PROGRAMME

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The effect of cancer treatment on male fertility and sperm banking
Melanie Davies  
*Consultant Gynaecologist*  
*University College London Hospitals*  
Melanie is a consultant in Reproductive Medicine, with interests in the reproductive effects of cancer and chronic disease (the long-term follow-up service at UCLH has seen >2000 patients), premature ovarian insufficiency, and adolescent care.  
She set up the egg and embryo freezing 'emergency service' at UCLH, and supervised the sperm banking service (the largest in the UK). She initiated a national network 'Fertility Preservation UK' and chairs this British Fertility Society special interest group.  

**Talk title:** Late effects of cancer treatment  
Ovarian insufficiency, due to loss of oocytes, is one of the commonest long-term adverse effects of cancer therapies. There is a spectrum from low ovarian reserve causing menstrual problems to overt menopause. Besides typical vasomotor symptoms, mood changes, joint stiffness and sexual difficulties, there are long-term risks of osteoporosis, premature cardiovascular disease and possibly cognitive effects. Oestrogen replacement is the mainstay of treatment, and is recommended up to the age of natural menopause.  
The ideal type of oestrogen treatment is uncertain. Topical oestrogen may be needed in addition to systemic treatment. Infertility needs to be addressed by egg donation, although for many couples this is not possible. Some women have medical co-morbidities which impact on pregnancy, or previous pelvic radiotherapy prevents them carrying a pregnancy.  

**Key learning points**  
• Ovarian insufficiency has short and long-term adverse effects; infertility can be the most distressing outcome of cancer treatment  
• Oestrogen replacement is a long-term therapy and we need more data in young women  
• Develop a 'late effects' service to give optimal care through the reproductive life-course

Vicky Grandage  
*Consultant Haematologist with an interest in late effects*  
*University College Hospital, London*  
Dr Victoria Grandage has been a Consultant Haematologist at University College Hospital, London since 2007. She works with patients within the TYA age bracket with haematological disorders, predominantly malignant.  
Dr Grandage also has a special interest in late effects and consequences of treatment. She has led the development UCLH late effects service which is now one of the largest services for adult survivors of childhood cancer in the UK. She is a member of the CCLG late effects steering group and is involved in a number of projects nationally relating to fertility and late effects.  

**Talk title:** Cancer in young people, long term outcomes  
The incidence of cancer in the UK has increased year on year with over 80% of teenagers and young adults becoming long term survivors. The burden of late effects after childhood cancer is dependent on tumour, treatment and host-related factors, such as age at diagnosis, gender and genetic predisposition.  
Detailed knowledge of these has been gained from two important cohort studies one in the USA and one in the UK. At 30 years after a cancer diagnosis, the US Childhood Cancer Survivor Study (CCSS) reported 73% of patients had at least one chronic health condition; classified as severe, disabling or life-threatening in over 40%. Survivors therefore require lifelong holistic care focusing on the medical issues, psychosocial, educational and vocational implications of living beyond cancer.  

**Key learning points**  
• Definition and prevalence of late effects  
• Factors affecting the risk of late effects  
• Aims of late effects follow up

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Matt Tomlinson
Consultant Scientist, Person Responsible and Honorary Lecturer
Nottingham University Hospital

Matt Tomlinson spent 4 years (post-doc) helping to start up the first fertility centres in Shrewsbury, before moving onto Birmingham as Clinical Scientist, developing region-wide andrology services in a more academic setting. A move in 2004 to Nottingham University Hospital saw this interest develop, particularly in education, cryopreservation and more latterly automation in semen analysis and Matt is now PR at the regional NHS Fertility unit. He continues to have a teaching role on the Masters course in ART at Nottingham and has over 50 papers and chapters published in male fertility and assisted conception.

Talk title: The effect of cancer treatment on male fertility and sperm banking

‘Sperm banking’, male fertility preservation or ‘sperm storage’ are performed for a number of reasons but the majority of referrals are men undergoing some form of cancer therapy. Most of these are being treated for germ cell cancer or some haematological condition, yet referrals may originate from almost any department of the hospital. Those being treated with high dose alkylating agents such as cyclophosphamide, procarbazine, chlorambucil are most at risk from permanent sterility. The referral is often urgent (especially in leukaemia and paediatric cases) and the consent process is complex and must be done with care in order to comply with regulations. Training of staff in consent, risk, handling of patients and sample processing should be an essential part of any reproductive scientists role.

Samples must be assessed, screened (BBVs) and processed according to best practice and the cryopreservation procedures should be validated using post thaw sperm quality data. Extra precautions will be required during the COVID19 pandemic to minimise face to face contact and transmission risk, especially since COVID virus may be present in seminal fluid. Risk associated with long term storage is significant and centres need to control for risk to: staff, loss or damage to stored material, mis-identification of samples (recipient error) and overall risk to service from a catastrophic freezer failure.

Testicular and Hodgkin’s disease patients are most likely to demonstrate subfertility before therapy. Non-Hodgkins lymphoma and leukaemic patients have the highest rate of azoospermia post therapy at around 50%. However the overall azoospermia rate is less than 30% (Tomlinson et al, 2015). The literature demonstrates that utilisation rates are remarkable with most suggesting that significantly less than 10% of all stored material ever gets used in assisted conception. However, most also acknowledge that by its nature, fertility preservation is a necessarily wasteful process since the risk of permanent infertility is highly unpredictable.

Key learning points

- Fertility post chemotherapy is highly unpredictable so sperm banking is required in most cases as a precaution
- Overall azoospermia rates are less than 30% post cancer treatment but are highest in leukaemia and non Hodgkins lymphoma
- Utilisation of frozen material is often less than 10%
- Long term male fertility preservation is complex from a regulatory perspective and is associated with health and safety risk, significant risk of sample loss/damage and ultimately potential for litigation
- The need for high level staff training amongst reproductive scientists in this area should not be understated
Gillian Lockwood

Medical Director
Care Fertility, Tamworth

Doctor Gillian M Lockwood, BM BCh. MA (Oxon) D. Phil FRCOG has been Medical Director at Care Fertility Tamworth (formerly Midland Fertility) since 2000. Previously she was Senior Clinical Research Fellow at the Oxford Fertility Unit, where her research interests included Polycystic Ovary Syndrome, Premature Ovarian Failure and Recurrent Miscarriage.

Her Doctoral Thesis was on the role of inhibin in ovulation and early pregnancy. Midland Fertility was the first clinic in the UK to achieve live-births using cryopreserved eggs; a development that has given new hope of becoming ‘genetic’ mothers to young women who undergo potentially sterilising chemotherapy or radiotherapy for malignancy.

Richard Anderson

Professor of Clinical Reproductive Science
MRC Centre for Reproductive Health, University of Edinburgh

Richard Anderson completed subspecialty training in Reproductive Medicine as a lecturer at the University of Edinburgh. After a year in Sam Yen’s lab in San Diego, he was appointed to the MRC Human Reproductive Sciences Unit. Subsequently appointed to his current post in the University in 2005. Established a group investigating the female reproductive lifespan, with both laboratory and clinical aspects focusing on the establishment of the follicle pool in fetal life, and the assessment and mitigation of iatrogenic damage in girls and women.

Talk title: The effect of cancer treatment on female fertility and an overview of female fertility preservation

It has long been recognised that cancer treatments, including chemotherapy, radiotherapy and surgery can compromise female fertility. While the ovary is often the key organ of consideration, the uterus and less frequently the hypothalamus and pituitary gland may also need to be considered. Most of the data on pregnancy after cancer has come from children and adolescents with cancer, but recent data provides a more comprehensive overview, highlighting the importance of age as well as treatments.

It is also clear that women with a higher ovarian reserve at diagnosis of breast cancer are more likely to retain ovarian function after treatment. This talk will also provide current data on the success of oocyte vitrification, and data on pregnancy rates after ovarian transplantation and replacement.

Key learning points

• Range of effects of different chemotherapies
• Importance of age and ovarian reserve at different ages
• Success of oocyte cryopreservation and current data on ovarian tissue cryopreservation

Talk title: Oocyte Cryopreservation

Since Chen announced the first 'frozen egg' baby in 1986, progress with egg freezing has been advanced by improved cryo-protectants, vitrification and ICSI. Although vitrified eggs from young, healthy donors perform near identically to ‘fresh’ eggs, the situation for even young cancer patients is not as good as their malignancy has often compromised their ovarian reserve and their oocyte quality. A significant proportion of 'oncology' egg freezers have breast cancer and initial anxiety about the impact of even transient hyper-estrogenaemia on their prognosis has been largely alleviated by follow up studies and the use of Letrozole. The possibility of fertility preservation by oocyte freezing is too often raised too late or not at all and so it is vital that oncologists have ready access to information for their patients and a seamless referral pathway, including the availability of NHS funding, to their local IVF facility that has experience of oocyte freezing.

Key learning points

• Oocyte cryo-preservation provides a low but psychologically and statistically significant chance of achieving pregnancy
• Involvement of the entire care-team (oncologists, IVF doctors, embryologists, counsellors and possibly parents) is vital to ensure that the treatment is offered appropriately and effectively
• Establishing ovarian reserve (by AMH) is important to set expectations as women with malignancy have reduced ovarian reserve when compared to age-matched controls
Ertan Saridogan PhD, FRCOG
Consultant Gynaecologist
University College London Hospital

Ertan Saridogan is a Consultant in Reproductive Medicine and Minimal Access Surgery at University College London Hospitals. He is a former President of the British Society for Gynaecological Endoscopy and a member of the European Society for Gynaecological Endoscopy and the Executive Committee as the Chair of Scientific Programme of Annual Congresses. He is also a member of the ESHRE and ESCE/ESHRE/WES Endometriosis Guideline Development Groups.

He is the current Editor of Facts, Views and Vision: Journal of the European Society for Gynaecological Endoscopy. His clinical interests include laparoscopic and hysteroscopic surgery for benign gynaecological conditions, reproductive surgery, endometriosis, fibroids and outpatient hysteroscopy. His research interests include non-invasive diagnosis of endometriosis, clinical outcomes following endometriosis surgery, outpatient hysteroscopy, and the place of screening and risk reducing surgery in women with a history of familial cancer.

Talk title: Laparoscopic ovarian transposition and oophoropexy for fertility preservation

Ovarian transposition (OT) and ovariopexy (or oophoropexy, OP) are surgical procedures performed to reposition the ovaries out of the radiation field in order to protect ovarian function in patients receiving pelvic radiotherapy. Ovaries are very radiosensitive and radiation doses administered for the treatment of cancers of the cervix, endometrium, rectum, bladder and pelvic lymphomas range from 30 to 60 Gy, which will uniformly induce ovarian failure. By transposing the ovaries out of the field of radiation, the ovarian dose is reduced to 5-10% of that of nontransposed ovaries.

In OT procedures the ovary is detached from the uterus by dividing the ovarian ligament, whilst maintaining the infundibulopelvic ligament, and moved out of the pelvis into the upper abdomen outside the radiation field. The ovary is then fixed to the peritoneum on the anterior abdominal wall under the costal margin. In OP procedures, both the ovarian and infundibulopelvic ligaments are maintained and the ovary is moved out of the radiation field by suturing it onto a supporting structure such as the obliterated umbilical artery, iliopectineal ligament, round ligament, uterosacral ligament or the posterior uterine wall.

The procedures are most effective below the age of 30 years, and in those not receiving concurrent chemoradiation. Their use should be considered either as a sole procedure or in association with other fertility preservation methods prior to pelvic radiotherapy.

Key learning points
- Ovarian transposition or ovariopexy should be considered to reposition the ovaries out of the radiation field in order to protect ovarian function in selected patients receiving pelvic radiotherapy
- The procedures are most effective in younger women
- Concomitant chemotherapy reduces efficacy of the procedures
Georgina Jones
Professor of Health Psychology
Leeds Beckett University

Georgina Jones (GJ) is a chartered psychologist and professor of health psychology at Leeds Beckett University having previously gained her D.Phil from the University of Oxford. She has over 15 years' experience working on social science related projects using both qualitative and quantitative methods, including leading on the development and validation of new instruments; particularly within the field of women's health; the Endometriosis Health Profile-30 (Jones et al, 2001, 2004, 2004, 2006), an electronic pelvic floor questionnaire (Radley & Jones 2004; Radley et al, 2006; Jones et al, 2008, 2009), the Polycystic Ovary Syndrome Questionnaire (Jones et al, 2004) and the Mothers & Partners Postnatal Health Instruments (Jones et al, 2011).

She is currently developing a new questionnaire to measure the burden of immunoglobulin treatment for patients with primary immunodeficiency. Her EHP-30 is now officially translated into over 38 languages and is used internationally and in clinical trials by major pharmaceuticals. She has recently completed a three-year study exploring the decision-making process in women with cancer contemplating fertility preservation.

Based upon these findings, she is leading a study to develop and evaluate a patient decision aid to help female cancer patients make decisions around preserving their fertility funded by Yorkshire Cancer Research.

**Talk title: The decision making process for women considering fertility preservation**

Unfortunately, cancer treatment often results in loss of fertility. Women diagnosed with cancer and facing cancer treatment may have to make decisions very quickly regarding fertility preservation with specialist fertility services whilst planning care for their treatment of cancer with oncology services. These decisions are extremely stressful and complex and the consequences will impact on a women's quality of life for the rest of their lifetime. Therefore, it is vital they feel supported in making the right decision for them whilst also having to deal with a cancer diagnosis and its treatment. However, the existing evidence suggests that women do not feel well supported in their choices with many patients finding the process challenging and missing out on fertility care at this crucial time.

This talk will discuss the results of a recently completed three year study in Sheffield which has explored the fertility preservation decision making process in women with cancer (The PreFer Study) and a systematic review in this area recently carried out by the study team. The presentation will report on the key factors that were found to hinder the decision making process and also explore key questions such as, why do some women with cancer of reproductive age choose not to preserve their fertility? Are there other issues purely than relationship status that impact upon the choice to freeze oocytes or embryos?

What are women's level of understanding regarding oocyte and embryo freezing? The talk will also cover the factors that might help women with cancer better prepare for the fertility decision and ensure they make the best decision for their future. Finally, the presentation will introduce the development of a new fertility preservation patient decision aid to support women that the fertility experts may find useful in their clinical practice.

**Key learning points**

- An increased understanding of the fertility preservation decision making process for women diagnosed with cancer
- Knowledge of the key factors that hinder the fertility preservation decision-making process for women with cancer
- An increased understanding of the impact of this process upon patient-reported outcomes e.g. quality of life, anxiety and depression
- An increased understanding of the factors that might help women with cancer better prepare for the fertility decision

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Julia Kopeika

Consultant Gynaecologist and Subspecialist in Reproductive Medicine and Surgery
Assisted Conception Unit, Guy's and St Thomas' NHS Trust

Julia graduated from medical school in 1999, with the highest grade among the whole graduate year. She was awarded a PhD on Cryobiology, for studying effect of cryopreservation on the genome of reproductive cells and embryos. Her novel research on the freezing of sperm, eggs and embryos has been recognised by several international awards. She has been instrumental in delivering and expanding fertility preservation service at Guy's Hospital, that provides care to the most of South East Cancer Network.

Talk title: Ovarian Stimulation for oocyte cryopreservation

This talk will give an overview of the principals of controlled ovarian stimulation, followed by tips for emergency stimulation. New data on physiology of follicular development and recruitment will be presented as a basis for understanding random start stimulation. Specific details on how to start stimulation in late follicular or peri-ovulatory phases of the cycle will be provided.

The talk will also give overview how to approach fertility preservation in young post-pubertal patients, patients with lymphoma, brain tumours, oestrogen positive breast cancer, gynaecological cancers or malignancies with genetic inheritance.

Key learning points

- Principals of fertility preservation
- Random start and underlying physiology
- Specific considerations for different types of cancer

Ben Jones

Post-doctorate Clinical Research Fellow
Imperial College NHS Trust

After graduating in 2009, Benjamin undertook O&G training in North West Thames, before being appointed as a clinical research fellow at Imperial College London in 2015. He undertook his PhD on fertility preservation and restoration. In 2016, he became a founding member of the International Society of Uterine Transplantation (ISUTx). He was PI of the INSITU trial on uterine transplantation using deceased donors.

Benjamin has published a number of peer reviewed publications and has presented internationally on uterine transplantation and various other aspects of fertility preservation. His ongoing interests include uterine transplantation, ovarian tissue preserving laparoscopic surgery, social egg freezing and endometrial transplantation.

Talk title: Uterine transplantation

Absolute uterine factor infertility is a term used to describe women who cannot carry a pregnancy because of either a congenital absence of a uterus or the presence of an anatomically or physiologically non-functioning uterus. It affects 1 in 500 women of childbearing age. The current options to acquire motherhood include adoption or surrogacy, both of which are associated with moral and ethical difficulties in addition to complex legal, financial and religious factors. Uterine transplantation (UTx) restores uterine anatomy and physiology, providing the opportunity to conceive, experience gestation, and give birth to biologically related offspring.

UTx has now been performed more than 70 times worldwide with 23 livebirths being recorded so far and as such is now of undoubted feasibility. However, it is associated with significant risk with more than a quarter of grafts removed due to complication, and one in ten donors suffering complication requiring surgical repair.

Key learning points

- Outline the options to acquire motherhood in women with AUFI
- Describe the essential anatomical and physiological considerations in UTx
- Appreciate the different risk vs benefit ratios in deceased and living donors
Stuart Lavery
*Consultant Gynaecologist*
*Imperial College London*

Mr Stuart Lavery is a Consultant Gynaecologist and Specialist in Reproductive Medicine and Surgery at the Hammersmith and Queen Charlotte’s & Chelsea Hospitals London. He is also an honorary senior lecturer in Reproductive Medicine at Imperial College London. He is a founder of The Fertility Partnership – the largest provider of assisted conception services in the Northern Europe.

Mr Lavery has served on the HFEA licensed Clinics Panel, as an HFEA Person Responsible and as a Clinic Licence Holder.

Mr Lavery’s main research areas of interest are fertility preservation, (PGD), and IVF. He has presented on these topics both nationally and internationally, and published over fifty articles in this area. He is a supervisor for the Imperial College MSc course, and is a lecturer for the University of Oxford and ICRF. He works privately in Harley Street.

Sheila Lane
*Consultant Paediatric Oncologist*
*Oxford University Hospitals NHS Foundation Trust*

Dr Lane received her PhD from Cambridge University before qualifying as a doctor at St George’s Hospital London. In 2007 she was appointed as a Consultant Paediatric Oncologist at Oxford University Hospitals NHS Foundation Trust. Since 2014 she has been Director and Clinical Lead for the Oxford Children and Young Adult Fertility Programme. This programme offers fertility preservation advice and treatment, including reproductive tissue cryopreservation to children and young adults at high risk of premature infertility.

Dr Lane is involved with an active research programme and has authored and co-authored a number of academic papers as well as being a co-author of the BFS UK Fertility Preservation Guidelines published in 2018 and the Children’s Cancer and Leukaemia Group Oncfertility Guidelines published in 2019.
The British Fertility Society would like to thank our 2020/2021 Corporate Partners

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