

Best wishes for 2014

Welcome to the 2014 edition of the annual Nurture newsletter.

Fundraising for reproductive research is a challenge. In 2013 the Nurture team was busy organising the sixth annual education day for general practitioners, nurses and midwives, which covered a variety of women's health related topics. This day was held in August 2013 and raised \$15,000 for the Nurture Foundation.

The Nurture Foundation was also inducted into the Sir Douglas Robb Society at the Vice Chancellor's Dinner in November 2013. This was in recognition of over \$100,000 worth of research grants that Nurture has awarded to the University of Auckland for research into new ways to predict and prevent reproductive problems and improve treatments for couples unable to conceive or carry a child safely to term.

In August this year we are planning to hold another education day for practitioners and also educational seminars on reproductive health. In 2014 we hope to make available approximately \$30-40,000 for research projects later in the year.



Cindy Farquhar
Nurture Foundation Trustee



In this Issue

- Community support
Jewellery evening
Marni's run
- Congratulations to Nurture board members
- Take part in the TUI study
- National Women's Hospital 50th Anniversary
- Nurture funded research: 2014
- Update on Nurture funded research
- International research round-up
- How you can support Nurture

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Community Support

Jewellery Evening

A most successful fund raising evening showcasing the work of talented jeweller Lisa Hosking, was held last November at the home of Nurture Trustee, Dr Wendy Hadden. The latest Stardust range of necklaces, bracelets, earrings, rings and cufflinks were offered for sale. Amid the hilarity of trying on the jewellery and with Christmas and presents in mind the buying was brisk. Over \$2,000 was raised for Nurture. In addition, those present were introduced to the Nurture Trust, its philosophy and aims and the role it plays in funding reproductive research.

We are grateful to Lisa for her contribution to this evening and hope it may be the start of an association with more evenings in the future. We are also thankful to Wendy Hadden, Nurture Chair, for making this event possible.

Marni's run

Marni Stewart put her body on the line by undertaking several run-walks to raise money for the Nurture Foundation. After tragically losing her twins at 22 weeks Marni decided to take action to support the Nurture Foundation to help improve outcomes for both mothers and babies.

If you are planning on taking part in any of the numerous marathons or run-walks around New Zealand please consider using Fundraise Online to raise funds for Nurture at the same time.

4 DARGAVILLE & DISTRICTS NEWS, JUNE 26, 2013

NEWS

Runners nurture mothers' dreams



Team nurture: These six know how to brave the cold for a good cause, from left: Nicola Hawkes, Marni Stewart, Monique Weber, Anne Cooper, Karina Cooper and Adam Lothian running for team Nurture. Photo: PETRICE TARRANT

By PETRICE TARRANT

Marni Stewart is running to prevent other mothers from experiencing the tragedy she had.

Marni lost her twin sons almost one year ago due to "a freak of nature", as the doctors put it.

She gave birth at 22 weeks and four days to still-born baby Lyla and live-born Alexander who died about 20 minutes later.

"Of course it was a very hard time for both me and my husband Mike, but it is extremely sad that we are just now a statistic in New Zealand, and that a lot of people do go through what we have been through."

Nearly 600 babies are stillborn or die within 28 days of birth in

New Zealand every year. Marni almost lost her own life after complications that required surgery.

Because of what she went through she has decided to dedicate her fundraising efforts to the Nurture Foundation.

The Nurture Foundation for Reproductive Research is committed to helping New Zealanders have families.

Through research it aims to find new ways to predict and prevent reproductive problems, and improve treatments for couples unable to conceive or carry a child safely to term.

She, alongside five others, tackled the Bayliss to Dargaville 12-kilometre run-walk during the

weekend and is training hard for the Kerikeri half-marathon in November.

"I've got blisters on my blisters but it's all for a worthy cause." Marni says she found Nurture online, and its workers have researched what happened to her children and why.

"The Nurture team so far have been amazing and since this is so close to my heart, I decided I wanted to be a part of this team and help them by fundraising – not only to raise money but also awareness."

■ Marni says people can donate by visiting fundraiseonline.co.nz, click on charities, sponsor a friend, then Marni Stewart.

■ 12k Run-Walk Results P7

MARNI'S EFFORTS MAKE THE PAPERS

Congratulations to Nurture board members



In the 2014 New Year's Honours, Cindy Farquhar was named Companion of the New Zealand Order of Merit, in recognition of services to women's health.



Lesley McCowan has recently been appointed by the Minister of Health to the board of the New Zealand Health Research Council.



Do you know a couple trying to have a baby? They might like to Take part in the TUI study

The TUI study aims to evaluate the effectiveness of a fertility treatment called intrauterine insemination (IUI) with ovarian stimulation. The TUI study is recruiting women with unexplained infertility to take part in the study in the Auckland area from now until mid-2014. Women who take part in the study will be randomised to either three cycles of IUI (there is no cost for these cycles) or three menstrual cycles of expectant management (no treatment). Women who do not receive the treatment as part of the study will receive a partly subsidised cycle of IUI after the three menstrual cycles.

Currently knowledge around the effectiveness of this treatment in women with unexplained infertility and low chance of pregnancy (less than 30% chance) is not extensive. If this randomised controlled trial demonstrates that intrauterine insemination with stimulation is effective then this would provide evidence for a less invasive and cost effective alternative to IVF for women with unexplained infertility. The TUI study is pleased to report the first pregnancies resulting from the study.

By participating in the TUI study, couples are helping to further our knowledge about fertility treatments.

For more information or to find out if you meet the criteria for the study please contact Dr Sarah Armstrong on 09 923 3874 or s.armstrong@auckland.ac.nz



THE TUI STUDY IS PART FUNDED BY THE
NURTURE FOUNDATION

National Women's Hospital celebrates 50 years

On February 14th an event was held at the University of Auckland to celebrate the history and achievements that have taken place at National Women's Hospital over the past 50 years. Established in 1964 on the site by One Tree Hill National Women's has touched the lives of many New Zealanders, both patients and health professionals. The day was a success with many past and current employees of National Women's coming together to hear talks on a variety of subjects covering the history of National Women's through to the present day and potential areas for improving women's health in the future.



LEFT: FAMILY OF SIR WILLIAM LILEY, THE FATHER OF FETAL MEDICINE.

RIGHT AND ABOVE: ATTENDEES AT THE 50TH ANNIVERSARY CELEBRATION.





Nurture funded research for 2014

Each year the Nurture Foundation awards four grants for research relating to reproductive health. Below is a summary of the research grants Nurture awarded in 2013 for 2014.

Prediction of preeclampsia in obese women from the SCOPE study.

Lesley McCowan

The Screening for pregnancy endpoints (SCOPE) study is a large cohort study of pregnant women which has been designed to identify early predictors of serious pregnancy and birth complications in New Zealand women. These complications include preeclampsia, spontaneous preterm birth and small for gestational age babies. The SCOPE researchers hope that the early identification of women at high risk will enable stratification of care and better provision of preventative therapy.

We are currently in a global obesity epidemic, and obesity is associated with a number of pregnancy complications and health-care costs. The SCOPE study found that the rate of preeclampsia was increased by 10% in obese women. While this is not a huge increase in risk, if subgroups of obese women at very high risk for preeclampsia (and also at very low risk) could be identified, this could contribute to improved clinical management. It is believed that the early pregnancy lipid profiles in pregnant women could be used for prediction of preeclampsia.

Therefore, this study will measure the levels of lipids and also markers of insulin resistance from stored blood samples from obese SCOPE participants to see whether these can be used to predict preeclampsia.

Cord blood collection in the Probiotics in Pregnancy study

Kristin Wicken

Previous research has shown that administration of the probiotic, *Lactobacillus rhamnosus* HN001, to pregnant women from 35 weeks gestation until the end of breast feeding lowers the risk of eczema in the infants by around 50%. However it is not clear whether there was any effect on early atopic sensitization, the tendency of infants to be especially allergenic. A subsequent study is now underway which administers probiotics to mothers earlier, from the first trimester, and which will also assess the effects of probiotics on eczema and atopic sensitization.

To understand the biological mechanism behind a reduction in these allergic responses after probiotics, Nurture has funded this study to collect and store samples of blood from the umbilical cord for future analysis.

ProViDe RCT: Does Better Early Nutrition in Pre-term Babies Improve Development?

Barbara Cormack

About 250 extremely low birth weight (birth weight <1000 g) babies are born in NZ each year. Extremely preterm babies often have poor growth in the weeks immediately after birth, because it is difficult to provide the nutrition they need to grow well. This pattern of growth is associated with long-lasting metabolic and neurodevelopmental effects, and up to 50% have some form of neurodevelopmental impairment.

A key to improving the long-term health of these vulnerable babies may be to increase protein intake following birth. This is difficult to achieve as fluid intake in very preterm babies is limited in early life.

This study is a pilot for a randomised trial to test the hypothesis that replacing the standard fluids with those containing protein will improve development at 2 years of age. If successful, these findings will be of relevance to the management of all extremely preterm babies.

Protein containing fluids costs less than \$100 per baby and are so simple to administer that they could be implemented in all neonatal units, thereby improving lifelong health of these very small preterm babies.

Investigating metabolism as a mechanism of ovarian ageing

Lynsey Cree

Fertility begins to decline in women during their late 20s and rapidly declines during the 30s. In New Zealand, like most developed countries, women are choosing to postpone child bearing until later in life. Consequently, the incidence of age-related infertility had rapidly increased in recent years. Regrettably, despite the many improvements in assisted reproductive technologies there is currently no answer to this age-related decline in female fertility. This means the many New Zealanders are faced with having to come to terms with the loss of their fertility and their dreams of having their own children.

The aim of this pilot study is to uncover the fundamental mechanisms underlying age related female infertility in order to develop new approaches to tackle the progression of ovarian ageing.



Update on Nurture Funded Research

The Nurture Foundation has been allocating a number of small grants to research groups every year since 2008. Grants are awarded to groups who are conducting research in the field of reproductive health and infertility. Below are updates on just a few of the research projects that Nurture has sponsored.

The New Zealand Stillbirth Study

The NZ stillbirth study, funded by Nurture in 2009, was designed to investigate risk factors for still birth by comparing characteristics of pregnant women who had stillbirth to those who didn't. The most useful risk factors are those which can be modified, for example smoking status.

This study found potentially modifiable factors associated with late stillbirth included maternal weight (overweight or obese), having four or more previous babies, attending less than 50% of recommended antenatal visits and reduced baby movements during pregnancy.

This project also discovered that women who did not sleep on their left side had a doubled risk of late stillbirth compared with those who slept on their left side. More research is needed to confirm whether sleeping position is truly associated with still birth.

The effect of ageing and ovarian stimulation of DNA mutations

In 2012 Nurture funded Dr Lynsey Cree to perform laboratory research with a new genetic sequencing technique. The technique will be used to measure the frequency of DNA mutations in the mitochondrial genomes of oocytes (egg cells). Lynsey's team have started testing this technique in eggs from cows. They hope to test specifically whether ovarian ageing (the age of the cow) and ovarian stimulation (such as during an IVF cycle) impact on the frequency of these mutations. This research can then be extrapolated to human populations to help understand the impact of age and IVF treatment on egg quality in women.

BMI and sperm

In 2009 Nurture funded a review to investigate whether there was any evidence for a relationship between BMI and semen parameters in men. This review did not find any relationship between BMI and sperm concentration, however more research is needed.



A review of assisted reproductive technologies

In 2010, Nurture funded Dr Julie Brown to create a summary of systematic reviews on all interventions related to assisted reproductive technologies, such as IVF. This "review of reviews" identified areas of research where evidence is considered low quality, meaning that more studies on this topic are needed before we can tell if these treatments or interventions are beneficial or not. This review was published in the Cochrane library and is available free to all New Zealanders.



International Research Round-up

A few exciting advances and updates on reproductive and fertility research (below and on next page)

A link between Caesarean section and obesity?

Rates of Caesarean section are rising in Western countries. In New Zealand, 24% of women had their babies by Caesarean section in 2010, and almost half of all Caesarean sections were planned operations (decision made by doctor and mother), rather than being emergency procedures. Caesarean section can be a lifesaving operation for mother and baby, but the increasing prevalence is a concern if there are long term health consequences for mothers and/or their children. A recent review has shown that babies born by Caesarean section have a 20-30%

increase in risk of becoming obese children or adults. It is not known why Caesarean sections put babies at greater risk of obesity, but one of the most likely reasons is called the "hygiene hypothesis". During the birth process the mouths of infants who birth vaginally are exposed to bacteria from the mother's vagina and bowel, whereas the mouths of infants delivered by Caesarean section are exposed to bacteria from the mother's skin and to environmental bacteria. These bacteria go on to colonise the infant's gut. There is increasing interest in the role of different types of gut bacteria and development of obesity and other health problems.

Parents and doctors should consider information about longer term health risks for the offspring when making decisions for Caesarean sections that are not based on medical reasons.

Egg Freezing

What is egg freezing and storage?

To help boost egg production, fertility drugs are used to stimulate the ovaries to produce follicles (which contain the eggs). The developing follicles are monitored and when they are large enough, they are carefully emptied to collect the eggs that they have produced. They are collected while the patient is under sedation or general anaesthetic. To freeze the eggs, they are placed in storage in liquid nitrogen.

Is egg freezing and storage for me?

By storing your eggs, you may be able to use them for treatment in the future.

You may want to discuss freezing your eggs with your clinic if:

- you are concerned about your fertility declining as you get older, and are not currently in a position to have a child
- you are facing medical treatment, such as for cancer, that may affect your fertility

What is my chance of having a baby with frozen eggs?

The use of frozen eggs in treatment is a relatively new development. Eggs do not respond as well as embryos to freezing, and generally the resulting success rate is not as high, although this will vary from clinic to clinic. However, vitrification (a new method for egg storage) has recently been shown to improve the chance of eggs surviving the freeze-thaw process and therefore increase the success rate

Three-person IVF

To help women with known mitochondrial disease conceive a child from their own eggs, new research has been investigating the potential for "3 person IVF".

Although most of our DNA is housed in the nucleus of our cells, a tiny amount of our DNA also sits within organelles called mitochondria. Due to the way that DNA combines when sperm meets egg, mitochondrial DNA is passed only from mother to child. There are some disabling and even fatal diseases linked to mutations in mitochondrial DNA, such as those which can cause blindness and heart failure.

Three-person IVF involves taking the nucleus from the mother's egg and inserting it into a donor egg that has healthy mitochondria, and has had its own nucleus removed. This egg can then be fertilized with the father's sperm. So far, this new technique has been trialled successfully in monkeys, whose resulting offspring are now 3 years old. More recently, this technique has been used to create normal human embryos in the laboratory. A law that would allow this technique to be used in fertility clinics is currently under public consultation in the United Kingdom.



Cochrane Reviews

The Cochrane Collaboration is a network of researchers from around the world who review evidence of treatments in many different medical areas, including infertility. The Cochrane team aggregates evidence from different studies into one review on each topic. In New Zealand, the government has provided free access to the Cochrane library for all residents, so that everybody is able to access quality reviews on topics that might be of interest to them. Below are just a small number of reviews which may be of interest to the Nurture community

Are two embryos transferred together different to two embryos transferred in two different cycles?

Read "Number of embryos for transfer following in vitro fertilisation or intra-cytoplasmic sperm injection"

Can antioxidants help with infertility?

Read "Antioxidants for female subfertility" and "Antioxidants for male subfertility"

Is acupuncture beneficial for infertility?

Read "Acupuncture and assisted reproductive technology"

Endometriosis, what can help with symptoms and infertility?

Read "Endometriosis: an overview of Cochrane Reviews"

Or, for a complete overview of all Cochrane reviews in this area

Read "Assisted reproductive technology: an overview of Cochrane Reviews"

You can search for summaries or full-text versions of these papers on the Cochrane Library website: <http://www.thecochranelibrary.com/>

The University of Auckland

The University of Auckland's department of Obstetrics and Gynaecology is actively involved in research. Below are just a few of the many publications from this department in the last 12 months

A randomized controlled trial of fallopian tube sperm perfusion compared with standard intrauterine insemination for women with non-tubal infertility

Ethnicity and risk of Caesarean section in a term, nulliparous New Zealand obstetric cohort

Childhood cognitive development after fetal growth restriction

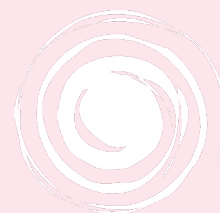
Donor age is a major determinant of success of oocyte donation/recipient programme

Ethnicity, body mass index and risk of pre-eclampsia in a multiethnic New Zealand population

Association Between Maternal Alcohol Consumption in Early Pregnancy and Pregnancy Outcomes

The low expression of leukemia inhibitory factor in endometrium: Possible relevant to unexplained infertility with multiple implantation failures.

If you would like more information about these publications please email admin@nurture.org.nz



How you can support Nurture

If your life has been touched by the loss of a baby, difficulties conceiving or a complicated pregnancy, you will understand the importance of the research Nurture is helping to fund. You can make a difference by supporting Nurture in a number of ways:

- Making a one off donation or a regular donation
- Organise a fundraising event or nominate Nurture as the beneficiary of fundraising events you may be involved with

Please contact us at admin@nurture.org.nz if you are interested in supporting the Nurture Foundation