MODELS OF MILK BANKING IN THE UNITED KINGDOM AND IRELAND

Tanya M. Cassidy

Maynooth University, Ireland and University of Central Lancashire (UCLan), UK

Recently researchers in the UK (Napier 2014) and the WHO (Napier, et al, 2017) have stressed the importance of overlapping cultural and health domains. Not only are issues of cultural competence identified in this paper, but also discussions of how cultural visions shed light on health inequalities are offered, to secure a better understanding of health care systems as communities of care. We demonstrate the need to interrogate taken-for-granted notions such as the notion that physicians have 'knowledge' and patients have 'beliefs'. In the past, models of donor human milk banks (DHMBs) were often linked to a specific national experience, such as the hospital, public/private, and community differentiations offered by PATH (2013) researchers about South Africa. In our study of DHMBs across the UK and Ireland we consider key psychosocial issues of trust, and how these concerns are translated to both other health care providers and the lay community at large, particularly in terms of the increasing importance of technology.

As of 2017 there are 16 DHMBs across the UK and Ireland, including one located in Northern Ireland serving the island of Ireland as a whole, as well as a Scotland-wide milk bank here in Glasgow, with the remaining 14 milk banks in England. There are none in Wales, despite the second ever milk bank in the UK opening in Cardiff in 1947, ten years after the first one opened in London's Queen Charlotte and Chelsea Hospital (QCCH). The systematic triangulated ethnographic research (including a year of observation, document and archival collection, and narrative interviews with staff, donors and parents of recipients) involved four of the largest DHMBs across the UK, two of which are located in university hospitals and two of which are located in community buildings, one on a university campus, and the other community based. All four are also actively involved in research, and all four are linked to the NHS. Currently, only one of the 16 DHMBs in the UK is not affiliated with the NHS. Commencing operation earlier this year, this non-NHS DHMB was not part of our systematic ethnographic data collection, although it was often discussed and the two founders were originally linked to one of the other banks involved in our data collection, and therefore have become part of our understanding of DHMBs across the UK.

Anthropologists, view culture as more than a conflation of national boundaries, race or ethnicity; comprising values, beliefs and practices as well as taken-for-granted conventions around which meaning is conveyed. Broadly speaking UNESCO (United Nations Education, Scientific and Cultural Organization) defines culture as 'the set of distinctive spiritual, material, intellectual and emotional features of society or a social group ... [which] encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs' (2001). Ethnography involves what Clifford Geertz (1973) has called 'thick description', in other words, interpretative understandings of ideas, values and practices over time to understand underlying meanings associated with the ways people think, feel and act in their taken for granted everyday worlds. The researcher often looks to link microsocial events using individual socio-psychological/culture-bound understandings and to macrosocial qualities such as gender and the economy. Underlying this empirical orientation is the recognition that all forms of knowledge and practices, including scientific and medical, are influenced by culture (Napier, et al, 2017). Using three key themes of food, environment and migration we will offer ethnographic cultural models of DHMBing across the UK and Ireland.

References:

1. Geertz, C. 1973. The interpretation of cultures. New York: Basic Books.
2. PATH. 2013. Strengthening Human Milk Banking: A Global Implementation Framework. Version 1.1. Seattle, Washington, USA: Bill & Melinda Gates Foundation Grand Challenges initiative, PATH.
3. Napier AD, Ancarno C, Butler B, Calabrese J, Chater A, Chatterjee H et al. Culture and health. Lancet 2014;384:1607–39. doi:10.1016/S0140-6736(14)61603-2.
4. _____, Depledge M, Knipper M, Lovell R, Ponarin E, Sanabria E, Thomas F. Culture matters: using a cultural contexts of health approach to enhance policy- making (Policy Brief No 1). WHO report. 2017.

NEW PROSPECTIVES OF HTST PASTEURIZATION

Laura Cavallarin[1], Marzia Giribaldi[1], Sara Antoniazzi[1], Alessandra Coscia[2], Paola Tonetto[2], Chiara Peila[2], Guido E. Moro[3], Enrico Bertino[2]

[1]Institute of Sciences of Food Production, National Research Council, Grugliasco, To, Italy
[2]Neonatal Intensive Care Unit, Department of Public Health and Pediatric, University of Turin, Turin, Italy
[3]Italian Association of Human Milk Banks, Milan, Italy

According to the existing literature (Peila et al., 2016, Picaud et al., 2017, Klotz et al., 2017), High-Temperature Short-Time (HTST) pasteurization of human milk (HM) seems to be a promising alternative to Holder pasteurization in ensuring HM microbiological safety, and in better preserving the HM antioxidant potential, lactoferrin content and structure, B and C vitamins, and some cytokines. In the past, the application of HTST to HM has been performed exclusively at a laboratory scale. Some authors used laboratory equipment, consisting of stainless steel tubing systems submerged in thermostated water baths, through which HM was pumped; others injected milk through a sterile water stream in a platetype industrial heat exchanger; some research studies were conducted by directly heating and rotating small aliquots of milk, to simulate the typical thin-layering of dairy industry HTST devices. Several studies involved simply heating small aliquots of HM in a bulk process. All the reported processes were substantially different from industrial HTST processes.

A new small-scale continuous-flow HTST pasteurizer has been designed for treating human milk. The efficacy of the new HTST device was assessed on inoculated Listeria monocytogenes, Staphylococcus aureus and Chronobacter sakazakii, as well as on raw human milk bacteria. The milk biochemical quality after HTST pasteurization was assessed in comparison to a standard Holder pasteurization, by determining the secretory IgAs (sIgAs) content, the protein profile, lysozyme and the Bile Salt Stimulated Lipase (BSSL) activities. No pathogen or bacterial growth was detected after HTST pasteurization with the new instrument. Changes in the protein profile were observed in the milk pasteurized according to both processes. The sIgAs content and BSSL activity were significantly higher in the milk pasteurized with the new device than in the same milk treated by the standard Holder pasteurization (Cavallarin et al., 2016). The new HTST apparatus can effectively pasteurize human milk with a better retention of sIgAs content and BSSL activity and it complies to human milk banking safety requirements.

References:

1. Picaud, Jean-Charles et al. (2017). Human Milk—Treatment and Quality of Banked Human Milk. Clinics in Perinatology, 44, 1, 95 – 119.
2. Peila et al. (2016). Human Milk Processing: A Systematic Review of Innovative Techniques to Ensure the Safety and Quality of Donor Milk. Journal of Pediatric Gastroenterology and Nutrition, 64, 3, 353-361.
3. Klotz et al. (2017). High-temperature short-time pasteurisation of human breastmilk is efficient in retaining protein and reducing the bacterial count. Acta Paediatrica, 106, 5, 763-767.
4. Cavallarin et al. (2016). Pasteurization of human milk by a benchtop High-Temperature Short-Time device. Innovative Food Science & Emerging Technologies, 36, 228-233.

HOW MILK BANKING CAN SUPPORT BREASTFEEDING AND SAVE LIVES IN INDIA

Anne Hagen Grøvslien, Morten Grønn

The lack of breastfeeding support and routines that keep mothers and babies apart has been a hindrance to ensure breastfeeding among babies admitted to large governmental hospitals in India.
The Norway/India project "Improved New Born Care" was established to facilitate:
-A neonatology exchange programme organized by the International Collaboration Unit at Oslo University Hospital.
This project aims to improve the care of underprivileged newborns, in line with international standards.
This exchange programme aims to reduce neonatal morbidity and mortality by improving basic neonatal care. Focus areas are basic neonatal nursing care such as Kangaroo Mother Care (KMC), nutrition, breastfeeding and human milk bank and hygiene. The project also intends to increase multicultural understanding within health care.
An increased focus on the benefits of mother's milk, it will increase the frequency of breastfeeding and consequently the general nutrition status of the newborn. This again contributes in the reduction of a number of infections, improves growth and development, and all in all decreases morbidity and mortality among the babies. In addition, when mothers breastfeed, it is proven to prevent bleeding and improve recovery after delivery, and protects the mothers against diseases like ovarian cancer, breast cancer etc.
Norway has a long tradition and competence in this area, and Oslo University Hospital has contributed to the establishment of a human milk bank in West Bengal in 2013, in Jaipur, Rajasthan, 2015 and in Delhi 2017.
After nearly 5 years, 3 projects and many stays in India I've seen that it is possible to make important changes that will improve the care, also after the project period. One of the most important factors in this is the exchange of Indian nurses and doctors to Norway. Their return to India with new knowledge and training in teaching skills will ensure sustainability. The project hospitals in India are all large medical colleges with large number of students. We hope to see the knowledge spread to districts as well.
The interest from government and the establishment of many milk banks all over India during these years has created a lot of interest and a new needed wave to achieve the SDG's in India.

Article:

J Hum Lact 2009; 25; 206
Anne Hagen Grøvslien and Morten Grønn
Donor Milk Banking and Breastfeeding in Norway
https://www.norway.no/en/india/norway-india/news-and-events/new-delhi/news/the-nectar-of-life/

ESTABLISHING AND OPERATING VIET NAM'S FIRST HUMAN MILK BANK

Hoang Tran, Vinh Nguyen, Roger Mathisen, Chung Do, Tuan Nguyen, Ha Vu Nga, Nguyen Quynh, Nga Nguyen Tuyet, Kiersten Israel-Ballard, Kimberly Amundson Mansen

Da Nang Hospital for Women & Children: Dr Hoang Tran
Vietnam Ministry of Health: Dr Vinh Nguyen
PATH: Nga Nguyen Quynh, Nga Nguyen Tuyet, Kiersten Israel-Ballard, Kimberly Amundson Mansen
Alive & Thrive: Roger Mathisen, Chung Do, Tuan Nguyen, Ha Vu

The first Human Milk Bank (HMB) in Viet Nam was established in February 2017 at the Da Nang Hospital for Women and Children, through international, national, and local partnerships. The project is a successful example of global knowledge sharing and support to establish a HMB in a lower-middle income country without a HMB precedent.

To inform project design and ensure quality, safety, and local ownership, the team conducted a hospital assessment, formative research for behavior change communication, a baseline feeding study, and a learning exchange in Glasgow, Scotland. Staff were trained on hazard analysis and critical control points, and standard operating procedures. The HMB infrastructure, equipment and electronic data collection system were installed per international standards. A costing study and endline evaluation determined impact, feasibility, and sustainability.

Da Nang Hospital for Women and Children is a referral hospital in Central Viet Nam with 13,000-15,000 live births per year. The hospital's neonatal unit provides treatment for more than 100 babies with low weight, premature birth, or illness every day. After 7 months of operation, from February to August 2017, 340 potential donors were approached; 135 agreed to donate and 113 passed screening. More than 60% of the donors were mothers of preterm babies; 37% of the donors were volunteers from community. 830 liters were donated, 42% of donor milk were provided by mothers of preterm babies on kangaroo mother care during their stay in the hospital. Approximately 70% of donor milk passed pre- and post- pasteurization bacteria cultures. The HMB dispensed 523 liters for 1285 infants, 30% of whom were pre-term. Around 45% of the recipients came from the neonatal unit. The average length of use was 3 days.

The successful implementation of Viet Nam's first HMB is a result of 1) support from the Ministry of Health, Department of Health, and hospital leaders; 2) high levels of local ownership; 3) technical and financial support from partners; and 4) an existing emphasis on practicing optimal maternal and child care in the hospital (e.g., early essential newborn care, kangaroo mother care, breastfeeding promotion). Lessons learned will support establishment of additional HMBs, and hopefully facilitate national HMB Guidelines and health insurance coverage for donated human milk.

IMPACTS OF SHORT-TERM OUTCOMES OF ESTABLISHING THE FIRST BREAST MILK BANK OF IRAN IN AL-ZAHRA TEACHING HOSPITAL OF TABRIZ

Mohammad Baqher Hosseini[1], Mohammad Heidarzadeh[2], Shirin Khatibi Shahidi[3]

[1]Subspecialist (Neonatologist), Director of Human Breast Milk of TUOMS, Pediatrics Health Research Center of Tabriz University of Medical Sciences TUOMS.
[2]Subspecialist (Neonatologist), Associate Professor of Tabriz University of Medical Sciences
[3]Bachelor of Science in Nursing, Al-Zahra Teaching Hospital of Tabriz, Executive Officer of Breast Milk Bank of Tabriz University of Medical Sciences

As several studies and evidences have shown, breast milk is the best nutrition for infants and offers many health benefits for infants and mothers (1). It has also many benefits to health of infants in the short term, midterm and long term (2). The best source of nutrition for every infant is his/her own mother's breast milk. When maternal milk is inadequate or lacking, particularly for high risk or premature infants pasteurized donor milk is the next best option (3). Breast milk bank is a place to safely collect, pasteurize, store and distribute donated milk of mothers. In Europe there are at least 214 active Breast milk banks and let alone in Brazil 210 (4). The first breast milk bank of Iran has begun its activity under supervision and supports of UNICEF and Iranian Neonatal Health Office at Al-Zahra Teaching Hospital of Tabriz since June 2016. All the processes in this center are based on the guidelines presented by Human Milk Banking Association of North America (HMBANA), and the donating mothers receive all health and laboratory tests free of charge. These tests include: VDRL, HBs Ag, Hcv Antibody, HIV 1,2 and HTLV1,2. The donated mother milks are collected safely from the houses of the donors and are transferred to the bank. Pasteurization is done through the Holder method (heating the milk up to 62.5°C and then suddenly cooling it down to 4°C) and is done by fully automated pasteurizing machine (made in IRAN ordered by neonatology department of the University).
Based on the results released by Dr. Mohammad Bagher Hosseini in an Iranian National Journal, feeding babies with pasteurized donated breast milk had the following benefits in the last year:

1. The decrease of mortality rate of high risk neonates from 11% to 7.5% in NICU of Al-Zahra Teaching Hospital of Tabriz.
2. Significant reduction in incidence of necrotizing Enterocolitis (NEC) among very low weight infants in neonatal unit and NICU of Al-Zahra Teaching Hospital of Tabriz (from 10% to 3%).
3. Significant reduction in late onset sepsis (from 7% to 5%).
4. Reduction of the cost and the use of intravenous antibiotics in these units.

Following these achievements, the Iranian Ministry of Health and Medical Education decided to support establishing more breast milk banks in the national level for the coming years.

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Keywords: breast milk bank, Al-Zahra Teaching Hospital, Tabriz

INTEGRATING HUMAN MILK BANKING INTO NUTRITION AND NEWBORN POLICIES: A GLOBAL APPROACH

Kiersten Israel-Ballard

PATH: Kiersten Israel-Ballard, Juliana Muiruri, Nga Nguyen Quynh, Nga Nguyen Tuyet, Ruchika Sachdeva, Praveen Kandasamy, Kimberly Amundson Mansen

Provision of donor human milk from a human milk bank (HMB) is a WHO recommendation when vulnerable infants lack their own mother's milk. Due to lack of global HMB standards, establishing country-specific guidelines and aligning policies remains a challenge. Systems strengthening is needed to foster integrated HMB systems for increasing effectiveness.

Using a systematic approach, PATH provided technical assistance in South Africa, India, Vietnam and Kenya for multi-sectoral engagement in establishing guidelines and policies. Each included a range of partnerships; critical collaboration was with local or national ministries of health to ensure sustainability and ownership.

This process involved critical steps: identifying local champions; establishing a core group of technical and policy leaders; conducting formative, baseline, or landscaping exercises to understand the current situation; reviewing newborn and nutrition policies to inform the policy environment; facilitating a learning exchange with a model HMB program; convening multi-sectoral stakeholder meetings; conducting Hazard Analysis and Critical Control Points quality control trainings; conducting guidelines reviews of existing systems; convening multi-sectoral workshops to develop guidelines including global HMB experts; and launching guidelines through official government systems. As a result of this approach, HMB guidelines have been or are currently being developed in each country. At the global level, policy review and convening of newborn and nutrition policy leaders has taken place to identify gaps and map the process for strengthening and aligning global policies.

Ensuring global and local guidelines and policies reflect the role of HMBs in newborn care is essential to scaling up effective programs worldwide.

ANTI-HCMV ACTIVITY OF COLOSTRUM AND MILK FROM MOTHERS OF PRETERM INFANTS AND ROLE OF COLOSTRUM-DERIVED EXOSOMES

M. Donalisioa, M. Rittà[a], A. Civra[a], Rachele Francese[a], Laura Cavallarin[b], Marzia Giribaldi[b], G.E. Moro[c], P. Tonetto[d], E. Bertino[d], D. Lembo[a]

[a] Department of Clinical and Biological Sciences, University of Torino, 10043 Orbassano, Torino, Italy
[b] ISPA, Turin Italy
[c] Italian Association of Human Milk Banks, Milano, Italy
[d] Neonatal Care Unit, University of Torino, Torino, Italy

Transmission of some viral pathogens by breast-feeding is an important risk for pre-term infants since they are more susceptible to develop severe clinical symptoms. Despite human cytomegalovirus (HCMV) is commonly excreted in breast milk from seropositive women, only a low percentage of exposed infants will acquire postnatal CMV infection. This observation points towards a protective effect of breast milk components against HCMV transmission to the breastfed child. The aims of our study were: 1) to assess the anti-HCMV potency of breast milk from a cohort of pre-term mothers at different stages of lactation 2) to evaluate the antiviral role of immune factors of colostrum, like secretory IgA, and non immune factors, like exosomes. 3) to evaluate the impact of Holder and HTST pasteurizations on the antiviral properties of breast milk.
The study revealed that all milk samples exerted significant anti-HCMV activity in vitro, although to a different extent and with interpersonal variability. Interestingly, colostra from HCMV IgG-positive mothers exhibited higher antiviral activity than samples from seronegative mothers. We demonstrated a partial contribution of sIgA to antiviral activity of colostrum and identified colostrum-derived exosomes as new anti-HCMV constituents of human milk. Preliminary data indicate the ability of exosomes to inhibit the attachment of HCMV to cells. Finally, we evidenced that Holder pasteurization significantly reduced anti-HCMV activity of breast milk, whereas HTST did not affect it.

HUMAN MILK LINK: A NEW MODEL FOR HOME COLLECTION OF DONOR HUMAN MILK

Guido E. Moro, Antonella Schiavello

Italian Association of Human Milk Banks (AIBLUD)

Human milk donation is not only a matter of generosity or sensibility. It is also a practical problem. Sometimes, lactating mothers have difficulties to reach a Human Milk Bank (HMB) to donate their milk, particularly in big cities. Here the necessity to provide donating mothers with a service to collect milk at home and to transfer the milk to a HMB.
Human Milk Link (HML) is a new service, completely free of charge for the donating mothers, carried on in a highly professional way, established in Milan (a city with 1,300,000 inhabitants) in the year 2016, with the purpose to support lactating mothers who want to donate their milk to a HMB. The service is granted by a private company and organized by the Italian Association of Human Milk Banks (AIBLUD).
The main advantages of HML are: 1) a highly professional service carried out by a midwife skilled in breastfeeding and neonatal problems; 2) cold chain maintenance with a transport freezer; 3) sealing of the bottles containing the donated milk at the donor's home; 4) continuous and regular home collection service even for small volumes of human milk; 5) free of charge supply of breast-pump, sterile bottles, and a frig-thermometer to the donors; 6) distribution to lactating mothers of leaflets and brochures to increase the knowledge of breastfeeding (empowerment); 7) promotion of the enrollment of new donors; 8) reduction of the costs of the National Health System.
The results of the first year of activity of the HML service will be presented.

BACILLUS CEREUS NEONATAL SEPSIS AND DONOR HUMAN MILK: GUILTY OR NOT GUILTY?

Jean-Charles Picaud[1,2,3], V Rigourd[3,4], R Buffin[2,3]

[1] Neonatal unit, Hopital croix rousse, Lyon, France
[2] Auvergne-Rhone-Alpes regional human milk bank, Hopital croix rousse, Lyon, France
[3] French human milk bank association, Neonatal
[4] Paris regional human milk bank, Hopital Necker, Paris, France

In September 2016, two very preterm babies hospitalized in two different hospitals in Paris died from a severe sepsis related to bacillus cereus in their first week of life. An investigation was launched to analyze possible commonalities between them. Since the two children had received donor milk from the Paris milk bank, it was closed pending the results. The investigation examined the diet of children (enteral and parenteral) and their environment. As Paris region is the most populous region in France, neonatal units take care of about 2,000 very preterm infants each year. The closure of the Paris lactarium lasted 5 weeks pending the totality of the microbiological results and authorization to re-open the lactarium by the Ministry of Health. Finally, these results showed that pasteurized donor milk was not involved, as in all other cases of bacillus cereus infection published in the literature.
Bacillus Cereus is a sporulated Gram-positive spore-forming rod that resists to usual cleaning solutions and alcoholic solutions used for hands disinfection. It produces toxins, including a thermostable toxins. Neonatal sepsis related to Bacillus cereus are particularly severe (bacteremia, septic shock, intestinal perforations, meningitis) were described and were related to laundered linen, ventilator circuits and air flow sensors, ultrasound probes, balloons used in manual ventilation, parenteral solutions, alcohol prep pads).
During this period, premature infants hospitalized in the Paris area received donor milk from other milk banks in France, notably the Marmande milk bank, as it is the only milk bank that produces lyophilized pasteurized donor milk. Lyophilization is used in France because powdered human milk is more easy to store and transport in French overseas territories. This peculiarity was very useful during this crisis.
This event highlights that 1) breast milk have never been implicated in neonatal Bacillus infection, 2) neonatal staff and hygiene team should not focus on human milk and need to check the newborn's immediate environment, 3) the network of 36 human milk banks, including a bank producing lyophilized donor milk helped to provide hospitalized preterm infants with human milk during that crisis.

MODULATION OF THE HUMAN MILK MICROBIOTA

Juan M. Rodríguez

Dpt. Nutrition, Food Science and Food Technology, Complutense University of Madrid, Spain; E-mail: jmrodrig@ucm.es

The microbiota of healthy infants born at term by vaginal delivery without receiving any medication and fed exclusively with milk from their own mothers is considered to be the prototype of the ideal microbiota for that age. However, this standard of optimal bacterial colonization may be altered by type of delivery, diet, antibiotic use and/or premature birth. Preterm infants have a very different postnatal experience, in general, than those born at term. They are very often born by C-section or after premature or prolonged rupture of membranes, usually receive antibiotics and other medications, are immersed in a hospital environment for relatively long periods, have a delayed enteral feeding (and, when started, may not be with the milk of the their own mothers), have an altered gastric barrier and, frequently, their mothers suffer microbial infections or dysbiosis in the digestive or genitourinary tracts (including mammary glands). All these factors alter the normal vertical mother-infant transmission of microorganisms during and after labour, leading to the acquisition of an aberrant gut microbiota, reduced nutrient absorption capacity, an altered intestinal barrier and poorly regulated immune system. In this situation, the intestinal epithelium lacks several of the mechanisms of protection and, consequently, is much more susceptible to being invaded by pathogens; this fact also induces the production of pro-inflammatory cytokines which, in turn, further compromise intestinal defence mechanisms. The imbalance between epithelial cell injury and repair leads to a vicious cycle of poor digestion, bacterial invasion, immune activation and inflammation. It is worldwide recommended that preterm infants receive mother's own milk (MOM) when available or pasteurized donor breast milk (DBM) when MOM is unavailable. In most NICUs donor breast milk is pasteurized due to safety concerns and, particularly the potential presence of viruses which presence is not routinely screened in donors, such as cytomegalovirus. Pasteurization of DBM kills the vegetative bacterial cells present in milk, including the microbes that are indigenous to human milk and play a beneficial role for the infant. Different strategies have been proposed in order to try to provide human milk bacteria to preterms fed with donor milk. In this context, the use of well characterized probiotic strains isolated from colostrum or milk of healthy women stands out since it is already available and they will be progressively applied in NICUs. Most probably, a better knowledge of the human milk microbiota and its function will allow the creation of complex human milk-specific minimal microbiotas. Fortification of donated milk with such minimal microbiota may be very useful for those cases where it is not possible to have milk from the mother. Coating the internal surfaces of enteral feeding systems with probiotic bacteria (or minimal microbiotas) isolated from human milk may also improve the gastrointestinal colonization of preterm infants by reducing their colonization with high risk hospital clones. Recently, the analysis of the internal surfaces of the enteral nutrition systems by means of culture-dependent and culture-independent techniques and scanning electron microscopy has revealed the formation of complex bacterial biofilms, mainly composed of high risk of the hospital environment, which act as a source of contamination for food passing through them and, consequently, for the gastrointestinal tract of children. On the other hand, most mothers of preterm infants are able to express at least small amounts of their own milk and although it may be of insufficient volume to meet the daily nutritional requirements of their infant, it can still provide lasting health benefits. A recent study investigated if DBM could be inoculated with MOM from mothers of preterm infants to restore the live microbiota. The results indicated that DBM incubated with 10–30% v/v of the MOM for 4 h was a reasonable restoration strategy.

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WHO GETS DONATED HUMAN MILK IN GLASGOW?

Judith Simpson

Consultant Neonatologist, Royal Hospital for Children, Glasgow & Clinical Lead for the Greater Glasgow & Clyde Human Milk Bank

Historical background

The only human milk bank (HMB) in Scotland first opened in Glasgow in 1978. It was hosted in the Queen Mother's Hospital, a large maternity unit that was co-located with the local children's hospital, the Royal Hospital for Sick Children. Due to the close proximity of the two hospitals the HMB provided milk to premature babies in the neonatal unit as well as to more mature babies who had undergone a variety of gastrointestinal or cardiac surgeries in the children's hospital. In the early days the HMB was very small with less than 20 babies receiving milk each year. The workload remained fairly constant for the next three decades but from 2005 onwards there was considerable service expansion, driven mainly by renewed interest from clinicians across the country in the role of donated human milk (DHM) in the management of sick and / or preterm babies. In June 2013 the HMB had expanded to such an extent that it was officially recognised and funded as a Scotland wide service, ensuring that any baby in the country could access DHM if clinically indicated.

Who currently receives DHM?

There has been a year on year increase in milk volumes pasteurised by the HMB and recipients of DHM over the time period 2010-2016. This trend has been most obvious since the establishment of a Scotland wide service in 2013 although it was apparent before this (Table 1). Over half of the milk is now transferred out of Glasgow for use throughout Scotland.

Table 1 Workload statistics for the HMB 2010-2016

	Year						
	2010	2011	2012	2013	2014	2015	2016
Donors (number)	45	64	77	100	159	153	156
Milk pasteurised (bottles)	5270	8547	9076	12705	15823	18281	23482
Recipients (number)	89	113	144	194	206	324	440
Proportion of milk used out with GGC (%)	NA	7	21	39	47	60	63

We have recently audited local DHM usage against our current clinical guidelines; which recommend prematurity < 32 weeks, congenital or acquired bowel disease and congenital heart disease as the main indications for use when there is insufficient mother's own milk (MOM).

We identified 165 recipients of DHM (5.3% of all neonatal unit admission) over a three year period from 2014-2016. 114 babies (69%) were < 32 weeks gestation (mean ± SD; 27.8 ± 2.2 weeks) and 51 (31%) were ≥ 32 weeks gestation (35.3 ± 2.8 weeks). In the < 32 weeks group the majority 103 (90%) received DHM as a supplement to MOM whilst in 11 (9.6%) it was used in the absence of MOM. Two babies in this group had co-existing congenital heart disease. In the ≥ 32 weeks group over half (28) received DHM because of prematurity, 12 due to bowel disease, 6 due to heart disease and 5 for other reasons. The median (IQR) age at introduction was 6 (3, 19) days in the less mature group versus 5 (3, 12) days in the more mature group and the median (IQR) duration was 14 (3, 35) days versus 2 (0, 9) days.

Our data demonstrate that a significant majority of babies in our unit receive DHM in line with our current guidance. It should however be acknowledged that evidence base supporting this guidance is limited and further research is required in the area.

EVALUATION OF A NEW HUMAN MILK DONKEY FORTIFIER: FORTILAT STUDY

Paola Tonetto[1], Francesco Cresi[1], Laura Cavallarin[4], Marzia Giribaldi[4,5], Elena Spada[1,2], Guido Moro[3], Enrico Bertino[1], Laura Reghin[1], Chiara Taberna[1], Francesca Pozzati[1], Coscia Alessandra[1]

[1] Neonatology and Neonatal Intensive Care Unit, Department of Public Health and Pediatrics, University of Turin, Italy
[2] Laboratory of Medical Statistics, Biometry and Epidemiology "G.A. Maccacaro", Department of Clinical Sciences and Community Health – University of Milan, Italy
[3] Italian Association of Human Milk Banks (AIBLUD)
[4] Institute of Sciences of Food Production, CNR, Grugliasco (TO), Italy
[5] Agricultural Engineering and Food Technology Research Center, Turin Laboratory, CREA, Italy

BACKGROUND: Very preterm newborns (gestational age lower than 32 weeks) and Very Low Birthweight (VLBW) infants (birthweight lower than 1500 grams) currently represent the majority of patients cared in Neonatal Intensive Care Units (NICU). The increase of the survival rate for these newborns, due to improvements in perinatal care, has opened new perspectives regarding their outcome and has a significant impact on their health status in adulthood.

In these groups of infants, nutrition represents a fundamental factor not only for neonatal survival and short-term outcome, but also for long-term consequences and quality of life. The main issue is to ensure an adequate qualitative and quantitative nutrition, particularly in terms of protein intake, which is the main cause of post-natal growth deficit [1].

Human milk is the recommended food for all neonates including preterm infants [2]. Breast milk alone, however, does not meet the recommended nutritional needs in preterm infants [3]. The most common strategy is to cope with potential nutrient deficits by supplementing breast milk with additional nutrients (mainly proteins and minerals) to satisfy the special nutritional requirements of these infants[4]. At present commercially available fortifiers are based on bovine milk (BM), whose protein intake has raised concerns because of its association with allergies [5] and a possible role as a trigger of intestinal inflammation in preterm neonates [6].

In previous studies we observed that donkey milk (DM) was well tolerated in a group of highly problematic cow's milk allergic children [7]. Our hypothesis is that feeding preterm infants with HM supplemented with fortifiers derived from DM will improve the feeding tolerance.

AIM. The purpose of the present randomized clinical trial is to compare the use of DM-derived fortifiers with commercial BM-based fortifiers in infants with birthweight ≤1500 g or gestational age < 32 weeks in terms of nutritional tolerance.

METHODS. The study was performed in the NICU of the University, City of Health and Science of Turin, and was approved by Ethics Committee. Informed written consent was obtained from parents before enrollment. The inclusion criteria were: gestational age < 32 weeks or birthweight ≤ 1500 grams, exclusive feeding with human milk and enteral feeding ≥80ml/kg/day reached within the first 4 weeks of life. The neonates affected by severe gastrointestinal pathologies, chromosomal abnormalities or major malformations, metabolic diseases, intravascular disseminated coagulopathy, shock, patent ductus arteriosus requiring medical care or surgery at time of randomization, and severe renal failure were excluded.

Before the beginning of this study, approximately 45% VLBWI or preterm infants admitted to our NICU had at least one episode of feeding intolerance. A 25% reduction in the frequency of the primary endpoint was regarded as the minimum clinically important difference (MCID): 62 infants per arm (planned study) had to be recruited to ensure an 80% study power, if the risk of type I error is set to the usual level of 5%. Since the occurrence of primary endpoint in our study population resulted to be much lower than that assumed in the protocol, and no adverse effect was observed, when the planned study size was achieved, it was decided to continue the enrollment until the end of the stock of FortiLat (extended study).

Infants were randomized 1:1 by a software-generated list in two arms: BF-arm (Bovine Fortifier) and DF-arm (Donkey Fortifier). Observation period was defined as 21 days since the beginning of fortification. In BF-arm, the human milk was fortified with commercial multi-component fortifier (FM85 Nestlè) and protein concentrate (Protifar Nutricia), derived from bovine milk, while in DF-arm with multi-component fortifier and protein concentrate derived from donkey milk (Fortilat), produced by an ultrafiltration

process of pasteurized donkey milk in a pilot stainless steel.
Advancing of enteral feeds was strictly regulated according to the feeding protocol adopted in our NICU, based on the evaluation of signs of feeding intolerance.
The primary endpoint was the occurrence of at least one episode of feeding intolerance, defined as interruption of enteral feeding for at least 8 consecutive hours during the observation period. We also evaluated the total number of feeding intolerance episodes and the number of feeding interruption episodes of any duration.
Statistical analysis. In the intention-to-treat population (ITT, all randomized infants) failure included the occurrence of at least one episode of feeding intolerance, NEC, death, and transfered before 21 days of observation. The difference in the occurrence of failure (primary endpoint) between the two arms of the trials was tested with Fisher's exact test.

RESULTS. A total of 124 neonates were enrolled in Planned study (BF-arm n= 62; DF-arm n=62). Further 32 infants were enrolled in Extended study (BF-arm n= 79, DF-arm n=77).
The primary risk of failure in the planned sample has resulted lower in DF-arm than in BF-arm with a Relative Risk Reduction (RRR) [CI(95%)] of 0.40 [-0.27; +0.72]. The trend of these results was similar in the extended sample: 0.46 [0.09; +0.73].
The mean [IC(95%)] of the total episodes of feeding intolerance and the mean [IC(95%)] of enteral feeding interruptions of any duration was lower in DF-arm (0.11 [0.01; 0.21] and 0.27 [0.12; 0.42] respectively) than in BF-arm (0.20 [0.07; 0.34] and 0.39 [0.20; 0.57] respectively).

DISCUSSION. Our first results about donkey milk based fortifiers are promising. Compared to the bovine fortifiers, the donkey milk based fortifier seems to have a better feeding tolerance even if these results are not significant.
When we extended the study including more patients (extended sample), we observed a further slight improvement in feeding tolerance in favor of the DF-arm. We can therefore hypothesize that increasing the sample size we would observe a significant better feeding tolerance in DF-arm.
To confirm our data it will be useful to perform a multicenter study in order to increase the sample size. It will be interesting to analyze metabolic, auxological and neurodevelopmental outcomes in order to determine if the use of donkey milk fortifiers will have also long-term benefits.

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PROTECTIVE EFFECT OF DONOR HUMAN MILK AGAINST RETINOPATHY AND LUNG INJURY

Sergio Verd

Department of Primary Care, Balearic Health Authority, Palma de Mallorca, Spain

Oxidative stress (OS) is the common endpoint leading to a wide spectrum of diseases like bronchopulmonary dysplasia (BPD) or retinopathy of prematurity (ROP). Premature infants are unprepared for extrauterine life in an oxygen-rich environment and exhibit a unique sensitivity to the toxic effect of free radicals (FR). These are highly reactive species as they contain unpaired electrons in their outer orbital; they react with cellular lipids, proteins and nucleic acids, leading to organ injury and dysfunction (1). The use of antioxidants in preterm newborns particularly exposed to OS and at risk for BPD or ROP represents a logical strategy to ameliorate FR injury (2). Most studies have shown that not only fresh human milk but also frozen or pasteurized human milk have a higher antioxidant capacity than formula, therefore we expect improved outcomes of infants fed human milk especially with regard to ROP or BPD (3-5). The first case of ROP was found in 1941, in 1945 Terry reported 117 new cases and in 1953 10,000 infants worldwide had been blinded by ROP. We now know which new approaches to neonatal care triggered the first outbreak of ROP in the forties. Oxygen was administered with more ease since piped medical gas was delivered from outlet walls; and soon after premies' difficulty in absorbing fat was described, most of them received a cow's-milk mixture. In 1951, Dame Kate Campbell highlighted that ROP was a problem in USA where oxygen was used freely and was rare in UK where oxygen was used sparingly. Three trials in the sixties addressed the question of restricted versus liberal oxygen administration, they showed that restricting oxygen exposure in the early neonatal period reduced the incidence and severity of ROP with accompanying increasing death and cerebral palsy rates. After the first wave of retinopathy of prematurity, the restriction of inspired oxygen to 50% resulted in 16 deaths per case of blindness prevented (6). Oxygen administration is better controlled nowadays than in the past, but optimum oxygenation to balance risk of retinopathy of prematurity against improved survival is still unknown (7). Further studies have identified a number of risk factors for ROP like gestational age, infection, ductus, intraventricular hemorrhage, transfusion, early weight gain or hyperglycaemia, but clinical interventions to prevent ROP have been limited because identified risk factors for ROP are difficult to alter in clinical practice. On the other hand, observational studies have found that formula feeding is a strong predictor of ROP. However, there are conflicting reports regarding the association of human milk with development of ROP. Possible sources of variation across studies of HM and ROP include the patients' gestational age, the age at which enteral feedings are initiated, the amount of HM fed to infants, the type (MOM versus DM) and the composition of the HM (8). To summarize, If human milk lowers the risk of severe ROP, it is more likely to be effective when the antioxidant components of HM are provided earlier in life during a time when infants are exposed to high levels of OS. A threshold mechanism for ROP protection has been suggested; therefore tiny amounts of HM are not expected to reduce ROP rates. Finally, three prior studies suggest a protective effect of donor milk feedings against ROP after controlling for potential confounding variables. In the late 1950s, a pediatric radiologist recognised a pattern of hyperinflation and cyst-like parenchimal infiltrates among preterm infants that was named BPD. Over time, the use of prenatal steroids, CPAP and surfactant have driven enhanced outcomes of this condition. However, the incidence of BPD persists at roughly 40% for infants below 29 weeks (9). Limited data exist regarding the impact of breastfeeding on BPD, but multivariable analysis has demonstrated a 9.5% reduction in the odds of BPD for every 10% increase in mother's own milk (MOM) dose. Thus, it is well established that high-dose MOM feeding may be an inexpensive strategy to help reduce the risk of this costly morbidity (10). On the other hand, five studies dating back to 2005 have reported lower incidence of BPD as well as less oxygen and respiratory support requirements associated with the introduction of DM as a supplement.

ABBREVIATIONS

Bronchopulmonary dysplasia (BPD); Free radicals (FR); Oxidative stress (OS); Retinopathy of prematurity (ROP).

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RECOMMENDATIONS FROM THE WORKING GROUP OF EMBA ON GUIDELINES FOR IMPLEMENTING A HUMAN MILK BANK

Gillian Weaver

Director and Former President EMBA (2012 – 2015)
International Human Milk Banking Specialist and Consultant / Co-founder and Director Hearts Milk Bank, UK

The European Milk Bank Association (EMBA) represents human milk banking throughout the continent of Europe. There are currently 215 human milk banks operating in 25 countries in Europe with a further 16 milk banks planned or in development/close to opening, including the first ones in modern times in 3 countries (Turkey, Slovenia, Rumania). The current status of human milk banks in Europe is maintained on the EMBA website[1]. The 215 milk banks incorporate newly established organisations as well as ones that have links to the very early milk banks founded over a century ago. They include national and regionalised services as well as many very small operations serving a single neonatal unit. The volumes of donor human milk (DHM) tested and processed and provided to sick and preterm infants vary widely from country to country[1] as well as within a single country[2] as do the criteria for receipt of donor human milk. There are internationally published recommendations for human milk banks available from France[3], Italy[4], and the UK[5]. Countries with nationally recognized guidelines include Austria, Denmark, Germany, Norway, Slovakia, Spain, Sweden and Switzerland. Given the very long and varied historical backgrounds to some of the milk banks of Europe, it is not surprising that a survey reveals many differences between the operational practices of the countries involved. In some cases the guideline recommendations lead to fundamental differences in practice. For example most recommend that all donor human milk should be pasteurised (using Holder pasteurisation) however in Norway mainly raw (non heat treated) milk is provided by the country's 12 milk banks and in around half of the 15 official human milk banks in Germany both raw and pasteurised milk is available and used in accordance with the gestation and health of the recipient[2]. One of the clear objectives of the EMBA[1] is to develop Europe wide guidance for milk banks. Such guidelines will optimise safety within the milk banks that are currently operational as well as offer much needed assistance to those who are establishing a new milk bank (especially if in a country without experience or a recent tradition of human milk banking and the use of DHM). A working group was established to address this. Membership of the group has included representatives from Austria, France, Germany, Italy, Norway, Poland, Portugal, Serbia, Slovenia, Slovakia, Spain, Switzerland and the UK. The initial task of the group was to consider all the guidelines that are available and assess where there was consensus within the recommendations and where clear evidence to support recommendations and practices exists. A survey of current practices was completed by the working group members. A useful tool in developing the structure for the survey was the global implementation framework6 published by the NGO PATH7 following the 2012 Technical Advisory Group convened and hosted by PATH at their headquarters in Seattle, USA. The framework includes a compilation of current practices in human milk banking globally using a series of sections incorporating all the steps within the milk banking process from donor recruitment to delivery of DHM to the recipient. Once completed and uploaded into a single document, the survey and subsequent discussions at EMBA Working Group meetings held in Milan, Italy and Lyon, France highlighted where there is international consensus within Europe, where there is near consensus and where practices and recommendations differ significantly. Using this data as a basis and considering the evidence base for the recommendations it was then possible to compile a list of agreed recommendations that are evidence based and that can form the basis of EMBA recommendations. These will be presented together with a description of how the EMBA recommendations will be disseminated and available in the near future.

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NEW ACHIEVEMENTS IN HIGH-PRESSURE PROCESSING OF HUMAN MILK

Aleksandra Weso□owska[1,2], Elena Sinkiewicz-Darol[1,2,3], Olga Barbarska[1,4,5], Kamila Strom[4], Ma□gorzata Rutkowska[6], Katarzyna Karzel[7], Gabriela Ol□dzka[4], Maria Katarzyna Borszewska-Kornacka[8], Sylwester Rzoska[6].

[1]Medical University of Warsaw, Department of Neonatology, Laboratory of Human Milk and Lactation Research at Regional Human Milk Bank in Holy Hospital, Poland;
[2]Human Milk Bank Foundation, Poland;
[3]Ludwik Rydygier' Provincial Polyclinical Hospital in Torun, Human Milk Bank, Poland;
[4]Medical University of Warsaw, Department of Medical Biology, Warsaw, Poland;
[5]Medical University of Warsaw, First Department of Obstetrics and Gynecology, Warsaw, Poland;
[6]High Pressure Physics, Polish Academy of Science, Poland;
[7]Warsaw University, Faculty of Psychology, Poland;
[8]Princess Anna Mazowiecka University Hospital, Neonatal and Intensive Care Department of the Medical University of Warsaw, Poland.

INTRODUCTION: Most milk banks in the world, to assure the safety of banked human milk, use holder pasteurization (HoP). This method provides microbiological safety of milk, but significantly reduces contents of bioactive components of human milk. High-pressure processing (HPP) is a nonthermal technology that is being increasingly applied in food industries worldwide. It was proposed that this method can be used as an alternative to HoP in milk banks but its impact on the immunologic, enzymatic and hormonal components of human milk is not yet detailed evaluated.

Aim of the study: The aim of the our study was to compare the effects of HPP in different variants 1) 600 MPa 2) 200+400 MPa 3) 100+600MPa 4) 200+600MPa and HoP (62,5 OC; 30min) on the leptin, adiponectin, insulin, hepatocyte growth factor (HGF), lactoferrin and IgG contents in breast milk samples.

Methods and equipment: Holder pastreurization was done in real working conditions at Regional Human Milk Bank in Warsaw at Holy Family Hospital on S90 Human Milk Sterifeed pasteurizer (Sterifeed, Medicare Colgate Ltd). The whole process takes not longer that 100 minutes with defrosting stage, heating to 62.5 oC for 30 minutes +/- 0.5o C and rapidly cooling to 4oC. The control of pasteuriser using calibrated probe was done in every cycle.
High Pressure Single Vessel Apparatus U4000/65 used in these research has been developed in 2010, designed and constructed by Unipress Equipment.
The main features of the Apparatus U4000 are the following:

- Treatment chamber volume: 0,95 l, diameter 2r = 65 mm
- Wide range of working pressure up to 600 MPa and temperature:-10□C…+80□C (pressure of up to 600 MPa is generated in 20-30 s; the release time is less than 1 s)
- The temperature sensor located on the axis of the chamber, 20 mm below its top.
- Test for the HPP processor external pumping of pressure
- Uniform temperature distribution (pressure vessel provided with thermo-insulating liner)
- Corrosion resistance (Apparatus made of stainless steel)
- Quick upper seal-less closure (easy loading and unloading samples)
- Measuring connections (for in-vessel pressure and temperature measurement)
- Conformity with EC directive for high pressure with the Pressure Equipment
- Manual and automatic control modes

Milk samples were obtained from women during 2-6 weeks of lactation who passed screening as a regular milk donor. Post treatment culture showed no endogenous bacterial contamination in any tested HPP option
Concentrations of selected components were determined using sandwich ELISA method by commercially available tests (

R&D Systems).
Results: The contents of all analyzed components were significantly decreased by HoP, leptin 32,19%, adiponectin 32.79%, insulin 33.40%, HGF 89.72%, lactoferrin 62%, IgG 60%. All HPP variants caused the increase in leptin concentration, respectively 1) 182% 2) 186% 3) 190% 4) 147%. No significant changes were found in concentration of insulin, HGF and lactoferrin in milk samples after HPP as compared to raw milk. Retention of insulin after HPP was 1) 88% 2) 95% 3) 82% 4) 90% HGF 1) 36%, 2) 97%, 3) 39% 4) 43%), lactoferrin 1) 58% 2) 80% 3) 59% 4) 65%. Only one HPP variant 200 + 400 MPa preserved adiponectin (39%) and IgG (79%) better than HoP. Our results showed that High Pressure Processing leads to greater preservation of some bioactive components, insulin, adiponectin, HGF, lactoferrin, IgG compared with HoP, even with increase availability of leptin with respect to the raw milk.
Conclusion

Effect of supplementation of mother's milk by pasteurized donor milk is widely studied. Providing safe donor milk is the priority in the NICU patients.
HPP may be a safe promising alternative to HoP that can be used in milk banks without significant damage to human milk components. Preservation in pastrurized milk important hormones as adipocytokines, insulin and hepatocyte growth factor could affect, not only short, but late long term effects of the intervention in feeding preterm infants, especially LBW and VLBW newborns. Therefore we are going to scale down the equipment was used in the current study and introduced U4000 prototype in hospital setting.
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ORAL COMUNICATIONS

C01
DONOR HUMAN MILK AFTER TWO YEARS OF LACTATION – COULD IT IMPROVE THE MACRONUTRIENTS COMPOSITION FOR PRETERM INFANTS?

M. Czosnykowska-#ukacka

Introduction: According to recommends all preterm infants should receive human milk: own mothers milk OMM or donor human milk DHM, if OMM is unviable. Fortification of OMM and DHM is required to meet the high nutritional needs of the preterm infant. If human milk (OMM or DHM) is used for feeding preterm infants less than 1000 g at birth, ESPGHAN recommend use of a human milk fortifier to increase the protein content of the feeding. Fortification to achieve a protein intake of 4.0 to 4.5 g/kg per day improves rates of weight gain and indices of protein nutritional status. The aim of this study: was to show the variability in HM composition from an infant's own mother's milk (OMM) or pooled HM from the milk bank. The second objective was to evaluate the macronutrients in the milk of two years breastfeeding mothers and compare the results with the ESPGHAN recommendation for preterm infants. Material and methods: The macronutrient composition of 41 samples of OMM, 38 DHM and 15 of two years breastfeeding mothers was determined using Mid-infrared milk analyzer (Miris, Sweden). Results: The macronutrient variability was high. Mother's milk after two years of lactation contain the macronutrient concentration of fats and proteins on average two and a half times higher than DHM and OMM. Energy was also two times higher in comparison to OMM and DHM. Conclusion: Using long term breastfeeding mother's milk for extremely low birth weight preterm infant as a DHM may provide nutritional needs in protein and fat for these babies.

C02
THE DONATED MILK OLIGOSACCHARIDES ARE NOT AFFECTED BY PASTEURIZATION AND FREEZE-DRYING

N.M. KANG

Background and Objectives: Human milk oligosaccharides (HMOs) are known as important factors in neurologic and immunologic development of neonates. Moreover, freezedrying seems to be promising storage method for better functions of human milk banks. However, the effects of pasteurization and freeze-drying on HMOs were not evaluated yet. The purpose of this study is to analyze and compare HMOs profiles before and after the pasteurization and freeze-drying. Methods and Study Design: Totally nine fresh human milk samples were collected from three healthy mothers at first, second, and third week after delivery from each mother. The samples were treated with Holder pasteurization and freeze-drying. HMOs profiles were analyzed by MALDITOF/TOF mass spectrometry and compared between samples before and after the treatments by bioinformatics analysis. Results: Human milk samples showed significantly different HMO patterns between mothers. However, HMOs were not affected by lactation periods within 3 weeks after delivery ($r2 = 0.972 \sim 0.999$, $P < 0.001$). Moreover, both of pasteurization and freeze-drying were found not to affect HMO patterns in a correlation analysis ($r2 = 0.989 \sim 0.999$, $P < 0.001$). Conclusion: HMOs were found not to be affected by pasteurization and freeze-drying. In addition, there were large differences between mothers. As significant changes of HMOs were not found after these treatments, we hope that introducing freeze-drying in human milk banks would be supported by the present study. However, the storage length without composition changes of HMOs after freezedrying needs to be evaluated in the further study.

C03
IMPROVING MILK PROCESSING IN NORTH AMERICA: A MATHEMATICAL MODELING APPROACH

L. Maillart

Because donor human milk varies in nutrients from donor to donor, and because it is beneficial for physicians to prescribe donor human milk based on a baby's individual needs, many HMBANA milk banks practice "target pooling." These banks use analyzers to determine the fat, protein and lactose content of each deposit. Deposits from several donors are then pooled together to create milk with certain calorie and protein profiles. Once pooled, the bottled milk is broken down into batches and assigned to pasteurizers. This three-step process involves challenging operational decisions, especially for high-volume banks. To support these bank's managers and laboratory staff, we developed a novel mathematical optimization model that simultaneously determines the daily pooling, batching and pasteurizing decisions for a given set of analyzed deposits so as to meet specified production targets. As a secondary objective, the model minimizes the labor required to achieve these targets. Retrospective analysis of one year of the Mothers' Milk Bank of North Texas (MMBNT)'s operational decisions revealed that MMBNT rarely combines deposits from more than two donors and rarely splits deposits across pools. Our analysis suggests that using the model would have led to a 14% improvement in pooling outcomes, with a small decrease in labor. MMBNT has been using the model for several months and have found that they are better able to meet their production needs. As a result, they now have significant surpluses, rather than perpetual shortages, of the most clinically desirable milk, and no longer overproduce very high calorie milk.

C04
BIOLOGICAL INTEGRITY· ETHICS AND CONTROL OVER HUMAN MILK

M. Rice

This session will look at human milk companies seeking to aggregate, control and create profit from banked human milk. In the United States, in absence of federal health policy and consumer regulation/ protection, companies are emerging seeking to build commercial markets for human milk often under the guise of improving the economic status of women and infant health. We will examine companies currently paying for milk both domestically and internationally and the implications for women/infants and emerging policy. We discuss the imbalance of power between the infant who relies on the milk and the birthing parent with decision making power, with a focus being to protect the rights of the infant from undue influence and pressure from commercial interests from outside the mother/ baby dyad. Entities setting a price for human milk in the absence of supportive public policy may in fact undermine women's biological integrity, infant health and contribute to the vulnerability of women and babies. We will consider the issues and support models of community engagement and decision making that are women centered and women led that keep this biologically critical substance within the community from where it comes; supporting breastfeeding and benefitting women and babies. We will also discuss the implications for developing thoughtful and responsive infrastructure through an equity lens for member milk banks of the European Milk Banking Association and the Human Milk Banking Association of North America.

C05
PRAGMATICALLY PRESENTING THE EVIDENCE IN SUPPORT OF BREAST(MILK) FEEDING IN NEONATAL UNITS
K. Woodman

Background: In Scotland there has been a clear "shifting of the curve" towards breast milk usage in neonatal units (NNUs). Thus, to inform the 2017 Scottish Governmentled Maternity and Neonatal Services Review and ongoing revision of Improving Maternal and Infant Nutrition: A Framework for Action, (Scottish Government, 2011), we collated the evidence about interventions to support breast(milk) feeding in neonatal units and described the infant feeding experiences of parents and staff. Methods: Medline, Embase, Web of Science, Cochrane, Cinahl and Midirs databases were searched to identify systematic reviews between 01/11/10 and 01/04/14, using the keywords neonatal/intensive care, KMC, low birth weight, premature, breastfeeding and breast milk. Eight systematic reviews and seventeen qualitative publications were identified. Systematic review evidence indicated the effectiveness of interventions for protecting against NEC and promoting neurodevelopment and growth. Qualitative studies emphasised the importance of attending to the experiences of parents and staff. Results: We published a full evidence review, including a summary of Scottish and international policies and published key messages to encourage practitioner engagement. As evidence gaps remained about issues related to supporting breast(milk) feeding, we considered ethical principles to help guide decision-making about NNU support. Conclusions: NNU staff have a unique opportunity to "change the conversation" by promoting and protecting the use of breast milk. Adopting a pragmatic approach to presenting the evidence to support breast(milk) feeding in NNUs has enabled meaningful engagement of NNU staff, policy makers and voluntary sector agencies as they each contribute to "shifting the curve" towards breast milk usage.

C06
COMPREHENSIVE LACTATION MANAGEMENT CENTRE FOR IMPROVING HUMAN MILK FEEDING: A NEEDS EVALUATION STUDY
D. Chawla

Background: Sick preterm neonates are the main beneficiaries of human milk banks (HMB). Need and potential benefits of donor human milk (DHM) for healthy term neonates especially during first 24-48 h of age has not been assessed. Material and methods: Objective of this prospective cohort study was to assess the need of Comprehensive Lactation Management Centre (CLMC) which integrates breastfeeding support, kangaroo mother care and provision of DHM in improving human milk feeding of healthy term neonates. The study was conducted in two metropolitan hospitals of which one was a tertiarycare centre with HMB. Feeding practices of mothers of healthy term neonates were captured using a validated data collection tool. Results: Among 2204 mothers (age 25.4±8.3 years, primigravida: 42.4%, baby birth weight: 2799±386 g; gestation: 38.1±2.9 weeks) enrolled, 1090 (49.5%) gave breastfeeding as first feed. Risk factors of mother not breastfeeding for the first feed included birth at tertiary-care hospital (57.4% vs. 33.8%), diabetes (76.9% vs. 50.4%), hypertension (73.9% vs. 49%) and caesarean section (92.6% vs.18.2%). Of 1564 mothers who gave birth in the hospital with HMB, in 343 (21.9%), DHM was used for first feed. At discharge, 62% and 44% neonates were on exclusive human milk feeding in the hospital with and without HMB respectively. Conclusion: Failure to provide breastfeeding as first feed is common, especially after caesarean section. Research is needed to investigate the role of CLMC to improve use of human milk in healthy term neonates by integration of breastfeeding promotion with provision of DHM.

C07
FOUR YEARS OF MICROBIOLOGICAL CONTROLS OF FORTIFIED MILKS FROM MILK BANKS DURING PREPARATION AND ADMINISTRATION PROCESSES
P. Cassier

In our hospital, we control fortified milks from milk banks fom the preparation in the milk kitchen to the administration in neonate units. The aim of our study is to assess their relevance. Every week, 2 patients are randomly chosen, one fed by milk bottles and one by milk syringes. For both, a milk sample is collected in the milk kitchen before and after enrichment. In neonate units, a milk sample of the last bottle of the day and 2 milk samples of the syringe at the beginning and at the end of administration are also collected. For each sample: total flora, total coliforms, Escherichia coli, Staphylococcus aureus and Clostridium perfringens are counted. Milk samples are unsatisfactory for pasteurized raw milk if culture is positive, and for enriched milk if total bacterial count is $>1\,000$ CFU/mL and/or culture is positive for pathogens. A retrospective study of these data between 2013 and 2016 was performed.From milk kitchen, 409 samples were cultured. Twenty-nine (7%) showed bacterial contamination: 13 in 2013, and 2 in 2016, and 19 after enrichment only (2 positive for E.coli). In neonate units, among 172 samples, total coliforms and E. coli was observed in only 3 bottles. For syringes, 22 (12.8%) of the 172 milks were unsatisfactory mainly at the end of delivery: 6 were contaminated with more than 1000 CFU/ mL, 14 were positive for coliforms and 7 for S. aureus. Moreover, time of administration was 3.5 hours for 77% of the unsatisfactory samples, whereas only 36% in conform samples. Difference was rather significant ($p=0.08$). Finally, C.perfringens was never detected in all the samples. In milk kitchen, contamination rate was the lowest in 2016, which shows that hygiene procedures are constantly improving. In neonate units, bottles seem to be less contaminated (more manipulations with syringes). Moreover, with syringes, time of administration could play a role on contamination rate. Microbiological controls of breast milks performed outside milk banks are an interesting tool for hygiene procedures evaluation, but could target only total bacterial count, E.coli and S. aureus

C08
TWO METHODS FOR CLEANING THE BREAST PUMP FOR HUMAN MILK DONATIONS: RANDOMIZED CONTROL TRIAL
B. Flores-Antón

Background: Sick preterm neonates are the main beneficiaries of human milk banks (HMB). Need and potential benefits of donor human milk (DHM) for healthy term neonates especially during first 24-48 h of age has not been assessed. Material and methods: Objective of this prospective cohort study was to assess the need of Comprehensive Lactation Management Centre (CLMC) which integrates breastfeeding support, kangaroo mother care and provision of DHM in improving human milk feeding of healthy term neonates. The study was conducted in two metropolitan hospitals of which one was a tertiarycare centre with HMB. Feeding practices of mothers of healthy term neonates were captured using a validated data collection tool. Results: Among 2204 mothers (age 25.4±8.3 years, primigravida: 42.4%, baby birth weight: 2799±386 g; gestation: 38.1±2.9 weeks) enrolled, 1090 (49.5%) gave breastfeeding as first feed. Risk factors of mother not breastfeeding for the first feed included birth at tertiary-care hospital (57.4% vs. 33.8%), diabetes (76.9% vs. 50.4%), hypertension (73.9% vs. 49%) and caesarean section (92.6% vs.18.2%). Of 1564 mothers who gave birth in the hospital with HMB, in 343 (21.9%), DHM was used for first feed. At discharge, 62% and 44% neonates were on exclusive human milk feeding in the hospital with and without HMB respectively. Conclusion: Failure to provide breastfeeding as first feed is common, especially after caesarean section. Research is needed to investigate the role of CLMC to improve use of human milk in healthy term neonates by integration of breastfeeding promotion with provision of DHM.

C09
DONOR HUMAN MILK IMPACT ON PREMATURE NEWBORNS (< 32 GESTATIONAL WEEKS) INTESTINAL MICROBIOTA

M. Gormaz

INTRODUCTION:
Human milk provided bacteria contribute to exclude pathogenic ceps and to create a reductor environment that will promote the development of strict anaerobic bacteria posteriorly. Pasteurized donor human milk provided by a Human Milk Bank is regarded as the best alternative for premature babies when their own mother's milk is not available. OBJECTIVE: To describe and analyze intestinal microbiota in premature newborns born below 32 gestatinal weeks, comparing the group fed human milk with the group fed donor human milk (previously frozen and pasteurized). A third group received preterm formula. STUDY POPULATION AND METHODS: prospective observational cohort study, paired, in a third level neonatal intensive care unit. A feces sample were obtained from 28 patients fed HM, 25 patients fed DHM and 7 patients fed preterm formula. Microbiome study analyzing diversity and microbial composition differences with massive sequentiation of bacterian gen 16S ARN r in MiSeq Illumina platform. RESULTADOS: PERMANOVA analysis and Canonic Correspondence Analysis showed significant differences in intestinal microbioma in newborn fed HM, DHM and PF, despite the high interindividual variability. Multivariant analysis showed significant differences among groups too. No differences were observed in alpha diversity, determined with Chaol and Shannon indexes among groups. Premature microbiota was predominantly constituted by Firmicutes film bacteria, followed by Proteobacteria, Actino bacteria and Bacteroidetes. We observed that newborn fed HM had less Firmicutes presence (p-value=0.017) compared with those fed DHM. In HM fed babies, greater presence of Bifidobacteriaecae (p-value=0.021) and lower of Staphylococcaceae (p-value=0.031), Clostridiaceaea (Pvalue=0.049) and Pasteurellaceae (p-value=0.02) than in DHM fed babies was observed. CONCLUSION: DHM favors an intestinal microbioma more similar to the one induced by HM and different of the one induced by PF. A longitudinal study is needed to know the impact of DHM on intestinal colonization on the long term.

POSTERS

P01
EARLY BREAST MILK PRIMING AND EXPRESSION TO IMPROVE OUTCOMES IN SICK OR PRETERM - A QUALITY IMPROVEMENT INITIATIVE

G. Gardiner, J. Becher, Y. Freer, J. McCormick

Royal Infirmary of Edinburgh, Simpsons centre for reproductive health

Background: In March 2015 the NNU hosted an international conference 'Breast milk: Science and Practice in the Neonatal Unit' focusing optimising maternal lactation and enteral health in the newborn. Of particular importance was the impact of early priming and expressing with an electric pump, preferably within one hour of birth using the bilateral expressing function which was shown to increase milk supply by 18% and longer term volume by 50%.
Aim: To express within one hour of birth where possible for any sick or preterm neonate.
Drivers for change and methods:
- Attendance at the conference Breast milk: Science and practice in the neonatal unit.
- Established a multi-professional workgroup.
- Conducted antenatal discussions with women and families.
- Created an electronic questionnaire within the mother's EPR detailing discussion antenatally and of preparing women and families for neonatal journey (Ready, coming or not). In process of expressing frequency and time questionnaire.
- Constructed a teaching poster on early and sustained breast milk expressing and its benefits displayed in all ward areas.
- Provided face to face teaching and staff education.
- Enabled access to bilateral electric pumps.
- Selected breastfeeding champions.
- Disseminated outcome and project information in safety briefs in all areas Pan Lothian.

Results: This QI project has contributed to an improvement with more babies receiving their own mothers' milk within 24 hours and 72 hours of birth. This will have an impact on reducing neonatal NEC, reducing infection and improving cognitive development.

P02
EXPERIENCE WITH THE USE OF DONOR MILK IN VERY-LOW-BIRTH-WEIGHT(VLBW) INFANTS

K. Mizuno, M. Sakurai, R. Kidokoro, T. Murakawa, K. Kanazawa, A. Menjo, Y. Sugishita, K. Ryouta, M. Yoshiyuki, K. Hanaoka, K. Morita, K. Matsuhashi

Dept. Pediatrics Showa University Hospital Koto Toyosu Hosp. Tokyo

Background: With recent changes to the nutritional strategies for preterm infants, early initiation of enteral nutrition is becoming a standard practice. This often requires donor human milk (DHM) from a breast milk bank when a mother cannot provide her own milk. In Japan, there is only one experimental human milk bank(HMB) in our hospital. We could take advantage of DHM for infants in our NICU. Objectives: We aimed to present our experience with DHM use in VLBW infants since the start of our in-hospital HMB established in April 2014. Methods: Subjects were born at our hospital and informed consent was obtained from the infant's parents before delivery. Clinical data on the babies and their mothers were retrospectively investigated based on hospital records during the 3 years from April 1, 2014 to March 31, 2017. Results: 1) DHM was used in 15 of 21infants during the 3- year period. 2) The use of DHM allowed significantly earlier initiation of enteral nutrition. 3) No adverse effects of DHM were observed during the hospitalization. Conclusion: DHM was useful in the early initiation of enteral nutrition in VLBW infants. Based on the results of our 3 year period results, we established Japanese Human Milk Banking Association (JHMBA) in May 2017.

P03
DONOR HUMAN MILK – TO WHOM, HOW MUCH AND HOW LONG?

M. Czosnykowska-#ukacka1, W. Wesolowska[3], B. Królak-Olejnik[2]
[1]Human Milk Bank, Department of Neonatology Wroc#aw Medical University University Hospital, Poland
[2]Department of Neonatology, Medical University of Wroclaw, Wroclaw, Poland
[3]Department of Neonatology, University Hospital, Poland

Human milk is the feeding of choice for all infants especially for premature infants and for infants in NICU. Donor human milk is the second choice if a mother is unable to provide an adequate volume or if own mother's milk OMM is unviable. The aim of this study was to show the variability of patients who received donor human milk during hospitalization, time and volume of receiving donor human milk DHM as well, also to assess time when only OMM receives infants in NICU and the way of feeding on the day of discharge from the hospital. The medical records of 43 patients hospitalized in the Department of Neonatology, who received DHM have been analyzed. A DHM feeding log was retrospectively analyzed for feeding volumes (in milliliters) and duration (in days). The way of feeding was assessed in the time of discharge from hospital. Infants born before the end of 32 weeks of gestation have received DHM in the smallest volumes and for the shortest period. Mothers of very preterm infants have been able to start achieve adequate lactation up to ten days after birth. Moreover, 100% of premature babies in this group were exclusively breastfed or fed only expressed own mothers milk on the day of discharge from hospital. Early stimulation of lactation mothers of extreme preterm infants achieved sufficient milk volume as the mothers of preterm infants and term infants residing in NICU. These mothers were able to and intend to exclusively breastfed or fed only expressed own mothers milk.

P04
CURRENT PRACTICE AND BELIEFS: SURVEY OF BREAST MILK HANDLING ROUTINES IN GERMAN, SWISS AND AUSTRIAN NEONATAL UNITS REVEALS LARGE CENTRE SPECIFIC DIFFERENCES

D. Klotz[1], S. Jansen[1], H. Fuchs[1], C. Gebauer[2]

[1]Center for Pediatrics, Division of Neonatology, Medical Center -University of Freiburg, Germany
[2]University Children's Hospital, Department of Neonatology, Leipzig, Germany

Introduction: Breast milk (BM) is handled on a daily basis in neonatal units throughout. Screening and treatment for bacterial colonisation and viral load, pasteurisation or freezing of BM, storage and distribution as well as providing human donor milk (DM) require complex procedures. However, evidence for mothers own breast milk (BM) handling is limited. Only scarce data about actual breast milk handling routines within neonatal units are available to assess the impact of existing evidence and recommendations on BM handling. Therefore we surveyed German, Swiss and Austrian neonatal units to assess existing BM handling routines to and to determine areas for future research. Methods: Web-based survey among German, Swiss and Austrian neonatal intensive care units from June 2016 until May 2017. Different aspects of BM handling were analysed: Threshold values and methods for Cytomegalovirus (CMV) inactivation and bacterial count reduction and indications for those interventions depending on gestational age and birthweight were assessed. Organisational structures for BM handling, assigned workforce and responsibilities for those tasks were asked. We analysed use and demand of DM as well as objections for its use. Furthermore, nutrient analysis, fortification, availability of lactation consultants and BM administration errors were among the covered topics. We performed a literature research for evidence or recommendations concerning aforementioned aspects of BM handling. Result: German (n=254), Swiss (n=14) and Austrian (n=34) units were contacted, 163 (54%) participated in the survey. 105 (66%) units provided level III and 41 (26%) level II of neonatal care. 75% performed maternal CMV screening. 59% of those units inactivated CMV by Holder- Pasteurisation, 12% by short-time pasteurisation, 29% by freeze-thawing of BM. Bacterial load was assessed by 43%, and pasteurised (any method) by 42% or discarded by 58% after certain cut-off values were exceeded (Table 1). DM is regularly used in 15% of units. In contrast, DM is never provided in 68%, but 76% of those neonatologists would feed DM if available. Milk banks are mostly headed by a nurse (70%), in 17% no one was in charge. Nutrient analysis and fortification were performed by 12% and 59%, respectively. All but one units offered lactation consultations. 72% of units report about milk administration errors. Conclusion: Wide variations concerning all covered aspects of handling BM within the participating neonatal centres were found. There was a high incidence of milk administration errors throughout most units. Evidence and recommendations for most handling routines are either scarce or not existent. However, available evidence or recommendations did not seem to have a perceptible impact on BM handling routines in participating neonatal centres.

P05
PRESERVATION OF BIOACTIVE COMPONENTS IN HUMAN MILK BY HIGH-PRESSURE PROCESSING

A. Wesolowska[1], E. Sinkiewicz-Darol[2], O. Barbarska[3], K. Strom[4], M. Rutkowska[5], K. Karzel[6], G. Ol#dzka[4], M.K. Borszewska-Kornacka[7], S. Rzoska[5]

[1]Medical University of Warsaw, Department of Neonatology, Laboratory of Human Milk and Lactation Research at Regional Human Milk Bank in Holy Hospital, Warsaw, Poland; Human Milk Bank Foundation, Warsaw, Poland
[2]Medical University of Warsaw, Department of Neonatology, Laboratory of Human Milk and Lactation Research at Regional Human Milk Bank in Holy Hospital, Warsaw, Poland; Human Milk Bank Foundation, Warsaw, Poland; Ludwik Rydygier' Provincial Polyclinical Hospital in Torun, Human Milk Bank, Torun, Poland
[3]Medical University of Warsaw, Department of Neonatology, Laboratory of Human Milk and Lactation Research at Regional Human Milk Bank in Holy Hospital, Warsaw, Poland; Medical University of Warsaw, Department of Medical Biology, Warsaw, Poland; Medical University of Warsaw, First Department of Obstetrics and Gynecology, Warsaw, Poland
[4]Medical University of Warsaw, Department of Medical Biology, Warsaw, Poland
[5]High Pressure Physics, Polish Academy of Science, Warsaw, Poland
[6]Warsaw University, Faculty of Psychology, Warsaw, Poland 7Princess Anna Mazowiecka University Hospital, Neonatal and Intensive Care Department of the Medical University of Warsaw, Warsaw, Poland

Most milk banks in the world, to assure the safety of banked human milk, use holder pasteurization (HoP). This method provides microbiological safety of milk, but significantly reduces contents of bioactive components of human milk. High-Pressure Processing (HPP) is a nonthermal technology that is being increasingly applied in food industries worldwide. It was proposed that this method can be used as an alternative to HoP in milk banks but its impact on the immunologic, enzymatic and hormonal components of human milk is not yet fully understood. The aim of the study was to compare the effects of HPP in different variants and HoP on the leptin, adiponectin, insulin and human growth factor (HGF) contents in breast milk samples. Milk samples were obtained from women during 2-6 weeks of lactation. Pooled milk samples were divided into 6 groups and subjected to processes respectively: HoP (62,5°C for 30min) and the four HPP variants 1) 600MPa, 2) 200 + 400 MPa, 3) 100 + 600 MPa, 4) 200 + 600 MPa. The control group consisted of untreated raw milk samples. Concentrations of selected components were determined using Quantikine Human Leptin ELISA Kit (R&D System), Human HMW Adiponectin/Acrp30 Quantikine ELISA Kit (R&D System), Human Insulin ELISA Kit, (Demeditec) and Human HGF Quantikine ELISA Kit (R&D System). The contents of all analyzed components were significantly decreased by HoP, leptin 32,19%, adiponectin 32,79%, insulin 33,40%, HGF 89,72%. All HPP variants caused the increase in leptin concentration, respectively 1) 81,71%, 2) 86,12%, 3) 90,01% 4) 47,96%. No significant changes were found in concentration of insulin and HGF in milk samples after HPP as compared to raw milk. Retention of insulin after HPP was 1) 88.20%, 2) 94.76%, 3) 81.98% 4) 90.31% and HGF 1) 36.15%, 2) 97.15%, 3) 38.81% 4) 43.02%). Only one HPP variant 200 + 400 MPa preserved adiponectin better than HoP (39%). Our results showed that High-Pressure Processing leads to greater preservation of some bioactive components, insulin, adiponectin and HGF, compared with Holder pasteurization, even with increase availability of leptin with respect to the raw milk. HPP may be a promising alternative to HoP that can be used in milk banks. This research was supported by National Centre for Research and Development (IS-2/81/NCBR/2015)

P06
NORTH WEST HUMAN MILK BANK DONOR SURVEY

C. Barnes

North West Human Milk Bank

The North West Human Milk Bank (NWHMB) operates as a not for profit service and is part of the NHS it has been operational since April 2014 when Wirral and Chester Milk Banks collaborated. The service since then has undergone operational development and reorganisation during this period, a new staffing Structure is now embedded and the service is flexible and responsive to changing demands locally and nationally. The service is fully compliant with NICE clinical guideline 93 and has the recommended Food Safety Management System in place-using Hazard Analysis and Critical Control point (HACCP) principles. NWHMB provides donor breast milk locally and nationally to NHS organisations including Community Services on health professional's request. We also participate in relevant local and national research. The service is recognised by United Kingdom Association of Milk Banks (UKAMB) and BAPM (August 2016) as the largest milk bank in the UK in terms of supply. We always have milk available and have never been unable to fulfil an order based on clinical request. This is largely due to the fact that the service is supported by around 120 active donors at any one time across England and Wales. The NWHMB has a team of volunteer drivers who make regular collections from donors and we also use the services of the National Blood Bikes as well as a national temperature controlled courier service. We continually strive to make improvements to the service and value the importance of constructive feedback from all stakeholders, but particularly our donors to streamline and improve the process. Therefore in early 2017 the NWHMB conducted a survey of active donors to obtain feedback and identify areas for improvements. The results of this survey enabled us to make some important changes which are now in place, particularly in the way we communicate with our donors and the quality of information provided when they enrol with the Milk Bank.

P07
INFLUENCE OF ADMINISTRATION TIME IN DONOR HUMAN'S MILK BACTERIAL COUNTS

M. Lozano, E. Garcia, B. Botella, A. Tormos[1], D. Silvestre[2], M. Gormaz[3], A. Ramón[3], M.C. Lopez-Mendoza[1]

[1]Biomedical Sciences Research Institute, University CEU Cardenal Herrera, C/ Tirant lo Blanc, 7. 46115 Alfara del Patriarca, Valencia, Spain
[2]Pharmacy Department. Biomedical Sciences Research Institute, University CEU Cardenal Herrera, C/ Ramón y Cajal s/n 46115 Alfara del Patriarca-Valencia
[3]Division of Neonatology, University and Polytechnic Hospital La Fe, Valencia, Spain

INTRODUCTION: Human milk is the "gold standard" for infant feeding and, when mother´s milk is not available, donated human milk (DHM) provided by a Human Milk Bank (HMB) is considered the best alternative for preterm infants. Milk has bacteria that contribute to colonization by a healthy microbiota in the newborn. The temperature and time conditions of administration of DHM can promote the bacterial overgrowth of certain bacteria with potential risk to the health of newborns. Routine administration oscillates between 5 minutes up to a maximum of 4 hours. Infants admitted to intensive care unit (ICU) are the main receptors of this DHM; is a very vulnerable population formed predominantly by preterm infants, so the handling of DHM is considered an important point of their care. Between the different steps of milk manipulation prior to ingestion by these infants, the permanence in neonatal care unit at room temperature is identified as a critical point for microbiological safety.HYPOTHESIS: The manipulation of the DHM before being administered to the infant may be the cause of milk´s contamination. Also, the temperature and time conditions of milk´s administration in the ICU can promote bacterial growth.OBJECTIVES: The objective of this study is to analyze the evolution of the microbiological quality of DHM under the conditions of handling in ICU (22°C during 4 hours maximum) and under a supposed high contamination with Escherichia coli.MATERIAL AND METHODS: 14 samples of DHM were taken, previous informed consent of donors. Each sample was subjected to the usual treatments of HMB, including Holder pasteurization (62.5°C during 30 minutes). The post- pasteurization bacterial culture was negative in all samples. After treatment of each sample, 50ml were taken and Escherichia coli was inoculated, in amount of 1000 CFU/ml (maximum allowed by current European legislation in dairy products). Later, these samples were held at 22°C during 4 hours, maximum period of stay for the milk in the neonatal care unit. During this period, the count of microorganism was realized in duplicated at different times (0h, 0.5h, 1h, 1.5h, 2h, 2.5h, 3h, 3.5h and 4 h) to check its evolution. RESULTS: The average counts obtained at different times were as follows: 0h= 3061 CFU/ml, 0.5h= 2632 CFU/ml, 1h= 3168 CFU/ml, 1.5h= 2654 CFU/ml, 2h= 3446 CFU/ml, 2.5h=
5529 CFU/ml, 3h= 8819 CFU/ml, 3.5h= 8596 CFU/ml, 4h=
8600 CFU/ml.
There is not significant growth of microorganism in the initial times (0h, 0.5h, 1h, 15 h y 2h) nevertheless, microorganism growth is observed after 2.5 hours, almost tripling at 3.5 hours. Therefore, we can say that until 2 hours the counts of microorganism remain stable, being the maximum time of permanence of the milk under these conditions.CONCLUSIONS: During the first 2 hours bacterial counts remain stable, observing a remarkable growth at 4 hours. It would be advisable to reduce the time of milk´s administration to a maximum time of 2 hours.

P08
MILK DONATION AWARENESS OF PARENTS, HEALTH WORKERS AND LACTATION CONSULTANTS: SURVEY FINDINGS IN RUSSIA

O. Lukoyanova[1], T. Borovik[1], I. Belyaeva[1], L. Namazova- Baranova[1], U. Lebedeva[2], V. Phurtsev[3], Y. Yakovlev[4], L. Sophronova[5], L. Dautova[6], O. Nodvikova[6], A. Karpova[7], N. Klyueva[8]

[1]National Scientific and Practical Center of Children's Health - Moscow
[2]Research Institute of Health - Yakutsk
[3]State Medical University- Krasnoyarsk
[4]State Institute of Postgraduate Medicine - Novokuznetsk 5State Pediatric Medical University - Saint-Petersburg 6Bashkir
[5]tate Medical University - Upha
[7]State Medical University-Yaroslavl
[8]City Children's Clinic No. 4 - Astrakhan

Background. Today, in Russia there is no practice of using donor milk in hospitals. Materials: The aim was to analyze the public opinion about the benefits and safety of donor milk. Methods. A sample survey was carried out. Results. The study involved 2,332 respondents from 11 cities and towns of the Russian Federation, including 1,134 mothers, 413 fathers, 692 health workers, and 93 lactation consultants. 1,007 (65.1%) parents and 541 (68.9%) specialists (health workers and lactation consultants) believe that feeding of a sick newborn with donor milk is useful in the absence of breast milk. Only 609 (39.4%) parents and 363 (46.2%) professionals would agree to use donor milk for their children in the absence or lack of mother's milk. Only 1/3 of the respondents —560 (36.2%) parents and 259 (33.0%) professionals — believe that donor milk is safe. 565 (36.5%) parents and 475 (60.5%) professionals have heard something about breast milk banks and 1,013 (65.5%) parents and 449 (57.2%) professionals believe that the establishment of such banks is reasonable. Most of the mothers (830; 73.2%) involved in the study would agree to become breast milk donors. Conclusion. The study has revealed low respondents' awareness of the use and safety of donor milk. However, most of the mothers are willing to become breast milk donors. More than half of the parents and professionals involved in the study believe that it is reasonable to create milk banks. Disclosure of interest. This research was carried out with the support of Philips Avent company.

P09
OUR JOURNEY TOWARDS UNICEF ACCREDITATION IN NICU IN GLASGOW

G. Bowker

Neonatal Infant Feeding Advisor, Queen Elizabeth Hospital, Glasgow

I am a neonatal infant feeding advisor based in Glasgow and one of my roles is to guide the Neonatal units through UNICEF baby friendly accreditation. I have been in post for 3 years and so far we have made great progress on our journey.
All of the units have achieved stage 2 accreditation with only a handful of other units UK wide having achieved this. We have also had 2 of the units assessed at stage 3 which we hope to achieve before the end of the year. There is only one unit in the UK who has already achieved this.
The UNICEF standards have help provide a framework to improve care for families in NICU. There are 3 standards which focus on 3 key areas
1-close and loving relationships and their importance of this for families in NICU
2-maximising breastmilk and breastfeeding 3-parents as partners in care.
Having a baby born too sick or too soon is a very stressful time for families. There is much enthusiasm in Glasgow to empower parents to be the primary care givers for their baby from the start through family integrated care. We value breastmilk and support early expressing so that baby gets off to the best possible start. Where this is not possible we are lucky to have the support of the milk bank which allows equity of access to all in Scotland. Donor milk is used to support lactation until mums supply is established or where mum is unable to provide milk.

P10
HUMAN MILK BANKING IN SPAIN

A. Gaya[1], N.R. Garcia-Lara[2], M. Gormaz[3], M. Peña[4], M.J. Martinez-Lorenzo[5], V. Pleguezuelos[6], J.M. Brull[7], M. Samaniego[8], A. Concheiro[9], O. Lopez[10], J. Aguayo[11], J. Calvo[12]

[1]F. Banc de Sang I Teixits de les Illes Balears, Palma
[2]Hosp. 12 de octubre, Madrid
[3]Hosp. La Fe. Valencia
[4]Hosp. Virgen de las Nieves. Granada
[5]Banco de Sangre y Tejidos de Aragón, Zaragoza
[6]Banc de Sang I Teixits, Barcelona
[7]Banco de Sangre de Extremadura, Merida
[8]Hosp. Universitario Rio-Ortega, Valladolid
[9]Hosp. Álvaro Cunqueiro, Vigo
[10]Complejo Hospitalario Universitario Santiago de Compostela
[11]Hosp. Virgen del Rocio, Sevilla
[12]Inst. de Investigaciones Sanitarias Illes Balears (IDISBA), Palma

Following the establishment of the first human milk bank (HMB) in Vienna in 1909, a growing number of HMB started operating in many countries around the world. However, it took almost a hundred years for this therapeutic alternative to be introduced in Spain. It was not until 2001 that the first HMB was opened in Spain, in Palma de Mallorca. Since then, eleven more HMB have started its activity. Now, there are HMB in 10 of the 17 Spanish regions: Madrid (2007), Valencia (2010), Zaragoza (2011), Barcelona (2011), Granada (2010), Merida (2012), Valladolid (2015), Vigo (2016), Santiago de Compostela (2016), Seville (2016) and Oviedo (2016), with advanced projects in Santander and Bilbao. In 2008, during the celebration of the First National Meeting of Spanish Milks Banks, the Spanish Association of Human Milk Banks (AEBLH) was created (www.aeblh.com) and recently consensus guidelines have been established. Moreover, two collaborative projects are in progress: a Lactovigilance Register, trying to identify the occurrence of adverse effects caused by the manipulation and administration of donated human milk, and a Program of quality control of the nutritional analysis of human milk In line with the creation of new banks, the donation and administration of donated milk has increased exponentially along the last years. During 2016, the global activity of Spanish HMB include the incorporation of 1565 donors who provide 7449 liters of milk to attend 2281 newborns in 43 hospitals One aspect that can be considered as differential in comparison with other countries is that, whereas six of these HMB are located in neonatology units, the other six (and the two that will start in 2017) are operated (at least partially) in a regional blood and tissue bank, where the milk is considered and manipulated in the same way as any other substance of human origin (SOHO) with a therapeutic application that is usually manipulated in these centers, like blood, corneas, bones. This gives some advantages with the management of the donors, including serological and microbiological analysis, as well as with all the logistics processes of collecting and distributing milk. In parallel, a transition process from a model of hospital-based HMB providing donated milk exclusively to its neonatology unit towards a model of regional HMB, with the same location, but providing human milk to other hospitals in its region, is taking place. Despite our late incorporation to the HMB activities, we consider the process of implementation of HMB in Spain as really positive and we hope in a near future accomplish a total coverage in our country.

P11
HUGG (HELPING US GROW GROUP): DEVELOPING A PROGRAMME OF NEONATAL FAMILY INTEGRATED CARE

N. Patel

Royal Hospital for Children Neonatal Unit, Glasgow

Description
Family integrated care (FIC) supports parents to care for their baby in the Neonatal Unit in partnership with clinical teams. Evidence suggests that FIC is associated with improved outcomes for babies, their families, and health services. However, developing models of FIC may be challenging in large, busy neonatal units such as our own Aims and objectives To empower parents to be confident members of the primary caregiving team in the Neonatal Unit.
Methodology

1. Engagement, empowerment and collaboration: Patient families and Neonatal staff of all disciplines attended open sessions to discuss care on our Unit. From these the Helping Us Grow Group (HUGG) was formed, F
2. Discovery: Monthly HUGG meetings, combined with regular parent and staff surveys, identified areas for improvement. A visit to a leading FIC centre (Mount Sinai Hospital, Toronto) gave further inspiration.
3. Planning and implementation: Staff and parents formed five multi-disciplinary subgroups representing key areas of FIC, to develop, test and implement ideas.

Results and outcomes
The work of HUGG has been profound and innovative, examples include:

- Cultural change:HUGG is empowering staff and families to deliver FIC, and palpably raising morale in our Unit. Change has been led “from the ground up”.
- Parent knowledge:Daily staff-led Parent Education Sessions bring parents together to learn about babies’ care and share experiences
- Communication: Cot-side white-boards allow staff and families to interact in new ways. Innovative video- messaging is used to update families and staff
- Infant holding and kangaroo-care:New training helps babies to benefit from being held by their family. As a result, on Christmas Day 2016 every baby was held
- Peer-to-peer support:New opportunities were created for parents to support each other and share experiences, including a Reunion Party for 400 former patients on World Prematurity Day 2016.

P12
ADOPTING A SYSTEMATIC APPROACH TO DEVELOPING OFF TO A GOOD START: A BREASTFEEDING INFORMATION RESOURCE FOR PARENTS, INCLUDING PARENTS OF BABIES IN NEED OF SPECIAL CARE

K.Woodman, F. Bayne, A. MacDonald

NHS Health Scotland

Background: Despite indisputable evidence about the benefits of breastfeeding, breastfeeding rates in Scotland remain broadly static. To support parents to make informed decisions about infant feeding, especially in the case of vulnerable infants admitted to NNUs, NHS Health Scotland in partnership with practitioners, academics and policy makers revised its OTAGS information for pregnant women and new parents. Methods: Having agreed on the resource content, systematic review level evidence was used to develop the resource text. Results: This approach ensured that key messages that addressed "what if my baby needs special care? "emphasised the importance of breast milk in reducing the incidence of NEC, KMC, expressing breast milk and the use of donor milk from the Scottish Donor Milk Bank Service as a safe alternative to formula. Conclusions: Adopting a systematic, consultative approach to resource development is crucial to ensure its acceptability to practitioners, and families, especially parents of vulnerable babies in need of Special Care.

P13
SIGNIFICANT LOSSES OF DONOR HUMAN MILK DUE TO PATHOGENIC BACTERIAL CONTAMINATION - THE PROBLEM REMAINS UNCHANGED

I. Ioannou[1], P. Vourna[1], F. Sioubara[1], K. Dritsakou[1], E. Glynou[1], G. Liosis[1]

[1]Dept. Neonatology, Human Milk Bank, Elena Venizelou
[2]Dept. Neonatology, Human Milk Bank, Elena Venizelou
[3]Dept. Neonatology, Human Milk Bank, Elena Venizelou
[4]Dept. Neonatology, Human Milk Bank, Elena Venizelou
[5]Microbiological Lab, Elena Venizelou
[6]Dept. Neonatology, Human Milk Bank, Elena Venizelou

The aim of the study was to prescribe bacterial profile of commensal and or pathogenic bacterial colonization of DHM treated in the Human Milk Bank (HMB) of Elena Venizelou Hospital, and quantify milk loses as a result of potential pathogenic bacterial contamination. During the last five years period (2011-2016) it has been marked a significant increase in the quantities of human milk treated in our HMB, which is working as regional HMB for the area of Athens. Samples from 208 individual donor mother's, 12 (5.8%) of those were mothers of ELBW premature infants, were submitted to microbiological analysis. Prepasterization microbiological profile of the milk tested revealed that 163/208 (78.4%) of the cultures grew at least one potential commensal and or pathogenic bacteria. Coagulase negative staphylococcus (Cons) was the predominant organism colonized from 150/208 (72.1%) samples. However, in 23.3% (35/150) of those colonized with CONS, the human milk was considered as unsafe for donation. The second predominant germ was found to be Enterococcus SPP (12.5%), followed by staphylococcus aureus (5.8%). Streptococcus was found only in 0.5% of the samples. GNR (Klebsiella, proteus, serratia E–coli and pseudomonas were identified in 22/208 (10.6%) of the individual samples. From a total quantity of 2323.889lt of the donor milk treated, a percentage of 26.6% (619.380 lt) was considered potential harmful and was rejected. In all preterm mothers' DHM, normal colonization was detected. This is probably owed to the fact that those mothers' DHM was pumped and stored under the strict surveillance of the HMB staff. Efforts have to be made for the better training of potential donor mothers, to minimize the percentage of the DHM that is discarded due to bacterial contamination.

P14
JUST MATERNAL MILK FOR SICK AND PREMATURE BABIES: FIRST EXPERIENCE OF DONOR MILK BANK AT VILNIUS PERINATAL CENTER

L.Tamuliene[1], I.J. Paulaviciene[1], A. Liubsys[2]

[1]Neonatologist at Neonatal Center of Vilnius Univ., Vilnius Univ. Children's Hosp.
[2]Director of Neonatal Center of Vilnius Univ.

Introduction: The best food for the preterm babies is the fresh milk of their mother. Donor milk is the second best choice for the premies. The Donor Milk Bank (DMB) was opened at Neonatal Centre, Vilnius University Children's Hospital March 2017 aiming to collect, analyse, process and store maternal donor milk.
Objective: To feed all sick and premature babies exclusively with maternal milk.
Methods:
1. Guidelines. Modified local guidelines of DMB coming to agreement with Infection Control Department are based on "Guidelines for use of human milk and milk handling in Sweden, 2011-04-01 Milk net, version 2.0.".
2. Design of the DMB. The DBM area has four compartments: mother's milking room, room for collection of the milk (donor's appointment room), room for milk analysis and pasteurisation, milk sampling (after pasteurization) and storage room.
3. Processing of donor milk. Single donor milk delivered at the time is mixed... Holder pasteurization with rapid cooling of the milk is used for milk processing followed by milk composition analysis performed with Miris Human Milk Analyser (HMA). Ultra freezing (minus 400 C) of the milk immediately after pasteurization and storage at minus 200 C for 6 months.
4. Supporting donors. Donors are provided with means for milk collection as well, as with electric milk pumps.

Results:
1.175 litres of donor milk has been collected during two first months of DMB activity. 25 donors are already officially registered. 60 l of donor milk already were given to sick and premature babies.
2.Since May 2017 all babies at Neonatal Intensive Care and Neonatal units are exclusively fed with human milk, either with their mother's, or donor milk.
Conclusion:
Opening of DMB at Vilnius Perinatal Centre enabled us to feed the sick and prematurely born babies exclusively with human milk, completely renouncing from formula feeding.

P15
INFLUENCE OF THAWING METHOD ON MICROBIOLOGICAL COUNTS IN HUMAN MILK BANKS

M. Lozano[1], E. Garcia[1], B. Botella[1], A. Tormos[1], D. Silvestre[2], M. Gormaz[3], A. Ramón[3], M.C. Lopez-Mendoza[1]

[1]Biomedical Sciences Research Institute, University CEU Cardenal Herrera, C/ Tirant lo Blanc, 7. 46115 Alfara del Patriarca, Valencia, Spain
[2]Pharmacy Department. Biomedical Sciences Research Institute, University CEU Cardenal Herrera, C/ Ramón y Cajal s/n 46115 Alfara del Patriarca-Valencia
[3]Division of Neonatology, University and Polytechnic Hospital La Fe, Valencia, Spain

INTRODUCTION: Breastfeeding is the gold standard for infant nutrition and when own mother's milk is not available, pasteurized donor human milk (DHM) provided by a hu- man milk bank is regarded as the best alternative for premature babies. DHM handling and processing protocols are not universally established and more stud-ies, to complete the available ones, are needed to support the selection of the optimal method that allows maximal milk bioactivity preservation. Among the processes that requiere further investigation is thawing method. Some protocols recommend water bath at 35ºC for 30 minutes (Hartmann 2007, Societá Italiana ddi Neonatologia 2002). Some alternatives to this method need to be evaluated in order to search for DHM mi-crobiological quality. OBJECTIVE: To evaluate different thawing methods effect on DHM's microbiological quality. Routine method (water bath at 35ºC for 30 minutes) was compared to four al-ternative conditions: 1. Room temperature (20ºC) thawing for 3 hours.
2. Wather bath at 25ªC for 40 minutes. 3. Thawing in refrigeration at 4ºC for 24h 4. Water bath at 4ºC for 4 hours. MATERIAL AND METHODS: 7 mature DHM pools (different donors samples were used to constitute the 500 ml pool) donated to the University and Polytechnic Hospital La Fe Human Milk Bank were used. Milk was transported refrigerated to the CEU Cardenal-Herrera University for analysis. Ethics Comitte approval and informed con-sent were obtained. Each DHM sample was divided into 5 aliquots (100 ml per aliquot) and a known Escherichia coli microorganism amount was inoculated. Samples were frozen at -20ºC for 7 days. Thawing procedures previously described were applied. Mi-crobiological count was tested to study the thawing method effect on E. coli growing. RESULTS AND DISCUSION: E. coli counts were highest with the water bath methods at 25ºC for 40 minutes and 35ºC for 30 minutes. The thawing method that resulted in lowest counts was refrigeration at 4ºC. Water bath at 4ºC for 4 hours, although de-creases significantly the thawing time compared to the previous method, results in high- er E. coli counts than refrigeration at 4ºC for 24h. La descongelación en agua a 4ºC durante 4h, aunque reduce significativamente el tiempo necesario para la descongela- ción, ofrece recuentos superiores a la descongelación en frigorífico a 4° durante 24 horas. CONCLUSiON: Water bath at 35ºC for 30 minutes thawing method is not recomendad as favors E. coli growing. To optimize DHM quality in this procedure, refrigeration at 4ºC for 24h results to be the most recommended method.

P16
EXPLORING THE PARADOX OF PUMPING THROUGH ADOPTING A SYSTEMATIC APPROACH TO USING EVIDENCE TO SUPPORT BREAST(MILK) FEEDING IN NEONATAL UNITS IN SCOTLAND

K. Woodman[1], L. Wolfson[2]

[1]Evidence for Action Team, Public Health Intelligence Adviser, Public Health Sciences Directorate, NHS Health Scotland
[2]National Maternal & Infant Nutrition Co-ordinator, (Improving Health and Wellbeing), Scottish Government

Background: The breast(milk) feeding of premature babies is of great importance to providing optimum nutrition. Yet "preterm" mothers' difficulties are compounded by anxiety as staff may be unable to fully support parents. To inform the 2017 Scottish Government-led Maternity and Neonatal Services Review and ongoing revision of Improving Maternal and Infant Nutrition: A Framework for Action, (Scottish Government, 2011) we summarised the evidence about effective interventions to support breast milk feeding and, drawing on findings from qualitative papers, we described the infant feeding experiences of parents and staff. Methods: Literature searches about the effectiveness of breast(milk) feeding in NNUs, using keywords including neonatal/intensive care, KMC, low birth weight, premature, breastfeeding and breast milk were conducted between November 2010 and April 2014. Qualitative papers exploring the infant feeding experiences of parents and NNU staff were identified. Results: Seventeen single study publications highlighted parents' support needs, including their experience of expressing breast milk. Mothers appreciated the importance of breast milk for militating against the complications of prematurity. However, expressing breast milk was paradoxical. Mothers' feelings of loss because of separation from their baby were counteracted by a sense of connection as the breast pump represented the wedge and the link between the mother and her baby. Conclusions: Making evidence accessible to staff as they support breast(milk) feeding in neonatal units may help them to understand the paradox of pumping and thus offer encouragement and support to mothers as they provide milk for their babies and to the Scottish Donor Milk Bank Service.

P19
PROTEOMIC ANALYSIS OF KOREAN MOTHER POSTPARTUM BREAST MILK

K. Nam Mi

Department of Nursing, Konkuk University, Chungju, Korea

Human breast milk (HBM) is considered an indispensable source of nutrition to the newborns that supply the nutritional as well as, overall health requirements. Quantitative shotgun proteomic analysis using LC/MS/MS for validation the expression level of the differentially expressed proteins that collected from Korean mother donors at different time points (I week, 3 week, and 6 week) after delivery. Our comparative study proved the reproducibility of 63 proteins in triplicate samples and among these proteins; we found 25 differentially expressed proteins that possess a statistical significance. We also summarized the expression pattern of the statistically significant proteins 1 w, 3 w, and 6 w after delivery.

P21
CURRENT SCENARIO OF HUMAN MILK BANKS IN INDIA, 2016

J. Mondkar[1], S. Shanbhag[2], A. Khan[2], M. Sinha[2], R. Sachdeva[2], P. Kandasamy[2], M. Wankhede[4], S. Mahapatra[2], R. Dasgupta[3]

[1]Dept of Neonatology Lokmaniya Tilak Municipal Medical College and General Hosp - Mumbai
[2]PATH - Delhi
[3]Center of Social Medicine & Community Health Jawaharlal Nehru University - Delhi
[4]Dept of Pediatrics Rajawadi Hosp - Mumbai

Background and Objective: Increasing access to donor human milk has the potential to reach 5 million babies in India annually. 22 human milk banks reported are inadequate to meet the massive need, calls for understanding the status to identify opportunities and challenges for effective scale up.
Methodology: Online survey tool was used to obtain data on functioning of 22 banks, active in the year 2016. Service providers of six of these milk banks representing each geographical zone and model were interviewed in-person using semi- structured questionnaire to capture qualitative information. Results: 16 banks (73%) responded to the survey tool. Two milk banks were funded by local government while the rest funded by non-profit organizations, recurring cost for all was managed through hospital funds. 25% were using imported automated pasteurizer and pooled milk under laminar airflow. 19% conducted pre and post pasteurization culture test while the rest were testing only post pasteurization culture. 62% milk banks were tracking from donor to recipient. 37% milk banks had dedicated full time technicians while in the rest lactation counsellors and other staff managed the milk bank processes. Only 31% had dedicated lactation counsellors, shortage of staff was noted. 30-50% of vulnerable neonates and 10-20% term neonates require banked milk. 62% milk banks reported demand supply gap. Service providers reported insufficient collection of donor milk to address the requirement. Conclusion: Government ownership is important to meet recurring cost, personnel shortage and community mobilization. Standard Operating Procedures are required for uniform processes implementation.

P22
UNDERSTANDING BARRIERS AND FACILITATORS FOR BREASTFEEDING, KANGAROO MOTHER CARE (KMC) AND DONOR HUMAN MILK (DHM) AMONG MOTHERS AND INFLUENCERS OF PRETERM AND SICK NEONATES IN INDIA

J. Mondkar[1], S. Shanbhag[2], A. Khan[2], M. Sinha[2], R. Sachdeva[2], R. Dasgupta[3], S. Mahapatra[2]

[1]Dept of Neonatology, Lokmaniya Tilak Municipal Medical College and General Hosp - Mumbai
[2]PATH - Delhi
[3]Center of Social Medicine & Community Health, Jawaharlal Nehru University - Delhi
[4]Dept of Pediatrics, Rajawadi Hosp - Mumbai

Background: With the highest burden of preterm, low birth weight babies, an integrated approach to newborn care is essential in India. Thus, assessment on knowledge of breastfeeding practices, KMC and perception of DHM among mothers and influencers of preterm and sick neonates was undertaken to strengthen Comprehensive Lactation Management Centre (CLMC) Model that integrates breastfeeding, KMC, and providing safe DHM to such babies.
Method: Focus group discussions with mothers and influencers of vulnerable neonates who have received DHM, mothers who have donated milk and are potential donor/recipient at two facilities in Mumbai.
Result: More than half mothers were aware of benefits of breastfeeding and its duration. Few mothers stated colostrum is harmful. Most mothers shared that doctors during antenatal care told them about their diet, but gave no information on breastfeeding. Few mothers shared challenges faced with feeding preterm and sick babies. Mothers who practiced KMC were aware of the benefits. Low awareness on human milk banks among mothers and influencers was found. Parents were comfortable with donating milk once they knew it is life-saving and did not compromise supply for own baby. All mothers accepted use of DHM; however, some parents had concerns about safety as they were not aware of HMB process. Most grandmothers were not comfortable with donating or receiving DHM.
Conclusion: A need for Behaviour Change Communication targeted at mothers and influencers about CLMC interventions from the antenatal period so that all receive support and information to help increase uptake of human milk for vulnerable babies.

P23
HUMAN MILK BANKING PRACTICES IN THE U.K.: OPTIMISING LCPUFA CONTENT

I. Nessel[1], G. Weaver[2], M. Khashu[3], S.C. Dyall[1]

[1]Centre for Midwifery, Maternal and Perinatal Health, Bournemouth University - Bournemouth
[2]Hearts Milk Bank - Herts
[3]Neonatal Unit, Poole Hosp. NHS Foundation Trust - Poole

Fat intake for preterm infants comes from diverse sources, including maternal expressed breast milk, donor human milk, formula milk, and parenteral nutrition. We have previously shown that extremely preterm infants receive very low levels of omega-3 and omega-6 long-chain polyunsaturated fatty acids (LCPUFAs), which are essential for optimal brain and visual development and immune system function (De Rooy et al. 2016). Levels significantly below European Society for Paediatric Gastroenterology Hepatology and Nutrition guidelines and estimated in utero accretion rates were noted. Previous research indicates that the processes involved in human milk banking, e.g. storage time and temperature, may negatively affect LCPUFA levels. Although operation of Human Milk Banks (HMBs) is covered by NICE Clinical guideline 93, this does not explicitly consider implications on LCPUFA content. Therefore, to identify the effects of current practices on LCPUFAs, an audit was conducted of all HMBs in the U.K. using a mixed-methods questionnaire, covering donor selection, nutrition, transportation, storage and handling. Questionnaires were distributed electronically between December 2016 and May 2017. The overall responses rate was 86% (12 out of 14 HMBs). Considerable variations were identified across all areas of practice. Differences were observed in key practices such as nutritional advice given to donors, maximum duration of milk donations, pooling of milk over 24 hours at 4C, and same day pasteurisation of thawed samples. The information gathered in this audit will be used to develop guidance for HMBs with specific regard to the optimisation of LCPUFA content in donor milk.

P24
SERUM AND MILK VITAMIN D CONCENTRATION IN BREASTFEEDING WOMEN

I. Adamczyk[1], A. Pater[2], E. Sinkiewicz-Darol[1], J. Siodmiak[2], G. Odrowaz-Sypniewska[2], U. Bernatowicz-Lojko[3]

[1]Ludwik Rydygier' Provincial Polyclinical Hospital, Human Milk Bank, Torun, Poland
[2]Dept. of Lab. Med., Coll. Medicum of N. Copernicus University, Bydgoszcz, Poland
[3]Ludwik Rydygier' Provincial Polyclinical Hospital, Departament of the Newborn and NICU, Torun, Poland

Background: The purpose of the study was to measure vitamin D concentration in serum of women during reproductive season in summer and winter seasons and in breastfeeding women's milk and serum.
Material and methods: The study included women from
22 to 45 years old, divided into two groups: women in lactiation period (N=49) and a control group not lactation women (N=38). To evaluate the vitamin D concentration (25OH-D) in serum CLIA method was used (Immunodiagnostic Systems, Germany) and in milk ELISA method (Immunodiagnostic Systems, Germany).
Results: The deficiency of vitamin D (>30ng/ml) in both groups, were 65% during the summer season and 55% during the winter season. In the study group and the control group during summer season the vitamin D deficiency were 61% and 71% respectively, while during the winter season 52% and 58%. The differences between vitamin D concentration, in the lactiation group and the controls, during the summer as well as the winter season were not significant. Women from the control group during the summer season, supplementing vitamin D were characterized with significantly higher concentration of the vitamin D comparing to the women from the same group but not supplementing (36.22 vs 26.08 $p<0.003$). An average vitamin D concentration during the winter season in both groups was higher in the supplementing women than in not supplementing (respectively 31.6 vs 24.38 ng/ml; $p<0.02$ study group; 37.50 vs 17.68; $P=0.0001$ control group). The average concentration of 25OH-D in milk was 5.38 ng/ml. Significant differences of vitamin D concentration in the milk between supplementing and not supplementing women were not observed.
Conclusions: Most studied women in the reproductive period have deficiency of vitamin D. Supplementation of vitamin D in non lactiation woman results in higher serum concentration of that vitamin while in lactation woman it does not influence the milk's vitamin D concentration.

P25
DESIGN AND VALIDATION OF A HTST SYSTEM FOR PASTEURIZATION OF DONOR MILK IN A HUMAN MILK BANK SETTING

D. Escuder Vieco[1], L. Fernández Álvarez[2], I. Espinosa Martos[3], J.M. Rodríguez Gómez[2], C.R. Pallás Alonso[1]

[1]Human Milk Bank- Madrid
[2]Dept. Nutrición, Bromatología y Tecnología de los Alimentos, UCM-Madrid
[3]Probisearch SL.

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P26
EFFECT OF HTST AND HOLDER PASTEURIZATION ON IMMUNOGLOBULINS, GROWTH FACTORS AND HORMONES IN DONOR MILK

D. Escuder Vieco[1], I. Espinosa Martos[3], L. Fernández Ávarez[2], J.M. Rodríguez Gómez[2], N.R. García Lara[1], C.R. Pallás Alonso[1]

1Human Milk Bank- Madrid
2Dept. Nutrición, Bromatología y Tecnología de los Alimentos, UCM-Madrid
3Probisearch SL.

Background
When mother's own milk is unavailable, the next best alternative is donor milk, which is usually pasteurized by Holder method to ensure its microbiological safety in human milk banks. Unfortunately, Holder pasteurization affects, at higher or lower degree, some bioactive compounds present in human milk.
Materials and methods
In this context, a continuous HTST system to pasteurize donor milk has been designed and validated recently by this research group. Therefore, the objective of this work was to compare the effect of HTST treatment at different temperature/time pairs in relation to Holder pasteurization on the main immunoglobulin, growth factors and hormones found in 18 batches of donor milk.
Results and conclusions
IgG showed the highest retention of activity after HTST treatments, followed by IgA, while IgM had the lowest values. In all cases, the level of retained Ig after HTST treatments was statistically significant higher than those obtained after Holder pasteurization.
Regarding growth factors, the retention values for TGF-2 activity were higher after HTST treatments compared to levels found after Holder pasteurization although these differences were not statistically significant. Also, none of the heat treatments had a substantial effect on EGF concentration. Finally, donor milk adiponectin and ghrelin concentrations were unaffected after the different heat treatments. In contrast, leptin was not detected after Holder method, whereas the retention rates of this hormone oscillated between 34–68% after the different HTST treatments.
Globally, HTST treatments were associated to a significantly higher preservation of, at least, some of the tested biologically active compounds.

P27
KENYA'S EXPERIENCE IN ESTABLISHMENT OF HUMAN MILK BANKS: A SYSTEMATIC APPROACH

B.M. Samburu[1], K. Israel-Ballard[2], E. Kimani-Murage[3], M. Njeri[3], R. Musoke[4], A. Govogah[5], J. Muiruri[6], L. Kiige[7]

[1]Ministry of Health Department of Preventive and Promotive Services, Nutrition and Dietetics Unit, Kenya
[2]Maternal New born Child Health, PATH USA
[3]African Population and Health Research Centre. Kenya
[4]University of Nairobi Pediatric Department, Kenya
[5]Ministry of Health Neonatal, Child and Adolescent Health Unit, Kenya
[6]PATH, Kenya
[7]UNICEF, Kenya

Background: WHO recommends exclusive breastfeeding for the first 6 months and continuation upto two years. However, some children such as orphaned, premature and low birth weight may have difficult accessing their own mother's breast milk. Kenya is ranked No. 15 globally with highest number of prematurity 12.3% and low birth weight 8% out of 188 countries of the total deliveries (1.5m). There is an annual estimation of 14,595 deaths as a result of prematurity. These deaths can largely be averted by proven and available interventions. WHO recommends donated human milk as the second option for feeding children who do not have access to their own mother's milk. Kenya is in the process of establishment of Human Milk Banks (HMB). However, there is little information on what works best and the local perception regarding donated human milk.
Objective: To describe systematic approaches being used to establish the mother baby friendly initiative plus (MBFI+) model for human milk banking.
Methodology: Phase 1 involved a formative research to establish feasibility and acceptability of donated human milk. Over 80% of mothers say they would donate milk. A learning exchange was conducted to South Africa to see how human milk banks operate. Development of the guidelines for establishing HMB is ongoing. In phase 2 and 3 we hope to establish HMB quality control system thereafter implement MBFHI+ human milk banks pilot programme in local facilities.
Conclusion: All these activities require resources and we hope that many lives will be saved through these innovative approaches.

P28
ANALYSIS OF RUSSIAN DONOR HUMAN MILK BANK WORK IN NICU

I. Belyaeva[1], N. Kharitonova[1], E. Bombardirova[1], T. Potekhina[1], M. Mitish[1], O. Lukoyanova[1]

[1]Department of Premature Infants Scientific Centre of Children's Health Russia

Significance. Recently, providing breast-feeding for infants with different abnormalities (especially, preterm infants) has gathered significance. Human milk is known to be the best possible nutrition for those infants because it provides possibilities for "catch-up growth" and optimal neuropsychological development. At the same time, many preterm infants are deprived of mother's milk for reasons beyond control, that is why the first donor human milk bank in Russia was opened in the Scientific Centre of Children's Health in 2014.
Aims. To analyse work of the donor human milk bank in NICU in 2015-2016.
Patients and Methods. 156 preterm infants receiving treatment for various perinatal pathologies were included in the study. Methods are following: clinical examination of patients, instrumental and laboratory examinations depending on the type of a pathology, physical development assessment using centile scale.
Results. Positive trend in neurological status was noted in all recipients of donor human milk; average daily weight gain was 30±7,1 g.; none of infants suffered from digestive malfunction during use of donor human milk. Most of the patients received breast-feed at the discharge.
Conclusion. Analysis of donor human milk bank work claims it's efficiency in support and promoting breast feeding that is especially important for preterm infants.

P29
THE FIRST HUMAN MILK BANK IN LITHUANIA

V. Ivanauskien, R. Tamelien, R. Vazgien, S. Siudikien, G. Šatien, N. Skorobogatova

University of Health Sciences Kaunas Clinics

Human milk (breastmilk) is the normal, optimal and most desirable food for human infants. EMBA and HMBANA and their member milk banks are committed to improving the health of populations through promoting breastfeeding and human milk as the first food for all babies. Donated milk is used primarily for preterm infants during their first days, until mother's own milk production has started. Human donor milk could be life enhancing and often life saving for low birth weight and premature babies or infants recovering from serious gut complications and surgery. The provision of safe, screened and tested human milk by milk banks has also been shown to promote and support breastfeeding enabling more babies who were born too soon to be discharged home fully breastfeeding and more mothers to continue to breastfeed. The first milk bank opened on the 30st of November 2016 in Lithuanian University of Health Sciences Kaunas Clinics.

P30
HUMAN-MILK DONATION SURVEILLANCE PROGRAM DEVELOPMENT OF QUALITY AND SAFETY CONTROL METHOD OF THE ACTIVITY OF A HUMAN MILK BANKS

N. Garcia Lara[1], M. Pena Caballero[2], A. Gaya Puig[3], J. Calvo Benito[3], M. Coderch Lecha[5], V. Pleguezuelos Hernandez[5], M.J. Martinez Lorenzo[4], J.M. Brull Sabate[6]

[1]1Human milk bank. Dep.Neonatology Hospital 12 Octubre. Madrid
[2]Human milk bank. Dep.Neonatology Hospital Virgen de las Nieves. Granada
[3]Human milk bank. Fundación Banco de Sangre y de Tejidos. Islas Baleares
[4]Human milk bank. Banco de Sangre y Tejidos de Aragón.
[5]Human milk bank Cataluña.
[6]Human milk bank Extremadura.

The number and area of influence of human milk banks has increased significantly in the recent years. Many are regional or local banks that distribute donated human milk to a large number of hospitals and users.
The intensification of activity in HMB increases the risk for adverse effects. The Spanish Association of Human Milk Banks (AEBLH) has created a network for safe lactation. The purpose is to promote the detection of risk situations and the implementation of prevention and corrective measures that ensure the quality and safety of donated human milk.
DEVELOPMENT OF THE PROCEDURE
1. Definition of Human-Milk Donation Surveillance Program (HMDSP): a set of control measures for the collection and recording of information about undesired or unexpected effects of donated human milk (DHM) and the prevention of their occurrence.
2.- Contents. 2a.- Concepts
INCIDENTS.- Any unexpected effect, action, or reaction occurred during the process of donation, storage, production, distribution or administration of DHM. ADVERSE EVENTS.- Any negative unexpected response experienced by the donor or receptor of DHM.
SERIOUS ADVERSE EVENT- Any fatal, potentially fatal, disabling or incapacitating event that prolongs the stay of the neonate in the Unit.
IMPUTABILITY.- Probability that an adverse reaction experienced by a donor or receptor is attributed to the process of donation, storage, production, distribution or administration of.
DHM
WARNING OR SIGN.- Potential causal relationship between an unknown adverse event and DHM which may pose a safety problem and lead to the issuing of a warning. 2b. Data collection and management
Event reporting is performed through the Adverse Event or Reaction Report Form, which are completed by the person in charge of Human Milk Donation Surveillance of the HMB. A work team of AEBLH annually performs a statistical analysis of the events reported and publishes the results obtained and the measures to be implemented.
3b. Characteristics of the procedure Data confidentiality
Participation of all HMB composing the AEBLH
The purpose of HMDSP is to facilitate the continuous sharing of data about unexpected incidents or adverse effects related to the process of donation of human milk.

P31
WHY DONOR MILK BANKD? - A SHORT OVERVIEW OF THEIR HISTORY IN GERMANY

A. Sunder-Plassmann

Sektion Neonatologie und Pädiatrische Intensivmedizin, Universitätsklinikum Hamburg-Eppendorf

Germany is an interesting case for an examination of ups and downs in the history of donor milk banks. Like in other European countries milk banks have not solely been influenced by medical/scientific evidence, but also by political, ideological and economic factors. Since the first donor milk was fed to infants in hospitals in the German Empire and then in the Weimar Republic, the country has gone through very different political systems. Nazi Germany, the Western Federal Republic of Germany (FRG), the Eastern German Democratic Republic (GDR) and the contemporary reunified Federal Republic each put an imprint on milk banks. My oral presentation will examine each.
In the German Empire and the Weimar Republic doctors widely recommended nursing and engaged wet nurses to meet the demand for human milk and – around the same time as in other countries (e.g. the Austro-Hungarian Empire and the USA) – the first donor milk banks were set up in the country. In Germany, social, national and eugenic considerations became intertwined in the struggle against infant mortality.
In Nazi Germany human milk was used to strengthen the "German Volksgemeinschaft" ("community of the German people"), particularly individuals who were considered as "erbgesund" ("hereditarily healthy"). Dozens of donor milk banks were set up across the territory of the "Third Reich" and the concept was "exported" during the war, e.g. to Norway.
After the war, until the 1960s, mother's milk and donor milk continued to be the preferred means of German pediatricians to counter infant mortality. When industrial milk products for infants were significantly improved in the 1960s, both in the East and the West, milk banks on both sides of the Iron Curtain took very different routes. While donor milk banks shut down in the FRG in the 1970s, the GDR continued using donor milk until reunification in 1990. Today the superiority of human milk is again undisputed, particularly with regard to extremely premature infants and other risk groups, and there is a revival of donor milk banks in Germany, which reflects a similar development across the globe.
The presentation will include historical photos.

P34
IMPACT OF HUMAN MILK BANK – EXPERIENCE FROM A TERTIARY CARE TEACHING HOSPITAL, SOUTH INDIA

A. Bethou, V. Bhat

Dept. of Neonatology, JIPMER, Pondicherry, India

Objective: To study the impact of Human Milk Bank (HMB) on neonatal mortality, incidence of Necrotizing Enterocolitis (NEC) and rate of exclusive breastfeeding.
Methods: This pre – post intervention study was conducted in a tertiary care teaching institute in south India. Data regarding neonatal mortality, incidence of NEC and exclusive breastfeeding rate were collected for a period of 6 months before and after establishing a modern HMB and compared.
Results: The number of deliveries, live births and incidence of preterm and VLBW neonates during pre and post HMB periods were comparable. Neonatal mortality was 11.32 / 1000 live births pre HMB compared to 10.77 / 1000 live births post HMB. The incidence of NEC was 1.26% of live births pre HMB compared to 1.07% post HMB. Exclusive breastfeeding rate pre HMB was 34% compared to 74% post HMB.
Conclusion: HMB decreased neonatal mortality and incidence of NEC while improving exclusive breastfeeding rate in the population studied.
Keywords: Human milk bank, Neonatal mortality, Exclusive breastfeeding, Necrotizing Enterocolitis.

P35
QUALITY IMPROVEMENT PROJECT: IMPROVING DONOR MILK PRACTICES WITHIN THE NICU AT BIRMINGHAM WOMEN'S HOSPITAL

H. Wood, G. Holder

Neonatal Unit. Birmingham Women's and Children's NHS Foundation Trust - Birmingham, UK

BACKGROUND: Donor milk from our on site Milk Bank is the milk of choice in high risk babies in the absence of mother's own milk. The NICE guideline "Donor milk banks: service operation" gives recommendations with regards to tracking and tracing the use of donor milk. A local audit performed in 2015 showed that the documentation of donor milk was often incomplete, making traceability difficult. This highlighted the need for significant improvement in local practice.
METHOD: A Quality Improvement Project was developed aiming to improve awareness, understanding and practice of local donor milk use. This consisted of three phases: (1) Establish existing knowledge among staff; (2) Devise an education package; (3) Re-audit practice. Existing knowledge was assessed through a questionnaire distributed to nursing and medical staff. This comprised of images showing incorrect practice that responders were asked to identify. The education package comprised of two short videos illustrating correct practice. The distribution to all staff was facilitated by showings at departmental meetings, ad hoc showings on the ward and uploading to the Trust's intranet education platform. Tracking and tracing practices are being re-audited using the NICE baseline assessment tool.
RESULTS: The correct responses to the questionnaire ranged between 66% and 83% indicating the need for further education. The educational videos have been shown to greater than 90% of staff.
Re-audit results are anticipated soon. CONCLUSIONS:
We believe that the re-audit will demonstrate improved practice since introducing our novel videos as an educational tool.

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P36
HOW TO INCREASE SUPPLY OF MILK TO MILK BANKS? - IMMUNOPROTECTIVE COMPOUNDS AND ANTIOXIDANT CAPACITY OF HUMAN MILK IN THE SECOND YEAR OF LACTATION

E. Sinkiewicz-Darol[1], U. Bernatowicz-#ojko[2], D. Martysiak-#urowska[3], M. Puta[4], A. Weso#owska[5], O. Barbarska[6], K. Kaczmarek[7], I. Adamczyk[7]

[1]Ludwik Rydygier's Provincial Polyclinical Hospital in Torun, Human Milk Bank, Torun, Poland, Medical University of Warsaw, Department of Neonatology, Laboratory of Human Milk and Lactation Research at Regional Human Milk Bank in Holy Hospital, Warsaw, Poland, Human Milk Bank Foundation, Warsaw, Poland
[2]Ludwik Rydygier's Provincial Polyclinical Hospital in Torun, Human Milk Bank., Torun, Poland, Human Milk Bank Foundation, Warsaw, Poland, Ludwik Rydygier's Provincial Polyclinical Hospital in Torun, Department of the Newborn and NICU, Torun, Poland
[3]Gdansk University of Technology, Chemical Faculty, Department of Food Chemistry, Technology and Biotechnology, Gdansk, Poland
[4]Gdansk University of Technology, Chemical Faculty, Department of Food Chemistry, Technology and Biotechnology, Gdansk, Poland
[5]Medical University of Warsaw, Department of Neonatology, Laboratory of Human Milk and Lactation Research at Regional Human Milk Bank in Holy Hospital, Warsaw, Poland, Human Milk Bank Foundation, Warsaw, Poland
[6]Medical University of Warsaw, Department of Neonatology, Laboratory of Human Milk and Lactation Research at Regional Human Milk Bank in Holy Hospital, Warsaw, Poland, Medical University of Warsaw, Department of Medical Biology, Warsaw, Poland, Medical University of Warsaw, First Department of Obstetrics and Gynecology, Warsaw, Poland
[7]Ludwik Rydygier's Provincial Polyclinical Hospital in Torun, Human Milk Bank, Torun, Poland

Background: Policies and practiecis about exclusion criteria for donors based on duration of lactation vary at milk banks around the world. The donors are usually women in the first year after delivery on time, or mothers of premature infants. In most milk banks donors beyond one year of postpartum are not accepted. Limited studies has focused on milk composition in second year of lactation. Our previous study have shown that breast milk in second year of lactation has a nutritional value similar to breast milk of mothers that delivery preterm babies (1). Aim of study: The aim of this study was to analysed the concenrtation of immunoprotective and antioxidant compounds of human milk, such as lysozyme, lactoferrin, catalase, Total Antioxidant Capacity (TAC), vitamin C and glutathione peroxidase in breast milk samples of women lactating over one year. Material and methods: Milk samples were obtained from 31women in the second year of lactation. Control group consisted of mature breast milk samples (3-6 weeks of lactation) obtained from 21 term infants' mothers. Concentration of lysozyme was determined using of the Lysozyme ELISA Kit (Immundiagnostik AG, Bensheim, Germany) and lactoferrin determined by reversed-phase high-performance liquid chromatography with UV detection (RP-HPLC/UV). The total antioxidant capacity of milk was determined with the use of the ABTS assay. Concentration of vitamin C was determined by reversed-phase high- performance liquid chromatography with UV detection (RP- HPLC/UV) and glutathione peroxidase was determined using of the Glutathione Peroxidase Assay Kit (Item). Results: Our results showed that concentration of lysozyme, lactoferrin and vitamin C were not significantly different between the 2 groups (137,97 vs 118,20 μg/ml; 1,49 vs 1,57 g/L and 34,66 vs 36,15 mg/l). The TAC, catalase activity and glutathione peroxidase activity were significantly higher in milk samples from women lactating over one year compared to control group: 37,89 vs 27,85 mgTE/100 ml, $p < 0.05$; 32,66 vs 19,59 nmol/min/ml, $p < 0.05$; 15,69 vs 10,18 nmol/min/ml $p < 0,05$. Conclusions: The results highlights the importance of understanding how human milk changes in second year of lactation in order to create evidence based recommendations for milk banks regarding the potential nutritive and immunoprotective value of milk obtained from women lactating over one year.

1CAN MOTHERS BEYOND ONE YEAR OF LACTATION BE DONORS OF HUMAN MILK FOR PREMATURE INFANTS? Sinkiewicz-Darol E., Bertatowicz-#ojko U. et al., Breastfeeding Medicine. March 2016, 11(2): A-3-A-75. doi:10.1089/bfm.2016.28999.abstracts

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ENGAGING DONORS, HARNESSING TECHNOLOGY: THE DEVELOPMENT OF THE MILK BANK APP

G. Weaver[1], C. Conway[3], F. Place[2], S. Clarke[2], D. Fletcher[2], N. Shenker[1]

[1]Hearts Milk Bank CIC, Biopark, Broadwater Road, Welwyn Garden City, Hertfordshire UK AL7 3AX
[2]White October, 3 The Gallery, 54 Marston Street, Oxford, Oxfordshire OX4 1LF
[3]Unpackaged, 111/117 Muswell Hill Road, London N10 3HS

Recruiting, managing and processing the milk of donors in milk banks has arguably changed little for decades, while technology has surged forward through the near ubiquitous use of smartphones and social media. New mothers especially are particularly engaged with technology. As the UK moves towards the adoption of a regionalised approach to milk banking, an increase in the number of milk donors means milk banks will need to utilise technology to increase efficiency and save administration time, while also improving the experience of milk donation for time-poor mothers. Through engagement with another social enterprise, Unpackaged, and White October, a digital consultancy, the Hearts Milk Bank won Nesta funding to co- create the first in a series of web-based apps to facilitate the process of milk donation. The initial grant funding has been used to develop a prototype app. Donors will register, be granted access by the milk bank, and from there will be able to book collections through the Hearts Milk Bank courier team (either their own couriers, or the SERV motorcycle riders). Future funding will increase the range of tools available to donors, and integrate the app with milk bank tracking software, with appropriate data security safeguards.

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ENGAGING DONORS, HARNESSING TECHNOLOGY: THE DEVELOPMENT OF THE MILK BANK APP

C. Denis[1], C. Boquien[3], O. Menard[1], M. Croyal[2], J. Ossemond[2], D. Dupont[1], A. Deglaire[1]

[1]Agrocampus Ouest STLO, INRA, Rennes, France
[2]INRA PhAN, Université de Nantes, CRNH Ouest, IMAD, DHU2020, Nantes, France
[3]INRA PhAN, Université de Nantes, CRNH Ouest, IMAD, DHU2020, Nantes, France; EMBA, European Milk Bank Association, Milano, Italy

Human milk is a biological fluid suitable for newborn's needs, which lipid content in the milk fat globules is variable and highly dependent on mother diet. The aim of this study was to link milk fat globule structure and fatty acid composition of their triglycerides with kinetics of lipolysis, while performing in vitro static digestion simulating what is happening in newborn gastro-intestinal tract. Twelve human milks (1 month of lactation from mothers of term babies) from three European countries (Norway, Spain, France) were classified in 3 groups by laser light scattering, according to the surface specific area of fat globules, and were characterized on their triglyceride and total fatty acid profiles. While performing in vitro static digestion, follow- up of the particle size evolution (by laser light scattering) and of the lipolysis degree (by thin layer chromatography and densitometry and by fatty acid quantification through gas chromatography) was done in order to compare the three defined groups of human milk. There was less lipolysis for the low specific surface area group. There was also an intermediate linear correlation between polyunsaturated fatty acid content and specific surface area of the milk fat globules ($R=-0.6$; p-value = 0.04; $n=12$). The final effect on fatty acid release and so on newborn growth and development is another scientific question that will need to be challenged.
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Key words: Human milk, milk fat globule, fatty acid, specific surface area, triglyceride, in vitro static digestion, maternal diet.

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WHY IT IS SO DIFFICULT TO ESTABLISH THE FIRST HUMAN MILK BANK IN A SMALL COUNTRY LIKE SLOVENIA?

A. Domjan Arnsek1

[1]University Medical Centre Ljubljana
[2]Department of Obstetrics and Gynecology
[3]NICU

More than 30 years ago was established the new Maternity hospital in Ljubljana and started a new NICU which is one of the threeTertiary Centres for the whole country. We have about 6500 deliveries which is 30% of all in the country. Mostly inborn prematures come as transport in utero (TIU). We admit at NICU 500 to 600 newborns per year and most of the babies under 1500g.
From the begining we had Lactarium which is part of the NICU. Nurses in Lactarium teach mothers very quickly after delivery how to express milk for their preterm or seek baby. They collect mothers milk, store, freez it if necessary, add fortifiers and prepair it every day for NICU pacients. They also prepair formula if there is no mothers milk. Prematures get only raw mothers milk, fresh or frozen.
Almost all of our mothers want to express milk for preterms and they succesfully do it. They can stay in hospital as long as they wish as lactating mothers. Some of them for weeks or months. It is paid by Health Insurance.There was no tradition of milk banks in Slovenia like in Austria and other European countries. Also all of my coleugs neonatologists were not certain we need a milk bank. Almost nobody of them supported or helped me. Most of them didn't believe in cost benefit of milk bank.
When I came to work in NICU in Ljubljana from a smaller hospital I asked my coleagues whay we don't have a milk bank from the establishment of NICU. No one could explain or answer. I went to Milk Banking Conference to get more information and than to London to see how milk bank is operating as a small budget bank. I thought it would be so easy to do it. What a mistake!
We asked some companies as donors and they bought us pasteuriser and milk analyzer. The hospital prepaired some room and renovated the place. But then the financial crises came and all investments in hospitals stopped. We couldn't get anything.We are waiting for freezers and other equipment for more than 2 years. Now we will get what we need.
In the meantime we have now new Head of the NICU who understands that we should have our milk bank and that donor milk is a higher standard than formula.We are lucky or it is the way we treat the preterms that we have very low incidence of NEC and LOS. So there was not a strong need or evidence we really must have milk bank. Maybe we will not need a lot of donor milk. I think mostly just the first few days before mothers start to lactate or for premature where it is mothers milk contraindicated becoause of mothers seeknes or medication. But it is important to start. And parents start to ask us why is the project not proceeding. A lot of mothers would like to be a donor but they have no place to donate yet.

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ORGANISING SECRETARIAT
BIOMEDIA srl - Via L. Temolo 4, 20126 Milan
Ph.: +39 02 45498282 - Fax +39 02 45498199 - monica.arosio@biomedia.net - www.biomedia.net