LIFESTYLE, MIND, BODY AND REPRODUCTION

Alice D. Domar, Ph.D

Domar Center for Mind/Body Health, Boston IVF, Harvard Medical School

Aim: Review the research on the impact of lifestyle behaviors, stress, and psychological interventions on infertility treatment outcome.

Method: Literature review

Results: Numerous lifestyle behaviors can have an impact on fertility, even with the use of the ARTs. Infertility patients may not be adequately advised on the impact of their behaviors. Stress is prevalent in the infertility population, especially in patients undergoing ART and is associated with treatment termination and possibly lower pregnancy rates. Some psychological interventions, especially group interventions that are more than six sessions and include specific skills training, are associated with higher pregnancy rates and lower rates of psychological distress.

Conclusion: Infertility patients need to be counseled about lifestyle behaviors. Stress reduction programs should be offered to patients who report higher levels of distress in an effort to decrease psychological symptoms, allow them to remain in treatment, and potentially increase the chance of pregnancy.

ARE LIFESTYLE PROGRAMS WORTHWHILE IN THE INFERTILE?

Warren SW Chan 1,2

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NO ABSTRACT RECEIVED

WHAT DIETS WORK?

Jennie Brand-Miller

Charles Perkins Centre, University of Sydney, NSW 2006

For the past three decades, dietary guidelines have encourage us to eat less fat, especially saturated fat. Australians have obediently reduced their fat intake, yet over the same timeframe, the prevalence of obesity has more than doubled, type 2 diabetes has tripled, and cardiovascular disease is still the number one cause of death. The nutritional landscape has changed. Recent systematic reviews and meta-analyses of prospective epidemiologic studies have concluded that there is no significant evidence that dietary saturated fat is associated with an increased risk of coronary heart disease or cardiovascular disease. A new paradigm is arising: that the processed carbohydrates which replaced the energy from fat, may increase the risk of obesity, diabetes and heart disease more so than fat or saturated fat. Both quantity and quality of carbohydrate are relevant. Sugars and starches, with or without fibre, can produce adverse effects on blood glucose levels after consumption, a characteristic that reflects their rate of digestion and absorption, and is assessed as their ‘glycaemic index’ or ‘glycaemic load’ per serving. Alternate dietary approaches, including high protein, Mediterranean-style and low glycaemic load diets, have been shown to improve weight control and cardiovascular outcomes more so than conventional low-fat, high-carbohydrate diets. These alternate diets share an under-recognised unifying mechanism: the reduction of postprandial glycaemia and insulinaemia. While intake of saturated and trans fat should remain low, a singular focus on reduction on fat is counterproductive. Alternate healthy diets offer greater flexibility and are more sustainable over the longer term.
Aim: Globally, assisted reproductive technologies (ART) practice continues to evolve with changes in the use of ICSI, type of transfer, vitrification and single embryo transfer (SET). It is important to monitor ART to determine: access to fertility services; benefits and risks of new technology; and changes in clinical practice and perinatal outcomes. The aim of this presentation is to describe the epidemiology of ART in Australia and New Zealand.

Method: Data were sourced from published literature, International Committee International Committee Monitoring Assisted Reproductive Technologies and Assisted Reproductive Technology Australia and New Zealand series of reports.

Results: In 2011, 66,347 ART treatment cycles were performed in Australia and New Zealand. 34,490 women undertook autologous ART treatment making up 95.1% of all cycles. The average age of women undergoing autologous and donor cycles was 36 and 40.8 years respectively. The proportion of SET was 73.2%. Of the 66,347 initiated cycles, 23.1% resulted in a clinical pregnancy, and 17.5% in a delivery of at least one live born baby. Of the 12,443 live born babies, 76.2% were full-term singletons of normal birthweight. The rate of multiple deliveries was 6.9%. For women who undertook their first autologous fresh cycle between 2009 and 2011, the cumulative live delivery rate was 6.9%. For women who undertook their first autologous fresh cycle between 2009 and 2011, the cumulative live delivery rate was 21.1% after the first cycle, increasing to 31.1% and 36.0% after two and three cycles respectively. The cumulative live delivery rate after five cycles was 40.0% and only increased marginally for additional cycles.

Conclusion: Monitoring of ART practice, effectiveness and outcomes at a national level is central to improving fertility services and outcomes, evaluating the impact of policy initiatives over time and to providing an evidence base for populations seeking fertility treatment. The number of embryos transferred is a major determinant of multiple pregnancies and is highly correlated with the likelihood of multiple birth and excess perinatal morbidity and mortality. In Australia and New Zealand, the adoption of SET as the predominant treatment strategy has significantly reduced multiple pregnancy and improved perinatal outcomes with minimal impact on pregnancy rates.

THE ECONOMIC EXTERNALITIES OF ASSISTED REPRODUCTION

Mark Connolly
University of Groningen & Global Market Access Solutions

Who are the beneficiaries from assisted reproduction programmes? The conventional medico-economic approach would suggest that couples able to fulfil their family formation desires are the main beneficiaries. However, recent ART reimbursement policy decisions have noted the long-reaching positive economic externalities of ART conceived children in the context of declining birth rates, ageing populations and the long-term sustainability of public finances. Recognising the broader economic benefits of ART conceived children to society is a quantum shift forward in positioning the benefits of ART within a range of publically funded policies. The presentation will focus on the international literature defining the broader economic benefits of ART and its implication in wider public policy context.

HOW SAFE IS ART AT A POPULATION LEVEL

Michael Davies
Research Centre for the Early Origins of Disease, The Robinson Institute, University of Adelaide, Adelaide Australia

Background: In 1978, research in assisted reproductive technology (ART) saw the first birth from in vitro fertilisation (IVF), which proved the feasibility of effective treatment for involuntary infertility. With approximately 5 million individuals born from the rapidly evolving technology, we are confronted with a series of questions regarding the effectiveness, safety, and long term social and biological consequences of treatment; both for the recipients of treatment and for the resulting offspring.

Method: This paper reports outcomes from a number of case-control and cohort studies internationally that have considered pregnancy outcomes after assisted conception.

Results While ART has entered mainstream medicine for the effective treatment of infertility, cumulative evidence from a variety of study designs indicate that ART is associated with an increased risk of congenital malformation, and that this risk appears to vary by treatment modality in addition to patient factors related to infertility. The use of embryo freezing appears to substantially reduce the risk, which suggests that the risk may be modifiable. Other perinatal outcomes...
indicate an array of disadvantages for the ART offspring which reflect parental characteristics, multiple pregnancy, and treatment specific factors. Longer term health outcomes are less well characterized, but are potentially important due the complexity of fetal development, long latency to certain outcomes, and the theoretical potential for transgenerational effects.

Conclusions: We are developing a more detailed appreciation of the wide range of consequences following ART treatment, which requires a greater investment in the continuous and long term monitoring of this technology. Emerging knowledge promises to jointly improve effectiveness and safety while also deepening our understanding of reproductive processes in the wider population.

GETTING IT RIGHT IN THE LAB!
LEVEL 4, ROOMS 1 & 2

GETTING IT RIGHT IN THE LAB!

Geraldine HARTSHORNE

1 Warwick Medical School, University of Warwick, Coventry, CV2 2DX, UK.

Aim: To highlight key factors in laboratory practice that make a fundamental difference in the quality of the laboratory service.

To aim to define what ‘getting it right in the lab’ means and how we will know when things are ‘right’ rather than just ‘OK’.

Method: Consideration of IVF unit Key Performance Indicators (KPIs) and what they tell us about laboratory performance.

Assessment of the wide variety of laboratory approaches, procedures and reagents that give relatively similar outcomes overall.

Reviewing Embryoscope time lapse imaging as a new option to increase objectivity of laboratory performance monitoring.

Results: There are few reliable, quantitative measures of laboratory performance that are informative for optimising laboratory practice in an already adequately functioning lab.

Distinguishing between factors arising from patients, ovarian stimulation, staff technique, reagents and embryological variability is challenging.

One recent tool that makes a step change in the quality of IVF laboratory evidence is time lapse monitoring of fertilization and embryo growth.

Conclusion: We are not yet at a point where we know what is the ‘right’ way to perform IVF in the laboratory. Even after 35 years of clinical IVF, vast differences between laboratory protocols mean that there is no universal ‘right’ answer for many legitimate questions. Time lapse recording, combined with computer vision and automated analyses will help to compare objectively and identify best practices in embryology.

THE IMPORTANCE OF REGULATING MITOCHONDRIAL DNA DURING OOGENESIS AND EARLY DEVELOPMENT

Jus St. John1

1 Monash Institute of Medical Research, Clayton, Australia,

Mitochondria are found in all eukaryotic cells and are the cell’s major generators of ATP through the process of oxidative phosphorylation, which takes place within the electron transfer chain (ETC). The ETC is encoded by the chromosomal and the mitochondrial (mtDNA) genomes. MtDNA replication is mediated by chromosomally-encoded genes, which translocate to the mitochondrial genome. Primordial germ cells possess ~ 200 copies of mtDNA per cell and these copies are clonally expanded during oogenesis so that mature, fertilisable, metaphase II oocytes possess ≥ 250,000 copies. However, those oocytes that fail to become developmentally competent have significantly fewer copies of mtDNA. Following fertilization, mtDNA replication is strictly regulated. During early preimplantation development, mtDNA copy number is significantly reduced with no mtDNA replication taking place. At the blastocyst stage, mtDNA replication is initiated but this is restricted to the trophectodermal cells. The inner cell mass cells, which have the potential to give rise to all cell types of the body, do not replicate mtDNA and continue to reduce mtDNA copy number so that, prior to gastrulation, they possess fewer copies of mtDNA. This continual reduction results in the establishment of the ‘mtDNA-set point’, which enables all differentiating cells to acquire the appropriate
numbers of mtDNA copy to meet their specific demands for ATP generated through OXPHOS in order that they can perform their designated cellular functions. However, some of the more sophisticated assisted reproductive technologies violate the replication of mtDNA and also introduce another population of mtDNA, which can have severe implications for offspring survival and health.

IMPROVING LAB STANDARDS TO AVOID FLUCTUATIONS

Suha KILANI

IVF Australia, Sydney, Australia

The main aim of any IVF clinic is to provide their patients with a successful pregnancy and a take home healthy baby. The IVF laboratory plays a huge role in achieving this in combination with nursing and clinical staff. However, the common misconception of an embryology laboratory that it’s only responsibility is to perform ‘clinical lab procedures’. Proper laboratory function requires the IVF laboratory to engage in a cycle of activities beyond the clinical assisted reproduction technology (ART) procedures. Therefore, quality control and Risk management are becoming increasingly important to assure that a specific element within the laboratory is correct. Observational tools used to inspect what goes on in the IVF lab such as using equipment logs and routine QC represents information that could hold the key to solving problems.

This presentation recognizes sources that influence the process by setting reliable and robust indicators and benchmarks to avoid fluctuations. Furthermore, methods recognized by IVF Australia to improve lab standards in managing fluctuation will be presented.

The main elements this presentation will investigate are:

1) Improving techniques for overcoming biological variation:

Temperature and PH control, staff training to control gametes/embryos exposure to environmental conditions, equipment and culturing system used are known factors that influence the lab standards and in particular results fluctuations. Controlling those factors is a continuous process and starts as early as oocyte retrieval. Controlling technical factors by improving the methods used in the lab plus the use of open or closed system to overcome the environmental variation will be discussed.

2) Background toxicity and air quality in labs:

Maintaining success rates in a newly renovated or built lab can be a big challenge. Air quality and infection control, being an important factors contributing to poor results, are only one part of the process that need to be looked at when building a new lab. Depending on time available in hands and cost allowed, methods for controlling air quality can vary from a simple standard IVF lab with carbon filters used to clean the air pumped into the lab or a more sophisticated and expensive systems i.e. clean rooms lab. Controlling Volatile Organic compounds (VOC) goes hand in hand with the air quality, VOC produced from various fittings used throughout the process i.e. paint, type of floor used and lab fittings can be detrimental to the embryos cultured in the lab. The gases used and the gas lines fitted to supplying gas to the incubators where embryos are cultured can be the biggest toxin. Methods for measuring the VOC and eliminating background toxicity when starting up a new lab will be discussed. Ongoing toxicity measures by limiting VOC in plasticware and disposables used in the IVF labs i.e dishes, the culture oil, tubes, and humidity flasks.

1030 - 1200

HANDLING PATIENTS

LEVEL 4, ROOMS 3 & 4

1300 - 1430

KEYNOTE PRESENTATION

LEVEL 3, GRAND BALLROOM

IAN JOHNSTON MEMORIAL LECTURE

NURTURE OF THE HUMAN PREIMPLANTATION EMBRYO

David K Gardner

Department of Zoology, University of Melbourne, Victoria

Nurture, which can be defined as “to feed and protect”, is a most appropriate term to use when considering the development of the human preimplantation embryo in the IVF laboratory. In order to facilitate the development of a competent and healthy embryo, and hence healthy resultant baby, it is essential that the appropriate nutrients are provided as the embryo develops and differentiates. Research on the nutrient composition of the female reproductive tract and the changing requirements of the embryo itself, paved the way for more physiological culture media. However, it is
also essential to protect the embryo from the stresses to which it is exposed in the laboratory, particularly during the first three days of life when the embryo is most susceptible to its environment. Stress in an IVF laboratory is inherent given that one is working outside the human body. Several sources of external stress have been identified including; atmospheric oxygen, serum, ammonium, the absence of amino acids, premature replacement in the uterus, temperature and pH drift, as well as shear forces created by vigorous handling. Additionally, stresses can act in synergy. Consequently, the outcome of an IVF cycle can be inadvertently compromised by the presence of one or more sources of stress. Of further interest, male and female embryos respond differently, in terms of their physiology, to stress source. The role of specific stresses and examples of how these differentially affect embryo development and health will be discussed.

SRB FSA Lecture - Human Stem Cells From Single Blastomeres Reveal Pathways Of Embryonic Or Trophoblast Fate Specification

Susan Fisher

University of California San Francisco, San Francisco, California

Aim: There are major mechanistic differences among species in how initial cell fate decisions are made in embryos. We sought to gain insights into lineage allocation in humans.

Method: We derived ten human embryonic stem cell lines from single blastomeres of four 8-cell embryos and one 12-cell embryo from a single couple (UCSFB1-10). We profiled their transcriptomes and methylomes. We also tested their developmental potential.

Results: Compared to lines from blastocysts, the UCSFB lines exhibited unique gene expression patterns and significant DNA hypomethylation. At a transcriptional level, UCSFB lines from different embryos were often more closely related than those from the same embryo. As predicted by the transcriptomic data, immunolocalization of Eomes and T showed differential expression among blastomeres of 8-12-cell human embryos. The UCSFB lines formed derivatives of the three germ layers and CDX2-positive progeny from which we derived the first human trophoblast stem cell line.

Conclusion: The UCSFB lines mirror heterogeneity among early-stage blastomeres and have unique properties, suggesting a more immature state than lines derived from blastocysts. They have aspects of totipotency, forming the germ layers and trophoblast stem cells. Thus, these cell lines are a novel model of human embryonic development.

AMH: WHERE ARE WE NOW??

Frank J Broekmans, PhD, MD

Prof Reproductive Medicine and Surgery, Department for Reproductive Medicine, University Medical Center Utrecht, The Netherlands

Anti-Mullerian hormone (AMH) has important roles in postnatal ovarian function. It is produced by the granulosa cells of primary, early developing follicles up to the large antral stages visible at transvaginal ultrasound. In early folliculogenesis, AMH inhibits the transition from the primordial to the primary follicle stage. AMH may also play a role in fine tuning the sensitivity of larger antral follicles to rising FSH levels in the menstrual cycle.

AMH levels can be measured in serum and are proportional both to the number of small antral follicles at ultrasound, as well as the number of primordial follicles. Levels fail to fluctuate according to the classical endocrinology of the menstrual cycle and may therefore provide a cycle independent marker for ovarian function testing. Recent studies have demonstrated that AMH levels may be influenced by endocrine manipulation such as use of contraceptives and GnRH agonists.

In normal women, serum AMH levels decrease with age and become undetectable in the peri-menopausal period. In follow up studies, AMH levels have shown the capacity to predict the timing of menopause, and may prove valuable in the long term forecasting of individual reproductive lifespan.

In patients with polycystic ovary syndrome (PCOS), AMH levels are clearly higher than in age matched controls, which indicates a potential use in PCOS diagnosis and management. In patients with premature ovarian failure, AMH is undetectable or greatly reduced and may become recognized as a more reliable endocrine marker for ovarian failure compared to FSH.

AMH has drawn most of the attention as a useful clinical marker for the assessment of ovarian reserve in cases of subfertility caused by advanced age in women. In prediction of poor ovarian response after ovarian
hyperstimulation for IVF, AMH has shown the highest accuracy compared to AFC and basal FSH. In addition, AMH increasingly has revealed itself useful in the prediction of hyperresponders after ovarian stimulation. FSH dose adaptation based on AMH assessment may become the way to further rationalize IVF treatment.

1500 - 1745

CLINICAL CONCURRENT SESSION
LEVEL 3, GRAND BALLROOM

A ‘FREEZE ALL’ STRATEGY FOR AVOIDANCE OF OVARIAN HYPERSTIMULATION SYNDROME IN HIGH RISK PATIENTS TREATED WITH GnRH ANTAGONIST CONTROLLED SUPEROVULATION FOR IVF: PREGNANCY RATES AND RISK OF OHSS.

Dr Paul Atkinson 1, Dr Juliette Koch 2, Professor William Ledger 1,2,3

1 Royal Hospital for Women, 2 IVF Australia, 3 University of New South Wales

Ovarian Hyperstimulation Syndrome (OHSS) remains a major complication of superovulation for in-vitro fertilisation. Early onset OHSS can be eliminated by employing a GnRH antagonist protocol with a GnRH agonist trigger for final oocyte maturation. Acceptable pregnancy rates have been achieved after fresh embryo transfer in a few centres worldwide using a GnRH agonist trigger combined with intensive, individually adjusted luteal support or with supplementation with low dose hCG. However, a recent Cochrane meta-analysis has shown overall low pregnancy rates after fresh embryo transfer in agonist triggered cycles, and there remains a small but significant risk of late-onset OHSS after fresh transfer. A strategy combining GnRH agonist trigger with vitrification of all embryos has been proposed as means of achieving a truly OHSS-Free Clinic (1). Pregnancy rates after transfer of thawed vitrified embryos are consistently high (2).

We will review the literature concerning use of agonist trigger in women at risk of OHSS and report a retrospective analysis of patients from IVF-Australia clinics across New South Wales who were triggered with a GnRH agonist. The primary outcome is rate of OHSS, with the hypothesis that OHSS is eliminated after agonist trigger in a freeze all strategy. The secondary outcome is the ongoing pregnancy rate after frozen embryo transfer. As far we are aware, this is the first presentation of such data in an Australian population.

References


DOES FSH DOSE ADVERSELY INFLUENCE EMBRYO ANEUPLOIDY? DATA FROM CGH CYCLES AT GENE

Mark Bowman, Katy Emmett, Maria Traversa, Steven Mcarthur

Genea, Sydney Australia

Aim: The blastocyst biopsy / vitrification model employed at Genea allows for analysis of the potential adverse effects of ovarian stimulation in “fresh” IVF cycles. The transfer of a single confirmed euploid embryo to a non-stimulated environment now appears to have the highest implantation and “healthy baby” rate within IVF. Physicians may tend to give higher doses of FSH in a CGH cycle, in order to obtain more embryos for biopsy and knowing that OHSS is being avoided through vitrification. This paper aims to observe whether FSH dose might influence embryo aneuploidy.

Methods: Data from 448 stimulation cycles where blastocyst biopsy for CGH was undertaken were analysed. The average number of oocytes collected, the number of biopsied embryos per cycle and the rate of aneuploidy were plotted against female age and three FSH dose ranges/day used (<175 IU/day, 175-249 IU/day and > 250IU/day). Cycles where CGH was undertaken for known translocation, as well as donor and surrogacy cycles were excluded from the analysis.

Results: For patients <35 years, an FSH dose of < 175 IU/day yielded the highest number of oocytes at OPU compared to higher doses and across all age groups, an FSH dose of > 250 IU / day yielded lower numbers of oocytes then lesser dose ranges. The subsequent numbers of blastocysts biopsied and the resulting aneuploidy rates are shown in figures 1 and 2 respectively.
Conclusions: High doses of FSH do not appear to lead to any more oocytes collected nor more testable blastocysts, beyond a “moderate” increase above what might be considered a “usual” dose for any particular age group. Further, there is not a higher rate of aneuploidy as a result of high dose stimulation.

BLASTOCYST BIOPSY OF HUMAN EMBRYOS IMPROVES IMPLANTATION AND LIVE BIRTH RATES COMPARED TO DAY THREE BIOPSY – ANALYSIS OF ANZARD DATABASE 2004 TO 2008.

Steven McArthur, Maria Traversa, Don Leigh, Alex Wang, Elizabeth Sullivan, Mark Bowman

1 Genea, Sydney Australia, 2 University of NSW, Sydney Australia

Objectives: Human embryo biopsy is an invasive process required for the provision of PGD/PGS in IVF clinics. Day three embryo biopsy is the most widely used method for embryo sampling but there are concerns that this technique might yield lower implantation and live birth rates compared to non-biopsied embryos. This paper aims to compare the outcomes, as reported to ANZARD, from day 3 and day 5 embryo biopsy.

Methods: ANZARD data from 3759 fresh PGD/PGS cycles where husband’s/partner’s sperm was used for fertilisation during 1 January 2004 to 31 December 2008 were analysed retrospectively, with respect to whether cell biopsy occurred at cleavage stage or blastocyst stage and then correlated with subsequent pregnancy and birth outcomes.

Results: The likelihood of live delivery (34.2% cf 16.8%) and “healthy baby” (28.4% cf 14.3%) following single embryo transfer (SET) cycles was significantly higher for day five biopsies than for day three biopsies (ARR 1.92 95% CI 1.54-2.40, and ARR 1.83 95% CI 1.43-2.33). When restricted to selective SET cycles, the chance of resulting clinical pregnancy (48.5% cf 34.3%) and live delivery (41.3% cf 27.2%) was significantly higher for day five biopsies than for day three biopsies (ARR 1.37 95% CI 1.02-1.86, and ARR 1.41 95% CI 1.01-1.97).

Conclusions: The study provides strong evidence that human embryo biopsy performed at the blastocyst stage improves both implantation and live birth rates compared to biopsy at day three.

THE EFFECT OF POLYCYSTIC OVARIIES ON IVF/ICSI TREATMENT OUTCOME.

Michael Costello, Chiao Yi Michelle Chew, Kristen Lindsay, Alex Wang, Glen McNally

1 University of New South Wales, Sydney, Australia, 2 Royal Hospital for Women, Sydney, Australia 3 IVF Australia, Sydney, Australia

Aim: To investigate the outcome of IVF/ICSI in ovulatory women with polycystic ovaries (PCO).

Method: A retrospective cohort study of women aged ≤42 years with infertility and regular ovulatory menstrual cycles who underwent their first IVF/ICSI cycle using the long down regulation protocol at IVF Australia-EAST in Sydney between 2000-2011. A pretreatment transvaginal pelvic ultrasound (TVS) was performed by a single tertiary level diagnostic ultrasound centre. Patients were divided into either group NO (women with normal ovaries) or group PCO according to the pre-treatment TVS. The starting dose of FSH was determined by the patient’s age and the presence or absence of PCO. The primary outcome measure was live birth rate per patient.

Results: A total of 200 patients (135 in group NO, 65 in group PCO) were included in the data analysis. There was no difference in live birth rate per patient between the two groups (25.2% V 26.2%) with both raw (OR [95% CI] = 1.05 [0.54-2.07]) and logistic regression adjusted (for maternal age) (Adjusted OR [95% CI] = 0.99 [0.50-1.98]) data. There were also no differences in ovarian response, embryological parameters or other clinical outcomes between the two groups.

Conclusion: The presence of PCO in ovulatory women does not adversely affect IVF/ICSI outcome at our unit. However, the results are not conclusive and further large, well-designed prospective cohort studies are required in order to confirm our findings.
NON-INTRAUTERINE INSEMINATION FOR WOMEN WITH NON-TUBAL INFERTILITY

Cynthia Farquhar 1, Julie Brown 1, 2, Nicola Arroll 1, Devashana Gupta 2, Claire Boothroyd 3, Maha Al Bassam 4, James Moir 5, Neil Johnson 6

1 University of Auckland, Auckland, New Zealand 2 Fertility Plus, Auckland, New Zealand 3 Assisted Conception Australia, Brisbane, Australia 4 Tawam Hospital, Al Ain, United Arab Emirates 5 Moir Medical, Buderim, Australia 6 Repromed, Auckland, New Zealand

Background: A Cochrane review in 2003 concluded that fallopian tube sperm perfusion (FSP) may be more effective than IUI for non-tubal sub-fertility, but the significant heterogeneity should be taken into account. The NICE Fertility guidelines (2004) made the following recommendation: “Where intrauterine insemination is used to manage unexplained fertility problems, fallopian sperm perfusion for insemination (a large-volume solution, 4ml) should be offered because it improves pregnancy rates compared with standard insemination techniques”.

Aim: We aimed to evaluate whether fallopian tube sperm perfusion (FSP) result in better pregnancy and live birth rates than standard intrauterine insemination (SIUI) for couples with non-tubal infertility with or without gonadotrophin or clomiphene stimulation?

Method: This was a pragmatic, multicentre, randomized controlled trial that compared SIUI and FSP in 417 women with non-tubal infertility.

Results: Four hundred and seventeen women were randomized to SIUI (n = 210) or FSP (n = 207). Data were available for analysis from 198 women in the SIUI group and 198 women in the FSP group. There were 19 women with incomplete data because of cycle cancellation or withdrawals and 2 women who conceived prior to commencing treatment. There were no significant differences in live birth rates between the two groups with 27 (12.9%) in the SIUI group and 21 in the FSP group (10.1%) [Odds Ratio (OR) 1.31 (0.71, 2.39), P = 0.48]. Two ectopic pregnancies were reported in the SIUI group and one was reported in the FSP group.

Conclusion: There was no evidence of an improvement in live birth rates with FSP compared with SIUI. There is no indication for the use of FSP in fertility clinics and fertility guidelines and protocols should be updated to reflect this.

DO SERUM ANTI-MULLERIAN HORMONE (AMH) LEVELS INDICATE SIGNIFICANT PROTECTION OF OVARIAN RESERVE IN ONCOLOGY PATIENTS WHO USE GONADOTROPHIN RELEASING HORMONE ANALOGUE (GNRHA) DURING CHEMOTHERAPY?

Claire Garrett 1, Franca Agresta 1 And Kate Stern 1, 2

1 Melbourne IVF, East Melbourne, Victoria, Australia, 2 The Royal Women’s Hospital, Parkville, Victoria, Australia

Aim: To use AMH levels as a comparative measure of ovarian reserve in oncology patients pre and post chemotherapy treatment with and without adjuvant GnRHa as a fertility preservation option.

Methods: Retrospective database analysis of 77 AMH levels available from 215 oncology patients with follow-up data >1 year post (non pelvic radiation or oophorectomy) treatment for cancer, 38 pre-treatment oncology patients and 4400 women prior to registration for fertility services at Melbourne IVF. Multiple regression analysis of log(AMH+1) as a function of age, oncology status and GnRHa treatment during chemotherapy. Percentages of undetectable (<1.1 pmol/L) AMH results were assessed using Fisher’s exact test.

Results: Log(AMH+1) was significantly negatively related to age(p<0.001) and oncology status(p<0.001)(r² = 0.17) and within oncology patients, log(AMH+1) was also significantly positively related to GnRHa therapy(p<0.05). %AMH<1.1 pmol/L: pre-treatment vs post-treatment (7.9% vs 37.7%, p<0.001); GnRHa vs nonGnRHa treatment(30.9% vs 54.5%, not significant p=0.07); post-treatment vs general fertility population(37.7% vs 14.3%, p<0.0001). Comparison of age dependent regression models for AMH indicated that at their average age at assessment (33.6 years) >1 year (mean 3.9 years) post treatment, oncology patients had an effective increase in ovarian age of 10±4 years. Similar models for 47 breast cancer patients indicated a 7 year increase in ovarian age at the mean age of 36.6 years, and reduction of ovarian aging by 4 years with GnRHa.

Conclusion: These results show consistent trends supporting the contention that GnRHa during chemotherapy reduces follicular depletion in cancer survivors. In view of the difficulties in execution of a
prospective randomised control trial, retrospective cross-sectional analysis such as this should prove useful with accumulation of more data.

**WHAT IS THE OBJECTIVE EVIDENCE TO SUPPORT FREEZING ALL EMBRYOS GENERATED IN A STIMULATION CYCLE FOR TRANSFER IN A SUBSEQUENT NATURAL OR ARTIFICIAL THAW CYCLE TO IMPROVE THE CHANCE OF SUCCESSFUL IMPLANTATION?**

John McBain1,2, Claire Garrett1 And David Edgar1,2

1 Melbourne IVF, East Melbourne, Victoria, Australia, 2 The Royal Women’s Hospital, Parkville, Victoria, Australia

**Aim:** Despite a lack of evidence, there is a growing consensus that modern cryopreservation survival rates in the 90% or higher range might justify a practice of freezing embryos for a superior implantation opportunity in a subsequent thaw cycle. The perturbing anti-implantation factor is said to be unnaturally high levels of oestradiol acting directly or indirectly upon the endometrium. The aim of this study is therefore to examine what impact increasing oocyte yield, as proxy for increasing peak oestradiol levels and thus a postulated anti-implantation impact upon the peri-implantation endometrium, might have upon foetal heart implantation rates(IR) following fresh single embryo transfer(SET) in stimulated IVF cycles.

**Methods:** A retrospective study was performed upon stimulated IVF cycles in women younger than 38y between 2009 and 2012 from the Melbourne IVF database for SET of a top quality Day2 cleavage stage embryo(4-cell at 42hpi which had undergone first cleavage by 23/24hpi). Relationship between IR and oocyte number was analysed by logistic regression.

**Results:** In regression analysis, IR is not significantly related to oocyte number (p<0.3).

<table>
<thead>
<tr>
<th>Oocyte Number</th>
<th>Number of SET’s</th>
<th>IR (%)</th>
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<tr>
<td>1 – 5</td>
<td>214</td>
<td>27.1</td>
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<tr>
<td>6 – 10</td>
<td>418</td>
<td>35.4</td>
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<tr>
<td>11 - 15</td>
<td>372</td>
<td>32.5</td>
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<tr>
<td>16 - 20</td>
<td>218</td>
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<tr>
<td>&gt;20</td>
<td>119</td>
<td>34.5</td>
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<tr>
<td>ALL</td>
<td>1341</td>
<td>32.8</td>
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**Conclusions:** No adverse impact of increasing stimulation effect upon IR could be observed. A practice of electively freezing embryos for transfer in a subsequent, unstimulated cycle to avoid a postulated negative impact of stimulation effect is not supported by these data.

**PROGESTERONE LEVEL ON DAY OF HCG TRIGGER AND IVF CYCLE OUTCOMES**

Sameer Jatkar1, Vivien MacLachlan1, Lynn Burmeister1, Nicole Hope1

1 Monash IVF, Melbourne, Australia.

**Aim:** To examine pregnancy rates following IVF/ICSI cycles, according to the serum progesterone level as measured on the day of hCG trigger.

**Method:** Retrospective analysis of 1706 IVF/ICSI cycles where serum progesterone was measured on the day of hCG trigger. Both GnRH agonist and antagonist protocols were included for analysis, while cycles demonstrating a premature LH rise were excluded. Pregnancy rates were compared between those cycles with progesterone levels greater than or equal to 4 nmol/L versus those below 4 nmol/L.

**Results:** A serum progesterone level had been measured on the day of hCG trigger in 1706 of 6700 IVF/ICSI cycles in the two year time period between April 2011 and March 2013. Progesterone was greater than or equal to 4 nmol/L in 230 cycles of the 1706 cycles analysed. Overall, the pregnancy rate was 28.9% for the 1706 cycles examined. In the group with serum progesterone levels less than 4 nmol/L on the day of trigger, the pregnancy rate was 30.4%. However, the pregnancy rate was only 19.1% for those with progesterone levels equal to or greater than 4 nmol/L on day of hCG trigger. Female age, day of transfer, and number of embryos transferred were not significantly different between the two groups.

**Conclusion:** Pregnancy rates were higher in IVF/ICSI cycles where serum progesterone was less than 4 nmol/L when compared with cycles where progesterone levels were greater than or equal to 4 nmol/L on the day of hCG trigger. These findings are consistent with other recently published literature. Further research is required to confirm this effect, and whether new strategies, such as freezing all embryos and completing embryo transfer in a different cycle, will have a benefit for this group of women.
References


REPRODUCTIVE OUTCOMES FOLLOWING HETEROTOPIC TRANSPLANTATION: ROYAL WOMEN’S HOSPITAL EXPERIENCE

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1Melbourne IVF, East Melbourne, Victoria, Australia. 2Reproductive Services, Royal Women’s Hospital, Parkville, Victoria, Australia. 3Obstetrics and Gynaecology Ultrasound Department, Royal Women’s Hospital, Parkville.

Aim: Despite significant advantages of using heterotopic sites for ovarian cortex autotransplantation, the clinical value of this approach has been questioned owing to the inferior pregnancy rates when compared to orthotopic transplantation. We report the largest series of heterotopic ovarian transplantations thus far in the literature, assessing reproductive outcomes in 9 patients who underwent heterotopic transfer of frozen-thawed ovarian tissue following premature ovarian failure (POF).

Method: A case series is presented, in which 9 women with POF underwent heterotopic ovarian transplantation between 2006 and 2012. Ovarian tissue cryopreserved for 1-12 years was rapidly thawed and transplanted into heterotopic sites (abdominal port site, pelvic side wall peritoneum) as well as remaining ovary, if present. Endocrine function was assessed by monthly blood tests (FSH) and ultrasound commencing 2-4 weeks after transplantation.

Results: Endocrine function was restored on average after 5.3 months after transplantation. Four patients underwent a second transplantation 1-2 years after the first. The duration of endocrine function was between 24 and 60+ months, with function still ongoing in a number of patient’s. In total there were 26 stimulated cycles, 25 oocytes retrieved, 15 embryo transfers. There was a biochemical pregnancy in a woman who underwent ovarian transplantation after being treated for NHL, as previously reported (Stern et al, 2011) and a second case of ongoing clinical pregnancy.

Conclusion: In this largest series of heterotopic transplantations reported, the reproductive outcomes are demonstrated and the technique highlighted as a valid option within the array of fertility preservation approaches.

FIRST REPORTED PREGNANCY FROM HETEROTOPIC GRAFTED FROZEN OVARIAN TISSUE AFTER BILATERAL OOPHORECTOMY

Catharyn Stern1,2, Debra Gook1,2, Franca Agresta1,2, Lyndon Hale1,2, Thomas Jobling4, Jacqueline Oldham3

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First reported pregnancy after heterotopic ovarian tissue graft in anterior abdominal wall

Aim: We report the first clinical (twin) pregnancy after embryo transfer of two embryos created with oocytes obtained from a heterotopic right abdominal ovarian tissue graft after cryopreservation. Previous pregnancies from ovarian tissue have all been orthotopic ie located close to the ovary within the pelvis

Method: The patient, aged 34 years, had previously undergone left and then right oophorectomies for a granulosa cell tumour. After histological evaluation of the tissue did not reveal any evidence of tumour, ovarian tissue freezing was performed. The patient presented seven years later requesting fertility assistance. The patient and her partner underwent extensive counselling regarding the potential risk of tumor cell transmission. The initial graft, to bilateral pelvic walls and anterior abdominal walls, resulted in restoration of ovarian function, but only a few oocytes developed. The patient then underwent a second procedure two years later.

Thirty slices of ovarian tissue were now grafted into the right and left anterior abdominal walls, resulting in further evidence of ovarian function. Low-dose ovarian stimulation and transabdominal ultrasound-guided oocyte retrieval resulted in two oocytes, both of which fertilized with intracytoplasmic sperm injection.
Results: An embryo transfer was performed on day three, with a positive serum human chorionic gonadotrophin level detected fourteen days later. Transvaginal ultrasound at five weeks and six days revealed a viable intrauterine twin pregnancy, confirmed at a further scan at eight weeks gestation.

Conclusion: This is the first pregnancy demonstrated to unequivocally arise from a heterotopic site outside the pelvis. This result has significant implications for future practice.

SUMMARY

We report the first (twin) pregnancy after embryo transfer of two embryos created with oocytes obtained from a right abdominal graft of ovarian tissue. The patient, a thirty-four year old woman, had previously undergone left and then right oophorectomies for a granulosa cell tumour. After histological evaluation of the tissue did not reveal any tumour, ovarian tissue freezing was performed. The patient presented seven years later requesting fertility assistance.

Ovarian tissue was grafted into the right and left anterior abdominal walls, resulting in endocrine and physical evidence of ovarian function. Low-dose ovarian stimulation and transabdominal ultrasound-guided oocyte retrieval resulted in two oocytes, both of which fertilized with intracytoplasmic sperm injection. An embryo transfer was performed on day three, with a positive serum human chorionic gonadotrophin (hCG) detected fourteen days later. Transvaginal ultrasound at five weeks and six days revealed a viable intrauterine twin pregnancy, confirmed at a further scan at eight weeks gestation. This is the first pregnancy demonstrated to unequivocally arise from a heterotopic site. This result has significant implications for future practice.

IVF TREATMENT OF ONCOLOGICAL PATIENTS - A RETROSPECTIVE STUDY FROM WESTMEAD FERTILITY CENTRE (WFC)

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Premenopausal women needing treatment for cancer are offered cryopreservation of embryos to allow the possibility of a pregnancy after completing gonadotoxic treatment.

Aims: The study aimed to investigate the fertility outcome of a group of women who had embryo cryostorage prior to oncology treatment.

Methods: Women who had undertaken emergency IVF prior to oncology treatment at WFC from 1994-2011, were included in this retrospective study. The data was collected from WFC’s ART database and hospital medical records, then analyzed statistically.

Results: Out of 66 women with cryostored embryos, 25 subsequently became pregnant after completing their cancer treatment. All pregnancies occurred between 1-10 years post cancer treatment with the majority in the second or third year. 65% of pregnancies were full-term with normal birth weight. Pregnancy was correlated to cancer diagnosis with all of the 6 women who had Hodgkin’s disease becoming pregnant either naturally (4/6) or after frozen embryo transfer (3/6). 16 out of 42 breast cancer patients became pregnant, with 9 out of 18 having ER/PR negative tumours conceiving compared to 7 out of 24 with ER or PR positive tumours. 10 breast cancer patients had recurrent disease or died (21.4%). All 3 AML patients failed to conceive and none survived. Of the 4 bowel cancer patients only one conceived (donated embryo).

Conclusion: This study confirmed that the fertility potential of women needing oncology treatment is related to the type of cancer and its treatment. Cryostorage of embryos allowed some women to complete a successful pregnancy after cancer treatment.

1500 - 1745

SCIENTIFIC CONCURRENT SESSION
LEVEL 4, ROOMS 1 & 2

IS OOCYTE MECHANICAL ASSISTED ACTIVATION AN EFFECTIVE APPROACH FOR TREATING PATIENTS WITH POOR FERTILISATION RATES FROM STANDARD ICSI?

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2Department of Obstetrics and Gynaecology, The University of Melbourne, Parkville, Victoria, Australia
Background: Complete failure of fertilization with ICSI is rare, estimated as 1-3%. This has a substantial emotional and financial effect on patients. Some of these cases are due to failure of oocyte activation thus assisted-activation (AA) techniques have been suggested as an approach to overcome this activation failure.

Aim: The aim of the current study was to evaluate the effectiveness of mechanical AA as a treatment option for patients with a history of no or poor fertilisation rates following standard ICSI.

Method: Data from 9 patients treated by mechanical assisted activation between 2009-2013 were collected. Fertilization rates (FR), syngamy rates (progression beyond pronuclear stage 23 hrs post injection) and day 2 cleavage rates were determined per oocyte injected and compared between standard and AA-ICSI cycles.

Findings: Overall 24 ICSI cycles and 13 AA-ICSI cycles were reviewed. FR was significantly higher among the AA-ICSI cycles (79 fertilized out of 135 oocytes injected - 58.5%) compared to the standard ICSI cycles (33 fertilized out of 166 oocytes injected – 19.9%), p<0.001. Percentage of embryos progressing beyond pronuclear stage at 23 hrs and percentage of embryos developed by day 2 were found to be significantly higher in the AA-ICSI group (p<0.001 for both). Four patients had fetal heart implantation post their AA-ICSI cycles. No implantations were associated with any of the standard ICSI cycles.

Conclusion: ICSI combined with mechanical AA may improve the outcome in patients with a history of poor fertilisation from standard ICSI. Further study is indicated.

BLASTOCOEIL FLUID MAY含有 EMBRYONIC DNA THAT COULD BE USED FOR PREIMPLANTATION GENETIC DIAGNOSIS (PGD)

Peter Coleman1, Leeanda Wilton1

1Preimplantation Genetics, Melbourne IVF

Aim: Differentiation of embryos to the blastocyst stage includes production and secretion of fluid into the blastocoelic cavity. It has recently been proposed that blastocoelic fluid (BF) may contain embryonic DNA that could be used for PGD (Palini et al., 2013). Here, we have attempted to collect BF and determine whether it contains genomic DNA that reflects the chromosomal status of the embryo.

Method: BF was aspirated after micropuncture of 7 blastocysts previously diagnosed as aneuploid after cleavage stage embryo biopsy. BF and individual blastocysts were loaded into separate PCR tubes and subjected to 24 chromosome analysis using whole genome amplification and array comparative genomic hybridisation (aCGH, BlueGnome, UK). Results from fluid and corresponding embryos were compared to assess concordance.

Results: BF was successfully aspirated from all 7 blastocysts. Amplifiable genomic DNA was confirmed by gel electrophoresis in 3 BF samples. 2 samples produced interpretable aCGH profiles which were concordant with the corresponding blastocyst, although one of these was noisy and difficult to interpret. One gave a blank profile.

Conclusion: The presence of genomic DNA in BF was confirmed in 3/7 samples and found to be representative of the embryo in 2 samples. The efficacy of this technique maybe dependent on the amount of fluid retrieved, amount of DNA present and embryo quality. Ongoing refinements will determine if consistency can be improved such that analysis of BF could be used to determine the chromosomal status of blastocysts.

References


BLASTOCYST FORMATION CAN BE PREDICTED FROM THE OPTIMAL TIMING OF NUCLEAR ENVELOPE BREAKDOWN (NEBD) IDENTIFIED USING TIME-LAPSE IMAGES

David Edgar1,2, Petra Wale2

1 Melbourne IVF and 2 Reproductive Services, Royal Women’s Hospital, Victoria

Aim: To determine the relationship between the timing of NEBD (and inferred entry into syngamy) and subsequent development of human embryos in vitro using time-lapse images.

Method: Human embryos generated by ICSI were cultured individually in wells in an Embryoscope™ and images were recorded every 7 minutes by time-lapse microscopy. The exact timing of nuclear envelope breakdown (NEBD) was recorded for each embryo.
Following subsequent culture, each embryo was assessed for blastocyst formation at or before 115 hours post insemination (hpi).

Results: The mean time at which NEBD was observed for all cultured embryos (n=318) was 25.5 hpi (range 17.5 - 46.4 hpi). For embryos cultured to day 5 (n=182) the data with respect to timing of NEBD was analysed as quartiles. The proportion of embryos which developed to the blastocyst stage by 115 hpi decreased by quartile (60% in the 1st quartile to 13% in the 4th quartile). Further analysis by octile revealed that optimal blastocyst development was achieved when the timing of NEBD was in the 2nd and 3rd octiles (68%) whereas the first octile of NEBD timing resulted in only 52% blastocyst development. When NEBD occurred in the 4th octile or later, blastocyst development was further reduced (45% - 4%).

Conclusion: Timing of NEBD on day 1 of development is predictive of timely development to the blastocyst stage. An optimal window exists for timing of NEBD with earlier or later occurrence resulting in reduced development. Time lapse monitoring is a powerful tool for accurately identifying this window.

COMPARABLE OUTCOMES FROM VITRIFIED AND SLOW FROZEN BLASTOCYSTS FROZEN ON DAY 5 AND 6

Nerupi Fernando, John Peek, Bert Stewart
Fertility Associates, Auckland, New Zealand

Aim: To compare vitrification (VIT) versus slow freezing (SFz) by woman’s age and day of blastocyst cryopreservation.

Method: Retrospective analysis Sep 2009 – Dec 2012, from one Fertility Associates clinic using VIT and two Fertility Associates clinics using SFz where all spare embryos were cultured to day 5-6. A total of 463 warming cycles and 560 thawing cycles were analysed. Other than cryopreservation technique, the same stimulation, cycle management and embryology protocols were used in each clinic.

Results: The two SFz clinics had identical results so their data were combined. Cryosurvival (CS), implantation rate (IR) and Clinical pregnancy rate (CPR) for VIT versus SFz were: 91% vs 93%, 39% vs 40% and 38% vs 38% for n=306(VIT) and n=443(SFz) cycles, women aged ≤37 at freezing, and 94% vs 94%, 39% vs 37% and 39% vs 36% for n=157(VIT) and n=117(SFz) cycles, women ≥ 38. Analysis by day of cryopreservation showed CS, IR and CPR for VIT versus SFz of: 96% vs 95%, 37% vs 44% and 39% vs 42% for n=238(VIT) and n=357(SFz) for day 5 blastocysts, and 93% vs 97%, 41% vs 31% (p=0.03) and 40% vs 30% (p=0.04) for n=215(VIT) and n=196(SFz) for day 6 blastocysts.

Conclusion: SFz can give comparable blastocyst cryosurvival, implantation and pregnancy rates as VIT overall for both younger and older women, but VIT gave higher implantation rates for the more slowly developing embryos that were cryopreserved on day 6.

IMPACT OF OXYGEN ON IN VITRO DEVELOPMENT AND METABOLISM OF MOUSE PREANTRAL FOLLICLES

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2 Department of Zoology, University of Melbourne, Parkville, Victoria, Australia.

Aim: To compare the impact of 5% and 20% oxygen during culture on the development and metabolism of preantral follicles from adult mice.

Method: Primary and secondary follicles (80-130µm diameter) were mechanically isolated from adult mouse ovaries and cultured for 8 days in α-MEM with FSH (10mIU/ml), ascorbic acid (50ug/ml), ITS and HSA (5mg/ml) in either 5% or 20% oxygen. Follicular diameters were measured on days 0 and 8 to determine growth. For each oxygen concentration, half of the medium was replaced on Day 4 and supernatants were also collected at the completion of the study (Day 8) for metabolomic analysis by 1H-NMR. On day 8, follicle morphology, viability (live/dead staining), development of zona pellucida, cell proliferation and apoptosis were assessed.

Results: The proportion of follicles that grew over the 8 day period and retained viability was significantly higher in 5% oxygen (77% [72/94]) than in 20% oxygen (6% [6/101], p<0.0001). Metabolomic profiles of follicles at Day 4 or Day 8 of culture showed significant differences in amino acid and carbohydrate utilisation with respect to both oxygen concentration and day of development.

Conclusion: The use of 5% oxygen should be adopted for follicle culture. The poor in vitro follicular development previously observed in minimal culture conditions may reflect the use of 20% oxygen. Metabolomics will assist
in further optimizing culture media conditions for successful in vitro follicular development.


DOES THE SEX OF RECIPROCAL TRANSLLOCATION CARRIERS INFLUENCE BLASTOCYST DEVELOPMENT AND PGD OUTCOMES?

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1Genea, Sydney, Australia,

Aim: To evaluate and compare differences in blastocyst development and outcomes in Pre-implantation Genetic Diagnosis (PGD) cycles where the translocation carrier was identified as either the female or male partner, in order to assess clinical approaches to improve outcomes.

Method: Analysis was performed on 110 couples (235 cycles) who underwent a fresh PGD cycle at Genea between 2006 and 2011 to identify embryos with balanced chromosome complements. For 60 couples (132 cycles) the known carrier of the translocation was identified as the female partner and for 50 couples (103 cycles), the carrier was known to be the male partner. Number of oocytes collected, fertilisation rates and blastocyst development on days 5 and/or 6 were assessed for quality based on morphological appearance and suitability for PGD biopsy. For the purpose of this study, live birth rate was calculated as live birth per embryo transferred. Statistical analysis was performed using a Fisher’s exact test.

Results: The day 5/6 blastocyst formation rate was significantly lower for female carriers than for male carriers (female carriers 65%; male carriers 70%) (p=0.01). The percentage of embryos suitable for biopsy was also lower for the female carrier group (35% compared to 40%) (p=0.06). The live birth rate for transferred embryos that were deemed to have No Abnormality Detected (NAD) (n=124) was lower for the female carrier group than for the male carrier group (21% and 42% respectively) (p=0.12). The average female age, number of oocytes collected, fertilization and implantation rates were not significantly different between the two carrier groups.

Conclusion: The results of this study suggest that blastocyst formation rates on day 5/6 of development are significantly lower in cases where the female patient carries the chromosomal translocation. The reduced blastocyst development rate combined with the reduced embryo biopsy rate results ultimately produces a reduction in cumulative pregnancy rates. This information is useful in developing treatment strategies and managing patient expectations of cycle outcomes.

THE LINK BETWEEN OOCYTE SPINDLE NORMALITY AND RESULTING EMBRYO EUPLOIDY

Liza Tilia1,2, Michael Chapman1,2, Simon Cooke1,2, Suha Kilani1

1IVF Australia, 225 Maroubra Road, Maroubra, NSW, Australia, 2 University of New South Wales, Sydney, Australia

Aim: Prospective study to compare oocyte meiotic spindle morphology using polarised light microscopy (Oosight™) with the full chromosomal status of the subsequent embryo.

Method: Prior to ICSI, oocyte spindles were assessed for patients undergoing preimplantation genetic diagnosis (PGD) using array comparative genomic hybridization (CGH). Oocyte spindles were assessed at 39-41hrs post trigger injection and categorised as normal (barrel-shaped with clearly delineated boundaries and evenly distributed birefringence) or abnormal, as described by Kilani et al.

The abnormal spindle category was then stratified to (a) dysmorphic (spindles present, but not clear barrel shapes) and (b) translucent (dysmorphic shape but with very weak birefringence). We also assessed (c) oocytes with no visible spindles.

Gametes were cultured individually to ensure the oocyte was tracked correctly. Embryo biopsy was performed on Day 3. Array CGH was performed on the biopsied cells, with results available on Day 5. Spindle categories were compared to the array CGH result using Fisher’s exact test.

Results: A total of 440 oocytes assessed for spindle normality had array PGD results from the embryos created (27 had no array results). Embryos created from oocytes with abnormal spindles were more likely to result in embryo aneuploidy compared to the embryo from oocytes with normally shaped spindles (p=0.004).

When the abnormal spindles were stratified, the embryos created from:
(a) dysmorphic spindles had similar aneuploidy to embryos developing from normally shaped spindles \((p<0.049)\), however (b) Oocytes with translucent spindles were more likely to form aneuploid embryos than embryos from normally shaped spindles \((p<0.001)\), and (c) when oocytes had no visible spindles at the 39-41hr ICSI timing but were still injected as being MII oocytes, the resulting embryo was more likely to be aneuploid than embryos from normal spindled oocytes \((p<0.001)\).

**Conclusion:** Embryo aneuploidy occurs at significantly higher levels when the embryo originates from an oocyte that has an abnormally shaped spindle, especially if the spindle is translucent or the spindle is not visible at all at the MII stage.

\[1\] Kilani et al 2011; Fert Steril 96:389

**ABNORMAL DEVELOPMENTAL PATTERNS OBSERVED WITH TIME-LAPSE IMAGING**

Petra Wale1, David Edgar1,2

1 Melbourne IVF and 2 Reproductive Service, Royal Women’s Hospital, Victoria

**Aim:** To determine the relationship between abnormal developmental patterns and subsequent development of human embryos in vitro using time-lapse images.

**Method:** Human IVF and ICSI embryos were cultured individually in wells in an EmbryoScopeTM and images were recorded every 7 minutes by time-lapse microscopy. Embryo development was assessed and selection performed using standard protocols. Each embryo was assessed for blastocyst formation at 115 hours post insemination (hpi). The presence of a fetal heart was used to define pregnancy. The type and timing of abnormal developmental patterns such as direct cleavage from 1 to 3 cells or reverse cleavage were annotated for each embryo retrospectively.

**Results:** A total of 201 normally fertilized embryos were examined using EmbryoScope images for the presence of abnormal development during embryo culture. Overall, 23% displayed at least one abnormal event. Embryos displaying abnormal development formed significantly fewer blastocysts compared to embryos not exhibiting abnormal development (20% vs 45%, \(P<0.01\)). Of the 26 embryos transferred, only 2 displayed an abnormal developmental pattern. Of those two embryos selected for transfer, one was transferred singly and resulted in a negative outcome. The other was transferred together with an embryo not displaying abnormal development resulting in detection of a single fetal heart.

**Conclusion:** Embryos with abnormal developmental patterns have a reduced potential for blastocyst formation and are rarely selected for embryo transfer. However, the implantation potential of these embryos remains to be fully elucidated. Time lapse monitoring is a powerful tool for identifying embryos which have undergone abnormal development.

**PREIMPLANTATION GENETIC DIAGNOSIS OF ANEUPLOIDY (PGD-A) AND TRANSFER OF EUPLOID EMBRYOS IN WOMEN OF ADVANCED MATERNAL AGE (AMA)**

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Preimplantation Genetics, Melbourne IVF, East Melbourne VIC

**Aim:** Success rates after ART decline with AMA, partly due to the increased frequency of chromosome errors in embryos from older women. Despite this, PGD-A for AMA analysing 8-10 chromosomes has provided no benefit, probably because of undetected embryonic aneuploidies. The true frequency of chromosome errors in embryos from older women and their impact on ART outcomes can only be accurately determined by analyzing all 24 chromosomes in PGD-A.

**Method:** Single cells were biopsied from day-3 embryos from women ≥38 years and tested for copy number of all 24 chromosomes using 24sure (Bluegnome, UK) microarray comparative genomic hybridization. Embryos with no abnormality detected (NAD) in the biopsied cell were transferred on day 5. Clinical pregnancy was defined as a fetal heartbeat at 6 weeks gestation and results stratified according to the woman’s age.

**Results:**

<table>
<thead>
<tr>
<th>Maternal age (yr)</th>
<th>38-38.9</th>
<th>39-39.9</th>
<th>40-40.9</th>
<th>41-41.9</th>
<th>42-42.9</th>
<th>≥43</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. embryo</td>
<td>44</td>
<td>54</td>
<td>55</td>
<td>43</td>
<td>22</td>
<td>40</td>
<td>240</td>
</tr>
<tr>
<td>% NAD</td>
<td>72.7</td>
<td>81.5</td>
<td>70.5</td>
<td>86.7</td>
<td>86.4</td>
<td>82.5</td>
<td>78.2</td>
</tr>
<tr>
<td>% Enter with PT</td>
<td>88.2</td>
<td>94.1</td>
<td>91.0</td>
<td>90.9</td>
<td>82.7</td>
<td>85.0</td>
<td>90.5</td>
</tr>
<tr>
<td>% Clinical pregnancy</td>
<td>43.3</td>
<td>78.0</td>
<td>41.1</td>
<td>40.9</td>
<td>25.0</td>
<td>14.3</td>
<td>34.5</td>
</tr>
<tr>
<td>implantation rate</td>
<td>37.1</td>
<td>35.8</td>
<td>36.0</td>
<td>37.9</td>
<td>25.0</td>
<td>14.3</td>
<td>34.5</td>
</tr>
</tbody>
</table>

\(*P<0.05 \hspace{5pt} **P<0.01 \hspace{5pt} ***P<0.001 \) compared to 38-38.9 year old group
The percentage of NAD embryos, and consequently the percentage of cycles with a euploid embryo for transfer, decreased with increasing maternal age. Once a euploid embryo was identified there was no statistically significant difference in the clinical pregnancy or implantation rate between any age group.

Conclusion: This data demonstrates that, at least up to 41.9 years, the decreasing success rates with advancing maternal age after standard ART are overwhelmingly caused by embryonic aneuploidy. Over 42 years of age, the clinical pregnancy and implantation rates appear to decrease after transfer of a euploid embryo although the differences are not statistically significant perhaps because of small sample sizes. Other factors in addition to embryonic aneuploidy are likely to influence success rates in women over 42 years of age.

REAL-TIME THREE-DIMENSIONAL IMAGING OF EMBRYOS USING DIGITAL HOLOGRAPHIC MICROSCOPY

Dr Tristan Hardy 1, Dr Michelle Lane 2,3, Dr Benjamin Thierry 4, Dr Pierre Bagnaninchi 5

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Aim: To investigate the use of digital holographic microscopy in obtaining real time three-dimensional phase images of embryos at different stages of development.

Method: Murine embryos were cultured to various stages of development and analysed using a Lyncée Tec Digital Holographic Microscope. Embryos were subjected to routine clinical embryology procedures (e.g. vitrification and thawing, biopsy) to examine differences in cellular micromotion compared to normally-developing embryos.

Results: Three-dimensional phase imaging of the early embryo is possible using digital holographic microscopy. Cells can be measured at nanometric resolution and cellular micromotion can be quantified, comparing subcellular activity at different stages of development and following different invasive procedures. Real-time recordings of embryonic cell dynamics can be obtained and may be correlated with future embryological development and viability.

Figure: Two cell murine embryo, 3D reconstruction and digital holographic representation.

Conclusion: Digital holographic microscopy is an exciting new tool which can provide noninvasive, real-time, three-dimensional phase imaging of embryos without fixation or staining of the embryo. Key events in early embryogenesis can be visualised in vivo, potentially allowing the study of cell polarity and lineage formation without interruption to the development of the embryo. Further research is required to correlate cellular micromotion with viability and investigate imaging of subcellular structures at an even higher resolution.

1500 - 1745

NURSING/PSYCHOSOCIAL CONCURRENT SESSION

LEVEL 4, ROOMS 3 & 4

NURSING MANAGEMENT OF OVULATION INDUCTION IN A FERTILITY PROGRAM

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Aim: The modern era of IVF has seen the diminution of ovulation induction programs. Commonly the use of clomiphene citrate is not monitored conferring a risk of multiple pregnancy, whereas FSH ovulation induction needs skill and experience to avoid high multiple pregnancy rates. There is a clear role for the fertility nurse in coordinating and managing complex and successful programs in this area. This study reviews ovulation induction success rates in a program where nurses play a pivotal role.

Method: All ovulation induction programs between 2009 and 2012 at Fertili5SA, South Australia were audited. The drug used, the pregnancy rates obtained
and the multiple gestation outcomes were recorded. Nurses played a major role in determining increase of clomiphene and FSH, timing of blood and ultrasound tests, hCG administration and luteal phase support in partnership with fertility doctors. Nurse’s job satisfaction was surveyed.

**Results:** Extremely high individual and cumulative pregnancy rates were obtained for all programs where the nurse practitioner was a pivotal leader. Job satisfaction levels were greatly increased.

**Conclusion:** High pregnancy rates and low multiple pregnancy rates can be achieved in ovulation induction programs primarily managed by nursing staff. Other benefits of the program are the education nurses receive regarding ovarian physiology, pharmacology and the biological basis of reproductive medicine. Nurse led care promotes maximum utilization of the doctors’ time and avoids formulaic one-size fits all treatments. Ovulation induction in combination with nurse monitored ultrasound and decision making, provides stimulating challenges for experienced nurses and excellent outcomes for patients.

**INFORMING THE DEVELOPMENT OF A NEW MODEL OF CARE TO IMPROVE THE FERTILITY-AWARENESS OF SUB-FERTILE WOMEN IN PRIMARY HEALTH CARE**

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**Aim:** Promoting prevention in health care is foundational to establishing primary health care (PHC) in Australia. This study aimed to inform the development of a new model of care to improve the fertility-awareness of sub-fertile women in general practice.

**Method:** The study uses a two phase mixed methods design informed by the complex intervention framework to improve health care.

**Results:** Only 12.7% of infertile women on admission to assisted reproductive technology (ART) clinics identified the fertile window of the menstrual cycle. Most women attending general practice (92.2%), infertile women seeking assisted conception at ART clinics (94.5%), and general practitioners and practice nurses (PHC practitioners) (89.2%) believed that fertility-awareness education should be provided when women first reported trouble conceiving. Only 30.2% of PHC practitioners’ rated their own overall level of knowledge of fertility-awareness as either high or very high. The main barriers to the provision of the education in general practice included a lack of knowledge and skills, time and educational resources. Greater use of nurses in collaborative team care arrangements was considered an enabler.

**Conclusion:** Poor fertility-awareness among infertile women may be a contributing cause of infertility. A high degree of agreement exists between women and PHC practitioners that fertility-awareness education should be provided when women first reported trouble conceiving, suggesting that general practice is an appropriate setting for an intervention to improve the fertility-awareness of these women. Inter-professional development, collaborative team care arrangements, and educational resources are required to improve the provision of this education in general practice.

**LATE MISCARRIAGE AND STILLBIRTH - “WHY SHOULD WE CARE?”**

Louise Harper

Port Macquarie Base Hospital, Port Macquarie NSW, Rural Research Capacity Building Program: Health Education Training Institute

**Aim:** Following ART pregnancy loss can be a devastating life event. Grief and loss theories have highlighted the need to acknowledge the pain faced by families experiencing late miscarriage or stillbirth.

A late miscarriage or stillbirth may leave the woman & her family with a sense of emptiness and precious little time with their baby. As front line clinicians midwives strongly influence the woman’s and families experiences, where their actions and words can have an enduring impact.

**Method:** An action research approach will be used for this project. Women and families experiencing a late miscarriage or stillbirth will be interviewed and open-ended semi-structured questions used to illicit their narratives. The recorded interviews will be de-identified and used to facilitate forums with local midwives. Informed consent will be obtained prior to participation from all participants.
**Results:** This presentation will share how, through women’s voices and narratives, midwives may gain an understanding of the needs of local women and their partners facing late miscarriage and stillbirth.

**Conclusion:** Midwives need to provide care in an emotionally competent and respectful manner. Midwives must guide, support and nurture these women through the chaos of sudden and unexpected grief and support them in the collection of a lifetime of memories within a few hours or days.

It is anticipated that a greater understanding through these narratives may lead to midwifery care that is more sensitive to the needs of these women and their families, providing a somewhat positive impact in an otherwise tragic scenario.

**References:**


**PATIENT UPTAKE OF VERSION III CLINICAL CULTURE MEDIA SUITE TRIAL - A CLINIC BY CLINIC COMPARISON**

**Vanessa Raggio, Natalie Hobson**

**Genea Limited, Sydney, Australia**

**Introduction:** The CT3004 clinical trial is a recently completed RCT examining the efficacy and safety of Genea’s newest version of culture media. The projected trial period was 13 months with an aim of recruiting 1000 patients over five Genea sites. The patient care/support and nursing staff were integral in the process of engaging participants.

The completion of the trial has presented an opportunity to retrospectively examine the level of engagement, the success of the consenting process and the possible explanations as to why some clinics achieved higher levels of obtaining consent for participation.

**Methods:** Data comparison of five participating clinics on month by month uptake during the course of the trial.

**Results:**

<table>
<thead>
<tr>
<th>Clinic number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td># couples approached</td>
<td>303</td>
<td>330</td>
<td>267</td>
<td>189</td>
<td>328</td>
<td>414</td>
</tr>
<tr>
<td># couples completed trial (% of those recruited)</td>
<td>109</td>
<td>217</td>
<td>114</td>
<td>88</td>
<td>107</td>
<td>162</td>
</tr>
</tbody>
</table>

- The expected uptake of patients was projected at 50% across all sites
- The actual total uptake was 39% with site variances for uptake ranging from 33% to 67%.

**Conclusions:** The assessment of the process of patient consent for participation has given valuable insight for the design of future trials at Genea. Stakeholder engagement at all levels of the process is paramount if any trial is to meet uptake and timeframe targets. Identified challenges include; appropriate resource allocation, clear communication of messages, the ability to ensure patient understanding of what the impact of the trial is on outcomes and clarifying safety issues with patients. The provision of access to further information so all stakeholders can feel confident in trial efficacy and projected outcomes. Our experiences in these areas with respect to this current trial will be discussed in the broader presentation.

**EVALUATION OF YOUR FERTILITY, A PUBLIC EDUCATION CAMPAIGN TO INCREASE FERTILITY KNOWLEDGE**

**Louise Johnson ¹, Karin Hammarberg ¹², Helen Smallwood ¹, Stephanie Francis ¹, Robert J Norman ³, Carol Holden ⁴, Janet Michelmore ⁵, Sheila Hirst ⁶**

¹ Victorian Assisted Reproductive Treatment Authority, Melbourne, Victoria, Australia
² Jean Hailes Research Unit, School of Public Health and
Aim: ‘Your Fertility: Supporting Reproductive Choices’ is an evidence-based public education program to increase fertility knowledge in the community to enable people to make informed and timely decisions about childbearing. It was funded over three years from 2011-2013 by the Australian Government, and undertaken by the Fertility Coalition: Victorian Assisted Reproductive Treatment Authority (VARTA), Andrology Australia, Jean Hailes for Women’s Health and The Robinson Institute. Program evaluation is an integral part of the project.

Method: Independent evaluation of the reach and achievements of the program.

Results: By March 2013 the following outputs had been achieved:

- research identifying considerable gaps in fertility-related knowledge among Australians of reproductive age;
- publication of research findings in a peer-reviewed journal;
- development of:
  - Your Fertility website housing information for the community and health professionals which has had 45,500 visits;
  - evidence-based resources about the Top Five Fertility Factors, age, weight, alcohol, smoking and timing of sex distributed to >500 health services;
  - a 60 minute health professional teaching module ‘Optimising Patients’ Fertility’ registered as continuing professional development with three professional organisations, accessed by an estimated 2350 people;
- initiation of the annual Fertility Week;
- through social and traditional media Your Fertility messages are estimated to have reached over 1 million people of reproductive age.

Conclusion: The final evaluation report concludes that the project has been highly successful in achieving its objectives. The Your Fertility program is currently building on its achievements and seeking funding to sustain current initiatives and ensure a strong foundation for future work.

COMPARATIVE STUDY OF EXPERIENCES OF MISCARRIAGE

Elizabeth Hurrell1, Marilena Pelosi2, Kate Cheney2, Alison Cornish

1 Fertility Unit, Royal Prince Alfred Hospital (RPAH), Camperdown, NSW, Australia
2 Early Pregnancy Assessment Service (EPAS), RPAH

Aim: Optimal management of patients who experience miscarriage in the context of infertility treatment is informed by general studies of miscarriage. Factors such as psychological attachment to the developing fetus and the longer time to subsequent conception suggest that emotional distress may be intensified and prolonged after miscarriage of an IVF pregnancy. This study aims to compare the emotional experience, over a 16 week period, of women who miscarry after an IVF pregnancy with women who miscarry after natural conception, and to identify the services and supports provided that the women found most helpful.

Method: Participants (N=54, non IVF=32 and IVF=22) were patients attending the Early Pregnancy Assessment Service and completed questionnaires at 2 and 16 weeks following their miscarriage. Questionnaires administered were the Edinburgh Depression Scale (EDS) and the Perinatal Grief Scale (PGS). A third questionnaire surveyed patients’ perceptions of services delivered, and aimed to identify helpful interventions.

Results: A comparative analysis of scores for the EDS and PGS showed no statistical difference between the two groups. For both groups, there was a significant decrease in level of distress over time. Women who miscarried after IVF were more likely to report that the miscarriage brought them closer to their partner than non IVF women. For both groups, the experience of miscarriage increased worries regarding future pregnancies and the ability to have a baby.
Conclusion: There was no evidence to support the assumption that women who miscarry after an IVF pregnancy have more intense or prolonged emotional distress than women who miscarry after natural conception.

References


2 Franche RL, Psychologic and Obstetric predictors of couple’s grief during pregnancy after miscarriage or perinatal death. Obstetrics and Gynecology, 2001 Apr;97(4) 597-602

ENHANCING CHANGE IN LIFESTYLE, MIND AND BODY IN INFERTILITY

Nadia Mellor, Elle Miller

Reproductive Medicine Albury

Aim: To enhance change in infertility client’s physical and mental wellbeing during treatment, using alternative therapeutic practice such as Mindfulness, Emotional Freedom Therapy and nutritional education.

Method: Clients will be taught the practice of mindfulness and how they can adapt this therapy to infertility treatment. Emotional Freedom Therapy will be taught to each client or couple in the context of infertility treatment, associated stress and general daily life. Nutritional education will be taught to enhance the general lifestyle changes that will increase chances of infertility treatment and will also enhance general lifestyle choice.

Results: Using the methods outlined clients of Reproductive Medicine Albury will have a greater sense of wellbeing in lifestyle, mind and body, both in their journey in infertility treatment and in life in general.

Conclusion: All clients will benefit greatly from this holistic practice that nurtures from the beginning of this infertility journey.

Reference:

EFTDownunder-Steven Wells, David Lake

DISORDERED EATING ATTITUDES AND BEHAVIOURS IN WOMEN UNDERGOING FERTILITY TREATMENT IN WESTERN AUSTRALIA

Iolanda Rodino 1, Susan Byrne 1,2, Kathy Sanders 1

1 The University of Western Australia, Perth, Western Australia
2 Centre for Clinical Interventions, Perth, Western Australia

Aim: Eating disorders are common in women of childbearing age and studies have reported a higher prevalence of eating disorders in patients attending infertility clinics. These earlier studies are limited by sample size. The aim of this study was to compare the presence of disordered eating attitudes and behaviors across infertility diagnoses in a large sample of Australian women.

Method: A total of 385 women aged 20-40 years undergoing treatment at three Perth IVF clinics were grouped according to infertility diagnosis: male, anatomical, ovulatory, PCOS, unexplained and heterogeneous causations. Participants anonymously completed the Eating Disorder Examination Questionnaire (EDE-Q), the International Physical Activity Questionnaire (IPAQ) and a demographic profile.

Results: Women in the PCOS and ovulatory groups scored higher on subscales of the EDE-Q compared to the other Infertility Categories and exhibited more maladaptive weight control behaviors (all p < 0.05). There was no significant difference between Infertility Categories on level of physical activity. Individual weight variability varied according to participants’ BMI and responses on the EDE-Q (all p < 0.05).

Conclusion: Our study did not find an overall higher lifetime prevalence of disordered eating but found women with PCOS and ovulatory disorders presented with greater vulnerability to disordered eating attitudes and behaviors, especially with weight and shape concerns. Weight variability (gain or loss) was linked to higher BMI and eating psychopathology, having implications for dieting and rebound weight gain. To optimize patient care, greater awareness of the effects of disordered eating on infertility is warranted.
KEEPING UP WITH THE EVER-EVOLVING PSYCHO-SOCIAL ASPECTS OF TREATMENT: ONE CLINIC’S WAY OF ENSURING A CONSIDERED MULTI-DISCIPLINARY APPROACH TO DECISION MAKING ON COMPLEX PATIENT PRESENTATIONS

Marianne Tome1, Andrea Smales1, Sarah Nowoweiski1

1 Melbourne IVF, Melbourne, Australia

**Aim:** Psychosocial aspects of family structure and functioning are evolving quickly, sometimes ahead of legislation and clinical guidelines. This increased diversity in our patient population, presents challenges to evidence based practice and decision making surrounding treatment. The Clinical Review Committee (CRC) was established in 2004 to ensure a considered multi-disciplinary approach (including independent representatives) to decision making whilst respecting patient autonomy and diversity.

**Method:** De-identified cases presented to the CRC between February 2009 and April 2013, along with relevant evidence from the literature used to guide the CRC, will be used to highlight the central considerations and outcomes.

**Results:** To date, the CRC has heard 176 new patient cases including intra partner oocyte and embryo donation, serious mental health and cognitive impairment, and complex donor and relationship arrangements. Analysis of previous cases and decision-making processes provide evidence that the CRC plays an important role in supporting patients and health professionals and establishing precedents to ensure a consistent approach to decision-making where governing frameworks and/or long term outcomes are insufficient or absent.

**Conclusion:** The CRC is one option for clinics to adopt to meet the need for transparent, consistent and formal approaches to decision-making that go beyond the medical model of practice. It is argued that complex and diverse patient presentations should not be denied on the basis of a lack of knowledge or long term outcomes. However, careful consideration, monitoring and documentation are essential for attempting to combine the underlying principle of ‘the best interests of the child’ with respect for patient autonomy.

NUPTURING (THE BEST INTERESTS OF) THE CHILD

Margaret Van Keppel, John Yovich

PIVET Medical Centre, Perth, Western Australia,

The overriding drive that keeps many of us involved in this exciting and cutting-edge field is that we are motivated to assist and support our patients to have babies. The overriding principle that is intended to set the tone for Assisted Reproductive Technology (ART) as it is practiced in a large number of jurisdictions is that treatment must protect the “best interests of the child”, yet to be conceived/born. Most do not argue with the importance of this principle; however, it is my observation that many of us struggle to understand what it really means, in an operational sense. The practice of ART has become increasingly patient-centred, in that we are often too easily swayed by the patient’s urgency and desire for a child. In this presentation, I will address the principle of the “best interests of the child”, drawing from both experience and conceptual material from relevant disciplines, consider the role of the clinic counsellor in relation to this issue and identify ways in which our practice may indeed better address the interests of the child, yet to be conceived.

TUESDAY 3 SEPTEMBER 2013

0815 - 0845

KEYNOTE PRESENTATION
LEVEL 3 – GRAND BALLROOM

FETAL DNA – THE LATEST ON PRENATAL TESTING

Jon Hyett1

1 University of Sydney, Sydney, Australia,

**Aim:** To describe current and future strategies for the use of cell free fetal DNA (cffDNA) in prenatal diagnosis.

**Method:** To review the literature and present findings of a cohort of cases assessed at Royal Prince Alfred Hospital since October 2012.
Results: cffDNA has been offered to and taken up by >100 women attending Royal Prince Alfred Hospital. There are some potential pitfalls to cffDNA screening that need to be recognized and guarded against. The test allows a significant proportion of women to avoid chorionic villus sampling or amniocentesis – and the risk of miscarriage associated with invasive testing. Some women, who chose testing despite having low risk combined first trimester screening results, continue to be anxious after cffDNA testing.

Conclusion: cffDNA is a valuable tool for improving sensitivity and specificity in Down syndrome screening. The tool can be applied to both high and low risk population groups. The potential pitfalls of screening need to be recognized and discussed with parents.

SPINDLE ABNORMALITIES IN THE HUMAN OOCYTE

David Keefe

NYU Langone Medical Center, New York, New York 10016

Aim: Determine the molecular and cellular basis of spindle disruption in human eggs. Reproductive aging increases aneuploidy, embryo arrest, apoptosis, and spindle abnormalities. We have proposed a Telomere Theory of Reproductive Aging to explain the diverse effects of aging on reproduction in women, and demonstrated that genetic or pharmacologic shortening of telomeres in mice recapitulates the reproductive aging phenotype observed in women. In women, telomere length predicts embryo aneuploidy and fragmentation, as well as pregnancy outcome. One of the most surprising observations is that telomere shortening in mice disrupts the meiotic spindle, which normally tethers the chromosomes in the oocyte, and is disrupted in eggs from older women.

Method: We and others have employed an orientation independent polarized light microscope (polscope) to image spindles semi quantitatively and non-invasively in women undergoing IVF. The polscope images spindles based on their birefringence, an inherent optical property of highly ordered molecules such as microtubules.

Results: Research from our and other groups has demonstrated that reproductive aging in women is associated with marked spindle dysmorphologies.

Conclusion: Recent research in yeast reports similar effects of telomere dysfunction on spindle structure, and demonstrates that telomeres play a fundamental role in nucleation of the meiotic spindle. Together these results suggest a possible mechanism involving telomere shortening to explain the association of spindle abnormalities with human infertility.
THE CONTROL OF MEIOSIS IN MAMMALIAN OOCYTES

Hayden HOMER

Institute for Women’s Health, University College London, London WC1E 6BT, UK

Aim: Oocyte quality is a major determinant of pregnancy outcome and declines markedly with female aging. We aim to uncover key regulators of oocyte maturation to better understand the cellular basis for oocyte quality.

Method: Gene-silencing and high-resolution confocal imaging in mouse oocytes and single-cell gene profiling of human oocytes.

Results: We have identified novel roles for kinetochore proteins that impact multiple facets critical for proper oocyte maturation and intersect with two other major regulatory nodes, the APC/C-dependent proteolytic machinery and the CDK1 master kinase. Recently, we were able to profile many of these genes in single human oocytes using nanoString technology, revealing for the first time marked heterogeneity in expression profiles from one oocyte to the next even when derived from the same individual.

Conclusion: Improved understanding of the heterogeneity in oocyte expression patterns of pivotal genes in individual patients will be important for refining oocyte/embryo selection strategies during ART.

SURROGACY: MORAL AND ETHICAL DILEMMAS

Stephen Page

1 Harrington Family Lawyers, Brisbane

Aim: Identification of moral and ethical dilemmas in surrogacy from a legal perspective

Method: Some of the dilemmas to be identified include: When should doctors not help patients? Who should be parents? Where should they come from? Where should they go for surrogacy? Who should be surrogates? What differences would commercial surrogacy make? How do we avoid exploiting children, intended parents, surrogates, donors and their partners? Is it OK for there to be paid donors and surrogates- here or overseas? What are the impacts of bans? Is it OK for children to not know where they come from? Does it matter if parents are not recognised at law?

Results: The manner in which dilemmas have been addressed, without necessarily being identified, have had potentially negative effects on children, intended parents, surrogates, donors and their partners.

Conclusion: We need to continue to identify and discuss the dilemmas, and remain focused on the lives of those affected by surrogacy.

Posthumous Sperm Donation - The Legalities

Saul Holt SC

1 Victoria Legal Aid, Melbourne, Australia

Aim: To identify and describe the range of legal tests for posthuminous sperm retrieval and use in Australian States and Territories and in New Zealand.

Method: Case law and legislation review followed by ethical and legal analysis.

Results: N/A
**Conclusion:** The legal tests for posthumous sperm retrieval are inconsistent and incoherent. They create profound difficulties for doctors and the families of deceased people. The law requires harmonization and rationalization around a coherent ethical framework.

**Results:** 266 enquiries about social sex selection were received over the 20 month period and have increased over that time frame. 111 women started a stimulation cycle with a further 25 about to commence stimulation, indicating that 51% of Australian couples enquiring about treatment commenced a cycle. 99 of the 111 cycles have been completed, with a further 12 in progress at time of writing. 55% of couples treated wanted a male child and 45% a female.

The outcomes of the 99 completed cycles are shown in the Table. Further pregnancies can be expected from the use of frozen embryos.

<table>
<thead>
<tr>
<th># Commenced and completed stimulation</th>
<th>99</th>
</tr>
</thead>
<tbody>
<tr>
<td># PGD cycle cancelled due to poor response (%)</td>
<td>6 (6%)</td>
</tr>
<tr>
<td># PGD cycles with no suitable embryo for ET (%)</td>
<td>11 (11%)</td>
</tr>
<tr>
<td># PGD cycles with suitable embryos but all frozen (%)</td>
<td>10 (10%)</td>
</tr>
<tr>
<td># Reaching ET</td>
<td>72</td>
</tr>
<tr>
<td>Clinical pregnancy rate per ET (%)</td>
<td>24 /72 (33%)</td>
</tr>
</tbody>
</table>

**Conclusion:** The number of couples undertaking social sex selection each month is steadily increasing and at present is much higher than the number of couples per month, who underwent treatment at Sydney IVF before the regulatory ban was instituted. These results suggest that any ban on treatment does little to change decisions by couples, but merely enforces them to undertake treatment overseas.

**A CASE CONTROL STUDY OF ANTIOXIDANT THERAPY IN PATIENTS WITH MULTIPLE FAILED IVF CYCLES**

**Natasha Pritchard ¹, Kelli Sorby ², Tiki Osianlis ², Beverley Vollenhoven ¹²³**

¹ Monash University, Clayton, Australia ² Monash IVF, Clayton, Australia ³ Monash Health, Clayton, Australia

**Aim:** Egg quality and therefore embryo quality is a limiting factor in IVF. Mitochondria supply ATP to the cell, and higher levels are associated with better quality eggs. Excessive reactive oxygen species (ROS) are implicated in mitochondrial damage. Melatonin is a powerful free radical scavenger and antioxidant. Our study examined the use of melatonin in IVF patients with multiple unsuccessful cycles.
Method: Retrospective analysis of the use of melatonin in 13 patients who had previously undergone at least two unsuccessful IVF cycles. Two controls per case were matched for age, cycle number, stimulation type and dose; considering BMI, infertility aetiology and andrology. Primary outcomes were oocyte number, maturity and utilization rates. Secondary outcomes included clinical and biochemical pregnancies, peak oestrodial levels and follicles >11mm. T-tests were used for continuous data and Fisher’s exact test for categorical data; p<0.05 considered significant.

Results: When melatonin cases were compared to the matched controls, no statistically significant differences occurred in any primary or secondary outcomes assessed. Interestingly, when melatonin cases were compared to their previous cycle, oocyte number trended towards increased value (5.1 vs 7.1, p=0.1744). Of clinical relevance, increase in mature oocyte numbers compared to previous cycles approached statistical significance (3.4 vs 4.9, p=0.0515). Duration of FSH, max E2, follicle number and numbers of embryos transferred or frozen showed no significant changes.

Conclusion: In patients with multiple unsuccessful IVF cycles, melatonin may improve oocyte quantity and increase development to mature oocytes. The trends in the small group of patients warrants further study.

NEW OPTIONS FOR CONCEPTION IN HIV SERO-DISCORDANT COUPLES - A REVIEW OF 10 YEARS EXPERIENCE AT THE ROYAL WOMEN’S HOSPITAL MELBOURNE AND PRESENTATION OF FUTURE TREATMENT PROTOCOLS.

Rachael Knight 1,2, Penelope Foster 1,2, Shlomi Barak 1,2, Michelle Giles 1,3

1 Melbourne IVF, East Melbourne, Australia, 2Royal Women’s Hospital, Parkville, Melbourne, 3The Alfred Hospital, Prahran, Melbourne.

Background: The Royal Women’s Hospital has Australia’s only combined Fertilty – HIV clinic. This clinic has been treating HIV sero-discordant couples since 2003 and has in excess of 200 cycles of treatment experience from assisted reproduction. Recent evidence regarding pre-exposure prophylaxis (PrEP) efficacy has highlighted a new direction for treating a sub-group of our patients through the clinic. Pre-exposure prophylaxis (PrEP-C) refers to the administration of antiretroviral therapy before potential HIV exposure to reduce transmission.

Aim: To present the previous results of treatment cycles and to summarise the literature surrounding PrEP. Our proposed treatment protocol for PrEP-C will be presented.

Method: Retrospective data collection and literature review.

Results: The clinical pregnancy rate from intra-uterine insemination was 11% and from IVF/ ICSI cycles was 19%. There has been no incidence of sero-conversion from the treatment performed to date.

Conclusion: Despite ten years of safe and successful reproductive treatment for sero-discordant couples, new data is emerging suggesting antiretroviral therapy can be used to facilitate conception avoiding assisted reproduction in couples who have no fertility issues. In addition, the ongoing pregnancy rate with intra-uterine insemination is low and many couples choose to attempt to achieve a pregnancy by unprotected intercourse. To safely utilize PrEP-C, protocols are required to guide selection of couples most suited to this approach and how they should be monitored while on therapy so that the risk of HIV transmission is minimised.

PREGNANCIES AND BIRTHS FOLLOWING ASSISTED REPRODUCTIVE TECHNOLOGY IN AUSTRALIA, 1979-2011

Elizabeth A Sullivan, Alan Macaldowie, Yueping Alex Wang

1National Perinatal Epidemiology and Statistics Unit, University of New South Wales, Sydney, Australia,

Aim: This study aims to provide the annual and total number of pregnancies and births following assisted reproductive technology (ART) treatment in Australia since 1979, and investigate changes in ART pregnancy and birth outcomes during 1979 to 2011.

Method: Data was obtained from the Assisted Conception Data Collection (1979-2001 treatment years) and the Australia and New Zealand Assisted Reproduction Technology Database (2002-2011 treatment years). Linear regression was used to test the significant changes over time.

Results: There were 156,894 clinic pregnancies and 137,949 babies (including 135,409 liveborn babies) born in Australia following ART treatment during 1979-2011. Since 1979, Australia has seen a marked increase in the
both the number of clinical pregnancies (from 2 in 1979 to 13,790 in 2011) and babies born (from 1 in 1979 to 11,314 in 2011) following ART treatment. Of all births, 102,729 (74.5%) were singletons, 32,402 (23.5%) were twins and 2,818 (2.0%) were higher order multiples. A significant reduction (p<0.01) in multiple birth rates was observed in last 12 years, from 36.5% in 2000 to 13.3% in 2011, the lowest multiple birth rate since 1980.

**Conclusion:** Since 1979, the number of births following ART treatment has grown rapidly. In 2010, approximately one in twenty five women giving birth did so following ART (Li Z, et al. 2012). Notably, there has been a significant reduction in first higher birth multiples and more recently twin births since 2002.

**References:**


**BIRTHWEIGHT PERCENTILES BY GESTATIONAL AGE FOR BIRTHS FOLLOWING ASSISTED REPRODUCTIVE TECHNOLOGY IN AUSTRALIA AND NEW ZEALAND, 2002-2010**

Zhuoyang Li 1, Yueping Alex Wang 1, William Ledger 2, Elizabeth Sullivan 1

1National Perinatal Epidemiology and Statistics Unit, University of New South Wales, Sydney, Australia 2 School of Women’s and Children’s Health, University of New South Wales, Sydney, Australia

**Aim:** Small and large for gestational age births are at increased risk of perinatal morbidity and mortality. Birthweight percentile chart allows the detection of neonates at high risk and is a tool to inform management. There are no customized national birthweight centiles for births following assisted reproductive technology (ART). The aim of this study was to develop a national birthweight centiles for liveborn singletons following ART treatment.

**Method:** Population study using data from the Australian and New Zealand Assisted Reproduction Database (ANZARD) for live singleton births following ART treatment between 2002 and 2010 in Australia and New Zealand. Univariate analysis was used to determine the sex-specific exact percentiles, means and standard deviations of birthweight for gestational age between 25 and 42 weeks.

**Results:** Between 2002 and 2010, there were 72,694 live singleton births following ART treatment recorded. Of these infants, 9.7% were born preterm (birth before 37 completed weeks of gestation) while 6.9% were low birthweight (< 2500 g). Percentiles were calculated for 69,315 singleton births (35,580 males and 33,735 females). The mean birthweight significantly increased from 3,362 grams in 2002 to 3,387 grams in 2010 for male singletons and from 3,239 grams in 2002 to 3,262 grams in 2010 for female singletons (p<0.05). Singletons following SET fresh (3,295g) and thaw (3,427g) cycles were heavier than singletons following double embryo transfer(DET) fresh (3,254g ) and thaw (3,384g) cycles (p<0.0001).

**Conclusion:** The birthweight centile charts provide the clinicians with an Australasian standard for births following ART treatment.

**MICROSURGICAL TESE: THE FINAL FRONTIER IN THE SEARCH FOR SPERM**

Sarah Johnstone 1, Luk Rombauts 1,2,5, Rob Mclachlan 1,3,4, Tiki Osianlis 1,2

1Monash IVF, Clayton; 2Monash University, Clayton, 3Prince Henry’s Institute, Clayton; 4Andrology Australia; 5Monash Health

**Aim/Objective:** To review the sperm retrieval rate (SRR) in microsurgical testicular sperm extraction (microTESE) procedures performed at Monash IVF, Melbourne.

**Method:** Retrospective analysis of 22 microTESE procedures performed on men with non obstructive azoospermia (NOA) between 2010 and 2013. Parameters reviewed in relation to SRR included baseline serum FSH, LH and testosterone levels, known aetiology for NOA (including Y chromosome deletions and karyotypic anomalies), testicular volume and histology.

**Results:** The mean age of these men was 36.6 years. The group included 5 patients with Klinefelter’s (one with a previous unsuccessful TESA), none of whom had successful microTESEs. Three men had Y chromosome microdeletions, one of whom had sperm retrieved (DAZ gene deletion). Overall SRR was 9/22 (41%). Five patients had previous failed standard open biopsies with one having a successful microTESE. A markedly elevated baseline FSH (>8IU/L) was equally prevalent in those with successful (6 of 9) and failed (11 of 13) microTESEs. Sperm was retrieved in patients with a range of histologies including Sertoli cell only syndrome (SCOS).
(3/9), hypospermatogenesis (3/3) and germ cell arrest (1/2). Testis size had no bearing on sperm retrieval rate with one patient having successful retrieval from testes <5ml. Overall LH levels were slightly increased and ranged from 2-10.4 IU/L in the group where sperm was found. Testosterone levels ranged from 5.5-27.9 nmol/L and were similar between both groups.

Conclusion: Patients with a range of etiologies can benefit from the microTESE procedure irrespective of baseline FSH, testis volume or histology.

SOCIODEMOGRAPHIC FACTORS AND BIRTH FOLLOWING ASSISTED REPRODUCTIVE TECHNOLOGY (ART) TREATMENT IN AUSTRALIA, 2007-2009, A POPULATION STUDY

Larisa Corda1, Yueping Alex Wang2, Ramin Nikravan2, Elizabeth Sullivan2

1 St George Hospital, Sydney, Australia, 2 Perinatal and Reproductive Epidemiology Research Unit, University of New South Wales, Sydney, Australia

Aim: Are women giving birth after successful ART demographically different from other (non-ART) women giving birth, and does this influence access and utilization of ART amongst different demographic groups?

Methods: Population study of 397583 women giving birth in Australia and New Zealand between 2007-2009. Data were from the National Perinatal Data Collection. ART and other (non-ART) mothers were compared for multiple demographic factors. Student t-test and Chi-square test were used to compare the differences.

Results: ART mothers were characterised as being older (34 +/- 4.8 versus 29.7 +/- 5.7), non-smoking (2.6% vs 12.3%), nulliparae (60% vs 40.5%) with lower BMIs, access to private health insurance (72.7% vs 32.3%), and higher socioeconomic status (27.8% vs 17.7%), with an Australian origin. Above 40% of fertility clinics were concentrated in the most socially privileged areas, providing for 27.8% of ART mothers living there, compared to 6.7% of clinics in the most deprived areas, for 12.4% of women undergoing ART there.

Conclusion: Our findings confirm that women giving birth after successful ART have a different demographic profile to those giving birth by spontaneous conception. Further research is needed to determine what role access to care and utilisation of services has in ensuring successful ART outcome. Our findings would suggest that the provision of ART services is biased towards the socially advantaged and not necessarily to those with the greatest need. With demand for ART treatment likely to increase, ensuring equitable access will be a priority.

ART AND BIRTH DEFECTS IN WESTERN AUSTRALIA

Michele Hansen1, Adrian Charles3, Jennifer J Kurinczuk3, Nicholas De Klerk4, Peter Burton3, Carol Bower1,6

1 Division of Population Sciences, Telethon Institute for Child Health Research and the Centre for Child Health Research, The University of Western Australia, Perth, Australia.
2 Consultant, Department of Pathology, Princess Margaret Hospital, Subiaco, Western Australia.
3 National Perinatal Epidemiology Unit, University of Oxford, Oxford, United Kingdom.
4 Department of Biostatistics and Bioinformatics, Telethon Institute for Child Health Research and the Centre for Child Health Research, The University of Western Australia, Perth, Australia.
5 Concept Fertility Centre, Subiaco, Western Australia.
6 Western Australian Register of Developmental Anomalies, King Edward Memorial Hospital, Subiaco, Western Australia.

Aim: To estimate the prevalence of major birth defects diagnosed by six years of age in all births and terminations of pregnancy for fetal anomaly (TOPFA) conceived by Assisted Reproductive Technology (ART) and the remainder of non-ART births and TOPFA in Western Australia (WA), 1994 to 2002.

Method: We performed a retrospective cohort study using linked data from three population-based registers (Reproductive Technology Register, Midwives’ Notification System, WA Register of Developmental Anomalies) to identify all ART and non-ART births with and without birth defects and all TOPFA. We examined changes in birth defect prevalence over time and compared defects of blastogenesis (i.e. with clear origin up to day 28 post-conception) in ART and non-ART children.

Results: Over the entire study period, the risk of a major birth defect was increased in ART singletons (OR 1.53, 95% CI 1.30-1.79) but not significantly in twins (OR 1.08, 95% CI 0.77-1.51). The prevalence of birth defects in both ART singletons and twins decreased markedly over the study period. Defects of blastogenesis were not significantly increased in ART infants although the risk
was greater following fresh compared with frozen embryo transfer.

**Conclusion:** There has been an important decrease in the prevalence of major birth defects over time in children born as a result of ART in Western Australia; however the prevalence of major birth defects in ART singletons remains increased compared with non-ART singletons. Our data do not confirm previous reports of an increased risk of blastogenesis defects following ART.

**1130 - 1330**

**SCIENTIFIC CONCURRENT SESSION**

**LEVEL 4 – ROOMS 1 & 2**

**VOLATILE ORGANIC COMPOUNDS WITHIN THE IVF LABORATORY**

Vi-Khiem HUA ¹ and Simon COOKE ²

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**Aim:** Volatile organic compounds (VOC) are emitted by various sources and culture oil can act as a sink (Merton et al., 2007) which may affect embryo quality. In a two part experiment, firstly we measured VOC emission levels and determined an appropriate outgassing time for consumables within the laboratory. And secondly, we determined the effectiveness of culture oil against VOCs within an embryo culture media system.

**Method:** Experiment #1: Each consumable was placed inside a modified glass chamber attached to a MiniRAE 3000. The VOC emission levels were determined upon first opening and a 60sec reading. Subsequently, VOC outgassing times were determined after intervals of 5, 10, 30, 60, 120min and 24hrs. Experiment #2: Embryo culture media was dispensed into tubes with or without culture oil. Two different manufacturer’s culture oil (paraffin versus mineral based) were compared. 70% ethanol was introduced as a source of VOC, whilst a control group without ethanol was also used. All tubes were sealed tight and left at 37°C for 24hrs.

**Results:** Experiment #1: Most consumables had VOC emission levels ≤0.2ppm. However, consumables that recorded VOC’s ≥0.5ppm (such as culture dishes and test tubes) would return to ≤0.2ppm after outgassing with the exception of humidification flask tubing, which remained at 0.8ppm after 24hrs. Experiment #2: Without ethanol, VOC levels of embryo culture media and oil (both paraffin and mineral based) were less than 0.2ppm after 24hrs. However, when ethanol was present the average (ppm±SE) VOC level in culture media with paraffin (2.4±0.3) or mineral (2.8±0.4) oil overlay was significantly lower (P <0.05) compared to culture media without an oil overlay (12.2±1.0) after 24hrs.

**Conclusion:** We have developed evidence based outgassing times of consumables needed to reduce VOC emissions in the laboratory. In addition, we have shown that embryo culture oil is an effective barrier in reducing VOCs within the culture system. We expect that by reducing VOCs within the laboratory can have a positive effect on the fertilisation rates, embryonic development and pregnancy outcomes.

**Reference:**

J.S. Merton et al., Theriogenology 2007; 67: 1233-1238

**A SIMPLE AND EFFECTIVE METHOD FOR HUMAN SPERM CRYOPRESERVATION**

De-Yi LIU ¹, ², Ming-Li LIU ¹

¹Melbourne IVF, ²University of Melbourne Department of Obstetrics and Gynaecology, Royal Women’s Hospital, Melbourne, Victoria, Australia

**Aim:** Human sperm cryopreservation plays a very important role in donor sperm banking and clinical ART. Here we report a simple and effective method for sperm cryopreservation using egg-yolk free medium.

**Methods:** Cryo-medium was made in house (Queen’s Advantage HEPES-HTF medium + 6% sucrose + 12% glycerol + 1% albumin) and kept at 4°C. Semen was mixed (1:1) with cryo-medium then added to a 1ml cryovial and frozen in a liquid nitrogen (LN₂) vapour tank. Three experiments were performed to compare total motility (TM) and progressive motility (PM) in frozen-thaw samples: 1) using cold (4°C) or warm (20-22°C) medium; 2) Freezing sperm in LN₂ vapour with or without 1h low-cooling (~30°C) transition; 3) freezing sperm at 0.5h, 1h or 1.5h after ejaculation.

**Results:** Motility was significantly higher using cold than warm medium (TM 46±3% vs 37±4%, PM 39±5% vs 31±4%, n=12, P<0.01). Sperm frozen directly in a vapour
tank had higher motility than sperm with 1h low-cooling transition (TM 48±4% vs 41±3%, PM 43±4% vs 36±3%, n=23, P<0.01). Motility was higher when sperm were frozen at 0.5h or 1.5h after ejaculation (TM 47±3%, 38±4%, 31±3%, PM 40±4% vs 33±4%, 27±3%, n=20, P<0.01). Thus using cold medium and frozen directly in a LN2 vapour tank were used routinely for 498 normozoospermic samples and average recovery rates were 67% for TM and 61% for PM respectively.

Conclusion: Using cold cryo-medium and freezing sperm directly in a LN2 vapour tank is a simple and effective method for human sperm cryopreservation.

STRUCTURAL ABNORMALITIES OF THE Y CHROMOSOME IN MALES PRESENTING WITH INFERTILITY

Nicole Martin, Peter Field

Genetics Laboratory, Queensland Fertility Group, 1/225 Wickham Terrace Brisbane

Aim: To determine the burden Y chromosome abnormalities contribute to cytogenetic causes of male infertility.

Method: All males with a karyotypic abnormality from 2011 and 2012 were reviewed and those with abnormalities of the Y chromosome selected for analysis (n=24). The number of these cases screened for AZF deletions was also recorded.

Results: In 2011 17.5% of all males with a karyotypic abnormality involved the Y chromosome and this number was 19.4% for 2012, giving an average of 18.45%. Numerical abnormalities were found in 33% of cases and 67% had structural abnormalities. The structural group can be divided into (i) translocations - 16.6% had Y-autosome translocations and, 8.3% had a derived X from an X-Y translocation i.e. cytogenetic sex reversal and (ii) structural rearrangements of the Y chromosome alone – 37.5%. In this latter group 12.5% of the total cohort had more than one cell line. Overall 58% of cases were screened for AZF deletions, with 45% in 2011 and 69% in 2012.

Conclusion: No cases with numerical abnormalities or Y-autosome translocations had AZF deletions. In the structurally normal Y chromosome group, the presence of the AZF genes does not guarantee sperm production. Iso-dicentric Y chromosomes in sperm have the potential for a Turner syndrome pregnancy with inherent risks of gonadoblastoma. Genetic counselling needs to be thorough before the use of TESA in males with structurally abnormal Y chromosomes. Deletions of AZF a,b, and c as a stand alone test do not allow the structurally abnormal karyotype to be deduced.

THE RELATIONSHIP BETWEEN SEMEN QUALITY AND THE HALOSPERM G2 KIT RESULTS.

Phillip MATSON1,2, Ashleigh MCEVOY1,2, Peter ROBERTS3, Kailin YAP1, Vince CHAPPLE1

1 Fertility North, Joondalup, Australia, 2Edith Cowan University, Joondalup, Australia

Aim: Examine the relationship between sperm DNA fragmentation and results of semen analysis to determine if (i) DNA fragmentation is more prevalent in semen samples with abnormalities, and (b) the Halosperm test provides information over and above semen analysis.

Method: Sperm DNA fragmentation was measured on 643 consecutive semen samples using the Halosperm G2 kit (Halotech DNA SL, Madrid) counting a minimum of 300 sperm, and results ≥30% regarded as positive. Semen analysis was according to WHO (4th Edition). Pearson correlations and analysis by ANOVA were performed using StatistiXL, with post-hoc testing by Tukey’s HSD. Proportions were compared by Chi-squared. P<0.05 was considered significant.

Results: Significant associations existed between sperm DNA fragmentation and sexual abstinence (r=0.138 p=0.000), sperm concentration (r=-0.137, p=0.001), normal sperm morphology (r=-0.231, p=0.000) and sperm progressive motility (r=-0.270, p=0.000). Oligoasthenoteratozoospermic samples had significantly higher DNA fragmentation (39.4±3.7%, n=38) compared to oligozoospermic samples with normal motility and morphology (21.6±2.3%, n=22). Similarly, samples with sperm concentration ≥20M/ml were higher compared to normozoospermic samples (18.1±0.8, n=277) when there was reduced normal morphology alone (23.6±1.5%, n=151) or in combination with reduced progressive motility (34.2±2.8%, n=55). Positive samples were more prevalent with abnormalities of morphology and motility together compared to no abnormalities for samples with concentration <20M/ml (20/38, 52.6% vs 3/22, 13.6%; X²=8.963, p=0.003) and ≥20M/ml (34/277, 12.2% vs 26/55, 46.3%; X²=37.963, p=0.000).

THE RELATIONSHIP BETWEEN SEMEN QUALITY AND THE HALOSPERM G2 KIT RESULTS.
Conclusion: Significant associations exist between parameters of semen analysis and the sperm DNA fragmentation determined with the Halosperm test, although there were many samples where the Halosperm test provided additional information.

AIR-DRYING IS A VIABLE METHOD OF SEMEN STORAGE PRIOR TO TESTING SPERM DNA FRAGMENTATION WITH THE HALOSPERM G2 KIT

Ashleigh McEvoy1,2, Peter Roberts2, Kailin Yap1, Phillip Matson1,2

1 Fertility North, Joondalup, Australia, 2 Edith Cowan University, Joondalup, Australia

Aim: To (i) compare snap freezing and air-drying as methods of sample storage prior to performing the Halosperm® G2 test, and (ii) investigate the stability of air-dried samples stored at different temperatures.

Method: Multiple aliquots of each semen sample were prepared to achieve fresh, snap frozen and air-dried samples. Air-semen on a slide before air-drying on a 37°C warming plate for 25 minutes. Samples were sequentially assessed for sperm DNA fragmentation using the Halosperm® G2 kit (Halotech DNA SL, Spain) and scored against 300 sperm with results ≥30% considered positive. Pearson’s correlation coefficient and paired t-tests were used for statistical analysis.

Results: Results from fresh and air-dried semen gave comparable results (19.1±4.8 vs 20.2±4.5, p=0.125) with a mean difference of only 1.1±0.7%, r=0.991. Test values of snap frozen samples were however significantly different from fresh samples (21.8±3.2% vs 16.3±2.7%, r=0.941, P<0.0005). Air-dried semen kept overnight at room temperature for 7 days resulted in a significant increase of 38.7±9.4% (28.0±4.3% vs 66.7±10.2, r=0.392, P<0.005) whilst no statistically significant differences were found in slides held at 4°C over time (30.9±6.9% vs 32.1±6.8, r=0.982, p=0.370).

Conclusion: Air-drying semen is a viable method of storage prior to testing sperm DNA fragmentation with the Halosperm G2 kit as it give results similar to fresh samples, unlike those snap frozen, and is stable for up to 7 days. Snap freezing introduces error and should not be used with the Halosperm G2 test.

OOCYTE VITRIFICATION: RESULTS AND CLINICAL OUTCOMES

Sara Philip1, Tiki Osianglis1,2, Maria Diamente1

1 Monash IVF, Melbourne, Australia, 2 Monash University, Clayton, Australia

Aim: To investigate clinical outcomes of an oocytes vitrification program.

Method: Retrospective analysis of patients who had oocytes vitrified at Monash IVF from 2008 to present. Clinical outcomes were examined for patients who returned for Vitrified Oocyte Thaw (VOT) cycles.

Results: A total of 1813 oocytes were vitrified from 176 patients. The main reasons for oocyte vitrification were for prechemotherapy oocyte storage, advanced maternal age and no partner and IVF couples with no sperm available on the day of oocyte retrieval. The age of the patients ranged from 24-45 years with an average age of 34.6 years. 38 patients have had 45 VOT cycles. The majority of patients who returned for VOT cycles had oocytes frozen for male factor issues. Overall, oocyte survival was 86.6%, and pregnancy rate/transfer was 33.3%. One patient had a single oocyte thawed for religious reasons that did not survive and two patients had 0/1 and 0/2 fertilised. For patients under 38 years of age, the survival rate was 86.4%, fertilisation rate was 70.4% and pregnancy rate per transfer was 43.3% with a utilisation rate of 37%. Majority of patients had single blastocyst transfers. There were 7 patients with frozen embryo transfers arising from VOT cycles and 3 pregnancies resulting.

Conclusion: Oocyte vitrification is a viable option for patients who need to store their oocytes. This procedure does not affect the developmental potential of embryos resulting from vitrified oocytes and these embryos have similar clinical outcomes to those resulting from fresh oocytes.

PATERNAL OBESITY IMPAIRS THE REPRODUCTIVE HEALTH AND OVARIAN MOLECULAR PROFILE OF THEIR FEMALE OFFSPRING

Helana Shehadeh1, Tod Fullston1, Verity Bell1, Lauren Sandeman1, Michelle Lane1,2

1 School of Paediatrics and Reproductive Health, University of Adelaide, South Australia, Australia, 5005. 2 Repromed, Dulwich, South Australia, Australia, 5065.

Aim: Recent evidence has demonstrated paternal transmission of adiposity and impaired reproductive health to their female offspring. However, the impact on
embryo development, embryo quality and ovarian molecular profile in these female offspring remain unknown.

**Method:** Male mice were fed either a control diet (CD) or a high-fat diet (HFD), to induce obesity but not diabetes, then mated to CD fed female mice. Female offspring generated from CD and HFD fathers were maintained on a CD. Female offspring were super-ovulated, mated and the resultant zygotes were cultured to the blastocyst stage to assess embryo morphology, cell number and apoptosis. Ovarian expression of selected genes that maintain endoplasmic reticulum (ER), metabolic, inflammatory and epigenetic homeostasis were assessed and compared between offspring sired by a CD father, offspring sired by a HFD father and diet induced obese (DIO) females.

**Results:** Sperm from HFD fed males had reduced motility (P<0.01) and increased levels of intracellular reactive oxygen species (P<0.001) compared to sperm from CD fed males. Female offspring sired by HFD fathers (known to develop increased adiposity) produced embryos with delayed pre-implantation development (P<0.05) and had increased ovarian gene expression of *Atf6* (P=0.05), *Glut1* (P=0.02), *Glut3* (P=0.05) and *Glut4* (P=0.01) compared to offspring sired by CD father and diet induced obese (DIO) females.

**Conclusion:** Paternal obesity impaired embryo development in female offspring, despite the offspring being fed a CD. The ovarian molecular alterations in female offspring which are developmentally programmed for obesity did not mimic those of DIO females. This study suggests distinct subtypes of obesity exist with different effects on the ovary.

**WHAT THE SNPS ARE TELLING US - PGS USING SNP ARRAYS**

Kelli SORBY1, Elissa OSBORNE1, Tiki OSIANLIS1,2

1 Monash IVF, Clayton, Australia, 2Monash University, Clayton, Australia

**Aim:** To analyse the results of Preimplantation Genetic Screening (PGS) using Single Nucleotide Polymorphism (SNP) arrays with Parental Support.

**Method:** Retrospective analysis of all SNP array cycles between May 2012 and March 2013. Statistical analyses used Fisher’s exact test with p<0.05 considered significant.

**Results:** A total of 252 blastocysts and 22 cleavage stage embryos displayed an overall aneuploidy rate of 46.4%. As expected, aneuploidy rates significantly increased with maternal age, from 34.2% in under 35’s to 63.3% in 42-45 year olds (p=0.0087). Errors involving only maternally inherited chromosome/s were identified in 63.7% of embryos, while errors involving only paternally inherited chromosome/s were identified in 17.7% of embryos. The remaining 18.6% of embryos contained errors in chromosomes of both origins. Three cases of uniparental disomy (UPD) were observed (1.1% occurrence rate), one resembling cases reported in the literature - maternal UPD in the presence of a large number of other aneuploidies - the remaining two occurring in the presence of only one other chromosomal error (monosomy 4 and 22). Two of these cases were maternal UPD (chromosome 12 and 15, the latter being associated with Prader-Willi syndrome) and exhibited heterodisomy, indicative of a meiotic error. The third case involved paternal UPD of chromosome 19, which was, to the best of our knowledge, the only chromosome to have no reported cases of either maternal or paternal UPD, until now.

**Conclusion:** The ability of SNP arrays to detect a wider range of chromosome abnormalities adds to our body of knowledge and informs clinical decisions.

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1130 - 1330

**NURSING / PSYCHOSOCIAL CONCURRENT SESSION**

**LEVEL 4 – ROOMS 3 & 4**

**UNDERSTANDING THE NEW ZEALAND PUBLIC DEBATES OVER GENETIC TESTING: AN INTERDISCIPLINARY APPROACH.**

Michael Legge, Ruth Fitzgerald1, Julie Park2

1 University of Otago, PO BOX 56, Dunedin, New Zealand
2 Department of Anthropology, University of Auckland, Auckland, New Zealand.

**Aim:** This paper presents early findings on the complexity of the task of understanding the array of New Zealand public opinions and positions on genetic testing and evaluates the benefits of an interdisciplinary approach to such a topic.
Method: Two research teams each with 10 years prior research into aspects of genetic testing, combined their research and expertise in a 3 year study of nodes of experiential knowledge and debate on this topic in contemporary New Zealand society. Sampling included individuals who had experienced terminations, affected families with an inherited condition, members of public ethics committees, professional scientists working with genetics, activist and advocacy groups working with genetic issues and a review of public submissions to parliament and parliamentary debates about the HART 2004 Act. The method was ethnographic interviewing with biological science input for analysis and design of initial interview questions.

Results: The early results show great social complexity in the way members of several publics engage with the idea of genetic testing and little public discussion of the points of connection between these various positions. For example, while advocacy and activist groups make public statements as a group on the issue of genetic testing, it does not follow that group members will adopt such a position in their own private lives. Biological scientists working with genetic testing may hold very different moral positions about their work than they express through their job. Some families may reject the idea that their genetic difference is a disability.

Conclusion: The complexity of these findings are a caution against the use of surveys or a few key spokespeople from prominent organizations to understand social views on genetic testing. However this method of ethnographic approach informed by biological science is time consuming to conduct on the scale that allows confidence in generalizability of the findings.

.CRITERIA USED BY RECIPIENTS IN SEMEN DONOR SELECTION

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1 Queensland Fertility Group, 225 Wickham Terrace, Brisbane 4000, Australia

Aim: Our clinic obtains donor semen from both local donors and international sperm banks which comply with Australian regulations for donor data release, counselling, and expenses reimbursement. Some donors are more popular with potential recipients than others. This is further complicated by the social status of the recipient. It would be of help to the clinic to better understand the criteria employed by potential recipients in the selection of donors so that we can meet those needs when recruiting donors or importing from overseas.

Method: Potential recipients were invited to voluntarily complete a questionnaire asking them to rank the three most important donor criteria to them in their donor selection.

Twenty two responses were received and the selection criteria identified by patients was compared with the patients demographics.

Results: A number of criteria were not the first choice for any of the respondents: matching recipient’s parents, occupation, education level, talents, and lifestyle interests. However the health and medical history of the donor appears to be important criteria for selection amongst all groups.

Single women seemed to favour a physical match with themselves and donors with appealing physical characteristics. Same-sex couples strongly valued personality of the donor with physical characteristics similar to their partner. Heterosexual couples favoured a physical match with the male partner.

Conclusion: The study reveals that physical matching is important, along with attractive physical and personality characteristics. A clear health and medical history is also important to most.

EMBRYO DONATION NETWORK: WORKING TOWARDS INFORMED CHOICE IN AUSTRALIA

Angela FERGUSON and Marieke MCPHAIL

1 President, Embryo Donation Network, Sydney, Australia,
2 Vice President, Embryo Donation Network, Sydney, Australia

Aim: It was our aim to address the limited information and support for those considering embryo donation in Australia, which makes it difficult for those with unused embryos to make an informed choice.

Method: A review of embryo donation literature was conducted, including recent research in the Australian context (e.g. Millbank, Stuhmcke, Karpin & Chandler, 2013). In addition, extensive research and consultation was carried out with the fertility industry, other not-for-profit organisations, US embryo donation organisations and those with lived experience of embryo donation.
**Results:** We concluded that an independent ‘network’ should offer information and support around this valid option for unused embryos, and also provide a space where potential donors and recipients could find each other. Following incorporation as an association, Embryo Donation Network established embryodonation.org.au and a presence on Facebook and Twitter. Subsequent uptake of information and support was logged. There has been a growing uptake of this information and support, including direct enquiries through our website and people utilising our ‘meeting space’. Analysis of website traffic through Google Analytics has shown that the personal stories are the most popular part of the website.

**Conclusion:** Embryo Donation Network has been established in line with best practice in providing information and support in this complex area. Initial feedback has been positive and we will continue to analyse our progress in meeting our objectives.


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**CHANGING ATTITUDES OF PARENTS OF DONOR INSEMINATION CHILDREN TO DISCLOSURE**

Eva M Durna¹, Leo R Leader¹ ², Marianna Stolzenhein ¹, Steve Steigrad³, Sheila Sim³

¹ Department of Reproductive Medicine, Royal Hospital for Women, Sydney, Australia. ² School of Women’s and Children’s Health, University of New South Wales, Sydney, Australia.

**Aim:** To survey if parental attitudes toward disclosure to their children about their origins have changed over the last 10 years. To establish the ages and reactions of the children when told and whether they wished to contact their donors.

**Method:** Data were obtained by a confidential questionnaire from couples who had children by donor insemination (DI) at the Royal Hospital for Women over a 30 years period. Letters were sent to 407 couples who had undergone DI at the Royal Hospital for Women, Sydney, Australia, between January 1979 and December 2010. Telephone contact was established with 203 couples. We received replies from 84 families.

**Results:** The median age of participants was 48 (29-66). Ten percent had participated in our previous surveys. 82% of respondents were married to the same partner as at the beginning of the DI program. Median duration of marriage was 19 years (4-29). The couples had 150 children between them. In this study, 37 couples (44%) had informed their children of their biological origin. In our previous research only12.6% of couples had informed their children. Ninety three percent of children were reported to have shown a favourable response to being told. The median age of children when told was 5 (1.5-25). Fifty percent of children who had been told expressed a desire to meet the donor but 70% did not want to meet their DI siblings.

**Conclusion:** Over the last 30 years, there has been a large increase in the number of couples telling their children of their biological origins. The finding that the children responded favourably should encourage other couples to tell. Although the number of couples needing DI has decreased, there is now an increasing trend towards using donor eggs as the age of women trying to conceive increases.

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**CONSULTATION WITH DONORS WHO DONATED GAMETES IN VICTORIA, AUSTRALIA BEFORE 1998: ACCESS BY DONOR-CONCEIVED PEOPLE TO INFORMATION ABOUT DONORS**

Kate Bourne¹, Karin Hammarberg¹ ², Jane Fisher², Louise Johnson¹ ², Maggie Kirkman²

¹ Victorian Assisted Reproductive Treatment Authority, Melbourne, Victoria, Australia
² Jean Hailes Research Unit, School of Public Health and Preventive Medicine, Monash University, Melbourne, Victoria, Australia

**Aim:** In Victoria, gamete donation before 1988 was anonymous. Between 1988 and 1998 donors’ consent was required to release information about them to donor-conceived offspring. Since then, donor offspring have legal right to access information about their donor. Before responding to a 2012 Law Reform Committee (LRC) recommendation to introduce legislation allowing all donor-conceived people access to identifying information about their donors, the Victorian Government commissioned a consultation with pre 1998 donors.

**Method:** Donors were recruited through advertising. Semi-structured interviews were conducted to explore their opinions of the LRC’s recommendations.
Results: 42 donors (36 sperm donors, 6 egg donors) participated. Participants were diverse in age (40-73), place and year of donation (1970-1997), disclosure patterns, and outcome of their donations. Opinions on the recommended legislative changes, of which the removal of anonymity was pivotal, covered the range from strong agreement to equally strong disagreement with all changes. About half of the donors rejecting legislated information release suggested the compromise of persuading donors voluntarily to release information (identifying or non-identifying) to donor-conceived people. There was near consensus that if loss of anonymity was mandated, approaches from donor-conceived people to their donors should be mediated by an organisation with expert staff experienced in managing the complexities of these new relationships.

Conclusion: The consultation was successful in encouraging participation by a broad range of donors. The findings highlight the difficulties inherent in balancing the conflicting rights of gamete donors who presumed they would remain anonymous and donor-conceived people who want to learn about their biological origins.

THE DONOR EMBRYO PROGRAM AT MELBOURNE IVF: DEVELOPMENT AND IMPLEMENTATION OF A UNIQUE PROGRAM MODEL TO FACILITATE EMBRYO DONATION

Suellen Peak¹, Tamara Blacher¹, Julia Cernaz¹

¹Melbourne IVF, Melbourne Australia

Aim: The Donor Embryo Program (DEP) at Melbourne IVF (MIVF) was established in 1992 and is uniquely placed as one of Australia’s largest embryo donation programs. Since its beginnings the program has assisted in the birth of over 100 children and continues to expand due to the increasing need for patients to seek alternative fertility options. The aim of this presentation is to describe the evolution, processes and underpinning principles of the DEP and the specific process of embryo allocation.

Method: Data obtained through experience of the DEP counselling team in the planning, development and implementation of the program will be used to highlight the issues for this patient population. Allocation data from the past three years will be presented.

Results: The DEP provides individual counselling to both donors and recipients and allocates embryos using key guiding principles established by the counsellors of the program. From 2010-2012, 215 recipients and 162 donors engaged in the program. One hundred and three donor/recipient pairings have been facilitated, leading to 62 allocations. In total, 90% of recipients and 84% of donors were successfully allocated.

Conclusion: The DEP at MIVF offers a unique and organizational specific approach to the allocation of donated embryos. The DEP considers that shared expectations between donors and recipients in the areas of disclosure intention, motivation for future contact, and information exchange to be in the best interests of a child. The high allocation rate indicates that guiding principles are a useful tool in guiding the embryo allocation process for counselors, donors and recipients.

FROM CHOICE TO EXPECTATION: ACCESSING THE WORLD EGG BANK - “PATIENTS” PERSPECTIVE

Antonia LOCKITCH¹, Susan DELL¹

¹Monash IVF, Brisbane, Australia

The World Egg Bank (TWEB) offers eggs from fertile females for altruistic donation. An online catalogue, for recipients to select donors with specific criteria to impact the genetics of their child, creates expectations of a commodity-type market, including the expectation of success. This paper discusses patients’ experiences in accessing TWEB, providing a greater understanding of common themes and increasing our insight and ability to manage the process and patient expectations.

Aim: By sensitising practitioners to aspects of patient expectations, this paper aims to promote a clear understanding by patients, via these practitioners, of their rights and fashions their realistic expectations on accessing donor eggs from TWEB.

Method: Information has been collected, with verbal permission, via ethnographic research methods including observations, interviews and assessments, by a nurse and counsellor, with patients and clinical staff. Criterion sampling since the commencement of the program identified theoretically provocative ideas meriting further exploration.

Results: Common themes have arisen, indicating the likelihood of similar experiences by future patients. This qualitative paper reviews information-rich data collected from “customers”; and details how we can utilise these data to manage expectations of patients by the provision of comprehensive and objective views of experiences using these donor eggs.
Conclusion: The availability of altruistic donation, payment for medical treatment, and provision of choice triggers specific patient expectations. This paper indicates the need to manage these expectations by staff providing accurate and realistic patient advice prior to commencement of treatment. This will ultimately help to ensure a smooth service, from beginning to end.

TRAUMA OR PLEASURE: THE LOVE HATE RELATIONSHIP OF DONOR SPERM

Antonia LOCKITCH 1

1 Counsellors Room, Brisbane, Australia

Abstract: Donor Sperm provides an opportunity for the medically and socially infertile. Whilst donor sperm offers hope, patients with a history of sexual abuse or trauma may approach treatment with trepidation. Their experience with semen in the past, invasive gynaecological treatment and exposure of their body, may trigger vulnerability, fear and repulsion. Semen as a foreign substance yet wanting a child, which warrants this encroachment, creates internal conflict for those whose chosen partner is not male.

Aim: Exposing practitioners to unforeseen array of patient experiences, aims to stimulate a discussion and awareness of the polarity accessing donor sperm triggers in some patients.

Method: This qualitative paper gathered information with verbal permission, via ethnographic research methods, by a counsellor with patients and clinical staff. Literature is used to highlight vital points. Criterion sampling emphasized examples where social and psychological history impacted on hyper vigilant patients.

Results: Shared reservations have highlighted the need to question and include patients’ social and psychological history in discussing and preparing treatment plans. Awareness of meanings for clients, gender of staff, broader discussion pre treatment, comprehensive explanations of potential experiences during appointments and treatments, ensure recognition of patients’ pasts and present emotional well being, their triggers, trauma, excitement and fears.

Conclusion: The process of donor sperm is often fraught with fear and trauma. This paper indicates the need to recognise both pleasant and traumatic experiences to achieve a good outcome with sensitivity and openness by staff. Reduction in patients’ angst can lead to more successful healthy outcomes.

1430 - 1545

CREI PRESENTATIONS
LEVEL 3 – GRAND BALLROOM

ENDOMETRIAL “SCRATCH” – ANOTHER ADVANCE?

Warren SW CHAN 1, 2

1 Genea, Sydney, Australia, 2 Royal Prince Alfred Hospital, Sydney, Australia

Aim: To provide an evidence based update on the use of the endometrial “scratch” technique in assisted conception.

Method: A literature search was performed to using MEDLINE, PubMed and Cochrane databases. All relevant studies including systematic reviews and meta-analyses were analyzed to provide the most recent up to date evidence on the effect of endometrial “scratch” on different IVF outcomes.

Results: Recent published meta-analyses have shown an improvement in IVF outcomes including live birth rates (OR 2.46, 95% CI 1.28-4.72) after an endometrial “scratch”. An endometrial “scratch” seems to be of most benefit when it is performed in the menstrual cycle preceding a fresh IVF cycle in women with previous recurrent unsuccessful IVF. An endometrial “scratch” may be achieved by either a hysteroscopy or an endometrial biopsy technique.

Conclusion: There is emerging consistent evidence on the benefits of an endometrial “scratch” prior to IVF. However, there are limited randomized controlled studies providing data on live birth rates and further high quality studies are required.
SHOULD WE HELP OLDER WOMEN CONCEIVE?

Alejandra Izurieta

IVF Australia - St George Private Hospital

**Aim:** To understand the impact of pregnancy in women of advanced maternal age. Addressed are the risks to the mother and infant, the burden on the community and the medical and social responsibilities IVF doctors have in their role in assisting conception in this age group.

**Method:** Australian statistics of deliveries in Australia of women over 40yo and 45yo are presented. A review of the literature with regards to the maternal and fetal risks of pregnancy based on advanced age, and in addition to the use of assisted reproductive technologies, the differences in risk of autologous and donor IVF pregnancies.

**Results:** A steady increase has been noted in the number of women over the age of 40yo achieving a pregnancy and delivering an infant over the last 10 years. Much of the increase can be accredited to the use of donor oocytes and donor embryos. It is clear that risks to mothers of advanced maternal age are significantly greater, including their obstetric complications. The absolute numbers however remain low and thus their significant impact on the community questionable.

**Conclusion:** Serious consideration needs to be given in the counseling and assistance given to women requesting ART of advanced maternal age. Responsibility for the decision to assist conception needs to be shared by mother and doctor as IVF doctors cannot relinquish their responsibility for obstetric outcome and complication. Education to women wishing to delay conception and the development of guidelines must be our focus.

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PROGESTERONE ELEVATION IN THE LATE FOLLICULAR PHASE OF AN IVF CYCLE

Olivia Stuart $^{1,2,3}$

$^1$ Royal Hospital for Women, Randwick, Sydney, Australia; $^2$ University of New South Wales, Sydney, Australia; $^3$ IVF Australia, Sydney, Australia

**Aim:** To review the current evidence on elevated progesterone in the late follicular phase and its impact on in-vitro fertilization (IVF) outcome.

**Method:** The databases of Medline, PubMed and Cochrane were searched to identify all relevant publications. Evidence from all relevant studies regarding the impact of progesterone elevation (PE) in the late follicular phase on the outcome of an IVF cycle was collated and analysed.

**Results:** A large, recently published meta-analysis found a significantly reduced chance of pregnancy (clinical pregnancy, ongoing pregnancy or live-birth) in all women with PE defined as >0.8 ng/ml (>2.54 nmol/L) on the day of human chorionic gonadotropin (hCG) trigger, irrespective of the PE threshold used. Odds ratios (OR) for achievement of pregnancy in women with PE according to the threshold used in the study were: 0.8 – 1.1 ng/ml: OR 0.79; 1.2 – 1.4 ng/ml: OR 0.67; 1.5 – 1.75 ng/ml: OR 0.64; 1.9 – 3 ng/ml: 0.68 (P<0.05 for all cases). No effect of PE on pregnancy rates in frozen embryo and donor-embryo cycles was observed.

**Conclusion:** There is good evidence to show that PE on the day of hCG trigger in an IVF cycle significantly reduces the chances of pregnancy when an embryo is transferred in the same cycle but has no effect on pregnancy rates when embryos retrieved from IVF cycles associated with PE are used in a frozen embryo or donor-embryo cycle. A randomized study of outcome when an embryo is replaced in the fresh cycle or all embryos are electively frozen in cases with PE is required.

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GERMLINE DEVELOPMENT AND THE MALE EPIGENOME

Stringer, Sanna Barrand, Patrick Western

Centre for Genetic Diseases, Monash Institute of Medical Research, Monash University, Australia.

Germ cells transmit not only a parent’s genetic information to their offspring, but also important epigenetic information. The best examples of epigenetic inheritance include genomic imprints that are differentially transmitted through the paternal and maternal genomes. Genomic imprints are established at target genes during male and female germ cell
development, and function in a complementary manner to ensure normal development in the subsequent generation. Growing evidence suggests that other epigenetic marks are also established in the male and female germlines, and contribute to development of the offspring. Because the germline is derived from somatic cells of the epiblast and carry epigenetic information from both parents, the epigenome is reset during primordial germ cell development. This is followed by establishment of paternal and maternal epigenetic information in the male and female germlines. Male and female germ cell development is initiated in the midgestation embryo in response to signals from the developing testis and ovary. We are examining the roles of signaling mechanisms and epigenetic modifiers in male germline development, the patterning of the male epigenome and the potential for errors in the male epigenome to impact development in a father’s offspring. Greater understanding of epigenetic mechanisms regulating male germline development is essential to our understanding of male fertility, testis cancer and the roles of inherited epigenetic errors in development and disease.

Relationships Between Cumulus Cells And Oocytes: Assuring Embryo Developmental Potential

Darryl L Russell

Robinson Institute, School of Paediatrics and Reproductive Health, The University of Adelaide, South Australia, Australia.

Cumulus cells surround oocytes throughout their development, meiotic maturation and fertilisation. The microenvironment experienced by the oocyte during these events is controlled by the cumulus complex, which comprises cumulus cells and the extracellular matrix, thus the cumulus complex plays a major part in determining the developmental potential of the oocyte. While the mechanism through which the cumulus cells influence oocyte competence are not fully understood, mounting evidence demonstrates control of metabolic substrate supply, exposure to environmental stressors and cell signalling interactions are key processes. These functions of the cumulus complex are intricately controlled through regulation of cumulus gene expression by both maternal hormones and oocyte derived signals. New understanding of the mechanisms promoting oocyte potential and the dynamic control of gene expression in cumulus cells has led to the identification of biomarker genes in cumulus cells which can noninvasively identify those oocytes which have matured to high developmental potential.

In assisted reproductive therapy, large numbers of mature oocytes are frequently collected, but the best practice requires that only one embryo is transferred ensuring against multiple gestation and the associated risks. Selecting the best embryos to transfer is currently based on morphological criteria. While this is a useful tool for the elimination of low potential embryos, it is it a poor discriminator of successful pregnancy. Our group has assessed the relationship between cumulus gene expression and successful pregnancy outcomes from individual human oocytes fertilised, cultured and transferred independently. Quantitative real-time RT-PCR is used to measure the copy number of selected target genes with functional importance for oocyte maturation as well as microarray analysis used to survey the entire transcriptome for associations with pregnancy outcomes. Molecular pathways involved in extracellular matrix production and prostaglandin signalling were associated with successful implantation and live birth as well as higher birth weight following single embryo transfer.

HSPA2 AND UNEXPLAINED FAILURE OF FERTILIZATION IN IVF

Brett Nixon, Kate Regrove, Mark Baker, John Aitken

1 The University of Newcastle, Callaghan, Australia.

Aim: A common defect encountered in the spermatozoa of male infertility patients is an idiopathic failure of sperm–egg recognition. The aim of this study was to investigate the molecular basis of this condition.

Method: For the purpose of this study we have compared the proteomic profiles of spermatozoa from male infertility patients exhibiting a n impaired capacity for sperm-egg recognition with that of sperm from males of proven fertility using label free mass spectrometry-based quantification. The dominant protein identified as being differentially expressed between these sperm samples was characterized to determine its role in fertilization.

Results: Our analysis indicated that impaired sperm–zona binding was associated with reduced expression of the molecular chaperone, HSPA2, from the sperm proteome. Western blot analysis confirmed this observation in several independent patients and demonstrated that the defect did not extend to other members of the HSP70 family. HSPA2 was present in the acrosomal domain of human spermatozoa as a major component of five large molecular mass complexes, the most dominant of which was found to contain HSPA2 in
close association with just two other molecules, SPAM1 and ARSA, both of which have previously been implicated in sperm-egg interaction. Furthermore, we were able to demonstrate that HSPA2 regulates the expression of SPAM1 and ARSA on the surface of human spermatozoa.

**Conclusion:** The close association between SPAM1, ARSA and HSPA2 in a multimeric complex mediating sperm-egg interaction, coupled with the complete failure of this process when HSPA2 is depleted in infertile patients, provides new insights into the mechanisms by which sperm function is impaired in cases of male infertility.

**1430 - 1545**

**NURSING – COMPARING ART**

**LEVEL 4 – ROOMS 3 & 4**

**FERTILITY NURSING IN THE UK**

Alison McTavish

1 **University Of Aberdeen, Aberdeen Fertility Centre, Aberdeen Maternity Hospital, Scotland**

**Aims of session:**

- To discuss the roles undertaken by Fertility Nurses within the UK.
- To explore the educational framework available for Fertility Nurses
- To travel the patients journey into fertility care
- To discuss how legislation, politics and professional bodies affect fertility care provided
- To raise awareness of salaries paid and costs of treatment within the UK

**Method:** This presentation will incorporate information from the Royal College of Nursing Midwifery & Fertility Nursing Forum,(RCN M&N Forum) the British Fertility Society (BFS) and the Senior Infertility Nurses Group (SING) all of which contribute to Fertility Nurse training, support and professional guidance.

The presentation will incorporate information from the National Institute for Clinical Excellence (NICE) guidelines for Assessment and treatment for people with fertility problems which was issued in February 2013 and applies to England and Wales. The National Infertility Group Report, Scotland which was issued in April 2013 will also be discussed. This will give a clear picture of patient pathways.

The impact of the Human Fertilisation and Embryology Authority (HFEA) on patient care will be explored alongside professional guidelines

**IVF IN THE KINGDOM**

Sara MOSER

**The Fertility Centre, Brisbane, Australia**

Working in the field of ART provides many insights and challenges but never more so than when working in an unfamiliar culture. Four years working in Saudi Arabia provided the opportunity to work within a unique and totally unfamiliar culture, along with working alongside many other cultures. Working in such a different environment provided experiences that were surprising, unexpected and challenging on both personal and professional levels.

My time spent working in two different clinics (one which we set up from scratch) broadened my perspective and experience not only in the field of infertility but also on religion, relationships, work politics and so many other factors. This gave a whole new appreciation on my return for the work environment I am familiar with. It has also given me many special and valuable memories and friendships.

This presentation will explore some of those experiences of working in the ‘Magic Kingdom’.

**COMPARING ART**

Kara Carter

1 **Wesley Monash IVF, Brisbane, Australia**

**Aim:** To discuss the cultural differences and similarities between ART practices in the USA and Australia and to promote awareness for nurses interested in working in ART overseas.
**Method:** A subjective review of the observations, processes and practices relating to ART after working for a fertility clinic for one year in Houston, Texas, USA.

**Results:** Lack of government funding and variations in health funds affect patients seeking to undergo IVF; more embryos are transferred to get the most value per cycle; differences in US government legislation affects ART practices, societal perceptions appear to be the same.

**Conclusion:** Cultural differences do exist between ART practices in the US and Australia however, overall, the role of the fertility nurse, the experiences of the fertility patient and the general fertility practices remain universal.

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**ULTRASOUND DIAGNOSIS OF POLYCYSTIC OVARY SYNDROME**

Ernest HY NG

**Department of Obstetrics and Gynaecology, The University of Hong Kong, Hong Kong**

Polycystic ovary syndrome (PCOS) is the commonest endocrine disorder in women of reproductive age as this syndrome may affect 5-10% of premenopausal women. The Rotterdam criteria require the presence of two from the following three: (i) oligo- or anovulation; (ii) clinical and/or biochemical features of hyperandrogenism; and (iii) the presence of polycystic ovary (PCO) morphology.

The PCO morphology is initially defined as either 12 or more follicles measuring 2-9 mm in diameter in at least one ovary, or increased ovarian volume (>10 cm³) on pelvic scanning. Higher numbers of follicles have been recently proposed because of better visualization with modern ultrasound machines. Other features such as ovarian volume and ovarian stromal blood flow will also be discussed.

There is considerable variability of counting follicles in patients with PCOS. Serum AMH level may be used as a surrogate marker, especially in cases when transvaginal scanning is not possible.

**PCOS IN ASIAN PATIENTS**

Jie Qiao, M.D.

**Department of Obstetrics and Gynecology, Reproductive Medical Center, Peking University Third Hospital, Beijing, China**

**Aim:** To understand and evaluate the current PCOS status in Asian patients, including the prevalence, clinical and metabolic features, and PCOS-related risks.

**Method:** Systematic review of articles published in English before July 2013 and identified using the PubMed search engine.

**Results:** There is considerable ethnic variation in the expression of PCOS in Asian patients, including the prevalence and severity of obesity, insulin resistance, metabolic disturbances, and their correlates. Overall, East Asian women with PCOS have a lower BMI and a milder hyperandrogenic phenotype, but with the highest prevalence of metabolic syndrome. South Asians in particular have a high prevalence of insulin resistance and metabolic syndrome, and are at risk for type 2 diabetes, with central obesity more than BMI reflecting their metabolic risk. South East Asians with PCOS have a higher mean BMI than South Asian patients, but have comparable prevalence of metabolic syndrome. Acanthosis nigricans is a common clinical indicator of greater metabolic risk in South Asian and South East Asian women, although it is not included as a clinical marker in diagnosing PCOS. Genetic differences, different environments, cultures and lifestyles, and diet-induced genetic modifications might explain such wide phenotypic variation within these groups.

**Conclusion:** Ethnic difference of PCOS in Asian patients appears to be linked to the variety of hyperandrogenism, obesity, insulin resistance, and metabolic problems. Further assessment of the variations of PCOS among different ethnic groups in Asia is required in a standard definition, and ethnicity-specific guidelines are needed for identifying anthropometric thresholds for appropriate screening and diagnosis in high-risk ethnic groups.

**DIAGNOSIS OF PCOS IN ADOLESCENTS**

Roger Hart

1. University of Western Australia and Fertility Specialists of Western Australia, Australia.

**Aim:** To discuss the factors associated with and potentially influence a diagnosis of PCOS in adolescence.
**Method:** Review of the literature

**Results:** The adult diagnosis of PCOS may not be relevant to PCOS in adolescence, and new diagnostic parameters should be developed.

**Conclusion:** Features of PCOS are very common in adolescents and new diagnostic parameters may need to be developed.

**WEDNESDAY 4 SEPTEMBER 2013**

**0900 - 1030**

**MICRO RNAs FOR DUMMIES**

**LEVEL 3 – GRAND BALLROOM**

**MICRORNAS AND REPRODUCTION**

Tamer Nafee

NO ABSTRACT RECEIVED

**MICRORNAS AND IMPLANTATION**

Louise Hull

NO ABSTRACT RECEIVED

**0900 - 1030**

**CROSS CULTURAL IMPACT OF INFERTILITY PANEL DISCUSSION**

**LEVEL 4 – ROOMS 1 & 2**

**1100 - 1200**

**INVITED SPEAKER SESSION**

**LEVEL 4, ROOMS 3 & 4**

**ASSESSMENT OF TELOMERE DNA LENGTH IN HUMAN OOCYTES AND CLEAVAGE STAGE EMBRYOS: IMPACT ON ANEUPLOIDY RISK AND IMPLANTATION POTENTIAL**

Souraya Jaroudi¹, Michalis Konstantinidis², Samer Alfarawati¹,², Elpida Fragouli¹,², Dagan Wells¹,²

¹Reprogenetics UK, Institute of Reproductive Sciences, Oxford, United Kingdom.
²Oxford University, Nuffield Department of Obstetrics and Gynaecology, Oxford, United Kingdom.

**Aim:** The identification of embryos with greatest reproductive potential is critical for IVF success. Aneuploidy screening and morphological evaluations help to reveal viable embryos, but neither can assure implantation. An association between telomere length and reproductive competence has been suggested and telomere length deficiency has been implicated in aneuploidy in oocytes and embryos. The aim of this study was thus to investigate whether the assessment of telomere DNA length allows the detection of chromosomally abnormal oocytes or cleavage stage embryos and help predict implantation and pregnancy potential.

**Method:** A total of 97 first polar bodies and 117 blastomeres, obtained by micromanipulation of oocytes and embryos, were subjected to whole genome amplification (WGA). The amount of telomere DNA, a measure closely related to telomere length, was assessed in the WGA products using quantitative real-time PCR. The WGA products were also subjected to microarray comparative genome hybridisation (aCGH), allowing the corresponding oocytes and embryos to be classified chromosomally normal or aneuploid. Patient age ranged from 30-42 years (mean 37.7).

**Results:** The average telomere lengths were higher in polar bodies compared to blastomeres (p=0.00016). A decline in telomere length was observed when euploid embryos were compared to those that were highly abnormal (with >3 chromosome errors). This association was particularly clear for older patients (aged 38-42) (p=0.042).

A correlation between telomere length and pregnancy outcome was also apparent. Transferred embryos from
euploid oocytes with longer telomeres were more likely to produce a clinical pregnancy (p=0.033; N=19). A similar tendency was seen for cleavage stage embryos (p=0.137; N=22). Considering the results from all embryos from patients with different IVF outcomes (not only the embryos transferred), it was clear that patients achieving a clinical pregnancy tended to have embryos with greater telomere lengths compared to patients that did not become pregnant following embryo transfer (p<0.001; N=109). Similar analysis of all oocytes also showed that significantly higher telomere lengths were associated with a positive pregnancy outcome (p<0.001; N=92). Additionally, it was possible to determine an initial threshold telomere length, for both polar bodies and blastomeres, above which the odds of achieving a clinical pregnancy was doubled.

**Conclusion:** The measurement of telomere length alone does not allow reliable detection of aneuploidy in oocytes or embryos. However, telomere analysis may be applied clinically to reduce the number of oocytes or embryos that require screening using more expensive methods (e.g. aCGH). Furthermore, telomere length showed an association with clinical pregnancy in both oocytes and cleavage stage embryos, suggesting that telomere assessment could provide additional information concerning the implantation potential of chromosomally normal embryos.

**TELOMERE LENGTHS IN HUMAN GAMETES AND EMBRYOS**

Geraldine Hartshorne

1 Warwick Medical School, University of Warwick, Coventry, CV2 2DX, UK.

**Aim:** To assess predictive value of telomere length in human gametes.

To determine average telomere lengths in individual male and female gametes, male and female pronuclei and embryos. To directly compare telomere lengths of male and female gametes and pronuclei using the same methodology.

**Method:** HFEA Research Licence R0155.

Sperm: Men attending for semen analysis, sperm decondensation using halosperm method, telomere Q-FISH.

Pronuclear oocytes: created for research by injection of donor sperm by ICSI into failed fertilised or IVM surplus oocytes, and multipronucleates from IVF or ICSI treatment. Male and female pronuclei distinguished by 5-methylcytosine staining.

Oocytes and embryos: Immature and mature oocytes, pronuclear oocytes, cleaving embryos, morulae and blastocysts. Individually spread on slide, telomere Q-FISH.

**Results:** Average telomere length of sperm increased with male age as expected but did not correlate with semen parameters or sperm DNA fragmentation.

Immature (GV) oocytes had longer average telomere lengths than mature (MII) oocytes. MII oocytes had telomere lengths similar to those of female pronuclei. Sperm and male pronuclei had similar average telomere lengths. Female pronuclei had significantly longer average telomere lengths than male pronuclei. Average telomere length reduced from immature to mature oocyte to cleavage, and increased to the blastocyst stage.

**Conclusion:** Telomeres control multiple aspects of chromosome activity in gametogenesis and early embryonic development, however, little is known of the relative contributions of male and female gametes to embryonic telomeres and how telomere length is established for the next generation. Male age relates to eventual telomere length of offspring by unknown mechanisms that may include subpopulations of long telomere sperm increasing with age. However, this study shows that telomere length of female gametes usually exceeds that of male gametes, and that telomere length is not associated with semen parameters. We did not identify an association of oocyte or sperm telomere lengths with fertility treatment outcome.

**1100 - 1200**

**NON HUMAN IVF LEVEL 4, ROOMS 1 & 2**

**TWO LEGS OR FOUR: PROPAGATING VALUABLE EMBRYOS**

Rebecca Spindler

1 Taronga Conservation Society Australia, Mosman, NSW, Australia,
Many of the challenges faced when applying assisted reproduction to humans and domestic animals are mirrored in wildlife species. These similarities offer opportunities for the use of model species and to learn from species as diverse as Tigers and Giant Pandas. For example, the domestic cat is used to study the phenomenon of teratospermia and to develop oocyte in vitro maturation (IVM) in wild felid counterparts, but have a great deal to teach human practitioners. Likewise, in humans and felids, cytoplasmic and meiotic maturation can be asynchronous in IVM oocytes, thereby reducing fertility and developmental competence. Despite this IVM has great potential to bypass or reduce deleterious effects of hormonal treatments required for harvesting mature oocytes and for post-mortem recovery of genetic material from wildlife. Interestingly, similar obstacles are encountered when attempting in vitro production of human and wildlife embryos. Poor gamete quality and low numbers of embryos reduce opportunities for producing significant numbers of healthy offspring from specific individuals. These similarities will be discussed and explored across four wildlife projects including those on jaguars, giant pandas, Black Footed Ferrets and Black Rhinoceros. Technologies that have been developed to reduce the impact of teratospermia, poor gamete quality, low gamete numbers and aged donors in these species may offer valuable insights for scientists working on other species. Conversely, it may also be of interest to explore the disparity of issues and conditions not often encountered in a laboratory or clinic.

KEYNOTE PRESENTATION
LEVEL 3, GRAND BALLROOM

NURTURING FROM THE BEGINNING

Angeline Beltsos
Fertility Centers of Illinois, USA

Nurturing from the beginning and helping the couple prepare for pregnancy is a critical initial step of fertility care. This includes a shift from framing this talk only with prospective pregnant patients to all health encounters during a woman’s reproductive years. This discussion begins with obvious social habits which can cause birth defects. Updating vaccines prior to pregnancy are an important element of medical care for patients. With the explosion of genetic technology, preconception genetic testing is catapulting care at all levels from embryo to child to parents. New recommendations on disease screening leaves the physician at the forefront to offer these tests prior to conception...and if not, to be responsible for this omission. Chronic illness needs to be addressed as many primary care physicians may give the best drug but it may not be safe for fetus. Goals include improving knowledge and reducing risk and disparity. Recommendations involve things to help awareness and preventative care. When genetic carrier status is found in both partners, options available include preimplantation genetic diagnosis. Nurturing from the beginning. This is part of the FSA goal for participants in 2013.

LATE BREAKING ADVANCES
LEVEL 3, GRAND BALLROOM

PRE-MIXING SAMPLES WITH ASSAY BUFFER IS AN ESSENTIAL PRE-REQUISITE FOR REPRODUCIBLE ANTIMULLERIAN HORMONE (AMH) MEASUREMENT USING THE BECKMAN COULTER GEN II ASSAY (GEN II).

Han, X; McShane, M; Sahertian, R; White, C; and Ledger, W

AMH concentrations show a significant drift with time in storage when using the Beckman Coulter Gen II assay (Gen II). We studied whether pre-mixing serum samples with assay buffer eliminates this apparent drift in AMH concentration and subsequently re-evaluated the reference range.

This was a prospective study in which blood samples were collected, serum aliquoted and stored at 3 different temperatures and assayed for AMH at time 0,4,8,12,24,48 hours and at 1 or 2 weeks storage. 24 separate assays were performed by 2 operators using 4 different Gen II kit lots.

Volunteers were healthy non-pregnant (13) or early pregnant (15) women aged 22-41. 42 anonymised long term stored samples from routine fertility clinics were also included.

For the reference range 179 samples from normal women presenting for First Trimester Screening were used. Samples were divided into 5 age brackets.
Results

In non-pregnant women, AMH concentrations remained unchanged in serum stored for up to 8 hours at RT, -20C and -80C. At RT, levels started to rise by 24 hours, increasing by up to 29% of the time 0 value by 48 hours and 26% after 1 week. There was no significant change observed when samples were stored at -20C or -80C. In the pregnant group, there was a 50% increase above baseline in samples stored for 48 hours at RT and a 27% increase for those at -80C. When samples were pre-mixed with assay buffer, AMH concentrations showed a consistent increase in both non pregnant (29%) and pregnant (280%) groups, regardless of storage conditions and duration. Stored patient samples also exhibited a consistent 2 fold increase after pre-mixing. Time delay of premix did not affect results.

Overall, there was a two fold increase in medians in the pre-mixed reference range, with the biggest difference observed in the oldest age bracket (3.4 fold increase)

Conclusion

Our study has confirmed previously reported findings of lack of consistency in AMH concentrations when measured with the Gen II assay. We observed a differential increase in AMH concentrations from non-pregnant and pregnant women during sample storage. Pre-mixing samples with buffer gave the most consistent, higher and possibly the “truest” results regardless of storage conditions. We propose that to get reliable and consistent results with the current technology, all samples for AMH assay should be pre-mixed. Furthermore, clinical laboratories that offer AMH measurement as part of the assessment of endocrinopathies such as PCOS or POF, or for management of superovulation as part of assisted reproduction must re-establish their own normal ranges using the modified method.
CLINICAL EPOSTER ABSTRACTS

A GROWING PREFERENCE FOR OOCYTE RATHER THAN EMBRYO CRYOPRESERVATION AS A FERTILITY PRESERVATION OPTION FOR ONCOLOGY PATIENTS.

Franca Agresta1, Claire Garrett1, Kate Stern1,2 And Debra Gook2

1 Melbourn IVF, East Melbourne, Victoria, Australia
2 The Royal Women’s Hospital, Parkville, Victoria, Australia

Aim: Until recently, it was agreed that the best option for fertility preservation (FP) was embryo cryopreservation, given the lack of strong evidence for the success of oocyte thaw survival rates. This paper aims to examine changes over time of the ratio of oocyte-to-embryo cryopreservation undertaken by oncology patients undergoing a stimulated cycle as their FP option.

Method: Retrospective database analysis of the FP options pursued by 880 oncology patients who were referred to Melbourne IVF & Royal Women’s Hospital between 2004-2012. Regression analysis of oocyte-to-embryo cryopreservation as a function of year of cryopreservation.

Results: Regression analysis revealed strong, highly significant increase in oocyte-to-embryo cryopreservation uptake with time, corresponding to an increase of ~18%/year (p<0.001, r²=0.75). In 2012, oocyte preservation was 1.8 times more common than embryo cryopreservation. In the same period, the average age of oncology patients having a stimulated cycle has increased (from 29 to 33 years).

Conclusion: A marked change is revealed in choice from embryo to oocyte cryopreservation for FP. It can be surmised that this change reflects growing confidence in the advances in cryopreservation protocols. A controversial legal aspect is the use of embryos after patient’s death; furthermore, a proportion of couples may be separated. In such circumstances, neither partner will have full rights over the embryos and will need to reach a legal agreement, making a decision regarding the use of embryos. Given such decisions can be particularly difficult for a patient with a recent cancer diagnosis, confidence in oocyte cryopreservation and advances in freeze protocol may make this a more suitable FP option.

THE USE OF COMPLEMENTARY MEDICINE (CAMs) AND SELF HELP MEASURES BY WOMEN WITH POLYCYSTIC OVARY SYNDROME (PCOS).

Susan Arentz, Caroline Smith,1 Jason Abbott,2 Alan Bensoussan1

1 Centre for Complementary Medicine Research, University of Western Sydney, Sydney, Australia.
2 School for Women and Children’s Health, University of New South Wales, Sydney, Australia.

Aim: Polycystic Ovary Syndrome (PCOS) is the most common reproductive endocrinopathy affecting up to one in five reproductive aged women. As a consequence of lifestyle being recognised as first-line intervention, attention is now being paid to dietary and exercise practices which might assist with short term management as well as prevent the development of chronic disease. This study examined the patterns of use and women’s attitudes towards CAM and self-help with regard to perceived effectiveness and safety for the management of PCOS.

Method: A survey of women with PCOS was conducted through the consumer group POSAA. A second sample was generated by linking the UWS Facebook PCOS research page with three Facebook PCOS groups. A 37 item self completion questionnaire was developed. Descriptive analysis was undertaken with categorical responses reported as proportions with 95% confidence intervals. Associations between demographics, prevalence of use and perceptions of effectiveness with CAM, diet and exercise practices were used to describe behavioural trends.

Results: Four hundred and sixty one women responded to the survey (response rate 67%). Two hundred and eighty one women (69.9%, ±4.48) indicated current use of CAM’s. Two hundred and seventeen women (55.6%, ±4.93) consulted a CAM practitioner during the previous twelve months. Lifestyle intervention was used by the majority of respondents including dietary therapies, 264 women (65.3%, ±4.64), and vigorous or moderate exercise 291 women (73.12%, ±4.36). Only 24 women, (8.1%, ±2.68) felt they had achieved their health goals using exercise intervention.

Conclusion: Women with PCOS engage in lifestyle behaviours with varying degrees of success. Few women felt they achieved their health goals using exercise alone. Two thirds of women use CAM. These findings highlight the need to examine the evidence base for CAM therapies with the management of PCOS.

THE USE OF ENDOOMETRIAL SAMPLING TO IMPROVE OUTCOMES FOR PATIENTS WITH RECURRENT IMPLANTATION FAILURE
STIMULATION FOR IVF

CLINICAL OUTCOME FOLLOWING MILD OVARIAN STIMULATION FOR IVF

Ron Chang1, Linda Robertson1, Lena Astbury1, Keith Harrison1, Jeremy OSBORN1,3

1 Queensland Fertility Group, Oxford Street, Townsville, 2 Queensland Fertility Group, 225 Wickham Terrace, Brisbane and 3 Queensland Fertility Group, 9, Scott Street, Toowoomba, Queensland.

Aim: While ovarian stimulation to achieve multiple follicle development is an integral part of ART, mild ovarian stimulation with GnRH antagonists and low dose FSH stimulation is preferred by women over long down regulation (1). This study reports the results obtained in our program with a cohort of younger women after switching from agonist to antagonist cycles.

Method: All patients < 35 years undergoing treatment at QFG Townsville from January 2009 to March 2013 were divided into two groups: (A) those seen from 2009 to 2010 (154 cycles) when 78% were stimulated in agonist cycles and (B) those treated from 2011 to 2013 (187 cycles), when 86% received mild ovarian stimulation in GnRH antagonist cycles. Total IU FSH used, mean number of oocytes recovered, fertilization, clinical pregnancy and implantation rates in the two groups were compared.

Results: Patients in group B had significantly less IU of FSH administered (2021 ± 939 versus 2439 ± 931; P < 0.0001) and had significantly fewer oocytes collected (7.33 ± 3.8 versus 9.19 ± 4.65; P < 0.0001) than those in group A. There was however no significant difference between the two groups in either fertilization rate (68.9% versus 71.9%; P = 0.17), clinical pregnancy rates (28% versus 32.4%; P = 0.4) or implantation rates (22.1% versus 28.9%; P = 0.74).

Conclusion: These results show that while fewer oocytes were obtained in young women after mild stimulation in antagonist cycles compared to agonist cycles, pregnancy and implantation rates were not compromised by the change in stimulation.

Reference

PATIENT ACCEPTANCE OF LONG ACTING FOLLICLE STIMULATING PREPARATIONS WHEN UNDERGOING IVF

Larisa Corda1, Michael Chapman2

1 St George Hospital, Sydney, Australia 2 IVF Australia, St George Private Hospital, Sydney, Australia

Aim: We aimed to investigate IVF patient satisfaction with Elonva, as a single dose FSH used to achieve ovarian stimulation, compared with regular daily injections (Gonal F and Puregon), over the first 7 days of ovarian stimulation.

Methods: We included all patients who had unsuccessfully completed at least 2 fresh cycles of IVF and who had used Elonva in at least one of the cycles. A simple telephone questionnaire was undertaken covering acceptability of this treatment along with side effects.

Results: In the 100 patients surveyed, 86% preferred Elonva over daily FSH injections. Side effects for the long acting FSH were similar to the short acting drugs, with less than 20% reporting bloating, abdominal distension and headache. In the patients preferring the daily FSH, the main reasons were the inconvenience of attending clinic for the first injection and the perceived poorer ovarian response with Elonva. The main reason for preferring Elonva was the reduced number of injections.

Hollywood Fertility Centre, Perth, Western Australia

Aim: Embryo implantation remains the single most rate limiting step in the course of IVF treatment. It has been reported in previous studies that disturbance of the endometrial milieu in the luteal phase prior to an embryo transfer cycle promotes implantation and ongoing pregnancy in patients with recurrent implantation failure (RIF). The objective of this pilot study was to determine if this procedure improved the outcome for RIF patients in an ART programme.

Method: 12 patients presenting with > 3 consecutive unsuccessful embryo transfer cycles were offered endometrial sampling during the luteal phase of a spontaneous cycle. A Pipelle endometrial suction pipette was used to perform the procedure 2 hours subsequent to oral application of the sedative Lorazepam (2.3 mg). All patients had an embryo transfer procedure in the following cycle.

Results: Of the 12 embryo transfers 7 achieved a positive pregnancy test (hCG >100 mIU/ml). 2 clinical pregnancies have been confirmed by the presence of a foetal heart beat on ultrasound and 3 of the 7 pregnancies have resulted in miscarriage before ultrasound confirmation.

Conclusion: Early results of the use of endometrial sampling in RIF patients are encouraging. The mechanism by which the implantation of the embryo is enhanced remains to be defined but include the theories of decidualisation and the release of growth factors and cytokines during the healing process.

STIMULATION FOR IVF

Hollywood Fertility Centre, Townsville from January 2009 to March 2013 were

Method: Switching from agonist to antagonist cycles.

Aim: Embryo transfer cycle promotes implantation and ongoing pregnancy in patients with recurrent implantation failure (RIF). The objective of this pilot study was to determine if this procedure improved the outcome for RIF patients in an ART programme.

Method: 12 patients presenting with >3 consecutive unsuccessful embryo transfers were offered endometrial sampling during the luteal phase of a spontaneous cycle. A pipelle endometrial suction pipette was used to perform the procedure 2 hours subsequent to oral application of the sedative Lorazepam (2.3mg). All patients had an embryo transfer procedure in the following cycle.

Results: Of the 12 embryo transfers 7 achieved a positive pregnancy test (hCG>100mIU/ml). 2 clinical pregnancies have been confirmed by the presence of a foetal heart beat on ultrasound and 3 of the 7 pregnancies have resulted in miscarriage before ultrasound confirmation.

Conclusion: Early results of the use of endometrial sampling in RIF patients are encouraging. The mechanism by which the implantation of the embryo is enhanced remains to be defined but include theories of decidualisation and the release of growth factors and cytokines during the healing process.

Hamish Barblett1, Itziar Rebollar1, Denise Mehmet1, Catherine Meunier1, Julia Barton1, Lincoln Brett1 And Simon Turner1

1 Hollywood Fertility Centre, Perth, Western Australia

Aim: Embryo implantation remains the single most rate limiting step in the course of IVF treatment. It has been reported in previous studies that disturbance of the endometrial milieu in the luteal phase prior to an embryo transfer cycle promotes implantation and ongoing pregnancy in patients with recurrent implantation failure (RIF). The objective of this pilot study was to determine if this procedure improved the outcome for RIF patients in an ART programme.

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Conclusion: Early results of the use of endometrial sampling in RIF patients are encouraging. The mechanism by which the implantation of the embryo is enhanced remains to be defined but include the theories of decidualisation and the release of growth factors and cytokines during the healing process.

CLINICAL OUTCOME FOLLOWING MILD OVARIAN STIMULATION FOR IVF

Ron Chang1, Linda Robertson1, Lena Astbury1, Keith Harrison1, Jeremy OSBORN1,3

1 Queensland Fertility Group, Oxford Street, Townsville, 2 Queensland Fertility Group, 225 Wickham Terrace, Brisbane and 3 Queensland Fertility Group, 9, Scott Street, Toowoomba, Queensland.

Aim: While ovarian stimulation to achieve multiple follicle development is an integral part of ART, mild ovarian stimulation with GnRH antagonists and low dose FSH stimulation is preferred by women over long down regulation (1). This study reports the results obtained in our program with a cohort of younger women after switching from agonist to antagonist cycles.

Method: All patients < 35 years undergoing treatment at QFG Townsville from January 2009 to March 2013 were divided into two groups: (A) those seen from 2009 to 2010 (154 cycles) when 78% were stimulated in agonist cycles and (B) those treated from 2011 to 2013 (187 cycles), when 86% received mild ovarian stimulation in GnRH antagonist cycles. Total IU FSH used, mean number of oocytes recovered, fertilization, clinical pregnancy and implantation rates in the two groups were compared.

Results: Patients in group B had significantly less IU of FSH administered (2021 ± 939 versus 2439 ± 931; P < 0.0001) and had significantly fewer oocytes collected (7.33 ± 3.8 versus 9.19 ± 4.65; P < 0.0001) than those in group A. There was however no significant difference between the two groups in either fertilization rate (68.9% versus 71.9%; P = 0.17), clinical pregnancy rates (28% versus 32.4%; P = 0.4) or implantation rates (22.1% versus 28.9%; P = 0.74).

Conclusion: These results show that while fewer oocytes were obtained in young women after mild stimulation in antagonist cycles compared to agonist cycles, pregnancy and implantation rates were not compromised by the change in stimulation.

Reference

PATIENT ACCEPTANCE OF LONG ACTING FOLLICLE STIMULATING PREPARATIONS WHEN UNDERGOING IVF

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1 St George Hospital, Sydney, Australia 2 IVF Australia, St George Private Hospital, Sydney, Australia

Aim: We aimed to investigate IVF patient satisfaction with Elonva, as a single dose FSH used to achieve ovarian stimulation, compared with regular daily injections (Gonal F and Puregon), over the first 7 days of ovarian stimulation.

Methods: We included all patients who had unsuccessfully completed at least 2 fresh cycles of IVF and who had used Elonva in at least one of the cycles. A simple telephone questionnaire was undertaken covering acceptability of this treatment along with side effects.

Results: In the 100 patients surveyed, 86% preferred Elonva over daily FSH injections. Side effects for the long acting FSH were similar to the short acting drugs, with less than 20% reporting bloating, abdominal distension and headache. In the patients preferring the daily FSH, the main reasons were the inconvenience of attending clinic for the first injection and the perceived poorer ovarian response with Elonva. The main reason for preferring Elonva was the reduced number of injections.
Conclusion: Patients who experience both regimes of ovarian stimulation favours a reduced number of injections in their treatment. Elonva is clearly the preferred option for patients and given that it has equivalence in efficacy for appropriate patients, perhaps it should be the first choice of treatment for women undergoing IVF.

A STABLE SEX RATIO AT BIRTH IN AUSTRALIA BETWEEN 1991 AND 2010

Jishan H Dean¹, Michael Chapman², Elizabeth Sullivan¹

¹ National Perinatal Epidemiology and Statistics Unit, University of New South Wales, Sydney, Australia
² School of Women’s and Children’s Health, University of New South Wales, Sydney, Australia

Aim: To assess the sex ratio at birth in Australia in relationship with year of birth, maternal age, parity and plurality.

Method: 5,310,320 Australian live born babies were included in the analysis. Data included 3% babies born as multiples (160,619). Logistic regression modeling was used to estimate the trend of sex ratio at birth, controlling by year of birth, maternal age, parity and plurality.

Results: The overall sex ratio (male to female) at birth of Australian babies born between 1991 and 2010 was 105.8 males to 100 females (95%CI: 105.6-106.0). This ratio did not change significantly with year of birth, maternal age, or parity. Over the study period, there was a significant increase in babies born to mothers aged ≥40 years (P<0.001, from 1.4% in 1991 to 4.1% in 2010). The sex ratio at birth of babies born to mothers aged ≥40 years old (105.2), however, was not significantly different (P=0.295) from that (105.8) of younger mothers (<40 years old). Sex ratio at birth in multiples varied from the highest at 107.9 in 1998 to the lowest at 95.2 in 2002. The mean sex ratio at birth for multiples (101.9; 95%CI: 100.9-102.9) was significantly lower than in singletons.

Conclusion: Sex ratio at birth in Australia is stable between 1991 and 2010. Changes in socio-demographic and use fertility treatment have resulted in more older mothers giving births in recent years. However, it has not impacted the overall sex ratio at birth in Australia in the study period.

ARE ANTAGONIST PROTOCOLS LESS OPTIMAL FOR USE IN SATELLITE IVF CLINICS?

Emily Fiske¹, Gareth Weston²,³,⁴

¹ Peninsula Health, Frankston, Victoria, Australia, ² Monash IVF, Clayton, Victoria, Australia, ³ Department of Obstetrics and Gynaecology, Monash Medical Centre, Clayton, Victoria, ⁴ Monash University, Clayton, Victoria

Aim: Egg collections at regional satellite clinics are restricted to a narrow 3 day window. This study aims to compare the proportion of agonist and antagonist cycles resulting in regional egg collection.

Method: Retrospective analysis of 539 treatment cycles at Monash IVF conducted at two satellite clinic locations, from October 2010 to June 2012.

Results: 539 treatment cycles were included in the data, out of which 473 were agonist protocols and 66 antagonist.

The mean EPU day was significantly higher in the agonist group 14.0 in comparison to the agonist group 13.6. Increased variability of egg pick up (EPU) day was observed in the antagonist group (agonist 13.4 SD 1.9 vs agonist group 11.72 SD 1.3).

The number of patients required to transfer themselves to a metropolitan clinic site for EPU was markedly higher in the antagonist group (agonist 4.2% vs antagonist group 27.3%, p<0.01).

Conclusion: Estimation of the EPU date for IVF cycles is important for practical reasons. Accurate prediction of the EPU date streamlines the provision of IVF treatment to those living in remote and outer suburban Melbourne.

These data suggest that the use of antagonist protocols results in more variability in the day.

EPU and, as a result of the 3 day window available in satellite programmes, a greater percentage of patients are inconveniently by the need to transfer their care to metropolitan Melbourne.

UTILISATION OF ART IN SINGLE WOMEN AND LESBIAN COUPLES SINCE THE 2010 CHANGE IN VICTORIAN LEGISLATION

Emily Fiske¹, Gareth Weston²,³,⁴

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Aim: Identify trends in the use of assisted reproductive technology (ART) amongst lesbian couples and single women since changes to Victoria legislation at the beginning of 2010. Recognize proportions within these population using intrauterine insemination (IUI) or in vitro fertilization (IVF), and anonymous or known donor sperm.


Results: A substantial rise was observed in (IUI) and (IVF) cycle number for lesbian couples and single women. A 2.0 fold increase in ART cycles was noted amongst the single women cohort and a 3.5 fold increase with lesbian couples.

Proportion increase of IUI cycles was significantly higher than IVF cycles. IUI in the lesbian couples cohort represented 22.8% of treatment cycles and 11.9% for the single women cohort.

Preference for anonymous donor sperm was observed in both cohorts, anonymous donor sperm was used in 90.7% of cycles. Known donors were utilized by 20.0% of lesbian couples compared to 5.4% of single women.

Conclusion: Increasing demand on ART resources has occurred since the change in Victoria legislation. Lesbian couples and single women accounting for 5.28% of donor treatment cycles at Monash IVF Victoria during the relevant time period.

The greatest increase in ART use was observed in the lesbian couple population. A preference for anonymous donor sperm was observed across both cohorts. Use of known donor sperm was slightly higher amongst the lesbian couple cohort.

CROSS-COMPATIBILITY OF SINGLE CELL ANALYSIS PLATFORMS

Michelle Fraser, Christine Robinson, Sandra Protopsaltis, Xian Wang and Melinda Jasper

Reproductive Health Science Pty Ltd, Thebarton, South Australia 5031, Australia

When limited source material for genome wide evaluation is available, whole genome amplification (WGA) is often used to generate sufficient DNA for downstream analysis.

Aim: To determine the cross-compatibility of proprietary Reproductive Health Science (RHS) WGA protocols on a commercially-available microarray that has been recommended for single cell analysis, and to determine the ability of RHS-arrays to analyse single cells amplified using an alternative single cell WGA kit, PicoPlex.

Method: Single cells were sorted from aneuploid cell lines (Coriell Institute). The cells and 15pg reference 46,XY gDNA (Promega) were either subjected to WGA using RHS’ proprietary WGA and fluorescent labelling protocol or PicoPlex WGA and Agilent SureTag labelling. The labelled test and reference was hybridized to the SurePrint G3 human CGH 8x60K array (Agilent) and the same WGA products were also hybridized to the RHS-microarray, which consists of repeat-depleted chromosome-specific probes. The ratio of test to reference dye intensity after normalization was determined and the results were compared to the known karyotype.

Results: Single cells amplified using either WGA protocol provided the correct karyotype result on the RHS microarrays and for most chromosomes on the Agilent arrays.

Conclusion: The compatibility and ability to interchange commercially available WGA protocols and microarray platforms with RHS technologies provides an exceptional level of flexibility to a laboratory. Cross platform protocols allows individual laboratories to tailor diagnostic screening to suit their required time frame and level of resolution. RHS is now working with Agilent to further optimize array content, hybridization conditions and software analysis.

A PROSPECTIVE OBSERVATIONAL STUDY OF THE EFFECT OF OVARIAN CYSTECTOMY ON OVARIAN RESERVE (SOCOR)

Tamara Hunter1,2,3, Krishnan Karthigasu1,2,4, Bernadette McElhinney5, Rachel Beggs1, Emma Kelly1, Angela Beard1, Roger Hart1,2,3,4

1 King Edward Memorial Hospital, Western Australia, 2 Fertility Specialists of Western Australia, 3 School of Women’s and Infant’s Health, University of Western Australia, 4 Fertility Specialists, South

Aim: Limited data exists as to the influence of ovarian surgery upon subsequent ovarian function. Our study set out to evaluate if laparoscopic ovarian cystectomy reduces ovarian reserve, by evaluating the effect on serum anti-mullerian hormone (AMH) up to 1-year post surgery.
Method: Patients undergoing laparoscopic cystectomy were identified, consented and recruited. Each patient had an AMH measured pre-operatively at several points post operatively. Demographic, clinical, intra-operative and histological data were collected. Parametric and non-parametric inference was used for interpretation. Recruitment is ongoing.

Results: To date, 40 patients have had at least 1 pre- and post-operative serum AMH measurement. Median age was 30 years (IQR = 27-36), mean BMI 25.9 (IQR= 20.9-29.6), median parity was 0 (IQR = 0-1). Five patients (12%) reported a history of infertility with mean duration of 44.6 months. 30% of procedures were performed by a consultant, 27.5% by an endoscopic fellow, 30% by a senior registrar and 12.5% by a junior registrar. 27.5% of cysts were endometriomas on histopathology. Normal ovarian stromal tissue was identified in 52.5% of specimens.

The mean serum AMH was 13.27pmol/L pre-operatively (IQR = 6-16.6) and 13.14pmol/L post-operatively (IQR=4.8-17.0) (at a mean of 81.56 days post operatively (IQR=41-101)). Mean fall in AMH was 0.06pmol/L (IQR= 4.65-3.05)

Ongoing follow-up will generate a survival curve of influence of surgery and data stratified for significant variables.

Conclusion: Preliminary data suggest a limited influence of surgery on subsequent ovarian reserve; however with further recruitment, follow-up and sub-group analysis longer term effects of surgery may be determined.

USE OF AMH AS A PREDICTOR OF TWIN PREGNANCY

Jacquelyn Irving1, Nicky Darling1, Emily Ford1, Jeremy Osborn1, Anusch Yazdani2,3, Keith Harrison1

1Queensland Fertility Group, Brisbane 4000, Australia, 2Queensland Fertility Group Research Foundation, Brisbane 4000, Australia, 3Department of Obstetrics and Gynaecology, University of Queensland, Brisbane, Australia

Aim: Double embryo transfers are considered an acceptable clinical strategy in some patient groups; however they have the principal disadvantage of potentially giving rise to twin pregnancies which have increased rates of adverse neonatal outcomes. It has been proposed that, in certain patient groups, AMH (Anti-Mullerian Hormone) levels could predict multiple pregnancy rates. The purpose of this retrospective study is to test this hypothesis.

Method: Retrospective analysis of 214 cycles where a pregnancy was achieved following the transfer of two fresh embryo and where the patient (n= 208) had undertaken an AMH assay (pmol/L) within 12 months of the transfer.

Results: When patients are not filtered by age, the mean AMH is not statistically higher for those achieving a pregnancy with one fetal heart than two (16.06 vs 20.95; p=0.09).

However when the analysis is restricted to patients with an AMH of less than 30 (n=168) there is a significant difference between the two groups (9.8 for singleton pregnancies vs 13.5 for twin pregnancies; p=0.006).

Similarly, in patients aged 34 years and over (n=150) the mean AMH was significantly lower in those patients achieving a singleton pregnancy than those achieving a twin pregnancy (13.94 vs 23.60; p=0.007).

Conclusion: AMH may be used to reduce the incidence of twin pregnancies by identifying those who are at a higher risk of achieving a twin pregnancy following the transfer of two embryos. This study highlights the utility of AMH in the prediction of multiple pregnancies in women aged 34 years and over.

PCOS AND IVF: DEFINING PHENOTYPES: SLIM VS. OVERWEIGHT.

Dr Robert Lahoud, Ms Natasha Karunaratne

1 IVFAustralia, 2 University on New South Wales

Objective: To define varying phenotypes of polycystic ovarian syndrome (PCOS) in an IVF setting based on body mass index (BMI) of less or more than 25. The current study is the largest study addressing in the literature addressing this.

Design: Retrospective Cohort study in a single center and single physician setting.

Materials and Methods: 111 patients meeting the diagnosis of PCOS under the Rotterdam Criteria were included. All patients were undergoing controlled ovarian stimulation (COS) for IVF between 2009 and 2012.

Findings: The PCOS patients were divided into two groups based on Body Mass Index (BMI). The slim PCOS women (BMI<25) were found to have a greater sex hormone binding globulin (SHBG) concentration as compared to the overweight ones (BMI>25). The slim PCOS patients required significantly less follicle stimulating hormone (FSH) and reached oocyte retrieval quicker. The slim PCOS patients achieved significantly more oocytes. Clinical pregnancy rates for single embryo transfer were excellent and did not differ between the 2 groups.

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<th>Slim PCOS (BMI&lt;25) n=56</th>
<th>Overweight PCOS (BMI&gt;25) n=55</th>
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<th>Lean PCOS (BMI&lt;25)</th>
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Conclusions: Slim PCOS patients perform better in COS for IVF as compared to overweight ones. They achieve more oocytes and use less FSH. Clinical pregnancy rates are not significantly different between the two groups.

Support: None

PREDICTORS OF OVARIAN RESERVE, WHAT IS BEST

A/Prof Indu Lata

Sanjay Gandhi Postgraduate Institute of Medical Sciences Lucknow, UP, India

Aim: Ovarian reserve is a term used to describe the functional potential of the ovary and reflects the number and quality of oocytes within it. Ovarian reserve plays a crucial role in achieving pregnancy following any treatment in subfertile women.

Method: The prediction of ovarian reserve is routinely performed through various ovarian reserve tests (ORTs) in an effort to predict the response and outcome in couples prior to any treatment.

Results: Different Types of ovarian reserve tests are available as follows, but what is ideal one test that predicts it best is dubious. Age: It is long established that ovarian reserve reduces progressively with age. Basal follicle stimulating hormone levels is the most widely used ORT to assess the ovarian response to stimulation. Anti-Mullerian hormone biochemical markers, it can be measured on any day of the cycle and does not exhibit intercycle variability. Inhibin B is a heterodimeric glycoprotein released by the granulosa cells of the follicle. Basal E2 does not add to the predictive value of other commonly used ORTs, its routine use in clinical practice is not recommended. USG Parameters- Antral follicle count: AFC is considered to have the best discriminating potential for a poor ovarian response compared to others but lacks the sensitivity and specificity. Ovarian volume and ovarian vascularity are also useful.

Conclusion: ORTs do have a moderate ability to predict poor and hyperresponse. The information can influence the treatment protocol to be chosen for IVF but should not be used to exclude anyone from first attempt at IVF.

IS THE DECREASE IN OVARIAN RESERVE FOLLOWING LAPAROSCOPIC SURGERY FOR ENDOMETRIOMATA DUE TO THE PROCEDURE OF CYSTECTOMY OR THE ADHESIVE FEATURE OF ENDOMETRIOSIS?

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Fuxing Hospital, Capital Medical University, Beijing, China

Aim: Endometriosis is associated with reduced fecundity. ESHRE recommends laparoscopic cystectomy for endometriomata to improve access to follicles and possibly oocyte yield. However, there is concern that surgery may damage ovarian reserve and consequently compromise the success of fertility treatment. The aim of this study was to examine if the post-operative decrease in ovarian reserve was associated with the surgical procedure of cystectomy or due to the adhesion of endometriomata to the ovarian cortex resulting in inevitable loss of follicles by comparing pre- and post-operative measurements of ovarian reserve between women with endometriomas and those with simple cysts.

Method: 48 women with endometriomas and 60 women with simple ovarian cysts were enrolled from April 2011 to December 2012. FSH, LH, E2, AFC were measured before and after surgery. The AFC and coagulation depth of excised ovarian specimen were analyzed histologically.

Results: The post-operative measurement of FSH was significantly higher and AFC was significantly lower in women after surgery to endometriomata than those in women with simple cysts (p<0.05). In addition, a significant rise in FSH and LH and a reduction in AFC between pre- and post-operative measurement were observed for women with endometriomata (p<0.05). The AFC of the excised cyst capsule was significantly higher in women with endometriomata than that in women with simply cysts (p<0.05).

Conclusion: Laparoscopic cystectomy is not associated with an effect on ovarian reserve. The adhesive and pseudo-cystic nature of endometriomata contributes to inevitable loss of follicles during laparoscopic cystectomy.
IS MEASUREMENT OF PROGESTERONE PRIOR TO FSH STIMULATION USEFUL IN ANTAGONIST CYCLES?

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Aim: To reduce patient inconvenience during IVF cycles, some protocols delay intensive monitoring until mid follicular stimulation. Others assess hormone levels prior to FSH administration, not commencing stimulation until baseline P4 (<5nmol/l) are achieved.

Higher progesterone (P4) levels (>4.77 nmol/l) on day of FSH triggering have been implicated in poorer pregnancy rates.

Our study evaluates the value of performing day 1-2 progesterone levels in GnRH-antagonist cycles on pre trigger progesterone levels and clinical pregnancy rates (CPR).

Method: All fresh GnRH-antagonist IVF cycles between June 2011 – June 2012 performed by clinicians who do not routinely undertake pre-FSH progesterone levels (group 1) were retrieved from the IVFAustralia database and compared with controls (matched for age and cycle number) from clinicians who routinely perform them (group 2). P4 levels on day of trigger, number of oocytes collected and CPR were compared using Student t-tests.

Results: There were 199 cycles in each group. P4 levels on day of trigger were significantly higher in group 1 (3.75 vs 2.77, p<0.05). The incidence of P4 levels >4.77nmol/l was significantly higher in group 1 (45 vs 23 p<0.05). Number of oocytes retrieved was higher in group 1 (10.8 vs 8.5, p<0.05), however fertilization rates were significantly lower in that group (50.6% vs 61.6%, p<0.05). Cycles with P4 > 4.77nmol/l in group 1 had a significantly lower CPR compared to those with lower P4 levels (12.7% vs 26%, p<0.05), which was similar in group 2 (4.3% vs 29%, p<0.05).

Conclusion: In patients who were unmonitored prior to FSH stimulation, there was a higher incidence of elevated P4 levels on the day of trigger, lower fertilization rates and, consistent with the literature, CPR in that group is lower. Our study supports the practice of preFSH stimulation hormonal assessment. IVFAustralia HREC approved the project.

THE MONASH IVF EXPERIENCE WITH CORIFOLLITROPIN ALFA

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Aim: Corifollitropin alfa (Elonva®) is a novel long acting recombinant Follicle Stimulating Hormone (rFSH). The aim of this study was to review our IVF Units’ initial experience with this product.

Method: A retrospective analysis of our initial 387 IVF cycles utilizing an antagonist protocol with corifollitropin alfa was performed. Clinical outcomes were examined by patient age, FSH dose used and cycle number and compared to antagonist cycles using rFSH. Measured outcomes included follicular growth, oocytes collected, oocyte maturation rates, fertilization rates, embryo freezing, clinical pregnancy rates and the incidence of OHSS. The cohort was divided into those patient aged less than 40 years of age and those 40 years and older.

Results: Of those patients that proceeded to egg collection after receiving corifollitropin alfa, 84.8% required additional daily rFSH for an average of 4 days prior to oocyte collection. There was no significant difference in cycle cancellation rates, number of oocytes collected, fertilization rates and the number of excess embryos frozen between patients receiving corifollitropin alfa and those undergoing a standard antagonist cycle. Clinical pregnancy rates in the corifollitropin alfa groups were also comparable to antagonist cycles using rFSH. The incidence of severe OHSS was not increased in patients receiving corifollitropin alfa.

Conclusion: This retrospective analysis demonstrates that corifollitropin alfa can be used effectively in antagonist cycles without any detrimental effect to any of the standard IVF parameters measured, including clinical pregnancy rates.

ASSISTED REPRODUCTIVE TECHNOLOGY IN AUSTRALIA, 2002-2011

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1 National Perinatal Epidemiology and Statistics Unit, University of New South Wales, Sydney, Australia

Aim: The aim of this study is to investigate key trends in assisted reproductive technologies (ART) in Australia over the last decade (2002-2011), including patient demographics, clinical practice and treatment outcomes.

Method: Data were obtained from the Australia and New Zealand Assisted Reproduction Database (ANZARD), a population based data collection of all ART treatments undertaken in Australia and New Zealand and the resulting pregnancy outcomes. Linear regression was used to test the significant changes over time.
Results: Australia has seen a considerable rise in the number of ART treatment cycles from 31,227 in 2002 to 61,158 in 2011. One-quarter (25.7%) of all ART treatment cycles were in women aged 40 years and over in 2011, compared to one-fifth (19.4%) in 2002. A linear trend (p<0.05) of the proportions of intracytoplasmic sperm injection (ICSI), single embryo transfer and blastocyst transfer were observed in the past 10 years, with ICSI increasing from 57.7% in 2002 to 68.7% in 2011, blastocyst transfer from 17.6% to 55.0%, and single embryo transfer from 29.5% to 73.1%. The increase in single embryo transfer has resulted in the continuing decline in the rate of multiple birth delivery from 19.0% in 2002 to 7.0% in 2011 while maintain a clinical pregnancy rate of between 20.3% and 23.4% during 2002 to 2011.

Conclusion: Changes in clinical practice have been successful in reducing multiple gestation pregnancies while the clinical pregnancy and live delivery rate has remained stable.

EPIDEMIOLOGICAL ASPECTS OF INFERTILE COUPLES WITH AZOOSPERMIA IN A TERTIARY CARE SETUP IN SOUTH INDIA

Ann Mangalaraj¹

¹ Christian Medical College & Hospital, Vellore, Tamil Nadu, South India

Aim: The objective of this study was to do an epidemiological survey through medical records in male partners of infertile couples with azoospermia.

Method: Retrospective study in the department of Reproductive Medicine Unit, Christian Medical College, Vellore over a period of 6 years from 2007-2012.

The data were collected from the laboratory records. Statistical analysis was done using EpiData and SPSS version 16.

Results: The prevalence of azoospermia among the couples who attended our infertility clinic was 12%. Epidemiological aspects of these 1196 azoospermic men were analyzed. Highest prevalence of azoospermia was in the age group of 31-35 years. Majority of the azoospermic men were from the two states of India – Tamil Nadu and West Bengal, urban population accounted for 68%. Only 16% of the study population had smoking habits. Collection problem was observed only in minority (10%) of the subjects.

Conclusion: The prevalence and other epidemiological aspects of azoospermia in infertile men in this study were comparable to the standards.

LUTEAL PHASE DEFECT; IN WOMEN WITH UNEXPLAINED SUBFERTILITY

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Background: Luteal phase defect (LPD) remains controversial, unproven and of doubtful clinical significance in the apparent ovulatory cycles of women with unexplained subfertility. While various methods for determining such a defect have been proposed, including endometrial biopsy and integrated progesterone profiles, many feel that such efforts for diagnosis are not justified. If subfertile natural cycles were defective - would they benefit from support? The prevailing opinion¹ is that LPD in natural unstimulated cycles is difficult to diagnose, pregnancy outcomes do not improve with treatment and little is done to define who may have such a LPD.

Aim: To define the prevalence of luteal phase defect in unexplained subfertile women presenting to a public hospital infertility clinic.

Method: Women with a diagnosis of unexplained subfertility undertook to complete fertility awareness-based method charting. To define ovulatory function, progesterone and oestradiol levels were drawn 5, 7 and 9 days after the peak fertile cervical mucus sign. LPD criteria were applied based on the hormonal profiles.

Results: 35.6% (99) of the 278 women undergoing assessment were found to have a LPD. 29.8% (83) were anovulatory and 30.5% (85) were deemed to have a normal luteal hormonal profile.

Conclusion: LPD may warrant renewed interest in the unexplained subfertile population. A well designed RCT for therapy may assist in determining the effect such a defect has on subfertility.

1. Practice Committee of American Society for Reproductive Medicine, The clinical relevance of luteal phase deficiency: a committee opinion. Fertil
INCIDENCE OF ANTISPERM ANTIBODIES AMONGST 1085 SEMEN SAMPLES FROM COUPLES PRESENTING WITH INFERTILITY

Hannah Wills,1 Jeremy Osborn,1 Simon McDowell,1 Ben Kroon,1,2 Emily Ford,1 Keith Harrison,1 Anusch Yazdani1,2

1 Queensland Fertility Group; 2 University of Queensland, Brisbane, Australia

Aim: Estimates of antisperm antibody (ASA) incidence amongst infertile men vary between 5 and 15% (Zini, 2011) with little data surrounding the frequency of major ASA subclasses. The aim of the current study was to determine the baseline incidence of ASAs, and their relationship with ‘routine’ semen parameters in a population of male partners of couples presenting with infertility.

Method: Data from 1085 samples collected between 2003 and 2008 were analysed. Normal values were defined as per the World Health Organisation (2010).

Results: The incidence of significant IgG and IgA binding was 5.2% (n = 56) and 2.8% (n = 30), respectively. Regression analysis demonstrated that as IgG binding increased above 50%, sperm concentration and progressive motility decreased (p <0.05). There was no relationship identified between increasing ASAs and morphology or volume.

Conclusion: The current study provides an insight into the incidence of ASAs across a large sample and confirms that significant binding may impact deleteriously upon other semen characteristics. These findings aid in understanding ASA effects upon fertility. With further manipulation, a tool to predict those samples likely to have significant ASAs based on routine parameters may be developed.

References:


A COMPARISON BETWEEN PREGNANCY AND TAKE HOME BABIES RATES IN REGULATED AND NATURAL FROZEN-THAWED EMBRYO TRANSFER CYCLES

Lim Mn, Lee Asn, To Cf, Yu Sl

Department of Obstetrics & Gynecology, CARE, Singapore General Hospital, Singapore

Aim: To compare the pregnancy and implantation rates between regulated and natural frozen-thawed cycles.

Method: 433 female patients aged between 28 to 44 years old who underwent frozen-thawed cycles from Jan’2004 to Dec’2011 were analyzed. A total of 212 patients underwent the regulated frozen-thawed cycles due to their irregular menstrual cycle, and 221 patients underwent natural frozen-thawed cycles. Luteinizing hormone (LH) was monitored twice daily when leading follicle reached 14mm, once in the morning and another in the evening until a LH surge of 20 iu/l or more was reached. Embryo transfer was performed either before or after 84 (D2) to 156 (D5) hours depending on the day the embryos were frozen.

Results: The clinical pregnancy rate per embryo transfer was not significantly different, 32.6% (69/212) for regulated, 28.1% (62/221) for natural; P = 0.361. There was also no significant differences in terms of take home babies rate per cycle for both regulated and natural cycles , 27.4% (58/212) vs 22.6% (50/221); P=0.304.

Conclusion: From our data, higher pregnancy and take home baby rates per transfer were observed in recipients who underwent regulated frozen-thawed cycles then in natural cycles, however there was no significant difference between the two groups. Nevertheless, regulated cycle is recommended as it saves time and the hassle of travelling down to the Centre to take blood for LH monitoring. Regulated cycles can also be planned easily to avoid weekend duties.

OVULATION INDUCTION SHOULD REMAIN FIRST LINE TREATMENT IN PATIENTS WITH PCOS AND HYPOTHALAMIC DYSFUNCTION (WHO ANOVULATORY INFERTILITY GROUP I AND II)

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Aim: Ovulation induction is being increasingly substituted by IVF in modern reproductive medicine. We retrospectively evaluated the efficacy of our ovulation induction program in Fertility SA from January 2010 to September 2012.

Method: We extracted ovulation induction cycles provided during the above mentioned period. The main treatment outcomes were pregnancy rate per cycle and cumulative pregnancy rates per patient.

Results: Eighty six women with PCOS underwent 183 cycles of clomiphene citrate. Pregnancy rates per cycle were 25% and cumulative pregnancy rates after 4 cycles of Clomid was 45% (39/86); 1 biochemical pregnancy, 5 miscarriages (15%) and 4 multiple pregnancies (7%). Women who failed to ovulate or used clomiphene citrate unsuccessfully for 4 cycles proceeded with rFSH
(Gonal F, Puregon). 16 women underwent 38 cycles of rFSH, cumulative pregnancy rates were 50% (8/16).

Sixty four PCOS patients, who previously unsuccessfully used clomiphene citrate in other clinics underwent 131 cycles of rFSH. Pregnancy rates per cycle was 28% and cumulative pregnancy rates 71.8%. In 46 pregnancies 1 was ectopic and 1 early miscarriage (4%).

Fifteen women with hypothalamic dysfunction (WHO I) underwent 43 cycles of rFSH stimulation. Pregnancy rate per cycle was 40% and cumulative pregnancy rate in 7 cycles 93.3% (14/15), 1 multiple pregnancy (7%) (twin) and 3 early miscarriages (21%).

Conclusion: The success of our infertility treatment is due to close ultrasound and hormonal monitoring of stimulated cycles and defining group of women who will benefit from ovulation induction. This method should not fall into disuse and should remain first-line treatment for anovulatory women.

BASAL SERUM AMH CONCENTRATIONS PREDICT OVARIAN RESPONSE AND PREGNANCY OUTCOME DURING ART CYCLES BUT NOT EARLY CLEAVAGE AND EMBRYO QUALITY.

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Aim: Previous studies have demonstrated the prognostic value of measuring anti-Mullerian hormone (AMH) levels during the follicular phase. AMH levels are negatively correlated with female age and gonadotrophin dose and are positively correlated with antral follicle count (AFC), oocyte number and oocyte quality. The relationship between basal AMH levels, embryo quality and pregnancy outcome is less well defined. The aim of this retrospective study was to determine whether basal concentrations of AMH measured pre stimulation were predictive of the ovarian response, oocyte and embryo quality, implantation and clinical pregnancy rates in stimulated ART cycles.

Method: 460 couples undergoing 768 IVF/ICSI treatment cycles from April 2009 to December 2012 were divided into six groups according to the percentiles of AMH concentration measured in a preceding cycle: <10% (n = 77), 10-25% (n = 115), 25-50% (n = 192), 50-75% (n = 192), 75-90% (n = 115) and >90% (n = 77). These groups were analysed by female age, BMI, AFC, stimulation regimen, total IU gonadotrophin, ovulatory trigger, oocyte number and maturity, fertilisation rate, early cleavage, day 2 embryo score, clinical pregnancy rate, implantation and ongoing pregnancy rate.

Results: Basal AMH levels were significantly correlated with female age (P = 0.0004), follicle count (P < 0.0001), oocyte number (P < 0.0001) and total IU gonadotrophin (P < 0.0001) but not with BMI (P = 0.18). The proportion of mature oocytes, normal fertilization and multipronuclear rates were also correlated with AMH concentration (P = 0.03, 0.03 and 0.02 respectively). There was, however, no statistical difference between the groups in the number of embryos showing early cleavage (P = 0.11), day 2 embryo quality (P = 0.92), clinical pregnancy or implantation rates (P = 0.25). By contrast, higher AMH levels were significantly correlated with ongoing pregnancy rates per OPU or per ET (P < 0.001 and P = 0.0013 respectively).

Conclusion: Basal serum AMH levels are highly correlated with ovarian response in ART cycles. While early cleavage, embryo quality and clinical pregnancy rates are independent of AMH, there is a strong correlation with ongoing pregnancy rates.

TOTAL FERTILISATION FAILURE AFTER IVF INSEMINATION. IS THIS NURTURING FROM THE BEGINNING OR POOR CLINICAL PRACTICE?

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Aim: ICSI is limited to cases of male infertility as determined by a semen analysis using WHO 5th Edition criteria or a history of poor fertilisation in previous IVF cycles. IVF insemination, despite normal semen parameters, can still result in failure of sperm penetration for all mature oocytes. The objective of this study was to examine the clinical pathway for patients after fertilisation failure with IVF.

Method: A retrospective outcome analysis over a 4 year period of 29 patients less than 38 years of age presenting with failure of fertilization following a cycle using IVF insemination.

Results: 24% (7/29) of patients did not pursue further treatment after an IVF cycle with total fertilisation failure. 92% (20/22) of the remaining patients achieved fertilization and embryo transfer in a subsequent ICSI cycle and 60% (12/20) of these achieved a pregnancy within 2 ICSI cycles. 35% (7/20) have had a live birth and 15% (3/20) have ongoing clinical pregnancies.

Conclusion: A significant proportion of patients experiencing failure of fertilization in an IVF insemination cycle do not continue with further treatment. Patients completing subsequent ICSI cycles more often than not will have a live birth. This study highlights the need to re-evaluate the use of IVF insemination in ART practice.

WHAT IS IDEAL ANAESTHESIA FOR ASSISTED REPRODUCTIVE TECHNIQUES
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Aim: Anaesthesia during assisted reproductive technique is generally required during oocyte retrieval, which forms one of the fundamental steps during the entire procedure. However irrespective of the technique the key point of anaesthesia for in vitro fertilization it is important to provide the anaesthetic exposure for least duration so as to avoid its detrimental effects on the embryo cleavage and fertilization.

Method: We have to consider need of anesthesia for relieving pain, anxiety, management of coexisting illness and confounding of its treatment with anesthesia. The out of three desired methods: Monitored sedation with/without local anaesthesia, General Anaesthesia, Regional Anaesthesia which is best and its associated complications will be discussed.

Results: Till date variety of techniques like conscious sedation, general anaesthesia and regional anaesthesia has been tried with none being superior to the other. The technique employed in aspiration of the oocyte and laboratory manipulations have all been modified and updated. Which is better, sedation or general anaesthesia is more of a personal preference.

Conclusion: Anaesthesia technique, which is important to the comfort level both for the patient and the gynecologists to maximize the harvesting of oocytes plays an important role in the successful outcome. The key to anaesthesia in IVF is to aim for pharmacological exposure of shortest duration with minimal penetration to follicular fluid.

ZONA PELLUCIDA BOUND SPERM FOR ICSI IMPROVES IMPLANTATION AND CLINICAL PREGNANCY RATE IN COUPLES WITH PERSISTENT POOR OUTCOMES IN PREVIOUS CONVENTIONAL ICSI CYCLES

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Aim: Our previous studies have shown that sperm selectively bound to zona pellucida (ZP) has normal morphology and intact chromatin DNA. Aim of this study is to investigate whether ZP bound sperm for ICSI can enhance implantation and pregnancy in patients with persistent poor outcomes in previous ICSI cycles using scientist selected sperm.

Methods: A total of 70 couples with persistent low clinical pregnancy (<5%) from previous conventional ICSI cycles (average 4) were included in this study. Patients' sibling immature oocytes (GV or MI) were incubated with 0.5 - 2 million motile sperm for 2 h. After incubation, oocytes were washed in fresh medium 2-3 times to remove unbound sperm. Sperm tightly bound to the ZP were dislodged using a fine glass pipette in a small droplet of medium. ZP bound motile sperm were used for ICSI. Outcomes were compared between previous conventional ICSI cycles and ZP-selected sperm ICSI cycles.

Results: Nineteen couples with unsuccessful sperm binding to the ZP due to poor sperm quality were excluded from the analysis. The results of 51 couples showed that ICSI using ZP selected sperm had significantly higher implantation rate (18% vs 2%) and fetal heart pregnancy rate (27% vs 5%) than previous ICSI cycles using scientist selected sperm.

Conclusion: ZP selected sperm for ICSI significantly improves implantation and fetal heart pregnancy rates in patients with persistent poor outcomes in ICSI cycle using scientist selected sperm.

ATTITUDES TO RESEARCH: THE VIEWS OF REPRODUCTIVE MEDICINE CLINICIANS, NURSES AND COUNSELORS

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Aim: To examine the attitudes and knowledge of reproductive medicine health professionals towards research.

Method: An online survey was circulated to clinicians, nurses and counselors who were members of the Fertility Society of Australia. A self completion questionnaire examined attitudes towards research, evidence based research and practice, and attitudes towards participation in research.

Results: 742 questionnaires were distributed, and 96 were returned. The sample included nurses 39%, counsellors/psychologists 28%, doctors 21%, other professions 11%.

All participants agreed that evidence based practice (EPB) has an important role to play in patient care. This finding was reinforced by responses from over 90% of participants indicating EPB was an important part of their professional role, that it benefited their patients, assisted with their clinical decision making and could be used to change practice in a work environment. Forty three participants indicated they had initiated a change in clinical practice that was indicated by published research.
Forty one participants reported they were confident to undertake a piece or research themselves or in collaboration with others. This included data collection (66%), and recruitment of patients (64%).

Participants were highly motivated to undertake research with the aim of improving clinical management and outcomes. Barriers to undertaking research include a lack of time (85%), resources (69%), lack of organisational support (46%), or lack of skills and experience (40%).

**Conclusion:** Health professionals hold positive attitudes towards research. A key obstacle to research engagement includes a lack of time resources or skills.

**ACUPUNCTURE PRACTICES FOR INFERTILITY IN AUSTRALIA AND NEW ZEALAND**

Caroline Smith¹, Michael Armour, Debra Betts

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**Background:** There is an increasing evidence base exploring the use of acupuncture to treat female infertility. However the extent and scope of acupuncture practice to support patients with infertility in Australia and New Zealand is unknown.

**Aim:** To examine acupuncturists practice for the treatment of fertility complaints by New Zealand and Australian practitioners.

**Method:** An online and postal survey was circulated to all Australian and New Zealand acupuncturists. Data was collected on the treatment of infertility, the interventions used and practice characteristics.

**Results:** A response was obtained from 377 practitioners. Ninety percent of practitioners had treated women presenting with a fertility related condition. Acupuncture as an adjunct to ART was reported by over 90% of practitioners, and over 70% administered acupuncture to promote fertility related health. Sixty four percent reported treating men for any fertility related condition. Acupuncture was the most common modality administered, Chinese herbal medicine was prescribed by 50% of acupuncturists for clients undergoing ART compared to 80% non ART consultations. Lifestyle and dietary advice was given by 70% of practitioners. The majority of practitioners work in sole practices with a small number working on site within a fertility unit.

**Conclusion:** The practice of acupuncture support for women with infertility is widespread in Australia and New Zealand. Some practitioners modify their clinical practice when patients commence assisted reproduction, although all traditional Chinese medicine modalities continue to be practiced.

**Reference**


**IN THE BEGINNING THERE WAS OVULATION INDUCTION... AND IT STILL HAS A PLACE: 13 YEARS OF EXPERIENCE**

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**Aim:** To report long term trends in pregnancy rates after ovulation induction at the Royal Hospital for Women.

**Method:** Retrospective audit over 13 years.

**Results:** In the anovulatory group requiring gonadotropin ovulation induction and either timed intercourse or intra-uterine insemination(IUI), 90% of cycles achieved ovulation. Pregnancy rates per ovulatory cycle between 2000 and 2012 varied between 20 to 37%. Over a 9 year period, the multiple pregnancy rate was 2% with a low cycle cancellation rate for an excessive ovarian response. For couples with unexplained infertility treated with gonadotropin ovarian stimulation, pregnancy rates per cycle were 10 to 20% and the multiple pregnancy rate was 0.8% per cycle. For those couples undergoing controlled stimulation with clomiphene and IUI for unexplained infertility, pregnancy rates per cycle were 6.5 to 19% and multiple pregnancy rate was 1.6%.

**Conclusion:** Good pregnancy rates can be achieved with gonadotropin ovulation induction. Ovulation induction or controlled stimulation with gonadotropins is a cost-effective option in those patients with unexplained, anovulatory or mild female or male factor infertility who are unable to afford or unwilling to be exposed to the additional risks of in-vitro fertilisation. Multiple pregnancy rates can be minimized whilst maintaining low cycle cancellation rates.

**VALIDATION OF THE PIVET rFSH TARGETED STIMULATION PROTOCOL**

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**Aim:** To assess the validity of the rFSH dosage schedules of the PIVET targeted stimulation protocol adapted for the new Gonal F pen.
Method: PIVET's targeted stimulation protocol was published in 2012 based on a study undertaken between October 2009 and December 2010. This effectively reduced the proportion of women requiring monitoring for potential OHSS and virtually eliminated cases of severe OHSS. A significant proportion of women (~ one third) were stimulated with dosages of less than 150IU rFSH. This was originally undertaken using the Puregon pen.

This study examines data over the ensuing two years (to December 2012) where the algorithm was adapted for the new Gonal F pen and looks at the rate when the dosage of rFSH was increased. The overall aim was to generate 8 or more oocytes without increasing the risk of OHSS.

Results: For doses of rFSH <150IU, 41% of patients had the dosage increased due to a need perceived by the clinicians rostered for the daily Results Session. The increase was usually a single increment of 12.5 IU. However the average number of oocytes collected for both groups (elevated dosage vs unchanged dosage) was 15.

The pregnancy rate between the two groups was similar being 39% for patients who had a dose increase and 31% for patients who remained on an unchanged dosage.

20% of patients who had their dose increased required a freeze-all due to elevated OHSS risk whilst only 12% required a freeze-all if the dose remained unchanged.

Embryo utilisation was similar between the two groups, 52% for patients who had a dose increase and 46% for patients who’s dose remained unchanged.

Conclusion: Using the PIVET algorithm, the initial calculated rFSH dose of <150IU, can be used without increase, to give similar clinical pregnancy and embryo utilisation rate outcomes while reducing the OHSS risk and need for freeze-all. These data tend to validate the PIVET rFSH algorithm.

NURSING EPOSTER ABSTRACTS

HIGHER PREGNANCY RATES IN THE FET PROGRAM UTILISING A UNIQUE HRT REGIMEN

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Aim: Retrospective audit of pregnancy rates in FET program with mix of mainly LDS and HRT schedules.

Method: Following identification of a number of problems in the FET program when using natural cycles (often cancelled) or LDS cycles (multiple pregnancies) the PIVET program has increasingly moved to utilising an HRT regimen. The 2 year period 2011-2012 applies a unique schedule which arose from previous attempts to improve the pregnancy rates which have always been highest using the LDS schedule.

The HRT regimen involves commencing Progynova tablets on day 1 of the cycle, then progressively introducing pessaries from day 10 beginning with Estradiol then progressing to Progestrone as well as an Estradiol/Progesterone combination pessary.

Day 3 embryos (mostly one) are transferred on the 4th day of progesterone pessaries or a single blastocyst (always) is transferred on the the 6th day of progesterone pessaries.

On day 9 of progesterone (mid luteal stage) serum E2 and P4 levels are tested to consider adjustment of the pessary regimen.

Results: Overall 184 transfers were performed on Day 3 across all age groups with 42 pregnancies arising (23%), the results being higher for HRT (but not significant). In the <35 age group the pregnancy rates for HRT and LDS were the same at 40% and 38% respectively.

For day 5 transfers there were 417 transfers with 196 pregnancies arising (47%) again with HRT rates slightly higher (but not significant). In the <35 age group the pregnancy rates for HRT and LDS were the same at 52% and 50% respectively.

Conclusion: Although the pregnancy rates are now statistically similar between the LDS and HRT schedules, the flexibility of the HRT schedule is superior. It enables avoidance of weekend transfers, efficient scheduling during the working week days as well as less and more efficient monitoring by blood tests and ultrasound. Furthermore there is a higher safety feature with no unexpected multiple pregnancies arising from unscheduled coitus.

THE CHALLENGES ASSOCIATED WITH PROMOTING HEALTHY LIFESTYLE CHANGE IN INFERTILE COUPLES

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Aim: To describe why fertility clinics should promote healthy lifestyle and the challenges associated with establishing and delivering a successful program.

Method: Literature was reviewed to provide a synopsis of current evidence of the effect of lifestyle on fertility and the most effective methods of promoting healthy lifestyle changes in both men & women.
A program was designed based on this evidence and past experiences of running lifestyle modification programs. The program focused on diet and exercise, offering an individually tailored plan for overweight patients to encourage and support them in making long term lifestyle changes. It consisted of two components; a nutrition package and an exercise package, as well as access to nursing support. The program was introduced and recommended when patients attended a medical appointment at the fertility clinic. Information regarding the program was provided and a follow up phone call by the nursing lifestyle coordinator made two weeks later.

Results: Approximately 10% of the 125 patients approached over a 12 month period participated in the program. The results were positive with all losing weight and half becoming pregnant. However the majority of patients to whom the program was recommended did not enrol for a variety of reasons including cost and lack of interest. Modifications have been made to the program in order to increase its uptake.

Conclusion: Healthy lifestyle is fundamental to the best reproductive outcomes for the mother, father, child and possible future generations. There is a strong argument that health professionals have a responsibility to recommend lifestyle modification as the first line of treatment. This can be challenging and further research is required to determine the most effective means of achieving lifestyle change.

PSYCHOSOCIAL EPOSTER ABSTRACT

A COMPARISON OF MEN’S RESPONSES TO SURGICAL SPERM RETRIEVAL WITH WOMEN’S RESPONSES TO TRANSVAGINAL OOCYTE RETRIEVAL FOR IN-VITRO FERTILISATION (IVF).

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Aim: This study aimed to address the question, “How do men’s responses to surgical sperm retrieval compare to women’s responses to transvaginal oocyte retrieval?”

Method: A cross-sectional study of men and women attending a fertility clinic for IVF treatment during the five year period 2005 to 2009 inclusive. Male participants were all men who had undergone a first surgical sperm retrieval procedure. 180 women who had undergone a first TVOR during the same period were randomly selected. Participants were mailed a survey instrument.

Results: Of 268 surveys dispatched (88 to men, 180 to women), 114 returned surveys were complete enough for inclusion (42.5%). 34 completed surveys were received from men (38.6% completed response rate) and 80 from women (44.4% completed response rate). We found no difference in overall distribution of scores between men and women (p = 0.86). Whether the procedure yielded sperm did affect reported pain scores, although higher pain scores were reported when no sperm were obtained (p = 0.005) and when there was no pregnancy (p = 0.04). For female respondents, we found no differences in the distribution of reported pain scores whether the oocyte retrieval yielded a pregnancy or not (p = 0.28). There were no differences between men’s and women’s responses to the question, “how willing would you be to undergo a similar procedure again, if it was required?” (p = 0.23).

Conclusion: These data might provide useful information for clinicians and counsellors preparing men and their partners for IVF treatment where surgical sperm.

SCIENTIFIC EPOSTER ABSTRACTS

EARLY EMBRYO DEVELOPMENT AND IMPLANTATION ARE INDEPENDENT OF CULTURE MEDIA SYSTEM : A SIBLING OOCYTE STUDY

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Aim: To compare two commercially available IVF culture media systems with respect to their effects on early embryo development and implantation in a sibling oocyte study.

Method: Sibling oocytes (n=4050) from 590 cycles were included in the study. Following insemination (IVF or ICSI), oocytes were randomised into either culture media system A (SAGE) or culture media system B (Vitrolife). Oocytes were assessed for fertilization at 16-18 hours post insemination (hpi) and transferred from fertilization to cleavage medium. Fertilized oocytes were assessed for nuclear envelope breakdown (NEBD) at 23/24 hpi and embryo development at 42 hpi. Statistical analysis was by Fisher’s exact test.

Results: Fertilization rates (IVF and ICSI) were not significantly different between the groups. More embryos underwent early NEBD in group A (54.5 vs 50.4%; p<0.05) but there was a higher proportion of 4-cell embryos at 42 hpi in group B (52.0 vs 47.8%; p<0.05). Overall, the proportion of top quality day 2 embryos (4-cell/ early NEBD/ minimal fragmentation) was not significantly different (group A 24.2% vs group B 23.9%). Implantation rates in women under 40 were not significantly different (group A 24.2% vs group B 21.7%).
Conclusion: Early embryo developmental markers and implantation appear to be independent of the embryo culture media system.

USING IMAGE CAPTURE WHEN DOUBLE CHECKING IS REQUIRED WITH A SINGLE EMBRYOLOGIST: AN ECONOMIC OPTION

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Aim: The RTAC Technical Bulletin 24 September 2012 (www.fertilitysociety.com.au) requires that “double-checking must involve two independent checks. The checks must be made by the person responsible for the procedure and a second person, OR a machine system designed for sample identification (eg. Radio-frequency identification (RFID), barcode)”. The aim was to develop a method of recording sample identity checks using digital photography.

Method: Twenty one steps requiring sample identification and double-checks were reviewed and those which might occur when only a single embryologist was available were identified. The photographic method was developed for all stages that involved the use of labelled centrifuge tubes, culture dishes and vitrification carriers.

Results: An IPEVO Ziggi USB document camera with a multijointed swing arm with a weighted base was used above a heated plate for downward directed photographs. For tubes requiring vertical orientation the camera was rotated ninety degrees. The image was captured and imported into the patient’s file through the existing laboratory software and was subsequently checked and confirmed by a second embryologist when available. The increase in the amount of time required to document the identity check with image capture was measured.

Conclusion: Image capture recording of a sample identification check is a practical and economic alternative to RFID, use of barcodes or employment of a second embryologist and this is a useful adjunct in regional and small laboratories offering ART services.

STORAGE OF SPERM SAMPLES AT ROOM TEMPERATURE FOR DNA FRAGMENTATION TESTING

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Aim: To evaluate the suitability of DNAgard™ for the extended storage of sperm at room temperature prior to DNA fragmentation testing.

Method: Fresh and frozen sperm samples with known low and high DNA fragmentation levels were incubated over a 48 hour period in DNAgard™. Control samples were incubated in Human Tubal Fluid medium (HTF). Sampling was done at 0, 24 and 48 hrs to evaluate DNA fragmentation index (DFI) by Sperm Chromatin Structure Assay (SCSA).

Additionally, three semen samples forming part of the national sperm DNA fragmentation EQAP were incubated for 5 days at room temperature in DNAgard™ and HTF respectively. These samples were shipped at approximately 2 to 5°C, to laboratories in Australia and Canada that were undertaking analysis of frozen EQAP samples. DNA fragmentation was determined over 3 months (EQAP 2013-02, EQAP 2013-03, EQAP 2013-04).

Results: No sperm motility was observed in any of the specimens after incubation in DNAgard™. No increase in sperm DNA fragmentation was found after incubation in DNAgard™ over 24 hrs for specimen with either low or high DNA fragmentation. The DFI of samples forming part of the national EQAP correlated well with DNAgard™ treated and transported specimen: EQAP 2013-02=3.29% vs DNAgard™ 2013-02=3.63%, EQAP 2013-03=53.7% vs DNAgard™ 2013-03=56.4%, EQAP 2013-04=3.1% vs DNAgard™ 2013-04=4.02%.

Conclusion: DNAgard™ is toxic to sperm and therefore cannot be used to store sperm for future clinical use. DNAgard™ stabilized sperm DNA for 5 days at room temperature for DNA testing. DNA fragmentation correlated well between sperm shipped on dry ice and transported cooled in DNAgard™. DNAgard™ could serve as a suitable, cost effective alternative for storage and transport of sperm for DNA testing.

CAN THE DEGREE OF BLASTOCYST EXPANSION AT WARMING AND TRANSFER PREDICT PREGNANCY OUTCOME?

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Aim: To determine whether the % expansion of day 5 and day 6 vitrified blastocysts at warming and transfer, will predict clinical pregnancy.
Method: All surplus embryos at PIVET Medical Centre are cultured routinely to Day 6. Blastocysts with a grade 3BB or better (Gardner’s Scale) on Day 5 or Day 6 are cryopreserved using the Cryotop method of vitrification.

Subsequent FET cycles are always SET under a HRT regimen and involve warming of the blastocysts about 1 hour prior to transfer.

The % expansion of the blastocele cavity at warming and just before embryo transfer was observed and recorded.

From 2012, Day 5 and Day 6 blastocysts had blastocele expansion measured and recorded at warming (n=148) and at the time of transfer (n=159).

Results: Blastocysts that were >50% expanded at warming were more likely to result in clinical pregnancy (52% vs 36%).

Blastocysts that had expanded to >50% by the time of transfer were twice as likely to result in clinical pregnancy (54% vs 27%).

Conclusion: Measuring the % expansion of the blastocele cavity at the time of warming, but more importantly at the time of embryo transfer, may predict clinical pregnancy outcome.

THE EFFECTS OF VAGINAL LUBRICANTS ON SPERM FUNCTION: AN IN VITRO ANALYSIS

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Aim: The aim of this research was to compile a list of “sperm friendly” lubricants by analysing sperm motility, vitality and DNA fragmentation following treatment with commercially-available lubricants.

Method: Ten semen samples were obtained for the study from patients attending a fertility clinic. Following preparation, motile sperm fractions were incubated with different lubricants (10%) for 30 minutes at 37°C to mimic the temperature inside the female reproductive tract. Sperm motility, vitality and DNA fragmentation were then assessed to determine the effects of the lubricants on sperm function and DNA integrity.

Results: Nine lubricants were investigated including Sylk™, Conceive Plus®, glycerol, Johnson’s® baby oil, SAGE® culture oil, Yes®, Forelife®, MaybeBaby® and Pre-seed®. The lubricant which resulted in the highest sperm vitality was Pre-seed® and the lowest was Forelife™. When motility was analysed, Pre-seed® resulted in the highest and Sylk™ resulted in the lowest percentage of progressively motile spermatozoa in the sample. However, a sperm chromatin structure assay used to detect DNA damage in situ revealed that there were no significant effects on of lubricant exposure on DNA integrity.

Conclusion: Pre-seed® was clearly the lubricant of choice, with Conceive Plus® a close second, due to the significantly better motility and vitality results obtained. There was no evidence that vaginal lubricants induced DNA damage in spermatozoa.

IMPLEMENTATION OF AN ELECTRONIC WITNESS SYSTEM INTO AN ESTABLISHED IVF LABORATORY.

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Aim: Identification remains one of the highest areas of risk within the IVF clinic. In line with the RTAC Technical Bulletin for Patient and Sample Identification, double witnessing systems must be standard in all clinics with independent checks by either a second person (manual) or machine (electronic). System must provide accountability and traceability of critical identification points while reducing factors known to increase chance of misidentification. Our aim was to implement an electronic witnessing system into the laboratory to compliment and improve established manual witnessing procedures.

Method: The commercial R1 IVF Witness system utilizing Radio Frequency Identification technology was implemented alongside manual witnessing. Modifications were made to the electronic database to match existing witness identification procedures.

Results: A process map was established for each procedure where a manual or electronic witness would be utilized. The electronic witness successfully replaced defined steps within procedures minimizing interruption to embryologists and work flow. Manual witnessing continued to be used alongside the primary scientist and the electronic system for critical risk areas. For an average patient IVF/ICSI cycle, prior to the electronic system, there were 27 identification points of which 25 required a manual double check. With the electronic system 14 require a manual double check and 13 now use the electronic system.

Conclusion: The electronic witness system can successfully replace defined manual witness checks, significantly reduce number of interruptions to the embryologist, minimize risk and provide complete accountability and traceability of laboratory identification procedures with the ability to monitor error rates and cause.
THAW AND CULTURE OF CLEAVAGE STAGE EMBRYOS TO BLASTOCYST AND TRANSFER SIGNIFICANTLY INCREASES THE PREGNANCY AND LIVE BIRTH RATE.

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Aim: To compare pregnancy rates between the transfers of post thaw cleavage stage embryos cultured for 2-3 hours with transfer of blastocyst obtained from culture of post thaw cleavage stage.

Method: In this retrospective study, 117 cases were evaluated; all these patients had one or more cleavage stage embryos frozen in their stimulated cycle by controlled rate (slow) freezing protocol. In their frozen embryo cycle (FEC), patients were offered either thaw and culture to blastocyst (TCB Group) of their frozen embryos cultured for at least 2 days, or have their cleavage stage embryos thawed and transferred (TET Group) after a culture of only 2-3 hours. In the TCB group there were 29 cases and in the TET group there were 88 cases during the same period. All the patients in this study had a natural cycle; ovulation was determined by monitoring the blood hormonal profile. The thaw and transfer of embryo or blastocyst was scheduled the day ovulation was predicted.

Results: Overall in the TCB group where blastocyst were transferred compared to TET group where cleavage stage embryos were transferred, the ongoing clinical pregnancy rate (37.9% vs 19.4%), live birth rate (37.9% vs 18.2%) and implantation rate (40.7% vs 20.0%) were significantly higher.

Conclusion: Culture of post thaw cleavage stage embryos to blastocyst improves embryo viability, implantation rate, clinical pregnancy rate and live birth rate in patients undergoing a frozen embryo transfer cycle.

CFTR MUTATION SCREENING IN MALE ART PATIENTS

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Aim: To identify the CFTR mutation carrier rate in male partners of infertile couples.

Method: 1968 male patients were offered CFTR (Cystic Fibrosis Transmembrane Receptor) mutation screening. CFTR mutations not only cause clinical Cystic Fibrosis (CF), the most common deleterious single gene disorder in those of Northern European ancestry, but the mutations are also associated with infertility. By extracting DNA from blood samples and by analyzing the 30 most common CFTR mutations, we can calculate the CFTR mutation carrier rate in male patients presenting for investigation of infertility.

Results: The CFTR mutation carrier rate in this cohort is 1 in 15.1 (6.61% of patients screened 95% C.I. +/- 1.1%). This result includes the CF disease causing mutations and the infertility related mutation R117H. This cohort carrier rate is significantly increased over the background Australian population rate of 1 in 25 to 1 in 30. Without R117H, the carrier rate is 1 in 18 (5.55% of patients screened 95% C.I. +/- 1.02%). 11 different CFTR mutations were detected in this cohort.

Conclusion: CFTR mutations are identified at a significantly increased rate in male patients presenting for infertility treatment compared to the Australian population background rate of 1 in 25 to 1 in 30. Therefore, it would be advisable to offer all male patients CFTR mutation screening. In offering CFTR screening, not only are the mutations detected that are associated with infertility but CF carrier couples are also identified and treatment pathways can be offered to avoid CF affected children.

A COMPARISON OF EARLY DEVELOPMENTAL MARKERS IN HUMAN EMBRYOS FERTILIZED BY ICSI AND STANDARD IVF, USING TIME-LAPSE MONITORING

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¹ Melbourne IVF and ² Reproductive Services, Royal Women’s Hospital, Victoria

Aim: To compare the timing of early events in human embryos generated by ICSI and standard IVF, using time-lapse monitoring.

Method: Human oocytes inseminated using short insemination standard IVF (n=97) or ICSI (n=137) were cultured individually in the Embryoscope™ and timing of fertilization and early embryo development were recorded. The timing of nuclear envelope breakdown (NEBD) and cleavage to the 2-cell, 3-cell and 4-cell stage during the first two days of development in vitro were compared for ICSI and standard IVF embryos.

Results: The median time interval between insemination and NEBD was reduced in ICSI embryos compared to those generated by standard IVF (23.9 h versus 24.9 h). However, the time between NEBD and cleavage to the 2-cell stage was shorter for IVF embryos compared to ICSI embryos (2.4 h versus 2.8 h, p<0.001). Further, the time interval between cleavage from 2-cell to 3-cell...
was reduced in IVF embryos relative to ICSI embryos (11.3 h versus 12.0h, p<0.05). The median time between the 2-cell and 4-cell stage was 11.6 h for IVF embryos and 13.4 h for those fertilized by ICSI (p<0.001)

**Conclusion:** Using time lapse monitoring, we found that ICSI embryos undergo NEBD sooner after insemination than those generated by standard IVF. However, the time between subsequent cleavage divisions is increased in ICSI embryos compared to those generated from standard IVF. Time lapse monitoring is a powerful tool for accurately identifying these differences.

**EFFECT OF MALE AGE ON THE INCIDENCE OF SPERM ANEUPLOIDY**

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**Aim:** Previously we have demonstrated slower achievement of embryo developmental milestones and decreasing embryo morphology with increasing levels of aneuploidy in the insemination sperm. We further recommended that sperm aneuploidy testing may be a worthwhile investigation in couples who consistently produce embryos with substandard morphology or growth rates. Mice have shown a significant increase in sperm disomy with age but the evidence in the human is less clear. This study reports the relationship of age with sperm aneuploidy on greater subject numbers and a wider chromosome probe set.

**Method:** 443 male partners in infertile relationships were subjected to sperm aneuploidy testing using five-probe FISH for Chromosomes 13, 18, 21, X and Y. 2000 sperm were evaluated in each case. Sperm were scored for the presence or absence of any probe i.e. for disomy and nullisomy. Hybridization efficiency was 99.8%. The results were assessed against patient age. Correlation was assessed by Pearson’s coefficient using SPSS v.21.

**Results:** For the 443 cases there was a very weak positive correlation between male age in years and the % level of sperm aneuploidy (r=0.179, n=443, p=0.001). When the results were assessed for the % with sperm aneuploidy > 3% for each year of age there was a moderate correlation between male age in years and %>3% (r=0.686, n=31, p<0.001).

**Conclusion:** The study reveals an increased incidence of raised levels of sperm aneuploidy with increasing male age. In addition to being a worthwhile investigation in couples who consistently produce embryos with substandard morphology or growth rates and recurrent implantation failure, sperm aneuploidy testing may also be of help in cases where male age is approaching 40 years.

**DECREASE OF DNA SPERM FRAGMENTATION IN SPERM SELECTED BY MAGNETIC ACTIVATED CELL SORTING (MACS) IN SAMPLES WITH CLINICAL PURPOSES**

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¹Andrology laboratory, Reproductive Medicine laboratory, Unit of Reproductive Medicine, Clinica Las Condes, Chile, ²Unit of Reproductive Medicine, Clinica Las Condes, Chile, ³Institute of Maternal and Child Research, School of Medicine, University of Chile.

DNA sperm fragmentation can have negative consequences for clinical outcomes in couples undergoing assisted reproductive technologies (ART). Sperm separation techniques are an important step in sperm selection for ART. The Magnetic Activated Cell Sorting selection of sperm is a novel method that separates sperm by density gradient and molecular filtration to remove apoptotic sperm, which is associated to DNA damage. A decrease of DNA sperm fragmentation could improve ART outcomes in male factor infertility.

**Aim:** Assessing the decrease of DNA sperm fragmentation with the use of MACS. Identify any alterations in motility using molecular filtration with MACS.

**Method:** Semen samples were collected from 12 males. Traditional sperm analyses were performed including the evaluation of DNA sperm fragmentation using TUNEL in raw samples and filtrated samples. Sperm motility was analyzed in raw samples, motile sperm separated by gradient density and MACS.

**Results:** A decrease of 72.1% of DNA sperm fragmentation assessed by TUNEL (p<0.05) in filtrated samples (4,42%±0,66) compared to raw semen (15,83%±1,76). There were no statistical differences in sperm motility between density gradients (70,42%±5,74) and Annexin V columns (70,33%±7,29).

**Conclusion:** Our results show that the use of MACS removes DNA sperm fragmentation properly in raw semen without effecting sperm motility. These results suggest that the clinical application of MACS can assist in the removal of DNA fragmented sperm from a semen sample.

Project CLC PI2011-013

**FRESH ET. DOES THE DAYS REALLY MATTER?**
Aim: To look into the credibility of various embryo transfer (ET) days for fresh cycles and analyse if these variations can give rise to significantly better clinical pregnancies (CPR) and livebirth.

Method: Data of fresh ET (n=4908) with embryos derived from Intracytoplasmic Sperm Injection (ICSI) between YR2008 to YR2011 was extrapolated. Data was sorted into 3 main groups, according to the day the fresh ET was done; Day 2 (D2), Day 3 (D3) and Day 5 (D5). Their fertilization, cleavage, embryo usability, CPR and livebirth rates were analysed. Data was subjected to chi-square test (p<0.05).

Results: Tabulated data as follows. (Table 1)

<table>
<thead>
<tr>
<th>Day of transfer</th>
<th># of cases</th>
<th>Fert rate %</th>
<th>Cleavage rate %</th>
<th>CPR %</th>
<th>livebirth rate %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 2</td>
<td>3848</td>
<td>74.95</td>
<td>97.14</td>
<td>38.5</td>
<td>29.42</td>
</tr>
<tr>
<td></td>
<td>3803/38031</td>
<td>27688/28503</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td>690</td>
<td>76.23</td>
<td>98.21</td>
<td>36.4</td>
<td>28.4</td>
</tr>
<tr>
<td></td>
<td>5196/6816</td>
<td>5103/5103</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 5</td>
<td>40</td>
<td>81.5</td>
<td>99.36</td>
<td>52.5</td>
<td>40.0</td>
</tr>
<tr>
<td></td>
<td>621/762</td>
<td>617/617</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Outcome of Fresh ET on D2 vs D3 vs D5.

Evidently, there was significant differences (p=0.0001) in fresh embryo transfers done between D2, D3 and D5 in terms of all parameters outcomes studied.

Conclusion: Blastocyst (BL) culture enables excellent natural selection of the most competent embryo. Although embryo usability is significantly lower, ‘survival of the fittest’ enables best clinical pregnancy outcome with significantly higher livebirth. More cases need to be done to confirm our findings as data for BL culture is rather small. This is in line with our centre’s move towards single embryo transfer.

COMPARISON OF DAY 5 AND DAY 6 VITRIFIED BLASTOCYST USING THE CRYOTOP METHOD AND HORMONE REPLACEMENT THERAPY (HRT) TREATMENT

Aim: To compare the survival and clinical pregnancy rates of blastocysts vitrified on Day 5 to Day 6.

Method: All surplus embryos at PIVET Medical Centre are cultured routinely to Day 6. Blastocysts with a grade 3BB or better (Gardner’s Scale) on Day 5 or Day 6 are cryopreserved using the Cryotop method of vitrification.

Subsequent FET cycles are always SET and involve the patient undergoing PIVET’s unique HRT protocol with all blastocyst warming and transfers occurring on the 6th day of progesterone supplementation.

A blastocyst is considered to have survived if >50% of the cells are intact and clinical pregnancy is defined as the presence of an intrauterine sac(s) or fetal heart detected by ultrasound at 7 weeks pregnancy.

From 2011 to 2012, Day 5 (n=143) and Day 6 (n=85) blastocyst transfers were compared.

Results: Day 5 and Day 6 blastocysts survived 95% and 99% of the time respectively. Clinical pregnancy was observed in 55% of Day 5 transfers and 47% of Day 6 transfers across all ages which was not significantly different following Chi single analysis (p=0.38).

Conclusion: Using the Cryotop vitrification system and PIVET’s HRT regimen, a similar survival and clinical pregnancy rate can be obtained.

DOES THE DEGREE AND SPEED OF BLASTOCOELE RE-EXPANSION AFTER CRYOPRESERVATION AND WARMING CORRELATE WITH PREGNANCY RATES: A RETROSPECTIVE COHORT STUDY

Aim: To determine whether the degree and speed of blastocoele re-expansion following cryopreservation and warming correlates with pregnancy rates. To determine that the absence of blastocoele re-expansion is a marker of a non-viable embryo.

Method: Design

Retrospective cohort study

Anthony Marren¹, ², Ying Tan³, ², Bradley De Vries³, ⁴, Mark Livingstone¹, ², And Mark Bowman¹, ²

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⁴ Department of Obstetrics, Gynaecology and Neonatology, The University of Sydney, NSW, Australia.
Setting: Hospital-affiliated assisted fertility unit.

Patients: All patients who had undergone a frozen embryo transfer cycle with a single blastocyst at Royal Prince Alfred Hospital, Sydney Australia between 1 January 2007 and 31 December 2011 were considered eligible (n = 973). Of these, 216 cycles were excluded. This resulted in 757 frozen embryo transfer cycles suitable for analysis. Clinical and embryology notes were retrieved. Details regarding patient demographics, stimulation cycle from which embryos were derived, frozen embryo transfer cycles, embryology, and pregnancy outcomes were recorded.

Interventions: None

Main outcome measures: The presence of a fetal heart beat at the 6 – 7 week dating ultrasound and live birth.

Results: Female age was the only clinical factor that had a significant inverse association with pregnancy outcome (p = 0.03). Fertilisation method (p = 0.02), embryo type at cryopreservation (p = 0.005), embryo grade at cryopreservation (p < 0.0001), percentage of cell survival post thaw (p < 0.0001), and the degree of re-expansion (p = 0.003) were the IVF and embryology factors significantly associated with pregnancy outcome. All of the above factors, apart from embryo type at cryopreservation, were included in the final logistic regression model after non-confounders were removed. A predictive model was created in order to individualise the probability that the transfer of a given embryo would result in clinical pregnancy.

Conclusion: The degree and speed of blastocoele re-expansion post cryopreservation and subsequent warming can be used in conjunction with other parameters (female age, fertilisation method, embryology at freezing (type and grade), and percentage of cell survival post thaw) to predict pregnancy outcome.

CAN WE TRUST MAKLER CHAMBERS?

Phillip Matson1,2, Melissa Stemp1,2, Kai Lin Yap1, Bridget Blackwell1, Tara Cawley1, Yanhe Liu1,2, Kelli Peirce1,2

1 Fertility North, Joondalup, Australia, 2Edith Cowan University, Joondalup, Australia

Aim: To (i) evaluate our Makler chamber in routine use and determine its accuracy with a variety of sperm and bead suspensions, and (ii) review the place of Makler Chambers in today’s ART laboratory.

Method: A Makler chamber in routine use was compared against an improved Neubauer haemocytometer. Concentration measurements were made using fresh semen, semen treated by heat (90°C for 60 minutes to immobilise the sperm), and latex beads at a range of defined concentrations from 5–50 M/ml (EQASRM, Perth, WA). Bias was presented for the chambers, and comparisons made with paired t-tests.

Results: Sperm concentration was determined in fresh semen samples (n=18, range 2.2–102.5 M/ml). The Makler was significantly higher (66.0±9.7 M/ml) than the haemocytometer (33.8±7.0 M/ml; p<0.0001), with an average bias of +162.2±28.5%. Heat treating semen (n=9, range 3.7–102.0 M/ml) showed the Makler (38.5±12.0 M/ml) to be similar (p=0.055) to the haemocytometer (34.7±10.2 M/ml), with a bias of 13.8±6.0%. Latex beads showed the haemocytometer have a bias of 7.4±4.5% against the target value of the beads but the Makler had a bias of 25.1±8.1%, and there was a significant difference in concentration between the two chambers (p=0.005).

Conclusion: The Makler chamber was still being used to assess washed sperm preparations due to its ease of use, but was subsequently shown to have a tendency to overestimate, particularly with motile samples and the beads. Laboratories using Makler chambers should pay particular attention to their performance, and seriously consider the role of such chambers in the laboratory.

REPRODUCIBILITY OF ANTI MULLERIAN HORMONE (AMH) RESULTS IS IMPROVED BY PRE-MIXING SAMPLES WITH ASSAY BUFFER WHEN USING THE BECKMAN COULTER GEN II ASSAY

Mrs Monika McShane1,2, Dr Xuguang Han1, Mrs Renee Sahertian1, Dr Chris White1, Prof William Ledger2

1Endocrinology Department, SEALS, Randwick, 2School of Obstetrics and Gynaecology, UNSW, Sydney

Aim: Recent studies have shown that sample storage conditions may affect the reproducibility of AMH results when using the Gen II assay. In this study we aimed to confirm previous findings and to investigate whether modifying the current assay produces more consistent AMH results.

Method: 5mls of blood was collected and processed without delay from 13 normal healthy volunteers. Serum was aliquoted and stored at 3 different temperatures. Samples were assayed at time 0,4,8,12,24,48 hours and 1 week of storage at each temperature. Samples were also collected from 31 fertility subjects and assayed fresh and after 2 weeks storage at -20°C. These samples were also assayed with a modified method (samples premixed with buffer prior to assay) both fresh and after 2 weeks storage at -20C.

Results: In normal women, AMH concentrations remained unchanged in serum stored for up to 8 hours at RT, -20C and -80C. At RT, levels started to rise by 24 hours, increasing by up to 29% of the time 0 value by 48 hours and 26% after 1 week. There was no significant change when samples were stored one week at -20C or
In the fertility group, samples after 2 weeks at -20°C had an average 9% decrease in AMH values with CV=14.3%. There was an average 79% increase in AMH values when modified method was used and the increase is consistent after storage (5% variation with CV=5%).

**Conclusion:** Pre-mixing samples with buffer gives higher and more consistent AMH results regardless of storage conditions.

**USE OF REFROZEN DONOR SPERM IN IVF AND ICSI**

Andrew Noble 1, Timothy Rabbitt 1, Jacquelyn Irving 1, Jeremy Osborn 1, Keith Harrison 1

1 Queensland Fertility Group, Brisbane 4000, Australia

**Aim:** Frozen sperm has been used in infertility treatments for many decades, with numerous reports on its safety and efficacy. However, due to the limited number of donors available and the high associated costs, many patients have requested that the use of frozen sperm be minimised and that samples not required for insemination are refrozen. This study reviews the outcomes of cycles using refrozen donor sperm.

**Method:** Retrospective analysis of 893 cycles between 2008 and 2012 where donor sperm imported from the USA was used.

**Results:** In those cycles where donor sperm was used for the first attempt, 73.8% of cycles were IVF (n=307) compared to 20.9% undertaking ICSI (n=87). 5.3% combined IVF and ICSI to achieve fertilisation (n=22). When donor sperm was used in subsequent cycles (n = 477), the use of ICSI increased to 42.4%, as all refrozen sperm (n = 86) routinely used ICSI.

The pregnancy rates from the ICSI cycles were comparable between first and subsequent cycles (18.4% vs 20.7%), when no re-frozen sperm was used. However these outcomes were markedly lower than those using IVF on either the first or subsequent cycles (33.9% and 26.9% respectively). The pregnancy rate in cycles using refrozen sperm was 17.4% (mean patient age 38.8yrs), which was comparable to the outcomes from the ICSI cycles using a whole vial but significantly lower than the IVF cycles.

**Conclusion:** Refreezing donor sperm is a viable option for patients wishing to maximize the use of a single vial of sperm. To date, ICSI has been used for most patients using refrozen sperm regardless of the post thaw survival. Future research will determine whether satisfactory fertilization and pregnancy rates using IVF can be obtained with refrozen sperm.

**COMPARISON OF THE SEAFORIA® SPERM PREPARATION SYSTEM WITH DENSITY GRADIENT SPERM PREPARATION**

Timothy Rabbitt 1, Simon Mcdowell 1, Jacquelyn Irving 1, Keith Harrison 1

1 Queensland Fertility Group, 225 Wickham Terrace, Brisbane 4000, Australia

**Aim:** To compare the Seaforia™ sperm preparation system with a density gradient centrifugation method that is routinely used in the preparation of semen samples for IVF.

**Method:** Semen samples with varying sperm concentrations and motility that had been deemed suitable for IVF, were divided into aliquots. One aliquot was prepared using the laboratory’s standard density gradient centrifugation protocol. A second aliquot was prepared with the Seaforia™ sperm preparation system using the protocol supplied by the manufacturer.

Final sperm preparations were assessed for percentage of motile sperm recovered, sperm concentration and total sperm motility.

General comments regarding the ease and suitability of the protocol to laboratory staff were collected.

**Results:** Two semen samples were excluded from the study as the Seaforia™ system was unable to be utilised due to the viscosity.

Of the 38 samples assessed using density gradient centrifugation and Seaforia™ system, there was no significant difference in the motile sperm recovery rate (Density Gradient 43.89% vs Seaforia™ 46.74%). Similarly there was no significant difference between the total sperm motility in the final two preparations (>90% motility). Nor was there a significant difference in the mean concentration of the final sperm preparation (Density Gradient 14.6 Million/mL vs Seaforia™ 15.6 Million/mL).

**Conclusion:** The Seaforia™ sperm preparation system yields equivalent quality sperm to density gradient centrifugation. Sperm that is highly viscous must be pretreated prior to processing using the Seaforia™ sperm preparation. Seaforia™ is easy to use and is a valid alternative to density gradient centrifugation when used for the preparation of samples for IVF/IUI.

**THE EFFECT OF THE REPRODUCTIVE STATUS OF WOMEN UPON THE SERUM CONCENTRATIONS OF THREE MARKERS FOR BREAST CANCER, CA15-3, CA72-4 AND S-100.**

Melissa Stemp 1, 2, Peter Roberts 2, Phillip Matson 1, 2, Allison Mcclements 1, Patricia Sykes 1
Aim: To determine whether the reproductive status of healthy women affects the serum concentrations of biochemical markers for breast cancer.

Method: Women attending Fertility North for fertility treatment had blood collected as part of their management; 10 women gave 73 blood samples throughout the natural menstrual cycle, 11 women (64 bloods) during an IVF/ICSI cycle and 14 women (86 bloods) for early pregnancy monitoring up to 7 weeks gestation. Serum was stored at -80°C until all bloods from that individual’s cycle were collected and then CA15-3, CA72-4 and S-100 concentrations were measured on the Roche Cobas e411 Automated Analyser in one batch.

Results: All samples at different stages of reproduction had detectable levels of CA15-3 and S-100. 60% of samples in natural menstrual cycles, 54.5% of samples in stimulated cycles and 57% of early pregnancies had detectable levels of CA72-4. One sample from each group measured above the clinical cut-off value for CA15-3 of 25 U/mL with the highest value measured at 29.5 U/mL. The CA 15-3 concentrations (mean ± sd) remained relatively constant being for 15.70 ± 5.20 U/mL in natural cycles, 15.44 ± 6.51 U/mL in IVF cycles and 14.68 ± 5.78 U/mL in early pregnancy. The clinical cut-off values for both CA72-4 and S-100 are variable and transferability of expected values to individual laboratories can be considerably different. CA72-4 concentrations (mean ± sd) are 2.38 ± 2.67 U/mL in natural cycles, 2.59 ± 2.79 U/mL in IVF cycles and 3.39 ± 3.98 U/mL in early pregnancy. S-100 concentrations (mean ± sd) are 0.05 ± 0.02 µg/L in natural cycles, 0.06 ± 0.09 µg/L in IVF cycles and 0.05 ± 0.01 µg/L in early pregnancy.

Conclusion: Detectable blood levels of CA15-3, CA72-4 or S-100 are found in healthy women. However, the low incidence of results above the clinical cut-offs does seem to be affected by the reproductive status of the women.

Method: Assays were run on the Roche Cobas e411 automated analyser. Internal QC samples were included in each run, being either (a) pooled serum from healthy women of reproductive age, and (b) respective Roche and Bio Rad QCs. Coefficients of variation (CV) were calculated as standard deviation *100%/ mean.

Results: Pooled serum showed within-batch CVs of 2.48% for CA125, 2.07% for CA15-3, 2.03% for CA19-9, 4.68% for CA72-4, 2.30% for CYFRA21-1, 1.70% for free hCG, 1.65% for NSE, 2.25% for PAPP-A, 8.27% for PCT; 2.79% for S-100 and 12.94% for tPSA. Roche tri-level control material showed between-run CVs of <6.2 for CA125, <7.5 for CA15-3, <5.8% for CA19-9, <20.5% for CA72-4, <6.8% for CYFRA21-1, <3.7 for NSE, <9.3% for tPSA, <7.16 for free hCG, <20.09% for PAPP-A. BioRad trilevel controls showed between-run CVs of <5.7% for CA125, <7.0% for CA15-3; <6.0% for CA19-9, <19.2% for CA72-4, <5.9% for CYFRA21-1, <7.4% for NSE, <7.5% for S-100, and <13.4% for tPSA. Roche bi-level control material showed between-run CVs of <5.3% for PCT and <6.0% for S-100.

Conclusion: The assays tested show good within-batch variability. However, between-batch variability can be high for some particularly at low concentrations. Analysis of longitudinal samples from individual women should be made in one run where possible.

PROSTATE SPECIFIC ANTIGEN (PSA) MEASURED IN WOMEN AT DIFFERENT STAGES OF THE REPRODUCTIVE CYCLE.

Melissa Stemp1, 2, Peter Roberts3, Neil Collier, Allison Mcclements4, Patricia Sykes5, Phillip Matson1, 2

Aim: To (a) measure serum PSA concentrations in women at different stages of reproduction and (b) determine if levels vary during natural and stimulated cycles and in early pregnancy.

Method: Ten women gave 73 blood samples throughout the natural menstrual cycle, 11 women (64 bloods) during an IVF/ICSI cycle and 14 women (86 bloods) for early pregnancy monitoring up to 7 weeks gestation. Serum was collected throughout the ovarian cycle and during early pregnancy and stored at -80°C. PSA concentrations were measured on the Roche Cobas e411 Automated Analyser in one batch. Data was analysed with a generalised linear model with a gamma function to account for the non-normal data.

Results: Only 60% (6/10) of women in the natural cycle, 91% (10/11) of women in IVF/ICSI and 64% (9/14) of the pregnant women had detectable levels of PSA. Levels were low during natural and stimulated cycles showing more variability between women than at different stages of the cycle. The concentration of PSA rose
steady from 0.005 ± 0.0035 at 4 weeks to 0.01 ± 0.0054 at 7 weeks, with an average overall increase of 0.0015 ± 0.0004ng/ml per woman (t=3.29, p < 0.01).

Conclusion: Although associated with the prostate gland in men, PSA can be detected in the serum of a number of women in different reproductive states. Whilst showing little change during ovarian cycles, PSA in the serum of pregnant women doubled from 4 to 7 weeks gestation. The source and role of PSA in early pregnancy warrants further investigation.

THE CHANGES IN SERUM CA-125 AND PAPP-A DURING NATURAL AND STIMULATED OVARIAN CYCLES AND EARLY PREGNANCY.

Melissa Stemp1, 2, Peter Roberts2, Neil Collier2, Allison Mcclements1, Patricia Sykes1, Phillip Matson1,2

1 Fertility North, Joondalup, Australia, 2Edith Cowan University, Joondalup, Australia

Aim: To use new generation immunoassays to re-visit changes in serum CA-125 and PAPP-A in women at different stages of reproduction.

Method: Ten women gave 73 blood samples throughout the natural menstrual cycle, 11 women (64 bloods) during an IVF/ICSI cycle and 14 women (86 bloods) for early pregnancy monitoring up to 7 weeks gestation. Serum was collected throughout the ovarian cycle and during early pregnancy and stored at -80°C. CA125 and PAPP-A concentrations were measured on the Roche Cobas e411 Automated Analyser in one batch. Data was analysed with a linear mixed effects model and data log transformed before analysis.

Results: CA125 concentrations in natural and stimulated ovarian cycles were similar (p=0.073) but results were significantly influenced by the stage of the cycle (p=0.021), being lowest in the mid-follicular phase (13.5±1.7U/mL) and highest in the mid-luteal phase (22.9±3.4U/mL). During early pregnancy there was a significant effect of the stage of gestation (p=0.044) with peak levels of CA125 occurring around 5.5 weeks (58.0±23.5U/mL). There was no evidence of a change in the mean level of PAPP-A during the ovarian cycles (t=0.44, p=0.65) with values ranging between 6.0-9.3mlU/L. However the natural cycle values were 2.41±0.58mlU/L higher (t=4.10, p=0.003). During early pregnancy PAPP-A concentrations increase from 6.5±0.6mlU/L at 4 weeks to 125.4±22.1mlU/L at 7 weeks.

Conclusion: During the ovarian cycles there are phase dependent changes in CA125 but not PAPP-A. However, in early pregnancy the CA125 concentration peaks around 5.5 weeks gestation at a time when the PAPP-A is beginning to rise.

DOES QUALITY MATTER? A RETROSPECTIVE ANALYSIS OF SINGLE VITRIFIED BLASTOCYST TRANSFERS.

Stephanie Sullivan1, Kelli Sorby1, Tiki Osianlis1,2

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Aim: To investigate post-thaw parameters on vitrified single blastocyst transfers and their effect on clinical pregnancy rate.

Method: Retrospective analysis of vitrified blastocysts warmed at Monash IVF in 2012. Clinical pregnancy rates (PR) were examined with respect to day of vitrification (5 or 6), blastocyst stage and grade at time of vitrification, percentage survival and re-expansion at time of transfer. Statistical analysis used Fisher’s exact test with p<0.05 considered significant.

Results: A total of 1784 vitrified/warmed single blastocyst transfers were examined. PR increased with degree of blastocyst survival, with >70% survival resulting in a significantly higher PR than <70% survival, 37.6% vs 17.0% (p=0.0001). Blastocysts frozen on day 5 showed a significantly higher PR than day 6, 37.4% vs 30.7% (p=0.0228). ‘A’ grade embryos resulted in a significantly higher PR of 44.6%, compared with 37.1% and 31.0% for ‘B’ and ‘C’ grade respectively. Full blastocyst re-expansion at transfer resulted in a significantly higher PR of 43.9% compared with partial 35.8% or no expansion, which interestingly still showed a PR of 22.4% (p=0.0111). More advanced blastocyst stages resulted in higher PR (early-28.6%, expanding-39.5% and hatching-51.7%), with statistical significance between early blastocysts and all other stages. Not surprisingly, PR decreased as maternal age increased, from 39.7% in under 35s to 30.6% in over 40s (p=0.0065).

Conclusion: Good quality embryos with high degree of survival and expansion resulted in higher pregnancy rates. However, embryos with lower grade, less than 70% survival or no expansion prior to transfer still resulted in pregnancy rates justifying transfer.

RELATIONSHIP OF BLOOD GROUP WITH OVARIAN RESERVE AND RESPONSE TO SUPEROVULATION.

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Aim: It has been hypothesised that blood group O is associated with diminished ovarian reserve and that blood group A was protective of ovarian reserve, these relationships being independent of advancing age (1). Subsequently de Mouzon et al (2) were unable to demonstrate any significant relationship between ovarian reserve as assessed by AMH levels and either
ABO or Rhesus blood groups. The purpose of this study is to study further any relationship between blood group and both ovarian reserve and ovarian response.

**Method:** 545 patients undergoing 1044 cycles of ovarian stimulation for IVF/ICSI between January 2009 and March 2013 were assessed for their blood type, ovarian reserve as measured by AMH level and ovarian response as measured by units of FSH administered per oocyte retrieved. The mean number of oocytes recovered, fertilisation and clinical pregnancy rates were also compared.

**Results:** Proportions of group O, A, B and AB were 45.7, 37.4, 13.6 and 3.3% respectively. Mean AMH levels varied between the four blood groups, ranging from 18.81 ± 21.34 pmol/L in group B to 16.39 ± 17.64 in Group O, but were not significantly different. Similarly, there was no significant difference between the blood groups in the mean number of oocytes recovered per cycle, the mean IU FSH used per oocyte recovered, fertilisaiton rates or clinical pregnancy rates.

**Conclusion:** This study confirms the recently published paper by de Mouzon et al (2) and shows that there is no significant relationship between blood group and ovarian reserve as measured by serum AMH. Moreover, our results also show that blood groups do not differ in either the ovarian response to stimulation or to ART outcome.

**Reference**
(2) de Mouzon et al. (2012) Hum Reprod. 27:1544.

**Signalling Mechanisms in Human Ectopic Pregnancy: A New Approach to study of the Pathogenesis of Failed Implantation**

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**Aim:** to establish a new model for study of implantation failure in humans, and increase understanding of molecular events in signalling pathways occurring at the fetal-maternal interface.

**Method:** The Biobank of human Fallopian tubes allows open access to appropriately stored Fallopian tubes affected by ectopic pregnancy and a comparative group of intact Fallopian tubes. This can be used to study immunological and molecular regulation of human implantation.

**Key information:** Study of human implantation and the early stages of post-implantation embryogenesis has been limited by the lack of access to tissue due to the obvious ethical restrictions preventing collection of healthy intrauterine pregnancies. Available animal models do not accurately mimic the human process, and are costly and difficult to manage.

This project aims to address the lack of human samples for the study of trophoblast invasion, embryonic implantation and implantation failure. Study of angiogenic activity of the extravillous trophoblast might also help to understand malignant tissue invasion.

The development of a Biobank of Fallopian tubes from patients undergoing surgical treatment for ectopic tubal pregnancy, and healthy Fallopian tubes from women undergoing hysterectomy for benign indications will provide a dependable source of tissue for study of impaired fertility, implantation failure and miscarriage. This library of tissues and matched blood samples can be interrogated using a variety of molecular techniques to improve understanding of signalling mechanisms during implantation. Samples in the Biobank of human Fallopian tubes will be coupled to detailed, anonymised medical history, giving a full profile of clinical data for correlation with the laboratory findings.

**Conclusion:** Current status: the project was approved by the Human Ethics Research Committee in September 2012 and is being launched at the Royal Hospital for Women. Translational research using this model will help to delineate signaling mechanisms of implantation and implantation failure in human subjects.

**Comparison of outcome of fresh embryo transfer using frozen sperm retrieved by MESA, TESE and TESA**

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**Aim:** Testicular sperm aspiration (TEA), microepididymal sperm aspiration (MESA) & testicular sperm extraction (TESE) are surgical techniques used to treat azoospermic male patients. We compare the fertilisation, cleavage, clinical pregnancy (CPR) & live birth rate of fresh embryo transfer (ET) using frozen sperm retrieved from these surgical methods.

**Method:** Retrospective review done from April 1998 to June 2012 comparing fresh ET using frozen MESA (n=90), TESE (n=49) and TESA (n=8). Sperm retrieved is frozen and thawed for use in intracytoplasmic sperm injection (ICSI) on day of oocyte pick-up. Fertilisation check was performed at 16 to 18 hours after insemination, and cleavage check on day2 or day3 before ET. Data was subjected to Chi-square test (p<0.05).
**Results:** Table 1. Outcome of fresh ET with frozen MESA, TESE & TESA sperm.

<table>
<thead>
<tr>
<th></th>
<th>Fertilisation Rate (%)</th>
<th>Cleavage Rate (%)</th>
<th>CPR (%)</th>
<th>Live Birth Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MESA</strong></td>
<td>68.91 (729/1069)</td>
<td>94.65 (690/729)</td>
<td>37.78 (34/90)</td>
<td>26.67 (24/90)</td>
</tr>
<tr>
<td><strong>TESE</strong></td>
<td>60.39 (369/611)</td>
<td>90.24 (333/369)</td>
<td>26.53 (13/49)</td>
<td>22.45 (11/49)</td>
</tr>
<tr>
<td><strong>TESA</strong></td>
<td>49.80 (28/54)</td>
<td>89.29 (25/28)</td>
<td>37.50 (3/8)</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

Statistical differences were evident in fertilisation between MESA & TESE (p=0.0001), MESA & TESA (p=0.0187), and cleavage rate between MESA & TESE (p=0.0091). No statistical difference in pregnancy (p=0.3997) across the three methods. Live birth rate is not significantly different between MESA & TESE (p=0.7317). As the sample size for TESA is small, the significance of its live birth rate is still inconclusive.

**Conclusion:** There is no superiority between MESA & TESE. Further study needs to be done for TESA.