

Malta Midwives' Journal

The Stork



Malta Midwives Association

Issue 10 July 2017

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¹ G. Halkworth (Royal Glamorgan Hospital) et al. 'iron absorption from Spatone for prevention of iron deficiency in pregnancy' in Clinical and Laboratory Haematology, 2003, 25 227-231.

² IRI HBA outlets, 52 w/e 27th October 2010.

³ D. McKenna (Royal Victoria Hospital) et al. 'a randomised trial investigating and iron-rich natural mineral water as a prophylaxis against iron deficiency in pregnancy' in Clinical and Laboratory Haematology, 2003, 25 99-103.

⁴ M. Worwood (University of Wales College of Medicine) et al. 'iron absorption from a natural mineral water' in Clinical and Laboratory Haematology, 1996, 18 23-27.

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The views expressed
in the Journal are those of individual
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of the Midwives' Association.

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With courtesy of Ms Rebecca Zammit
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Annual Membership €20

Dear Member,

This publication marks the 10th issue of the Malta Midwives Journal. Over these 10 issues this journal has acted as a contact point between the Malta Midwives Association and its members, providing evidence and information to readers as well as the sharing of midwifery-related experiences. Of course this journal would not have been possible without midwives and other professionals writing for the Malta Midwives Journal, and the hard work of the MMA committee. This journal can now also be accessed online through the University of Malta. Electronic copies have been archived in OAR@UoM, and been assigned the following identifier: <https://www.um.edu.mt/library/oar/handle/123456789/19638>

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As in previous years, the International day of the midwife was celebrated by the MMA. The International theme 'Midwives, Mothers and Families: Partners for Life' guided the work, events and press release, which can be found in this issue. The midwife is recognised internationally as a lead professional during childbearing. Therefore the midwife's care and actions during such an important time are critical. Midwives have a professional duty to remain up to date with the latest evidence in their field of practice. New practices and evidence around breech presentation is one such area explored in this issue. Another area of practice that most of us are involved with is prematurity. The midwife plays an important part of the multidisciplinary team involved in the care provided to mothers at risk of preterm birth, management of preterm labour, the care of the preterm infant and supporting the family. Every year an estimated 15 million babies are born premature, the WHO recognises prematurity as a global problem and the leading cause of death among children under 5 years.

The Malta Midwives Association would like to take this opportunity to thank all those who contribute to the running of the services provided at the premises, those who attend and participate in the events organised by the MMA and those who write for this journal. We invite all midwives to write for this journal, so as to share their knowledge and experiences.

Rebecca Mizzi
Co-Editor

Upcoming Events

Transforming Loss: Meeting the Needs of Parents.

The 9th Joint annual conference- RCM,
SANDS and BLISS
Edgbaston Stadium, Birmingham
12th September 2017
[https://www.sands.org.uk/professionals/
training-and-information/transforming-loss-
meeting-needs-parents](https://www.sands.org.uk/professionals/training-and-information/transforming-loss-meeting-needs-parents)

11th International Normal Labour and Birth Research Conference

Grange hotel, Grange over Sands,
Lake District UK
2-4th October 2017
www.uclan.ac.uk/conferences

Improving quality of women's healthcare RCOG

United Kingdom
13th October
[https://www.rcog.org.uk/en/courses-exams-
events](https://www.rcog.org.uk/en/courses-exams-events)

2nd Congress of Joint European Neonatal Societies

Venice
31st Oct- 4th Nov
www.jenscongress.eu

Baby Friendly Initiative Annual Conference

22-23 November 2017,
Telford International Centre; UK
bfi@unicef.org.mt

Joint Conference of the Association of Clinical Embryologists, British Fertility Society and the Society for Reproduction & Fertility,

Liverpool, UK
4-6 January 2018.
<http://fertilityconference.org/>

7th International Conference on Clinical Neonatology, Turin, Italy

May 23rd to May 26th, 2018
info@iccn2018.eu

Educational Seminars at the Malta Midwives Association.

Short educational sessions to share
knowledge and evidence.
Watch our for our facebook page for more
information. Certificates will be awarded.



Message from the President

Dear Midwives,

It has been a few months since I took my chair as President of the Malta Midwives Association (MMA), a chair that I must say I have approached with a trembling heart, as I know that I need to meet a standard set by the incredible midwives who had occupied it before me. The Malta Midwives Association has come a long way since its inception in 1974. In fact, midwifery in Malta has progressed significantly over the past decades, but it is still clear, that we have further to go in order to build a better future for our profession. A better future for all will require busting myths, changing the way we do things, researching innovative procedures, and making sure we can play our full part in an ever changing world. Achieving this will require courage and commitment, the will to change the game, and to support transformative ideas, where each one of us will contribute to this in different ways. However, one thing is certain, we cannot support a status quo.



Franka Cadee, the new President of the International Confederation of Midwives, calls for midwives to take action. She closed the 31st Triennial Congress addressing midwives from all around the world with the main message that it is time to harmonise midwifery care

together. Women across the world are at risk of receiving care too little too late or too much too soon. She said that 'All midwives know when it is time to breathe and when it is time to push. This is the time to push for midwifery care.'

The midwifery profession will move forward through the way the midwife is able to use her knowledge and skills to meet the challenges of a women-centred and multi-disciplinary approach to midwifery care delivery. We are living in a time where care is driven by technology and geared by a result-focused approach which often forgets the simple important aspect that pregnancy and birth are physiological normal processes for many women. Many women nowadays are seeking ways to embrace

this normality and are more than ever empowered to be allowed to have informed choices.

The MMA is recognising this shift in the mentality of many local and foreign women living here, where the midwife is increasingly being seen as a point of reference for information, guidance, support and care. This is an opportunity which should not be missed by the local midwifery profession where the women themselves are choosing to be cared for by a midwife. I believe that the midwife is the appropriate care provider for women going through physiologically normal life events. In order to support this paradigm, the Association is looking into models of care on how to address this challenge, on how to use midwifery knowledge and skills in order to provide a women-centred approach to midwifery practices and on how to address the acceptability and quality of midwifery services.

I would like to take this opportunity to thank the committee members for their support, dedication and for the time they give to the Association. Their enthusiasm and passion for midwifery is inspiring and needs to be commended. One has to appreciate that it is all done on a voluntary basis.

A very big thank you also goes to all the midwives who offer their time to deliver education sessions and who give a helping hand to organise other activities held by the Association. Without your contribution, the Association would not be able to continue to give these services. Thank you once again for your sterling work, and here I would like to also take the opportunity to appeal to more midwives to come forward to assist with education sessions/activities. I can assure you that by participating in these sessions/activities you gain confidence and skills in public speaking, you will have an opportunity to be a midwife educator, and all of this will serve to build relationships and provide continuity of care.

Last but definitely not least, a heartfelt thanks goes to the contributors of this publication. This publication is a means for all midwives to share information and innovations in midwifery. It offers the midwife the opportunity to research topics that may challenge existent practices and allows the midwife to get the acknowledgement she deserves for her writing capabilities.

Pauline Fenech
President



MMA is very pleased to announce that Dr Rita Borg Xuereb was re-elected board member of the International Confederation of Midwives (ICM) during the council meeting held in Toronto, Canada in June 2017. Dr Borg Xuereb is also the ICM liaison person for Midwifery Education. On behalf of MMA, I would like to congratulate her for her dedication and commitment towards improving and upscaling midwifery.

Treasurer's Message

Over the past year, a record number of midwives opted to pay their annual membership fee via bank transfer. Such a process makes life easier for all and I am confident that more will take on board this procedure.

Money generated from membership was channelled back for the benefit of midwives and their curricular development:

- Sponsorships were made available for two midwives to experience first-hand the Dutch model;
- The sponsorship of a group of "Online Midwifery Conferences" which were made available for all to freely access and consult;
- The Malta Midwives' Journal published every six months and distributed to all midwives, both members and non-members;
- Sponsorship of the Induction Course for newly-graduated midwives
- Keeping in touch with developments via the membership of National and International organizations such as the ICM and EMA, amongst others.
- Sponsorship of other educational activities to be held later

on this year (still in the pipeline).

Moreover, the Association funds generated by the different courses provided to couples at the Msida premises are used to further foster the social activities which have now become an annual event. In this regard, the Midwives' Day dinners, held both in Malta and Gozo, was yet another successful event as we enjoyed each other's company over some excellent food.

Next coming up is this year's summer activity scheduled for 18 July.

A day by the pool and an evening barbeque are planned.

So save the date and hope to see most of you there.

Finally, more services are being offered at the MMA premises. But as these services increase, sustainability becomes somewhat of a challenge. Hence more midwives need to be on board – please do come forward.

Women need us!

Doris Grima
Treasurer

International Day of the Midwife 2017

The International day of the Midwife is celebrated across the globe annually on the 5th of May. This year the International Confederation of Midwives set the theme 'Midwives, Mothers, Families: Partners for life'. The Malta Midwives Association, knowing the impact of social media today created artwork incorporating the theme to celebrate the occasion and took to social media to promote midwifery. The public relations team of the committee issued a press release which was published in the Times of Malta.



Student Midwives: Daniela Buttigieg and Kristina Galea donating flowers on Midwives' Day

The annual Midwives Day talk and buffet dinner was held at the BellaVista hotel. As each year it was free of charge for all members of the MMA, 78 midwives/student midwives attended this event. The new association president, Pauline Fenech opened the night with a speech emphasising the long lasting impact midwives have on families. Pauline took this opportunity to thank all those midwives who dedicate their time throughout the year to the association, and introduced the midwifery services, that are taking place on Saturday mornings. Ex-president Mary Buttigieg Said presented a review of the association's work for 2016. The association invited Ms. Ritianne Xerri from MISCO who gave an interactive talk about compassion in midwifery. Her talk provided those present to reflect on the midwifery profession, highlighting the importance of empathy, tolerance and emotional intelligence. Ms. Ritianne Xerri, as a mother herself, took the opportunity to thank all midwives for their hard work and dedication during such a special time in family life. Those midwives unable to join us, as they were working night shift, were treated to a cake to enjoy during their shift. In Gozo a meal was organised with the help of Ms. Georgette Spiteri for the Gozitan midwives.

Midwifery students went round the maternity wards and breastfeeding clinic and gave a flower to each mother.

Rebecca Mizzi

Committee Members 2017/18

Ms Pauline Fenech	President
Ms Mary Buttigieg Said	Vice President
Ms Doris Grima	Treasurer
Ms Charlene Attard	Vice Treasurer
Ms Marie Soler	Secretary
Ms Annabelle Mamo	Vice Secretary
Ms Ruth Xuereb	Public Relations
Ms Sylvana Attard	Public Relations
Ms Rebecca Mizzi	Co-Editor



'Midwives, Mothers and Families: Partners for Life'

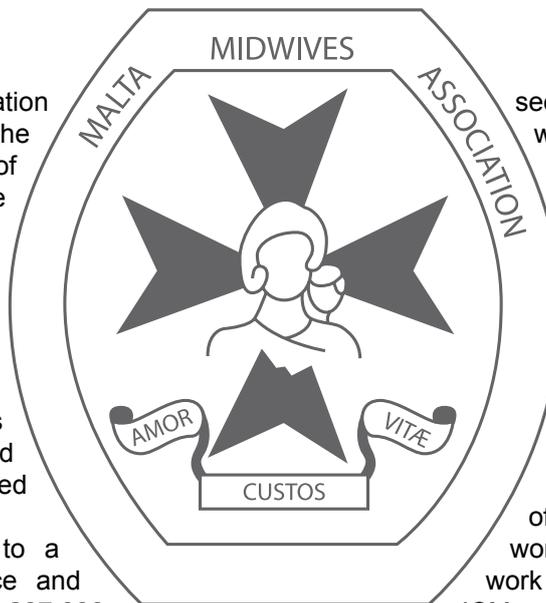
Press Release

The Malta Midwives Association (MMA), as a member of the International Confederation of Midwives (ICM), the worldwide body of midwives, celebrates the International Day of the Midwife on the 5th of May. The theme for this year is 'Midwives, Mothers and Families: Partners for Life'. May 5 is an annual commemoration aimed at recalling that millions of women and newborns around the world are cared for by skilled midwives every day.

On a global level, access to a skilled midwife can help reduce and prevent deaths of more than 287,000 women (ICM Resource 2017) who die while giving birth. Luckily this is not the case in Malta. As reported in the last issue of the National Obstetric Information System (NOIS) Annual Report 2015 there were no maternal deaths reported between 2011 -2015,. This augurs well on the local maternal health system. However, Maltese midwives are committed to continue raising the standard of care given to mothers and infants as well as to reduce the number of morbidities that affect mothers and infants during childbirth.

It is evident that the role of the midwife is far more than just delivering babies. Current research and evidence (Lancet Series on Midwifery 2014) is increasingly showing the importance and the significance of midwifery care in the promotion of maternal and infant well-being. This research confirms that midwifery-led services are efficient, effective and preferred by women who have a normal pregnancy. The policy goal in this country, should, therefore be to extend and expand these high quality midwifery-led services.

Working in partnership with women allows midwives and the mother-to-be to get to know each other and build trust and respect. It allows midwives to provide individualised care that meets each woman's needs. But it should not be one system fits all. The Association of Midwives urges women to voice their requests and discuss options available for them in order to have a positive birth experience. Women and midwives also need to find opportunities where they can appraise, and with good reason, question the evidence behind the status quo. Respectful maternity care must not be



seen as a luxury or an amenity for women who are lucky enough to have a straightforward or positive pregnancy and birth experience. Respectful care is a human right for all childbearing women. Midwives understand that by working in partnership with women and their families they can support these families to make better decisions tailored to their needs.

Midwives in Malta are aware of the benefits that partnering with women will also enable midwives to work within their scope of practice as per ICM competencies (ICM 2013) and WHO

recommendations (SoWMy 2014) as well as contribute to achieve the Sustainable Development Goals (SDGs) by reducing child mortality and improving maternal health.

The Malta Midwives Association is continuously committed to raise the standard of maternal and child health thus improving the quality of midwifery care. With this in mind the Association sees the need to be at the forefront in providing educational and professional development programmes for midwives; this through programmes that are held locally as well as by through participation in programmes abroad, always with the aim of keeping abreast with scientific research. In this vein, the Association regularly provides on-going educational programmes and seminars to inform and educate couples, thus enabling them to make informed decisions during pregnancy and childbirth.

Midwifery care is unique in the way it can influence the health of future generations through giving new parents the physical well-being, confidence and self-esteem that arise from a positive birth experience; through breastfeeding support and nutritional education; through assistance with family planning and spacing; and through encouragement of women's knowledge of their foetuses and their own bodies. However, there is no way forward without the involvement of the women, their infants and their families.

The 'International Day of the Midwife' is a golden opportunity to celebrate the work of the midwife and a rally-call to advocate for changes in midwifery and maternity services so that services meet the needs of women and midwives.

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Positive Birth Movement Malta

The Positive Birth Movement started out in 2012 by Milli Hill a writer and campaigner of the Positive Birth Book. Today, it has grown to over 300 life groups worldwide.

The positive Birth Movement believes that every woman deserves a positive birth. Having a positive birth experience, means that birth is approached in a realistic manner. Positive birth does not have to be a natural or drug free birth. One can have a positive birth experience in hospital, at home or a water birth or even an operative delivery. Having a positive birth means an experience in which the woman feels that she has freedom of choice, access to accurate information and informed consent. That she is in control of her birthing environment, empowered and respected throughout her pregnancy and childbirth experience.

The first Positive Birth Movement meetings in Malta were initiated by Ms Becky Gauci-Maistre who is a mother of three, postpartum doula, babywearing educator, Momma Trauma facilitator and Gentle Birth certified educator. Following her first birth experience, having suffered from

PTSD (Post Traumatic Stress Disorder) and determined for a VBAC (Vaginal Birth after Caesarean Section) for her second birth, Becky started researching into birth and together with Ms Sylvana Brannon, set up the Better Birth Coalition. Initial meetings were very successful and well received. Meanwhile, several midwives also wished to work towards developing the Positive Birth Movement in Malta. A group of midwives including Rebecca Mizzi, Ruth Marie Xuereb, Francesca Cachia Calvagno and Pauline Borg contacted Ms Becky Gauci-Maistre and set out to continue further meetings. Pauline Borg enlisted as a Positive Birth Movement Facilitator in order to register the group and attain permission from the International Positive Birth Movement to set up further meetings.

This year, meetings have been organised at the Malta Midwives Association. Topics discussed included; 'Birth in Malta', 'Becoming a mother' and 'Preparing for Birth & Contractions'. A Facebook page (Positive Birth Movement Malta) serves to provide information regarding upcoming meetings, which are organised monthly and consist of one hour discussion time together with some time for mingling and coffee.

Anyone interested in the movement can contact the PBM Malta via the Facebook page, with any questions, comments or feedback. The Facebook page also acts as a means to spread information via social media regarding positive birth and related childbearing matters.

The meetings held so far have been extremely positive and rewarding for mothers, fathers and midwives. The discussions are led and generated by the women, dads and any other attendees (meetings are open to all) and thus bring new insight into birth in Malta. It is inspiring to see women supporting each other and gaining knowledge from one another, especially from the experiential knowledge of couples who have already given birth. Women are meeting up, linking up and shaking up the local birth culture...it feels like the seed of a social movement for birth is on its way!

**Pauline Borg
Ruth Marie Xuereb**



Xi Jfisser Għaliġa Meta x-Xogħol Huwa Passjoni u Kuraġġ Biex Nghix

Bl-Ingliż jgħidu *'Life Begins at 40'*. Ifhem, ma tantx nista' ngħid din għaliġa għax sena qabel eżatt f'Settembru tal-2013 bdejt il-miġja tiegħi mal-marda tal-kanċer. Agħar minn hekk kienet meta f'Jannar tal-2015, il-kanċer reġa' tfaċċa. Tant nixtieq ngħid affarijiet li ma nafx jirnexxlix nesprimi l-emozzjonijiet li rrid nfisser. Allura nistiednek tpoġġi bilqiegħda b'xi kikkra te u taqra dawn l-erba' kelmiet li ppruvajt insib mill-garigori ta' moħħi jew iktar minn kollox mill-fond ta' qalbi.

Il-kelma kanċer tant hi kerha anke tismagħha twerwrek aħseb u ara tkun fuqek. Il-biża' taħmek iktar speċjalment, meta bħali, għadni qed inrabi familja u fejn suppost qiegħda fl-aħjar żmien ta' ħajti. Però, hekk kellu jkun id-destin u avolja jġu mumentu mudlama, xorta nibqa' niġġieled u nipprova ngawdi l-preżent għax ma rridx li l-kanċer jisraqli l-mumentu sbieħ tal-preżent. U hawn ħa niġi għas-sugu ta' din is-silta. Ilħaqt *midwife* fl-1995, jġifieri ili 22 sena, li jekk irrid nkun pożittiva, vera niringrazzja lill-bambin li kelli x-xorti naħdem tul dawn is-snin kollha. Kemm iltqajt ma' ommijiet, kemm fraħt u bkejt magħhom, kemm kultant inkwetajt jew mort id-dar nehwden forsi li stajt nagħmel iktar għal dik l-omm. Kemm esperjenzi, kemm għamilna fares fuq ix-xogħol mal-kollegi tiegħi, kemm organizzajna attivitajiet u ħruġ 'l hawn u 'l hemm. Il-lista ma tiqafx! U għalhekk 22 sena taru għax ix-xogħol dejjem sar bil-qalb u b'passjoni; u hija dik il-passjoni li nħossha qisha mutur ġo fija dejjem għaddej biex inkompli nqum filgħodu u niġi għax-xogħol.

Ħafna jistaqsuni kif għadni naħdem u dlonk ngħidilhom kif nista' ma nkomplix naħdem bħala *midwife* meta għaliġa xogħli huwa wieħed mill-isbaħ xogħlijiet tad-dinja! Meta naf li koppja fdatni fl-iktar esperjenza intima ta' ħajjithom

jew meta ma' kull tarbija li titwieled inħossni kburiġa daqs l-omm jew iktar minnha! Xi ġmiel, x'miraklu, x'passjoni! U ftakru wkoll għeżiež kollegi li meta tkunu mifqughin bix-xogħol hemm min hu bħali li jixtieq jaħdem iktar u ma jistax. Meta nkun id-dar ma niflaħx, ikolli xewqa kbira li qiegħda x-xogħol magħkom. Imma dik hi l-ħajja hux.. qisha d-dinja ddu bil-kontra!



Qed ngħixu f'dinja fejn iżjed m'għandek ittri wara ismek, iktar tidher li inti kapaċi. Ma rridx niftiehem ħażin, imma l-courses li wieħed jagħmel m'humieħ biżżejjed jekk m'hemmx imħabba speċjali lejn ix-xogħol. U hija din l-imħabba speċjali lejn il-professjoni li ġgagħalni nkompli noffri s-saħħa tiegħi biex naraw eżatt xi jridu l-ommijiet u fejn nistgħu aħna bħala professjoni nużaw iktar il-ħiliet tagħna. Inutli qed nitgħallmu fuq it-tqala u ngħallmu 'l-istudenti tagħna fuq it-tqala jekk aħna m'aħniex naraw u niltaqgħu man-nisa fit-tqala. Hija l-ħolma tiegħi li għada pitgħada, il-*midwives* joħorgu iktar fil-komunità speċjalment fiċ-Ċentri tas-Saħħa. Forsi, bħali, nibda xi darba ninzel saċ-Ċentru tal-Mosta, niltaqa' mal-ommijiet u jekk ikollhom problema, għandhom għand min jirreferu. U wara

mmur sar-Rotunda! Hija din il-ħolma tiegħi li ttini l-kuraġġ nibqa' naħdem għall-professjoni tagħna.

Il-kuraġġ li nibqa' niġi għax-xogħol jġi wkoll mill-fatt li għandi l-aqwa kollegi, u iva nerġa' ngħid...l-aqwa kollegi fid-dinja! Ma nistax ma niringrazzjax lil kulħadd tas-sapport Prattiku waqt ix-xogħol, sapport finanzjarju, sapport psikoloġiku u sapport min-naħa ta' *staff* li tawni sigħat *tat-time in lieu* jew *vacation leave*. Dan kollu jgħini biex inkompli l-ġlieda biex nghix. Ma nistax ma nsemmix lil 'oħti' Romina. Ħbiberija ta' 40 sena...li lanqas nemmen minn xiex kellna ngħaddu imma l-passjoni li għandna t-tnejn li aħna għall-ħajja tgħinni biex inkompli nghix il-preżent bl-aħjar mod possibbli. Il-kuraġġ li għalissa nibqa' naħdem jġi wkoll mill-fatt li għandi sapport kbir mill-familja...anzi le...mill-aqwa familja tad-dinja!

Tisma' sikwit jgħidulek fuq Alla m'hemm ħadd. U parti mill-imħabba u passjoni kbira għax-xogħol tal-*midwifery* tiġi mill-fatt li qed ngħixu ma' mirakli kuljum u li wara dawn il-mirakli hemm xi ħadd kbir li kultant ma nifhmux il-pjanijiet Tiegħu. Qiegħed magħna l-ħin kollu u Hu wkoll għandu passjoni u mħabba biex jieħu ħsiebna għal dejjem. Kif tgħid il-ħabiba tiegħi tal-qalb Pilar Cinena: Grazzi Mulej. Grazzi talli tajtni l-opportunità li meta kont iżgħar, għażilt xogħol mimli mħabba u passjoni.

Tislijiet

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Improving Preterm Birth Outcomes

A high risk pregnancy is one that threatens the health or life of the mother and her fetus. Thousands of children live with serious illnesses and health conditions, therefore it is of fundamental importance to identify the best possible care and support for such children. In order to lessen the pain encountered by families, it is important to identify the causes of high-risk pregnancies and preterm births so to work on these risk factors before a baby is delivered. When birth happens before the expected due date a lovely experience often becomes a painful one. A major issue that lessons such trauma is parental involvement and feeding preterm babies expressed breast milk. Preterm babies in the Neonatal Intensive Care Unit (NICU) are at risk of serious health complications, expressed breast milk which is a lovebiotic will help these very vulnerable babies fight off infection and illnesses.

A group of 11 nurses and midwives from the Neonatal Paediatric Intensive Care Unit (NPICU) together with the Senior Midwifery Manager participated in the 8th Excellence in Paediatrics (EIP) Conference. The conference took place in London from the 8th to the 10th December at the Church House Westminster. The conference offered a unique educational experience to over 1,000 delegates and 100 faculty members from 80 countries attended and thus a network of international knowledge was provided. 75 leading experts in paediatrics, neonatology, adolescent health and professional development presented latest research via practical learning sessions and workshops. The conference was held through the collaboration with the Health Behaviour in School-aged Children (HBSC), a WHO (World Health Organisation) collaborative study, the WHO Collaborating Centre for International Child and Adolescent Health Policy based at the University of St. Andrews School of Medicine, the Leadership Foundation for Higher Education and a host of other partners and supporters. The focus of the conference was neonatal & early life paediatrics,

bringing awareness in nutrition, infant development and the preterm infant.

The WHO Collaborative Centre for International Child & Adolescent Health Policy (WHO Collaborative Cross-National Survey) has several strands of work related to social factors of health variances and prevention of risk behaviours. The collaborative study now includes 45 countries and regions across Europe and North America. This collaboration brings in individuals with a wide range of expertise in areas such as clinical medicine, epidemiology biology, paediatrics, pedagogy, psychology, public health, and sociology.



Maternal nutrition and fetal outcomes

Maternal nutrition plays an important role in fetal growth and development. Poor maternal nutritional conditions at the earliest stages of the life-course, during fetal development and early life, can induce short-term and longer lasting effects; in particular an increased risk of chronic diseases and obesity throughout the life course. Maternal inputs towards nutrition and nutritional homeostasis all influenced by genetic, epigenetic, microbiomes is also important. Evidence of malnutrition – maternal and infant nutrition, high rates of neural tube defects, anemia in mothers and infants, rickets, infantile seizures and cardiomyopathy secondary to vitamin D deficiency is still prevalent in neonates. Obesity increases the risk of gestational diabetes, miscarriage and pregnancy induced hypertension whilst in infants it increases the

risk of cardiovascular disease and type 2 diabetes. Other changes include mitochondrial dysfunction, insulin resistance, immune system dysfunction and increased sympathetic tone. In 2015 an estimate of 32 million iron deficient pregnant women worldwide showed lack of compliance with iron supplements or micronutrient supplements. Another issue is that two cases of rickets were identified in the UK in 2015/6. In such cases



mothers most at risk may not be easily identified and treated. Poor nutrition augments mild or serious mental health issues. Michie (2016) notes that mothers lacking in social support frequently have poor nutrition. Increased awareness of healthy eating and physical activity, improved breastfeeding rates, and a decrease use of readily available foods are important factors to improve nutrition. Antenatal and preconception advice is thus very important since the period of fetal development is crucial to intervene to prevent disease (Michie, 2016).

A small change can make a big impact

Breastfeeding is not only the best and complete nutrition for an infant but it offers benefits to both infant and mother, including reduced incidence of multiple infections, asthma, atopic dermatitis diabetes mellitus type 2 and obesity in infants. Some common hospital practices can lead to the infant receiving formula in the first weeks of life despite mothers' dedication to exclusively breastfeed. It is very important that the ten steps of breastfeeding are followed by staff to evaluate the impact of significant changes in primary providers and for combined efforts of WHO and UNICEF (United Nations Children Funds) to create a global standard to help support breast feeding within a hospital setting, together with promoting exclusive breastfeeding, skin to skin and parental breastfeeding instructions. This will result in success attributed to the hospital support staff in identifying the barriers and overcoming the lack of consistency in breastfeeding advice: a factor that can be addressed through continuous staff education. The overall purpose is to improve the overall and exclusive breastfeeding rates at discharge to 75% (Kola, 2016).

A "Necrotising Enterocolitis (NEC) free NICU" through breast milk – The best lovebiotic

Breastmilk is a very important contribution a mother can provide in the care of her infant especially when the baby is receiving care at the NPICU. Therefore breastfeeding offers unique advantages to this vulnerable population. All mothers who are hospitalised for preterm labour should be given the opportunity to discuss breastfeeding and understand the implications of providing breastmilk for the care of their baby. A most common misconception for successful lactation for mother of preterm infants is that the initiation of milk expression can be delayed until an infant is 'stable'. Mothers ideally should start expressing within 6 hours of birth and repeat this every 3-4 hours (Jones and Spencer, 2007).

Consequently, it may be confirmed that breastmilk is the best **LOVEBIOTIC**. In fact an analysis of 1272 infants in the National Institute of Child Health and Human Development (NICHD) network (2001) looked into the association between human milk intakes, the risk of NEC or death among infants with birth weight of 400 to 1000grams. During the study, 13.6% of the infants died or developed NEC after 14 days. The chances of developing NEC decreased in the proportion of total breastmilk intake. Thus the beneficial effect of breastmilk to protect babies from NEC due to the immature nature of a premature infant's gut, improved retinal function – babies born prior to 32weeks are at risk of Retinopathy

of Prematurity and increased tolerance of feeds. Others include protection from infection or sepsis and reduced risk of allergies (Perinatol, 2015; Hessel, 2011).

To provide a successful breastfeeding atmosphere, the physical closeness of the parents is crucial. The latter refers to being spatially and emotionally attached to the infant. The effect of the neonatal unit environment and culture on physical and emotional closeness is extremely important. The reasons to the physical, emotional and social well-being of both the infant and the parent include positive effects on infant brain development and parent psychological well-being and on the parent–infant relationship (Flacking et al., 2012).

Effects of gestational age at birth on health outcomes at 3 and 5 years

Very preterm infants, born before 32 weeks of gestation, have high rates of neonatal morbidity and mortality. A longitudinal Millennium Cohort Study (MCS) looked into 18,818 infants born in the United Kingdom between 2000 and 2002. The study examined the burden of later disease associated with moderate/late preterm (32-36 weeks) and early term (37-38 weeks) birth. The focus of the study involved the effects of gestational age at birth on health outcomes at 3 and 5 years of age. The main focus involved growth, hospital admissions, longstanding illness/disability, wheezing/asthma, use of prescribed drugs, and parental rating of their children's health. These results suggest that health outcomes of moderate/late preterm and early term babies are worse than those of full term babies. Additional research should quantify the effect due to maternal/fetal complications rather than prematurity itself. Irrespective of the reason for preterm birth, large numbers of these babies present a greater burden on public health services than very preterm babies (Boyle et al., 2012).

Conclusion

To improve fetal health issues it is important to outline practical and policy barriers that hinders maternal nutrition. The latter is vital as it may influence the early establishment of frequent milk expression together with maternal commitment. It is thus important to ensure breastmilk exposure to all premature babies in the neonatal unit sustaining a NEC free NICU.

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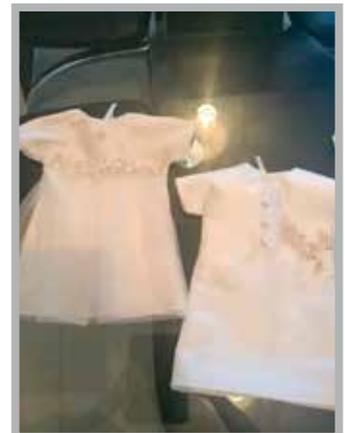
Tracey moved to Malta from the UK two and a half years ago, having previously made premature baby items for the NICU at Russles Hall Hospital. When she moved to Malta, a friend in the UK had an angel baby and asked her to make some items and send them in support of baby Jacob. Tracey then enquired into the local hospital's needs, and was directed to Charmaine at the NPICU, Mater Dei. Her work for the NPICU started with preemie baby outfits. Amongst those outfits was an angel type dress that she was told would not be used on preemie babies, due to tubes and wires, but it would be used on babies that did not survive. Tracey left Mater Dei with tears in her eyes from the knowledge that she was helping parents to allow their child to leave this earth with dignity. She then headed to social media for help from Recycle Malta. Seventy wedding dresses were donated, from which so far, over 40 angel gowns have been made and donated to NPICU, Central delivery suite, as well as angel wraps for Obstetric ward 2 and Gozo Maternity wards.

Tracey's support and hard work has been welcomed

by both the multidisciplinary team of the respective wards and the parents/guardians. The angel gowns are being used for baptisms and unfortunately, when a baby passes away. The angel dresses may also be given to the parents as a memory of their baby, and are placed in special pockets. The Central Delivery Suite has benefited from angel gowns for stillborn babies. These gowns have been designed with ties at the back to make dressing the baby easier. Not all parents want to see their angel babies in a gown, so Tracey's next mission is to create romper suits. The work has not stopped here, Tracey has sewn up 22 incubator covers, 19 large cot pretty sheets and 22 small incubator pretty sheets, as well as small knitted teddy bears and baby bonnets for the NPICU. Material has been donated by various local establishments to make this possible. A small knitted cot for Obstetrics 2 and colourful blanket for Central Delivery Suite were created to make photos for bereaved parents less clinical.

The NPICU works hard to involve parents/guardians in their babies' care. Furthermore, Obstetrics 2, Central Delivery Suite and NPICU staff do their best to comfort and support parents when they suffer an unfortunate loss of a child. Malta and Gozo love for babies has made this challenging work that little bit easier for us as midwives and nurses. On behalf of the Malta Midwives Association and the staff at Mater Dei we would like to take this opportunity to thank Ms Tracey Harper Jones and all those involved in supporting Malta and Gozo love for babies for their support in delivering a good quality service to our little clients and their parents. Tracey has been described by many members of staff as having a heart of gold, her dedication and selfless use of her talents is most definitely proof of that.

Tracey Harper Jones
Charmaine Psalia
Rebecca Mizzi





Fetal Fibronectin

A tool to predict preterm delivery

Preterm birth is the most important single determinant of adverse infant outcome in terms of survival and quality of life. Preterm labour accounts for 5-10% of all deliveries in developed countries. Preterm labour is a major cause of neonatal morbidity and mortality.

Preterm labour is defined as regular and painful uterine contractions, which lead to cervical change (effacement and dilatation) prior to 37 completed weeks of gestation (Gynaecologists, 2011). Threatened pre-term labour should be considered for any women presenting at less than 37 weeks gestation with uterine contractions +/- pre-term rupture of membranes, even in the absence of cervical change.

The advent of antenatal steroid administration has decreased the mortality associated with preterm delivery. In spite of this, preterm babies are still at risk of major complications namely respiratory distress syndrome, necrotizing enterocolitis, retinopathy of prematurity, sepsis, intraventricular haemorrhage, periventricular leucomalacia and long term cognitive and sensory impairment. Mortality and morbidity of preterm babies is determined by gestation at delivery and birthweight. Preterm babies put a stress on an already busy neonatal unit and carry cost implications for both health care services and society in general (Stratog, 2016).

Preterm birth is a complex and multifactorial aetiology. The majority are spontaneous, the remainder follow intervention for maternal or fetal disorders such as fetal growth restriction, pre-eclampsia and maternal diabetes.

Throughout the years professionals have tried to identify ways to predict those women who are at increased risk of preterm delivery. These include biochemical markers, screening for asymptomatic bacteruria and genital tract infection, risk scoring based on maternal factors, uterine activity monitoring and assessment of cervical length by clinical examination and more recently by ultrasound. Interventions such as early administration of tocolytics, cervical cerclage, antibiotic treatment of asymptomatic infection and the use of progesterone have all been considered (Gynaecologists, 2011).

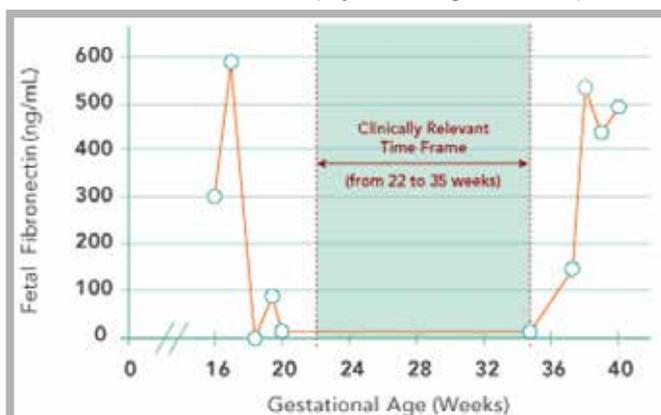


Figure 1: Normal Fetal Fibronectin: Expression by Gestational Age (HOLOGIC, 2010)

Fibronectin testing is used for the early prediction of preterm birth. Fibronectin is an adhesive glycoprotein at the maternal-fetal interface of the placenta. Fetal fibronectin testing has been shown to be clinically relevant between 22 to 35 weeks gestation (Figure 1). A negative result has a 99.2% confidence that these women will not deliver within 14 days.

Fetal fibronectin testing is used to assess the probability of preterm labour. This bedside test has a 99.2% *negative predictive value* this means that 124 out of 125 women with a normal (negative) fetal fibronectin test (fFN) did not deliver within the next 14 days. (i.e. < 1% chance of delivery in next 2 weeks). In relation to this, the test has a 16.7% *positive predictive value*. This means that 1 out of 4 women with an elevated (positive) test results in preterm delivery within 14 days (HOLOGIC, 2010).

Any woman who presents to labour ward, between 22 and 35 weeks gestation with a history of tightenings, who is not in active pre-term labour, should be recommended to have a fetal Fibronectin test (Peaceman AM, 1997).

This test can only be performed if the following criteria are fulfilled:

- 22 - 35 weeks
- Membranes intact
- No sexual intercourse in the past 24 hours
- No speculum examination or VE within the last 24 hours
- No aquagel use within the last 24 hours
- No vaginal bleeding within the last 24 hours

Once the above criteria are fulfilled, the test may be performed after maternal consent is obtained. This investigation involves a speculum examination without aqualgel in order to assess the cervix. A fibronectin swab is taken from the posterior fornix (soak for approximately 10 seconds). The contents of the swab container are

Specimen Collection Procedure

STEP 1 Collect specimen prior to digital examination or manipulation of the cervix to avoid sample contamination.

STEP 2 During speculum exam, lightly rotate swab across posterior fornix of the vagina for 10 seconds to absorb cervicovaginal secretions. 

STEP 3  Remove swab and immerse tip in buffer. Break the shaft at the score even with the top of the tube.

STEP 4  Insert the swab shaft into the hole inside the tube cap and push down tightly over the shaft, sealing the tube with a click. Ensure the shaft is inserted securely to avoid leakage. Label, and send fetal fibronectin sample to a lab near you.

Figure 2: (HOLOGIC, 2010)

then transferred to a cassette, which is read by the fetal fibronectin machine. It takes seven minutes to produce a result. Producing a positive or negative result (Figure 2, HOLOGIC, 2010).

Results and Actions:

A negative fibronectin test has a high specificity i.e. it confers a low risk of pre-term labour. In this situation further investigations are needed to rule out alternative causes of abdominal pain and provided that the woman feels well, she may be discharged. A positive test result confers a 1 in 4 chance that the women will go into pre-term labour over the next 2 weeks. Hence a positive result usually necessitates admission to hospital +/- steroids and tocolytics.

The Machine

The system consist of the fetal fibronectin machine and a printer. Two types of cartridges are available one for daily calibration of the machine (blue cartridge, Figure 3). A sampling pack consisting of a special swab with its own transport medium (Figure 4) and a cartridge for processing the result (grey cartridge, Figure 5).

Calibrating the Machine

The machine requires daily calibration (Figure 3, blue cartridge). This process of calibration produces a PASS or FAIL result. Calibration may be done prior to performing the test or on a daily basis by a designated member of staff. Each fibronectin sampler box has a Calibration Code and a Control Lot Number; which must be inserted into the machine each time a new sampler box is used.



Figure 3: Fibronectin calibration cartridge



Figure 4: Fibronectin swab and transport medium

Taking the sample

The sample should be collected as explained above. The patient's identification should be inputted into the machine together with the last two digits of the cassette (grey) lot number (located on box). The cassette is inserted into the machine. The sample is added to the cassette with the provided pipelle. The machine processes the result. A POSITIVE or NEGATIVE result is issued within seven minutes.

Documentation

Daily calibration result should be documented in the notes. Three printouts of the result should be obtained. One result should be attached to the patient's file, one attached to the maternal notes and another attached to a register on labour ward. Benefits of a positive test include: identification of the group that can be targeted for intervention, the opportunity of early administration of antenatal steroids and preparation for optimal neonatal care. The fetal fibronectin test is a tool; it is NOT meant to replace clinical judgment irrespective of the result. Clinical judgment should still prevail regarding decision on admission and steroid administration.

The Local Scene

The fibronectin machine has been available on the Mater Dei Delivery Suite for the past 2 years. Daily calibration kits and sampler kits are available. It should be offered to women at risk of preterm delivery in order to guide management. The implementation of this important investigation should be increased as to improve our standard of care.

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Figure 5: Fibronectin processing cartridge



Perineal Warm Compresses During the Active Second Stage of Labour: Worth a Try?

The Directorate for Health Information and Research (2016) reports 4385 deliveries locally in the year 2015. Out of these, 2837 (63.7%) were normal vaginal deliveries and 190 (4.3%) women delivered by assisted vaginal delivery. It is known that a number of women who have a vaginal birth will sustain perineal trauma. Locally, in 2015, 1968 (65%) women had an episiotomy, tear/laceration, or both.

Perineal trauma may result in significant short and long term difficulties for the woman (Aasheim, Nilsen, Lukasse, & Reinar, 2011) ultimately impacting the newborn and the whole family (Moore & Moorhead, 2013; Royal College of Obstetricians & Gynaecologists, 2014). Episiotomies, tears and/or lacerations are associated with perineal pain (The Royal College of Midwives, 2012). Pain becomes a disturbance, preventing the woman's completion of basic daily functions and interfering with independent care of the baby, affecting her self-confidence as a mother (Way, 2012) (Spiteri, Borg Xuereb, Carrick-Sen, Kaner, & Martin, 2014). Alleviating pain and factors which interrupt a woman's natural enjoyment of the early postnatal period is also vital for the promotion of bonding and breastfeeding and thus overall improved women and child health (Moore & Moorhead, 2013). If perineal injury has all these negative consequences, are these reasons not enough to safeguard the perineum during childbirth?

The midwife has a key role to play! (Moore & Moorhead, 2013)

An effective method to reduce perineal trauma appears to be the use of perineal warm compresses during the active second stage of labour (Aasheim et al., 2011; Moore & Moorhead, 2013). This simple method, is non-invasive, inexpensive, causes no harm and women find it soothing (Moore & Moorhead, 2013). The intervention is acceptable to both women and midwives (Aasheim et al., 2011; McAvoy, 2012). Dahlen (2012) highlights that this technique should be a standard part of second stage perineal care.

A Cochrane review of the literature consisting of 8 randomised controlled trials involving 11,651 participants

confirms the benefits of warm compresses during second stage (Aasheim et al., 2011). Moreover, a randomised controlled trial which investigated perineal outcomes and maternal comfort following the application of warm compresses in the second stage for nulliparous women reported that application of warm compresses did reduce the risk of third-degree and fourth-degree tears (Dahlen et al., 2007) with some evidence in reduction on the severity of pain (Dahlen et al., 2007; McAvoy, 2012). Several bodies including the Royal College of Obstetricians and Gynaecologists (2015) and the American Congress of Obstetricians and Gynaecologists (2016) also emphasize that warm compresses reduce third-degree and fourth-degree tears. This is consistent with Aasheim et al., (2011), Dahlen et al., (2007) and McAvoy (2012) study findings. The morbidity associated with perineal trauma is significant, especially for third-degree and fourth-degree tears (Dahlen, 2012; McAvoy, 2012).

In conclusion, midwives must continuously strive to provide woman centred, evidence-based, up-to-date, safe care so that the childbearing experience empowers the woman leaving her reflecting back the beginning of motherhood with joy and nurturing positive, healthy relationships with her partner, their baby and the wider family and social network.

Making a warm compress

Pour some lukewarm water in a kidney dish and add a cloth (swabs/sanitary pad). Squeeze excess water and place the cloth on the perineum when the baby's head begins to distend it. Continue doing this until the baby's head is born. Change the water if it cools down. Another method of doing this is putting the cloth directly under lukewarm running water.

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Application of warm packs



Annabelle Mamo B.Sc (Hons) Midwifery



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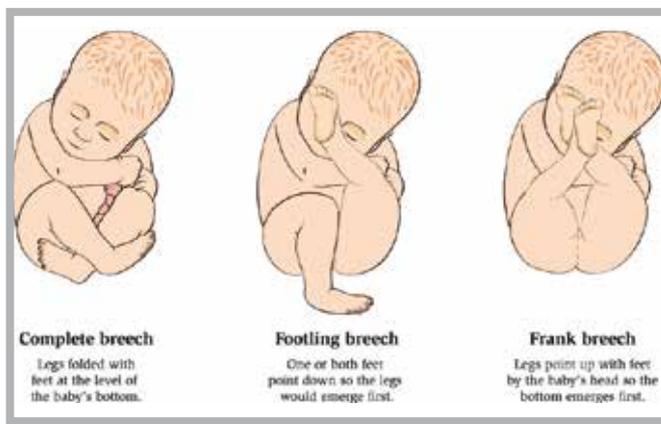
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Breech presentation

In midwifery care, *fetal presentation* refers to the anatomical pole of the fetus presenting at the pelvic inlet of the birth canal. This may be the vertex, breech or shoulders (Bennet & Brown 2001). Generally, as pregnancy develops and progresses towards 20 – 28 weeks gestation, the head of the fetus becomes heavy enough for gravity to bring the head down in a symmetrical womb. In a lesser percentage of pregnancies, this does not occur and another fetal pole such as the breech may present. Once again, as pregnancy approaches term, the incidence of breech presentation decreases progressively; 22-25% of fetuses would present breech before 28 weeks, but by 32 weeks only 7-15% remain so (Hickok et al 1992).



Facts on breech presentation

- present in 3–4% of pregnancies at term
- more common in nulliparous women
- may be associated with uterine/congenital anomalies
- common in preterm birth (RCOG 2017)

Antenatal diagnosis of breech presentation

Diagnosis of breech presentation is possible through abdominal palpation by a midwife or doctor. An antenatal abdominal examination is a standard and vital component of a pregnancy check-up and despite widespread ultrasound use in antenatal care, this should not replace the skill of Leopold's manoeuvres. Assessment of the fetal pole presenting in the pelvis is typically the final component of this examination yet is noteworthy only from 32 weeks onwards. Prior to this gestation, frequent changes in fetal lie make a focus on this finding unnecessary. As pregnancy continues there is ample time for the fetus to change from a breech presentation to a cephalic presentation. However, from approximately 32 weeks, being aware of a breech presentation can be of value in order to inform and empower the woman and her birth partner with options for encouraging a cephalic presentation for term.

Techniques for version of breech presentation

Postural techniques

The use of positions and/or exercises have a long traditional use in encouraging breech fetuses to

turn to the more favoured cephalic presentation. The rationale behind these techniques is typically based on promoting natural version by relaxing the pelvis in an elevated position. Positions include the open knee-to-chest position, supine with head-down whilst elevating the pelvis upwards with cushions, and other variations. Essentially there is insufficient evidence from the trials available to endorse the use of postural management to decrease the rate of breech presentation (Hofmeyr & Kulier 2012). Nonetheless, given that these techniques are safe and relatively easy to perform, they remain popular among women who wish to try to encourage their babies to turn.



Spinning Babies® childbirth education is a well-known resources site which promotes the use of body balancing and alignment for optimal fetal positioning. For breech presentation the open knee to chest position, forward leaning inversion and breech tilt is recommended (<http://spinningbabies.com/learn-more/baby-positions/breech/flip-a-breech>). The rationale once again is that such positions can enable the uterine and cervical ligaments to stretch, lengthen and hence give more room to the baby. Together with gravity and promoting flexion of the baby's head, version should be more likely to occur.

Other techniques include the Rebozo techniques, where a Rebozo (traditional Mexican scarf) is used to shift the fetal position. Mexican midwives claim a high success rate in turning breech babies with the Rebozo technique. The use of the Rebozo has also spread to other countries for use during pregnancy, labour and postpartum. It is particularly popular in Danish maternity wards and in effect a randomized controlled trial entitled RECeVe (<http://www.receivestudy.com>) is currently underway in Denmark to study this technique.

Moxibustion

In many Western countries, including Malta, breech presentation is an indication for elective Cesarean section. In attempt to encourage spontaneous version and avoid Caesarean section, alternative medicine such as traditional Chinese medicine (TCM) is being considered.



According to traditional Chinese medicine (TCM) textbooks, breech presentation could be corrected through a technique called moxibustion. Moxibustion is a traditional Chinese therapy consisting of stimulation of acupuncture points with heat from the slow combustion of mixtures of medicinal grasses, most often *Artemisia vulgaris* (the Japanese name for which is 'moxa') (Han, et al., 2003). The technique consists of lighting a moxa stick and bringing it close to the skin until it produces hyperaemia due to local vasodilatation. The intensity of moxibustion is just below the individual tolerability threshold (Cardini & Weixin, 1998). The only point proposed in China for the correction of anomalous presentation of the fetus is acupoint BL 67 (Zhiyin), which is situated beside the outer corner of the fifth toenail (Cardini, 1991). Treatment sessions last 15-20 minutes, once or ideally twice daily for 10 treatments. The patient may feel the baby start to move noticeably once the moxa sticks are applied. If significant movements are felt, treatment is usually stopped and the therapist must check the baby's position (West, 2000). The treatment is quite simple; in fact most women are instructed to undertake moxibustion therapy themselves at home.

The mechanism of action of moxibustion is not entirely clear and warrants further research. It was postulated that moxibustion on the Zhiyin point causes adrenocortical stimulation, which results in increased placental oestrogens and changes in prostaglandin (PG) levels (increased PGF/PGE ratio due to reduction of PGE while PGF remains unchanged). Oestrogens increase myometrial sensitivity, which results in increased contractility in response to PGF. This stimulates foetal movements and makes version more likely (Cardini & Weixin, 1998).

After publication of (positive) results of randomised controlled trial (RCT) of its efficacy (Cardini, 1998) this treatment has gained popularity in several Western countries, where it is recommended by doctors and midwives in public and private hospitals for women with

fetal malposition during the third trimester. Despite this, a definitive conclusion cannot be drawn from the evidence to date. Most of the trials have been small and they have not been randomised. Little information has been provided about the population samples, and treatment has been initiated at a gestational age ranging from 29 to 36 weeks.

Despite this, in a recent systematic review, researchers aimed to evaluate the efficacy and safety of moxibustion of treating breech presentation. Li *et al*, (2009) collected 10 RCTs involving 2090 participants and 7 CCTs involving 1409 participants. These trials included research on acupoint stimulating methods such as moxibustion and acupuncture for breech presentation. Meta analysis showed significant differences between moxibustion and no treatment. However, comparison between moxibustion and knee-chest position did not show significant differences. Li *et al*, (2009), concluded that moxibustion and acupuncture stimulation on acupoints BL 67, has shown beneficial effects for correcting a breech presenting fetus, however studies such as multi-centre trials are suggested (Li, Hu, Wang, Zhang, & Liu, 2009)



External Cephalic Version [ECV]

External cephalic version (ECV) is a procedure advocated by national guidelines for all eligible women with a breech presentation at term (RCOG 2017, 2010). The procedure involves manual manipulation of the fetus through the maternal abdomen. Tocolytics may be used to relax the uterine musculature and a full bladder encourages the breech presentation to displace out of the pelvis. With a hand on the vertex and another on the buttocks, the obstetrician/midwife gently manipulates the fetus into a forward roll and a cephalic presentation.

Contraindications to ECV include placenta previa/abruptio, cases where caesarean section is indicated, non-reassuring fetal status, recent vaginal bleeding (within the last 7 days), ruptured membranes, multiple pregnancy (except for the birth of the second twin) and significant fetal/uterine abnormalities. Relative contraindication include intrauterine growth restriction (confirmed by abnormal umbilical artery Doppler index), preeclampsia, oligohydramnios and a scarred uterus (RCOG 2010).

Success of the procedure is also dependant on race, parity, uterine tone, liquor volume, engagement of the breech, and the use of tocolysis (RCOG 2010). ECV should be performed under appropriate monitoring (usually by ultrasound) and in a facility where delivery can be initiated if necessary. Pre-operative preparations are not necessary.



- Information-giving for women regarding ECV
- 50% of external cephalic versions are successful
- Recommended from 36 weeks for nulliparous women & from 37 weeks for multiparous women
- Spontaneous reversion to breech presentation occurs in < 5% of cases
- ECV may evade the need for caesarean section
- ECV is a safe procedure with a very low complication rate
- Complications may include transient fetal bradycardia & a nonreactive cardiotocograph
- Some women find ECV painful hence the procedure can be stopped if they wish. (RCOG 2010)

Personal experience of ECV from a couple

Father's experience: "Hesitant at first as it does pose minor risks and we had already experienced a very emotional first birth. We researched further about ECV and followed the guidance of our midwife. Our obstetrician was also very positive and reassuring but above all, I honestly wished that my wife would experience VBAC this time round. After weighing all options, we decided to go for it; a decision which led to the cephalic birth of our son. Thanks to ECV, my wife and I experienced the joys, pains and thrills of a vaginal delivery. Thank you."

Mother's experience: "Once I was told that our baby had a breech presentation my husband and I both wanted to try and avoid a second caesarean (since our first was caesarean) for many reasons including faster recovery, to take care of a breastfeeding newborn and an active toddler at home. However our main reason was to experience a vaginal normal birth. So we tried exercises and moxibustion to turn baby but nothing worked. So we researched and were surprised to discover that it's standard practice and recommended (by most maternity hospitals abroad) that many breech babies can be turned by an ECV. We first talked to our midwife and then sought the advice of a gynaecologist who both agreed I was a good candidate for an ECV. It was the most beautiful procedure as it lasted approximately 3 minutes and was totally painless...it just felt like the gynae's hands do like an abdominal massage. We were so happy to experience an ECV and our baby remained head down after that and baby Andrew was born normally without pain relief on St.Valentine's Day at 3.6kg. Thank you and I hope Mater Dei starts offering ECV to ideal mums with breech babies as so many unnecessary caesareans can be avoided."

Intrapartum management options

Delivery of a breech presentation can be relatively contentious. Perinatal mortality increases with breech presentation, but is irrespective of mode of delivery. Many of the documented deaths are also associated with malformations, prematurity or intrauterine death prior labour (Walker 2013).

Historically, most breech babies were delivered vaginally however the publication of the Term Breech Trial (TBT) in 2000 instigated a change in intrapartum care since Hannah et al (2000) stated a higher rate of perinatal and neonatal mortality and neonatal morbidity in breech fetuses delivered vaginally v.s. those delivered

by Caesarean section. This instigated a persuasive trend towards operative delivery for breech births, despite the lack of rigour and hence applicability of this trial.

There is no conclusive evidence that Caesarean section is the best option for delivery, and given that Caesarean section is associated with several risk factors for both mother and newborn, including concerning long-term sequel (RCOG 2017), the ideal mode of delivery is controversial. The move towards routine Caesarean section for all breech presentations has also led to a widespread loss of skilled professionals in the management of a vaginal breech birth. Management is therefore highly dependent on the local context, the skill-set of professionals attending the birth and the woman's choice. As stated in the latest guidelines from the Royal College of Obstetrics & Gynaecology [RCOG] (2017) "selection of appropriate pregnancies and skilled intrapartum care may allow planned vaginal breech birth to be nearly as safe as planned vaginal cephalic birth".

Criteria for a vaginal breech birth

- no contraindication for a vaginal breech birth e.g. placenta previa
- healthy pregnancy
- frank/complete breech presentation (not footling/kneeling)
- estimated fetal weight within range (not below the 10th centile or >3.8kg)
- fetal neck is not hyperextended (assessed by ultrasound) (RCOG 2017)

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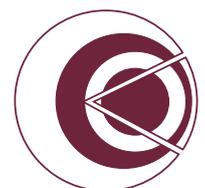
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Points of Good Practice for the Sampling of Cords and Culturing of Mesenchymal Stem Cells

Stem cell transplantation has been proven to be both feasible and safe¹⁻³, and numerous therapeutic applications use stem cells such as in cases of spinal cord injuries, cartilage repair and wound healing. Mesenchymal Stem Cells (MSCs) were first observed in bone marrow cultures as plastic, adherent stromal cells that differentiate into mesoderm-derived tissue⁴. MSCs originate from the mesodermal germ layer⁵ and their ability to differentiate into various cell lineages has widened the therapeutic potential of stem cells. A rich source of MSCs is the umbilical cord, namely Wharton's Jelly. The roles of Wharton's Jelly consist of protecting the arteries and veins from clumping (while providing cord flexibility), and after birth acting as a physiological clamp by decreasing blood flow⁶.

Before any cord can be collected, the pregnant donors should be informed of the ethically approved study underway and informed consent collected, such that not too long after birth, a piece of the umbilical cord (usually around 5-10cm) should be cut from near the placenta, entirely bled and, in order to preserve stem cell viability, and stored by complete submersion in phosphate buffer saline (PBS) at a temperature of 2 – 8°C until the sample can be processed. Bleeding the cord is crucial since the debris generated by red blood cells as they degrade prevents the growth of stem cells. Contamination of cell cultures is a common problem, which the majority of cell culture laboratories encounter at one stage or another. However, it is possible to reduce the frequency of contamination by following good aseptic techniques. As a prophylaxis to prevent contamination, the PBS used to store the cord should include antibiotics (generally 100 units penicillin and 100ug streptomycin/mL).

Just before the cord is processed, it should be washed briefly in 70% ethanol and subsequently in cold PBS to remove all alcohol and debris. Once the cord is clean, epithelial and vascular tissues are removed and the Wharton's Jelly extracted. At this stage the Wharton's Jelly is cut into small pieces and if desired it can be digested by enzymes such as collagenase (or dispase) and hyaluronidase. This step increases the surface area, loosens the tissue structure and allows stem cells to grow out more easily. The processed Wharton's Jelly is then transferred to tissue culture treated flasks, covered with adequate culture medium and incubated at 37°C with 5% CO₂ in a

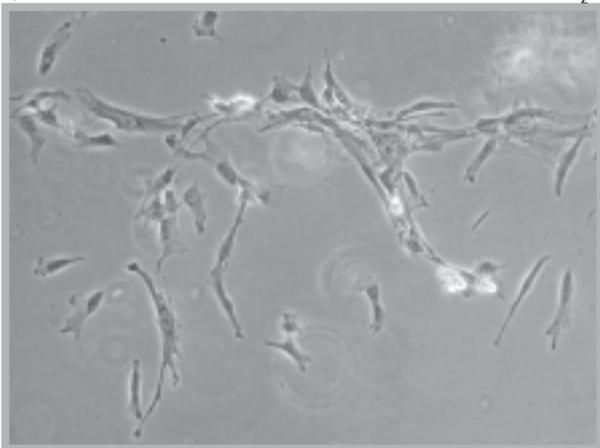


Figure 1: Mesenchymal stem cells

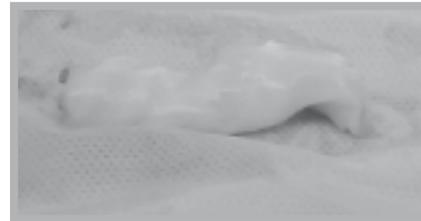


Figure 2:
Bled Cord

humidified environment. Medium should be topped-up every few days and after approximately two weeks, explanted cells should be seen attached to the bottom of the culture flask (figure 1).

Each cord sample is unique and standardising both collection and culturing procedures increases the possibility of obtaining explanted cells.

Overview of the basics for umbilical cord (Wharton's Jelly) sampling

- Researcher is to provide labelled transport containers containing the transport medium of preference with researcher's contact information and consent forms in Maltese and English.
- These containers are to be kept refrigerated until needed.
- Sample is to be collected as soon as possible after cord clamping.
- Cord length sample should be approximately 5 – 10 cm.
- Cord should be completely bled – no blood should be present (figure 2)
- Once sample is placed in the container it should be kept refrigerated in an upright position together with signed consent form.
- The researcher should be informed of the sample to collect it as soon as possible

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The ART of Preserving Ovarian Reserve in Securing Reproductive Certainty

Part 1: Ovarian Reserve

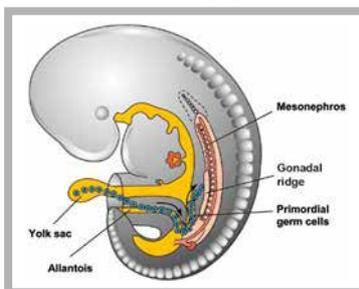
One is often reminded of the Biblical story of Sarah, wife of Abraham who was a prima gravida, at the old age of 90, a surreal concept that totally foreshadows knowledge about fertility in the 21st century.^[2] Greek medical books 'Hippocratic Corpus', 4th century BC physician Diocles of Carystus, the Aristotelian Corpus discussions and the Greek deity Asclepius who could cure any bodily problem including childlessness, had already captured interests in causes, failures and treatments of reproduction.^[19] Prior to 1978, therapeutic option for women afflicted with infertility was painfully limited, but a 29 year old heroine, Mrs Lesley Brown, with assisted reproductive technology (ART) led to the breakthrough longed by many women to overcome their infertility.^[4]

'Ovary' is derived from the Classic Latin word, 'ovarius'; 'egg keeper'. Total Ovarian Reserve (TOR) is the amount of good quality oocytes remaining within both ovaries. Decline happens with apoptosis of the primordial follicles, not by regular ovulation and not always consistent with biological age of the population, which misleads its chronological age.^[53]

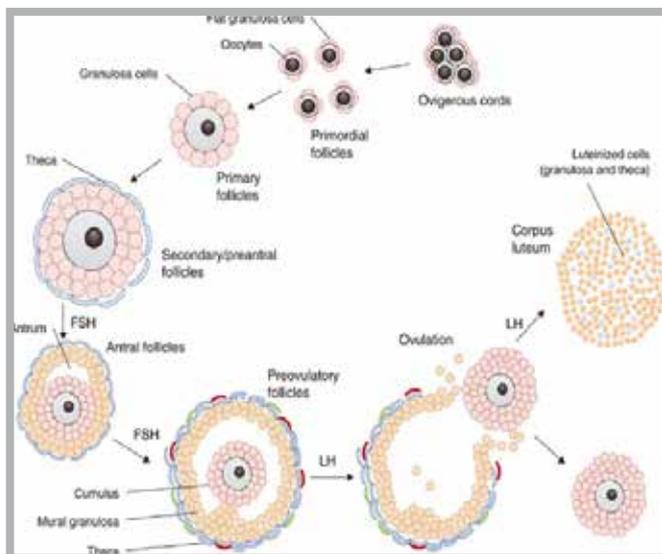
A multitude of endocrine, paracrine, autocrine and intracrine factors are responsible for the growing stages of an ovarian follicle, a process known as folliculogenesis.



Lesley Brown with Louise in 1978



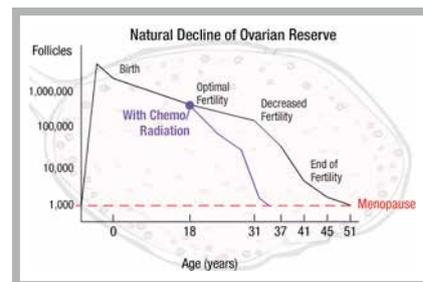
Folliculogenesis



Follicle recruitment drops with diminishing ovarian reserve (DOR) with natural ovarian aging (NOA).^[21] Around 300,000 follicles are present at menarche; with a range of 100-7,500 follicles entering maturation and growth per month, causing a constant decline.^[20] When follicles reach 25,000, degeneration accelerates at an alarming rate until it amounts to around 1000 follicles-menopause.

'Fertility preservation is the preservation of the potential to genetically parent a child beyond natural fertility despite iatrogenic loss, through the means of ART.'^[13] This study will analyse natural and iatrogenic scenarios that are known to cause diminished ovarian reserve (DOR). It will endeavour to explain the importance of clinical static endocrine and ultrasonography markers, aided by dynamic endocrine tests, simultaneously performed to assess ovarian viability prior assisted reproductive treatment. Finally, this thesis will explore current treatments for fertility preservation and will highlight future fertility suggestions to ensure restoration and preservation for reproductive certainty.

Natural fertility loss: Human ovaries are almost fully formed by the end of first trimester in pregnancy. By the seventh week, primordial germ cells (PGC) migrate to their destination in the gonadal ridge of the ovaries from the yolk sac endoderm, where oogonia mature into primary oocytes by mitosis. In the 12th week, some primary oocytes enter their first meiotic division,^[1,40] arresting in the dictyotene stage of prophase I, a process that resumes with first ovulation. Extensive cell apoptosis occurs as the oocytes become assembled into the primordial follicle pool with a peak number of 6-7 million around the 20th week gestation, and 1-2 million by birth. This establishes the ovarian reserve pool with subsequent continuous oocyte loss through follicular atresia and apoptosis. At puberty, a woman has around 300,000 oocytes with a steady and continuous decline throughout reproductive life until menopausal age, where less than 1,000 oocytes of possible poor quality will remain, also known as^[1] Total Ovarian Reserve. 'Ovarian age' is a term often used to describe a woman's progressive loss of the primordial follicle pool which represents reproductive capacity.^[21,37]



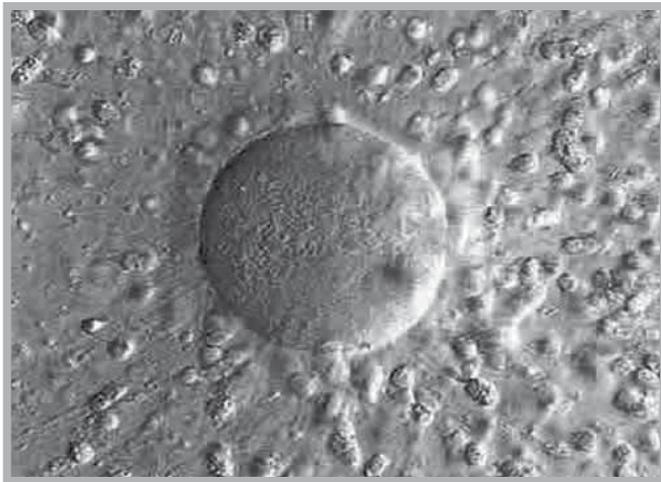
Female fertility declines naturally with advanced maternal age. Postponing family building for social stability and professional priorities until well in the thirties will

often result in definite loss of reproductive potential.^[9,6] One third of women who defer pregnancy to mid and late thirties or early forties, will have some degree of difficulty to conceive naturally.^[18] Menopause occurs during the mid-50s, but actual loss of fecundity starts about 10-

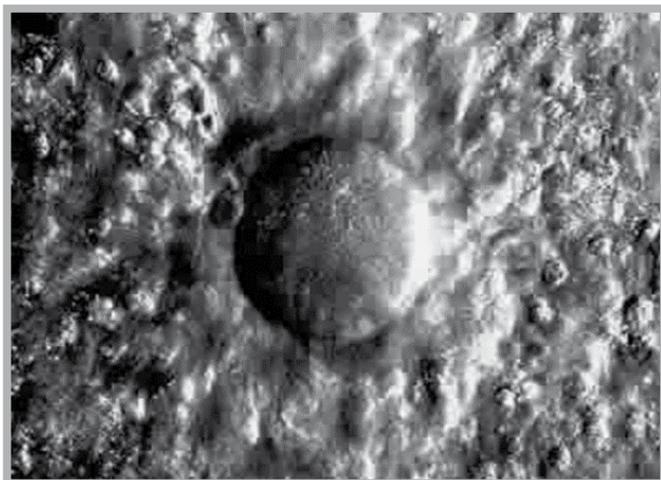


13 years prior, in the 30s, and increases significantly beyond the age of 35 years.^[42,54] Around 99% of women are actually infertile at 45 years of age.^[39,13,18,30,9] A natural atresia of oocytes results in decreased fertility potential.^[13] With follicle quantity, oocyte quality also declines at least after the age of 31 years. This possible decay of oocytes could be due to accumulation of different germ cells formed during foetal life, poor quality of the luteinized granulosa cells surrounding the oocyte and^[9,13,44] meiotic nondisjunction resulting in chromosomal aneuploidy.^[50] The meiotic spindle is often abnormal in advance maternal age, caused by chromosome alignment or microtubule matrix composition with a raised incidence of aneuploidy: an age related factor for spontaneous abortions and decreased live birth.^[3] Ageing oocytes may increase mitochondrial DNA deletion, chromosomal degeneration, increased apoptosis and decreased rate of in vitro maturation.^[3] Regular menstrual cycles of 22-35 days especially with premenstrual symptoms of bloating and breast tenderness strongly suggest that there is ovulation, however 20% of infertility cases are due to anovulation (absent ovulation) or oligovulation (infrequent ovulation).^[3] The first noticeable sign of ovarian aging is the shortening of cycle by 2-3 days; shortening of follicular phase, a sign of early selection and maturation of the dominant follicle diagnosed with clinical tests.^[9]

Premature Fertility Loss occurs before the naturally



'Good' quality oocyte in a 31-year-old woman



'Poor' quality Oocyte in a 45-year-old woman.

occurring time. Predisposing factors are environmental,^[5] psychological, genetic, chromosomal, infection, auto-immune conditions, radical ovarian surgery, benign ovarian disease and gonad toxic oncological conditions.^[45]

Lifestyle factors can drastically alter the overall well-being. Woman's nutrition plays a key role, particularly for ovulation. Replacing carbohydrates with animal protein is detrimental on ovulatory fertility. Increasing meat intake gives a 32% increased risk not to ovulate regularly and those who consume multivitamins are less likely to experience infertility.^[45] Weight has been an issue in industrialized nations, either due to obesity or eating disorders.^[45] A body mass index (BMI) below 18.5 is considered underweight while a BMI over 25 is overweight and over 30 is obese. Obesity effects follicular environment especially with an increase in follicular fluid levels of insulin, lactate, triglycerides and C-reactive protein. Negative effects of obesity can be reversed by an average loss of 10.2kg which will restore ovulation in 90% of obese women, but young women suffering with eating disorder, with a BMI below 17, will suffer from amenorrhoea or oligomenorrhea.^[45]

Obsession with weight loss has pushed women to excessive exercise regimes which may imbalance the energy intake needed for reproduction. Increase frequency, intensity and duration of exercise, causes hypothalamic dysfunction with alteration in gonadotropin-releasing hormone (GnRH) pulsation-menstrual abnormalities. Females who were born small for gestational age show altered ovarian development, size and reduced proportion of primordial follicles.^[11] In addition, the body is being bombarded with other toxic chemicals, such as smoking, illicit drugs, prescription drugs, alcohol, caffeine and air pollutants.

Among women of reproductive age, 30% are smokers.^[45] Tobacco contains over 4,000 chemicals causing diminished function and reduced ovarian reserve, with persisting high urinary follicle stimulating hormone (FSH) levels and lower levels of progesterone during luteal phase. Smoking impairs pick up of the oocyte and sluggish transportation of the embryo within the oviduct-risks of ectopic pregnancies.^[45] Fertility is also affected by recreational drugs. The illicit drug Cocaine, causes impaired ovarian responsiveness to gonadotropins, whilst opiates such as heroin and methadone, are depressants. Marijuana drops the level of luteinizing hormone and long period of abuse keeps the hormone level permanently low due to developed tolerance, a scenario often seen with excessive alcohol and caffeine.^[45]

Alcohol and caffeine consumption cause hormonal fluctuations with increase oestrogen and reduced FSH levels, suppressing Folliculogenesis and ovulation. More than 375mg of caffeine per day could result in spontaneous abortion.^[45] Foetal organ development is highly influenced by the prevailing intrauterine environment. Exposure to adverse conditions during foetal life can cause poor organ development of the endocrine, pancreas and kidney and since the ovary is at proximity to the kidney, sharing same blood supply, modifications in the foetal gonadal development, may lead to transgenerational

infertility in adult life. [40,11] Air pollutants, sulphur dioxide, carbon monoxide and nitrogen dioxide, ozone into the atmosphere from motor vehicles, industrial emissions and burning of coal and wood had been implicated with DOR but not yet proven. [45] Poor ovarian function (POF) can follow infections: malaria, varicella or shigella. POF has been associated with mumps and cytomegalovirus oophoritis in immunocompromised women. [20] In addition, 20% of women with POF have an associated autoimmune disease; diabetes mellitus, thyroid and adrenal disease, and 4% of women with normal karyotype due to autoimmune lymphocytic oophoritis, Addison's disease. [20] Furthermore studies indicate that physical and psychological stresses reduce fertility. Sharma et al states that women with professional demands of more than 32 hours per week, experience longer to conceive, compared to women working 16-32 hours a week. [45] This requires further studies, but genetic variants and chromosomal abnormalities have clearly been associated with reduced ovarian reserve.

Fragile X mental retardation 1 (FMR1) gene has shown significant association with DOR. Fragile X Syndrome presents with >200 trinucleotide CGG (Cytosine Guanine



'Streak Ovaries' in Ullrich-Turner Syndrome

Guanine) repeats, located at the 5' untranslated region of the gene. [37] These repeats do not have any form of ovarian dysfunction, but polymorphic triplet repeats above normal (35-54 repeats) have been associated with poor ovarian insufficiency with an increased risk of passing on the Fragile X Syndrome to future generation. [23]

The chromosomal condition Ullrich-Turner syndrome 45, X affects one in 2,500 female new-borns. Among other typical characteristics, TS women have gonadal dysgenesis and premature ovarian failure. [34] Apoptosis of ovarian follicles begin from 18 weeks gestation and rate of depletion varies ranging from 'streak ovaries' with total absence of follicles, to some follicular development allowing spontaneous puberty in some mosaic karyotypes. [34]

Benign ovarian diseases, polycystic ovarian syndrome; radical ovarian surgery, partial oophorectomy or ovarian drilling and pelvic infections all contribute to DOR, but their treatment is nothing, compared to the infliction on the ovary by cytotoxic radiotherapy and chemotherapy administered to cancer patients.

In 2010, it was estimated that every 250th adult

with cancer will be a childhood cancer survivor. [35,24] Cancer management using surgery, radiotherapy and chemotherapy have improved the survival rate. [58] Nevertheless, ovaries are highly susceptible to these therapies and since only about 200,000 follicles remain at puberty, treatment will reduce follicle stores with ovarian atrophy. [24] Reproductive function will be severely affected, needing careful clinical and psychosocial considerations. [48,58] Fertility preservation has been a concern for gynaecologists and oncologists for many years, focusing predominantly on pre and post pubertal women who encounter biological and social issues. [28] Multidisciplinary teams of oncologists, fertility and oncology nurses, social workers, reproductive endocrinologist and fertility specialists, embryologists and researchers should be involved. [7,29,13] It is estimated that 30- 50% of young women are denied counselling on fertility preservation, [15] considering that in America alone, more than 20,000 children and young girls of reproductive age are exposed to gonad toxic treatments every year. [24] Gonad toxic therapy, Chemotherapy and radiotherapy on the pelvic region and radical surgery of or near the gonads will create havoc on the reproductive system, therefore age of patient, type and dose have to be carefully considered. [13]

Ovarian damage occurs on all ages, but DOR is more obvious in older women as they start treatment already with a poor primordial follicle pool. [36] Women starting cancer treatment before the age of 20 years reach early menopause by 31 years, putting them at risk of developing osteoporosis, cardiovascular disease and psychosocial disorders such as depression. [58,15] Type and dose of chemotherapy are fundamental factors to prevent extensive ovarian damage. Ovaries are endowed with irreplaceable number of follicles and cytotoxic drugs will cause irreversible gonadal damage to steroid-producing cells, the granulosa, theca cells and oocyte, with premature menopause and permanent infertility. [48] Combinations of chemotherapy drugs are available, but the alkylating agent Cyclophosphamide is the deadliest as it is a non-cell cycle specific, damaging even resting oocytes and their support cells, the granulosa cells with ovarian fibrosis. [24,35,29,48] Ionizing radiation for cervical and rectal cancer; craniospinal radiotherapy for central nervous system malignancies; haematological malignancies and total body irradiation for bone marrow transplantation cause severe ovarian damage. [35] The degree of damage will depend on the age of patient, the dose and irradiation field. [24,48]

Whether ovarian reserve (OR) is lost due to natural or premature fertility loss, women are reaching out towards assisted reproductive treatments to preserve their fertility. [51] In Part 2 of this article we will explore the wide variety of Ovarian Reserve tests available, to assist in preserving fertility.

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**When a woman births, not only is a baby
being born but so is a mother.
How we treat her will affect how she feels
about herself as a mother and as a parent.
Be gentle. Be kind. LISTEN.**

**Excerpted from:
The Basic Needs of a Woman in Labour by Ruth Ehrhardt**

M.Sc Abstracts

The Impact of Technology on Childbirth

Technology has become part of everyday life; this also includes healthcare. Childbearing is a good example of the increasing use of technology. Technology is presumed to be positive, increasing safety in childbearing. In many cases the use of technology is needed and has beneficial effects. But what started to be used in certain specific indications, quickly came to be used in most pregnancies and births on the premise that what is beneficial to few must be beneficial to many if not to all, although this was never borne out through research. The increasing use of technology has led to the medicalisation of childbirth, with one intervention leading to another in what is known as the cascade of intervention.

This indiscriminate use of technology during the process of childbearing raises many questions. Most have been introduced without any research as to their safety, efficacy and reliability; their current widespread use makes research difficult to carry out on both logistic and ethical grounds. Other issues concern autonomy and informed choice, beneficence and non-maleficence. In childbearing these are complicated by the fact that the effects of any interventions are not only for the mother but also for the baby. Some interventions have effects beyond pregnancy and labour,



and may have long-term consequences. Technology has raised expectations of “the perfect baby”, which can cause emotional difficulties when this is not so. This expectation can make society less inclusive and less supportive to those who have different needs.

Technology is expensive, and although some technology is needed, overuse leads to higher expenses without a corresponding decrease in mortality and morbidity rates. This leads to questions regarding justice and fair allocation of available resources. As more finances are channelled into technology, other resources which can be cheaper but as effective are neglected. The social aspect of childbearing is usually perceived as not as important as the medical and technological aspects, and consequently not enough attention and resources, including financial, are given to it. Childbearing is not only a health event, but also a life event; therefore the human aspect should not be underestimated. Technology can displace this human aspect by becoming the focus of the whole process rather than an aid.

Technology in childbirth can be life-saving; it should be used when needed, in well-defined circumstances rather than routinely simply because it is available.

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Breaking the Silence: Experiencing Pregnancy after Perinatal Loss – A Qualitative Systematic Review

Pregnancy and childbirth are unique experiences in a woman's life, indeed major life-changing events (Gardner et al., 2006). Yet, despite advances in technology and medical knowledge, it is estimated that worldwide 20-25% of all pregnancies result in perinatal loss (Yilmaz and Beji, 2013; Bennett et al., 2005; Andersen et al., 2000; Hemminki and Forsas, 1999; Rajan and Oakley, 1993); figures as high as 43% have also been reported (Statham and Green, 1994). Perinatal loss has been defined as a devastating experience robbing women of the joys anticipated through pregnancy and forever changing their perceptions on future pregnancies.

Pregnancy after perinatal loss [PAL] is an equally unique experience, anecdotally described as anxiety-laden since women become aware of the fragility of life. The research question “What are the women's experience/s of pregnancy after perinatal loss?” allowed for an in-depth understanding of women's PAL experiences, which in turn holds the prospect of improving healthcare practices in this field. The study also aimed to identify the impact of previous loss experiences on subsequent pregnancies, and to explore how women navigated their way through such pregnancies.



Seven studies, published between 1999 and 2014, were selected for the systematic review. Women's experiences of PAL were thematically analysed following an adaption of Burnard's (1991) method of thematic analysis. Three main themes were identified: Journey: experiencing pregnancy after perinatal loss; the emotional experience of pregnancy after perinatal loss, and surviving the subsequent pregnancy.

These themes throw light on: the insecurity which follows from perinatal losses; the fear and trepidation which characterise a subsequent pregnancy; and the coping mechanism/s that women experiencing PAL develop in such cases. Findings from this systematic review reflect a need to conduct further research, especially in Malta, to advance knowledge regarding the impact of perinatal loss on subsequent pregnancies.

Moreover, the expressed need for constant support highlights the importance of broadening midwifery knowledge through further research on the impact of support systems in PAL. This will help in the development of evidence-based guidelines and protocols that will support midwives in providing better care for women experiencing PAL and their future babies.

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Acupuncture as a Method of Pain Relief during Labour

Acupuncture is being introduced in maternity care. It is used for analgesia, induction of labour, relaxation, unfavourable cervical dilatation and placental retention. This theory-based dissertation aims to explore the effectiveness of acupuncture for pain relief during labour and its safety. Moreover the objectives of this research are, to identify acupuncture points used for pain relief during labour, to learn whether acupuncture improves the birth experiences of labouring mothers, to learn about the effectiveness of acupuncture as pain relief, to identify whether there are any known side effects of acupuncture during childbirth, to learn whether acupuncture reduces the need for further pain relief, such as pethidine or epidural, and to explore the possible influences of acupuncture on the process of labour.

An evidence-based literature review was carried out, in order to reach the aims and objectives of the study. Acupuncture is known as an effective pain relief during labour, it lessens the need for further pain relief such as epidural analgesia and enhances mothers' birth experience. Acupuncture could be time consuming;



however it is a simple and cheap method of analgesia. Most importantly it does not have any adverse effects on both the mother and baby, which makes it a preferred option on pharmaceutical pain relief, such as pethidine and epidural.

Further research is required in this area. In fact, a proposal for a study trying to eliminate limitations experienced by previous researchers was designed. Recommendations for practice might include, that health care professionals should carry out acupuncture safely and recommend acupuncture for their mothers.

Research shows that even though mothers knew about the benefits of acupuncture they did not ask for it themselves, but accepted it when offered by midwives. Recommendations for education include training courses for midwives and doctors on acupuncture treatment, as to carry out this treatment one should be qualified. Moreover, mothers should be given information regarding acupuncture during pregnancy, so they would be able to give informed consent during labour.

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The Effect of Acupuncture Treatment on Female Infertility An Evidence-Based Literature Review

Objective: To review and discuss the efficacy of acupuncture in the management of female hormonal infertility caused by polycystic ovarian syndrome; and to propose a future study investigating the efficacy of acupuncture in women with polycystic ovary syndrome.

Design: Evidence based literature review and proposal for future research

Data Sources: PubMed, CINHALL, AMED, Medline Plus, Google Scholar, Science Direct Cochrane Collection and Hydi.

Study selection: All randomized and non-randomised control studies, showing the effects of acupuncture on women with hormonal infertility caused by polycystic ovarian syndrome.

Inclusion Criteria: All available acupuncture studies on human subjects with infertility caused by polycystic ovary syndrome from January 1991 to January 2016.

Exclusion Criteria: Studies not meeting the inclusion criteria. Studies published in languages other than English, articles using Chinese herbal medicine alone, or in conjunction with acupuncture treatment and animal studies were excluded.



Main outcome measure: Significant increase in ovulation rate, the return of regular menstruation and pregnancy rates with the use of acupuncture therapy.

Results: Nineteen studies were included in the review. Acupuncture helps to regulate menstrual cycles and sex hormones such as LH, FSH, Testosterone and Estradiol. It can help induce ovulation and has shown similar efficacy to pharmaceutical drugs such as clomiphene citrate. Moreover acupuncture studies reveal that electro-acupuncture can help reduce BMI and insulin sensitivity.

Conclusions: Clinical evidence suggests that acupuncture has fewer side effects when compared to pharmacological treatment and it can be used as an alternative method to induce ovulation in women struggling with infertility. Despite this, more research is required as methodology of published studies is weak. More trials with larger sample sizes are required before a conclusive statement can be drawn to support the use of acupuncture in the management of infertility in women with polycystic ovary syndrome.

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