



PRE-CONGRESS COURSE 1
**Fertility preservation -
The next frontier.**

Paramedical Group
London - UK, 7 July 2013





Fertility preservation - The next frontier

**London, United Kingdom
7 July 2013**

**Organised by
The ESHRE Paramedical Group**

Contents

Course coordinators, course description and target audience	Page 5
Programme	Page 7
Speakers' contributions	
Role of the nurse in England - <i>Rebecca Goulding - United Kingdom</i>	Page 9
Risk of premature ovarian failure - <i>Ina Beerendonk - The Netherlands</i>	Page 20
Fertility preservation in women affected by malignant diseases; when (indication), and how (procedures) - <i>Kirsten Louise Tryde Schmidt - Denmark</i>	Page 29
Oocyt Cryopreservation – alternative technique to embryo freezing - <i>Laura Francesca Rienzi - Italy</i>	Page 36
Oocyte banking in an egg-donation programme - <i>Elisabeth Clare Larsen - Denmark</i>	Page 44
Oocyte cryopreservation: applications and outcomes in the U.S.A. - <i>Nicole Noyes - U.S.A.</i>	Page 60
Counseling for social freezing - <i>Julie Nekkebroeck - Belgium</i>	Page 74
Ethical issue of social freezing - <i>Françoise Shenfield - United Kingdom</i>	Page 84
Upcoming ESHRE Campus Courses	Page 92
Notes	Page 93

Course coordinators

Jolienke Schoonenberg-Pomper (The Netherlands) and Helle Bendtsen (Denmark)

Course description

An advanced course for nurses and lab technicians focussing on the different aspects of fertility preservation

Target audience

Nurses and lab technicians.

Scientific programme

Chairman: Helle Bendtsen - Denmark

Chairman: Helen J. Kendrew - United Kingdom

09:00 - 09:10	Introduction <i>Helle Bendtsen - Denmark</i>
09:10 - 09:40	Role of the nurse in England <i>Rebecca Goulding - United Kingdom</i>
09:40 - 09:50	Discussion
09:50 - 10:20	Risk of premature ovarian failure <i>Ina Beerendonk - The Netherlands</i>
10:20 - 10:30	Discussion
10:30 - 11:00	Coffee break
11:00 - 11:25	Fertility preservation in women affected by malignant diseases; when (indication), and how (procedures) <i>Kirsten Louise Tryde Schmidt - Denmark</i>
11:25 - 11:35	Discussion
11:35 - 12:00	Oocyt Cryopreservation – alternative technique to embryo freezing <i>Laura Francesca Rienzi - Italy</i>
12:00 - 12:10	Discussion
12:10 - 12:30	Hands-on session vitrification- companies will show different vitrification devices for oocytes <i>Helle Bendtsen - Denmark</i>
12:10 - 12:30	Hands-on session vitrification- companies will show different vitrification devices for oocytes <i>Cecilia Westin - Sweden</i>
12:10 - 12:30	Hands-on session vitrification- companies will show different vitrification devices for oocytes <i>Yves Guns - Belgium</i>
12:30 - 13:30	Lunch
13:30 - 14:05	Oocyte banking in an egg-donation programme <i>Elisabeth Clare Larsen - Denmark</i>
14:05 - 14:15	Discussion
14:15 - 14:50	Oocyte cryopreservation: applications and outcomes in the U.S.A. <i>Nicole Noyes - U.S.A.</i>
14:50 - 15:00	Discussion
15:00 - 15:30	Coffee break
15:30 - 16:00	Counseling for social freezing <i>Julie Nekkebroeck - Belgium</i>
16:00 - 16:10	Discussion
16:10 - 16:40	Ethical issue of social freezing <i>Françoise Shenfield - United Kingdom</i>
16:40 - 17:00	Discussion

The Role of the Nurse in England

Rebecca Goulding RGN BA Hons
Senior Fertility Sister

Chelsea Westminster Hospital NHS
Foundation Trust
London United Kingdom

Learning Objectives

- Who we are and what we do
- Development
- Opportunities

How times have changed...



Introduction

- Definition of a nurse

a person trained to look after sick or injured people


Oxford Dictionary (2001)

What is a Nurse?

- Trust
- Treat as individuals
- Maintain confidentiality
- Collaboration of care


What is a Nurse?

- Consent
- Professional boundaries
- Share information
- Work effectively




What is a Nurse?

- Delegate
- Manage risk
- Evidence
- Personal development




What is a Nurse?

- Documentation
- Integrity
- Problem solving
- Impartial
- Professional




The role of the Fertility Nurse

- Advocate
- Counsellor
- Performing clinical procedures
- Leadership and Management




The role of the Fertility Nurse

- Training and Education
- Ultrasound Scanning
- Prescribing
- Consulting



The role of the Fertility Nurse

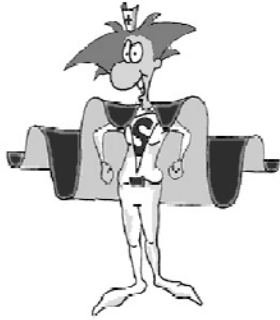
- Quality Management and Audit
- Data Collection
- Risk Assessment
- Mentoring



The role of the Fertility Nurse

- Person Responsible
- Dignity and Respect
- Confidentiality

Super Nurse



Frantic Nurse



Development

'as a registered nurse, midwife or health visitor, you are professionally accountable for your practice'

NMC Code of professional conduct (2004)

Development

'All nursing staff must be appropriately qualified and registered by the nursing and midwifery council'

HFEA Code of Practice 8th Edition

Development

- Working towards competencies
- Appropriate standards of clinical competence
- Able to provide evidence
- Suitably qualified

HFEA Code of Practice 8th Edition

Development



Competencies Tool



Collecting Evidence



Evidence

- Supervised practice
- Work based projects
- Practice developments/changes in practice
- Incident reporting

Evidence

- Reflective diaries/log books
- Assessments and appraisals
- Audit

Evidence

- Teaching sessions/posters
- Policy and protocol developments
- Standard operating procedures
- Patient feedback

Opportunities - Locally



Opportunities - Nationally



Opportunities - Internationally



Summary

- Training and updating essential
- Maintain competences
- Ability to acknowledge our limitations

Summary

- Opportunities are there
- Multi professional approach
- Show leadership and collaborative practice

Nurses Make a Difference



Chelsea and Westminster Hospital 
NHS Foundation Trust

Thank You



Rebecca.goulding@chelwest.nhs.uk







Useful Links

- www.rcn.org.uk
- www.hfea.gov.uk
- www.nmc-uk.org
- www.eshre.eu
- www.britishtfertilitysociety.org.uk



References

- Human Fertilisation and Embryology Authority Code of practice (eighth edition)
London: HFEA.
- Nursing & Midwifery Council (2004) The NMC code of professional conduct:
standards for conduct, performance and ethics. London:NMC.
- Royal College of Nursing (2003) Defining Nursing London:RCN.
- Royal College of Nursing (2011) Competences :Specialist competences for
fertility nurses (second edition) London: RCN
- Royal College of Nursing (2006) Guidance for Fertility Nurses London:RCN







Risk of premature ovarian failure

Ina Beerendonk, MD PhD
Gynaecologist in Reproductive Medicine


*Department of Obstetrics & Gynaecology
Radboud University Nijmegen Medical Centre
Nijmegen - The Netherlands*

Fertility preservation – The next frontier



Disclosures

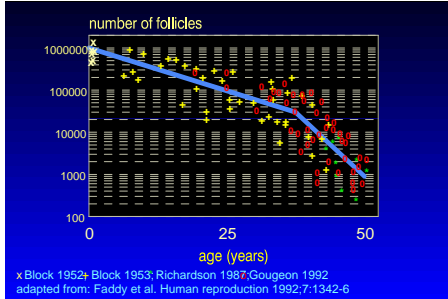
No potential conflict of interest



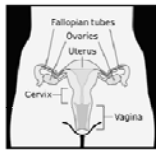
Learning objectives

- To learn about who is at risk of POF
- To learn about the damaging effect of cancer treatment on female reproduction
- To provide information on how the expected amount of damage can be determined
- To discuss on what indications fertility preservation (FP) should be offered and in what form

Ovarian reserve



Overview: Female Fertility



Who is at risk of Premature Ovarian Failure (POF)?

All patients whose disease or its treatment may cause infertility and early menopause:

- Cancer patients
- Mutation carriers for certain types of cancer
- Patients with auto-immune diseases
- Patients undergoing bone marrow or stem cell transplantation
- MS patients receiving new generation treatments
- Patients with genetic mutations leading to loss of fertility and early menopause

Highest impact on fertility

- Alkylating agents
- Cranial / brain radiation
- Hormone sensitive tumors requiring castration
- Bone marrow and stem cell transplants
- Auto-immune diseases
- Genetic mutation
- Genetic mutations that predispose to cancer
- Chemotherapeutic agents that impact gametes

Ovarian function after radiotherapy

Depending on:

- Age of woman
- Type of radiation:
 - Pelvic / abdominal
 - Total body
 - Cranial
- Doses



Ovarian function after radiotherapy

- 4 Gy 30% sterility in young women
- 4 Gy 100% sterility in women > 40 years
- LD50 human oocyte: < 2 Gy (Wallace et al, 2003)

Ovarian function after chemotherapy

Depending on:

- Age of woman
- Type of chemotherapy
- Total dose

Ovarian function after chemotherapy

- Alkylating agents most harmful
- Prepubertal ovaries least vulnerable
- Early menopause in the longer term

Other reproductive functions

- Puberty
- Sexual development
- Endocrine function
- Function uterus

Low risk

Less than 20% infertility

- AC in women 30–39 years
- CMF, CEF, or CAF x 6 cycles in women <30 years
- Nonalkylating chemotherapy: ABVD, CHOP, COP
- AC

Adapted from the 2006 ASCO recommendations on fertility preservation in cancer patients

No risk

- Radioactive iodine
- Methotrexate / 5-fluorouracil
- Vincristine

Adapted from the 2006 ASCO recommendations on fertility preservation in cancer patients

Unknown risk

- Paclitaxel, docetaxel (taxanes used in AC protocols)
- Oxaliplatin
- Irinotecan
- Bevacizumab
- Cetuximab
- Trastuzumab
- Erlotinib
- Imatinib

Adapted from the 2006 ASCO recommendations on fertility preservation in cancer patients

UMC  St Radboud

Oncofertility on the internet










UMC  St Radboud

Provider & Researcher Resources

www.oncofertility.northwestern.edu




The screenshot shows a webpage with a navigation bar, a main heading, and several content blocks including a featured image of a woman, a grid of smaller images, and a list of links for 'Latest Blog Posts', 'Lab of Hope', and 'Upcoming Events'. The footer includes the Oncofertility Consortium logo and the tagline 'exploring and expanding the options for the reproductive future of cancer survivors'.

UMC  St Radboud

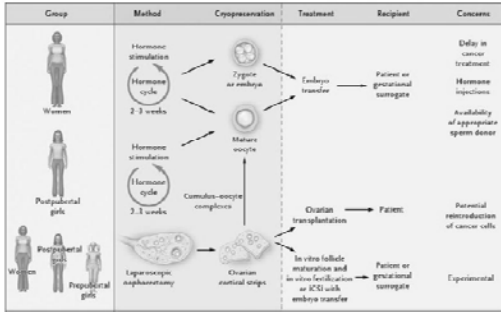
Patient & Provider Resources

www.oncofertility.northwestern.edu



The screenshot shows a webpage with a navigation bar, a main heading, and a central graphic with text boxes listing 'Fertility', 'Pregnancy', 'Fertility Preservation', 'Adoption', 'Subsidiary', 'Resources', and 'Support'. It also features a 'Survivor Stories' section with photos of people. The footer includes the Oncofertility Consortium logo and the tagline 'exploring and expanding the options for the reproductive future of cancer survivors'.

Options for FP in women with cancer



Jeruss JS, Woodruff TK. Preservation of fertility in patients with cancer. N Engl J Med 2009;360(9): 902-911

Summary

- Cancer and cancer treatment may have a high impact on female fertility
- Also benign diseases and their treatment may have a high impact
- Internet offers risk and options calculators for patients and professionals
- The risk of infertility and FP options should be discussed with all women at risk of POF
- Nowadays different kinds of FP are available for women at various ages

Bibliography

Articles

- Faddy MJ, Gosden RG, Gougeon A, Richardson SJ, Nelson JF. Accelerated disappearance of ovarian follicles in mid-life: implications for forecasting menopause. Hum Reprod 1992;7(10):1342-6
- Lee SJ, Schover LR, Partridge AH, Patrizio P, Wallace WH, Hagerty K et al. ASCO recommendations on fertility preservation in cancer patients. J Clin Oncol 2006; 24(18):2917-31
- Oktay K and Oktay O. Ovarian cryopreservation and transplantation for fertility preservation for medical indications: report of an ongoing experience. Fertil Steril 2010;93(3):762-8
- Jeruss JS, Woodruff TK. Preservation of fertility in patients with cancer. N Engl J Med 2009;360(9):902-11

Websites

- www.oncofertility.northwestern.edu
- www.fertilehope.org
- www.savemyfertility.org

Fertility preservation in women affected by malignant diseases; when and how?

Kirsten Tryde Schmidt
M.D., Ph.D.
The Fertility Clinic, Rigshospitalet
Copenhagen University Hospital

ESHRE, LONDON 2013

1

Disclosure

- I have no conflict of interest in relation to this talk

ESHRE, LONDON 2013

2

Learning objectives

- At the conclusion of this presentation, participants should be able to:
 1. Identify those women at risk of ovarian failure due to cancer treatment
 2. Describe the different methods of fertility preservation in women
 3. Discuss the pro's and con's of the different methods

ESHRE, LONDON 2013


3

Options to preserve fertility

<p>Methods to shelter the ovary</p> <ul style="list-style-type: none"> • Co-treatment with GnRH-a • Ovarian transposition or shielding 	<p>Methods to store gametes</p> <ul style="list-style-type: none"> • IVF with vitrification of oocytes • IVF with cryopreservation of embryos • Cryopreservation of ovarian tissue
---	--

ESHRE, LONDON 2013 4

Gonadotoxicity of cancer treatment

<p>Chemotherapy:</p> <p>Alkylating agents (Antimetabolites) (Plant alkaloids) (Taxanes)</p>		<p>Radiation therapy:</p> <p>Abdominal irradiation Cranial irradiation Craniospinal irradiation Total body irradiation</p>
---	---	---

ESHRE, LONDON 2013 5

Who should be offered fertility preservation?

- *Ideally, anyone at risk of loss of ovarian function*
- Risk depends on
 - Age
 - Type of drugs used
 - Cumulative dose
 - Ovarian reserve of the patient
- Beware of contraindications
 - Is the patient too sick?
 - Are there anaesthetic contraindications
 - Increased risk of bleeding or infection?

ESHRE, LONDON 2013 6

Co-treatment with a GnRH-a

- Non-invasive
- Low-cost
- Mechanism of action unknown

- Effect still questionable

More RCT's are needed!

ESHRE, LONDON 2013

7

Transposition of the ovaries

- 'Invented' in the 50's for cervicalcancer ptt.
- Ovaries are surgically moved out of field of radiation
- Scatter-radiation
- Side effects: chronic pain, vascular injury, ischemia, ovarian cysts, IVF to obtain a pregnancy



Wo and Viswanathan, 2009

IVF with cryostorage of oocytes or embryos

Vitrification of oocytes:

- Newer technique
- Results approaching those of embryo cryopreservation
- Ideal for single women and younger patients

- Takes 2-3 weeks

Cryopreservation of embryos:

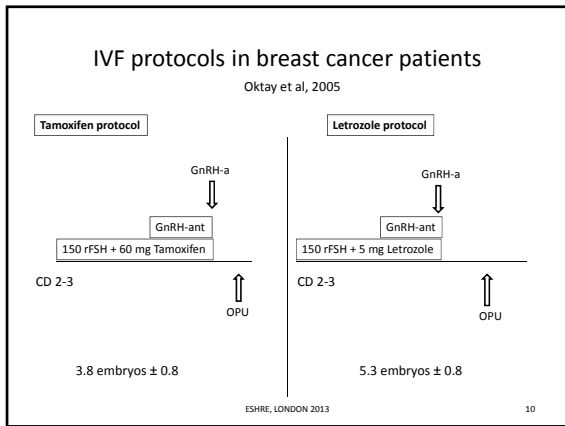
- Well-known technique
- Good for patients in stable relationships
- Ethical issues in case of death of the patient

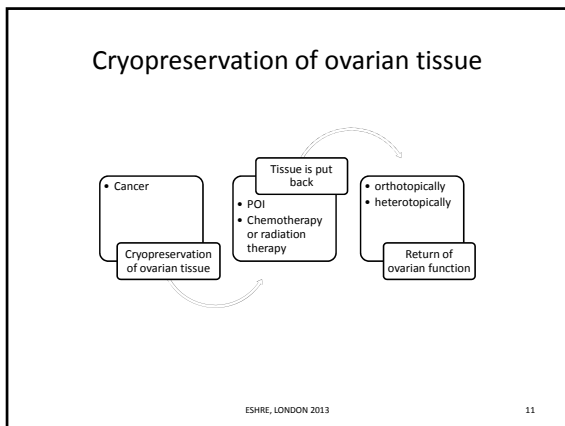
- Takes 2-3 weeks

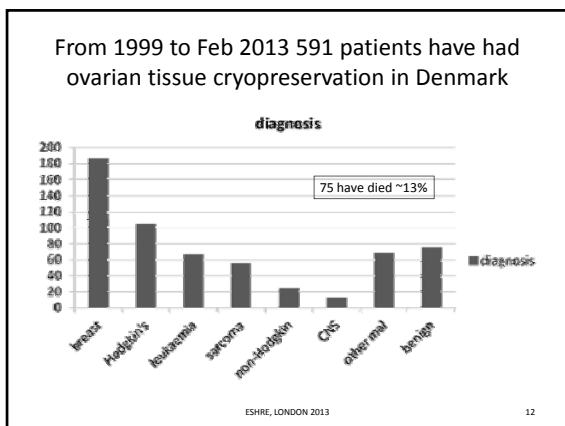
IVM of immature oocytes or vitrification of immature oocytes is still experimental, few clinics offer this, low implantation- and delivery rates

ESHRE, LONDON 2013

9







Age-distribution amongst patients with cryopreserved ovarian tissue

Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	> 35
N	23	30	40	80	90	152	140	43

93 girls

ESHRE, LONDON 2013

13

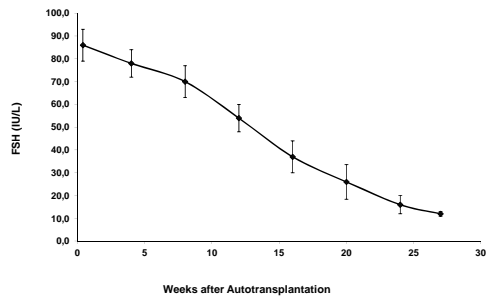
Results from autotransplantation

- 22 patients have received autotransplantation a total of 31 times
- Thus, 9 patients have had an additional transplantation
- All have regained their ovarian function (mean 20 weeks) as seen by return of menses and antral follicles on ULS

ESHRE, LONDON 2013

14

Mean concentration of FSH IU/l \pm SEM following transplantation of frozen/thawed ovarian tissue to 15 Danish women



ESHRE, LONDON 2013

15

Pregnancies in Danish women with autotransplanted ovarian tissue

- Nine women have obtained a total of 13 pregnancies
 - 2 biochemical (IVF)
 - 2 spontaneous abortions (IVF)
 - 2 induced abortion (spontaneous)
 - 3 ongoing pregnancies (2 IVF, 1 spontaneous)
 - 4 deliveries (2 IVF, 2 spontaneous)

ESHRE, LONDON 2013

16

No. of ART cycles	Best result of IVF/ICSI	Duration of graft function (months) (1 st /2 nd transplantation)
2	1 embryo transferred	45 / 25
10	2 biochemical pregnancies	88→ / 34→
12	1 clinical pregnancy	26 / 43
8	1 livebirth	15 / 64→
1	1 livebirth	70→
2	Follicles visible on ultrasound	7 / 0
14	1 embryo transferred	25 / 22
3	2 embryos transferred	42→
7	1 oocyte aspirated	12 / N.A
10	5 embryos transferred	37→
2	1 embryo transferred	27→
Total 71	Live birth rate: 2/71= 3% per cycle	

ESHRE, LONDON 2013

Schmidt et al, 2010

17

Relevance of different methods of fertility preservation

Method	Pre-pubertal girl	Adolescent girl	Single woman	Woman with partner
GnRH-a		X	X	X
Ovarian transposition	X	X	X	X
Oocyte cryopreservation		(X)	X	(X)
Embryo cryopreservation			(X)	X
Ovarian tissue cryopreservation	X	X	X	X

ESHRE, LONDON 2013

18

Conclusion

- Fertility preservation should be offered to women and girls with a risk of iatrogenic ovarian damage
- Cryostorage of oocytes or embryos offers a possibility of a future pregnancy
- Cryopreservation and autotransplantation of ovarian tissue restores the ovarian function in terms of resumption of a menstrual cycle
- Pregnancies are still scarce but more and more are reported

ESHRE, LONDON 2013

19

References

- Meirow, D. Reproduction post-chemotherapy in young cancer patients. *Mol Cell Endocrin* 2000;169:123-31.
- Wallace, WHB et al. Predicting age of ovarian failure after radiation to a field that includes the ovaries. *Int J Rad Oncol Biol Phys* 2005;62:738-44.
- Wo and Viswanathan. Impact of radiotherapy on fertility, pregnancy, and neonatal outcomes in female cancer patients. *Int J Rad Oncol Biol Phys* 2009;73:1304-12
- Oktay, K et al. Fertility preservation in breast cancer patients: A prospective controlled comparison of ovarian stimulation with tamoxifen and letrozole for embryo cryopreservation. *J Clin Oncol* 2005;23:4347-53.
- Schmidt, KT et al. Autotransplantation of cryopreserved ovarian tissue in 12 women with chemotherapy-induced premature ovarian failure: the Danish experience. *Fertil Steril* 2011;95:695-701.

ESHRE, LONDON 2013

20

References

- Schmidt, KT et al. Risk of ovarian failure and fertility preserving methods in girls and adolescents with a malignant disease. *BJOG* 2010;117:163-74.
- Rosendahl, M et al. Cryopreservation of ovarian tissue for a decade in Denmark: a view of the technique. *RBMonline* 2011;22:162-71.

ESHRE, LONDON 2013


21

 **g.en.e.r.a.** www.generaroma.it

CLINICA VALLE GIULIA, Rome
SALUS ASI MEDICAL, Marostica
UMBERTIDE, Perugia

Oocyte Cryopreservation
an alternative technique to embryo freezing


Laura Rienzi
Senior Clinical Embryologist
GENERA Centres for Reproductive Medicine
Rome, Marostica, Umbertide, Italy

 **g.en.e.r.a.**

Learning objectives

1. Role of oocyte cryopreservation in ART
2. Cryopreserved oocytes laboratory performances
3. Clinical evidences of efficiency
4. Comparison between oocyte and embryo cryopreservation in the infertile population
5. Conclusion: oocyte cryopreservation can be considered a standard procedure in ART today?

I declare no conflict of interest related to this presentation

 **g.en.e.r.a.**

Oocyte cryopreservation has a key role

Oocyte cryopreservation is an emerging discipline that has already a key role in different applications:

- Fertility preservation for medical reasons
- Fertility preservation for social reasons
- Use of cryo-banked oocytes for egg donation
- Avoids the production of supernumerary embryos in IVF
- Accumulation of excess oocytes in IUI cycles

g. on. o. r. a.

Oocyte cryopreservation was considered experimental

AMERICAN SOCIETY FOR REPRODUCTIVE MEDICINE
PATIENTS FACT SHEET
Cancer and Fertility Preservation

JOURNAL OF CLINICAL ONCOLOGY **ASCO SPECIAL ARTICLE**

American Society of Clinical Oncology Recommendations on Fertility Preservation in Cancer Patients

ETHICS COMMITTEE REPORT
Fertility preservation and reproduction in cancer patients

In contrast to preservation of male fertility, the techniques to preserve female fertility have only been recently developed. According to the most recent recommendations of the American Society for Reproductive Medicine (ASRM, 2006,2008) and the American Society of Clinical Oncology (ASCO, 2006), embryo cryopreservation is the only established option for fertility preservation in female cancer patients, while the other methods are still considered experimental.

g. on. o. r. a.

Today, not any more (ASRM guideline 2012)


Mature oocyte cryopreservation: a guideline

The Practice Committees of the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology
 Society for Reproductive Medicine and Society for Assisted Reproductive Technology, Birmingham, Alabama

There is good evidence that fertilization and pregnancy rates are similar to IVF/ICSI with fresh oocytes when vitrified/warmed oocytes are used in part of IVF/ICSI for young women. Although data are limited, no increased chromosomal abnormalities, birth defects, and developmental deficits have been reported in the offspring born from cryopreserved oocytes when compared to pregnancies from conventional IVF/ICSI in the general population. Robust evidence that oocyte vitrification and warming without longer preservation experimental. This document replaces the document last published in 2009 titled, "Ovarian Tissue and Oocyte Cryopreservation: Fertil Society 2009/2011". (Fertil Soc 2012)

2012 by American Society for Reproductive Medicine
 Earn online CME credit related to this document at www.asrm.org/learn

Discuss: You can discuss this article with its authors and with other ASRM members at <http://fertilityforum.com/publishing/mature-oocyte-cryopreservation-guideline/>



g. on. o. r. a.

Clinical evidences prove this

TABLE 1

Summary of randomized controlled trials comparing fresh versus vitrified oocytes.

	Cobo 2008 (24)	Cobo 2010 (26)	Rienad 2010 (25)	Parmegiani 2011 (19)
Patient population	Oocyte donors	Oocyte donors	Infertile patients: <45 years of age requiring ICSI with <6 mature oocytes	Infertile patients: <45 years of age requiring ICSI with >5 mature oocytes
No. patients	30 vitrification 10 fresh	295 vitrification 780 fresh	40 vitrification 40 fresh	21 vitrification 11 fresh
Mean age at retrieval	26	26	35	35
No. oocytes	231 vitrification 719 fresh	3280 vitrification 3180 fresh	124 vitrification 120 fresh	108 vitrification NA fresh
No. oocytes per retrieval	15.2 99.9%	11 99.9%	3 99.9%	NA 89.9%
Fertilization rate	76.9 vitrification 82.2 fresh	78% vitrification 73% fresh	76.2% vitrification 63.3% fresh	71% vitrification 72.0% fresh
Non-transferred vitrification vs. fresh	9.8 vitrification 3.0 fresh	1.7 vitrification 1.7 fresh	2.8 vitrification 2.5 fresh	2.5 vitrification 2.6 fresh
Day of transfer	3	3	2	2-3
Implantation rate	40.8% vitrification 100% fresh	39.9% vitrification 42.9% fresh	35.4% vitrification 21.7% fresh	17.1% vitrification NA fresh
CPR/transfer vitrification vs. fresh	60.8% (23 vitrification transfer) 100% (1 fresh transfer)	55.4% vitrification 55.6% fresh	38.5% vitrification 43.5% fresh	35.5% vitrification 13.3% fresh
Live birth rate	6.1%	6.3%	12%	6.3%

Note: All used vitrification with Cryotop. 15% EG = 19% DMSO = 0.5M sucrose ICR = clinical pregnancy rate.

Reproductive Committee. Oocyte cryopreservation. Fertil 2012;21:12

g.en.e.r.a.

Why has it been so difficult?

The image shows a cross-section of an oocyte with several biological processes labeled with arrows pointing to specific areas:

- Cytoplasmic and cytoskeleton damage**: Points to the outer cytoplasmic region.
- Zona pellucida hardening**: Points to the thick outer shell.
- Oocyte ageing**: Points to the central nucleus area.
- Membrane permeability**: Points to the inner membrane.
- Meiotic spindle depolymerization**: Points to the spindle fibers.
- Impact on oocyte physiology**: Points to the overall internal structure.
- Polar body degeneration/fusion**: Points to the small polar body.

g.en.e.r.a.

Timeline of principal evidences

- 2008: Efficiency in donation program not compromised with vitrification (Cobo et al., 2008; Nagy et al., 2008)
- 2008: The clinical pregnancy rate double with the introduction of vitrification (Tulandi, 2008; Cao et al., 2009; Smith et al., 2010 (RCT))
- 2010: Prospective randomized study with own sibling oocytes demonstrates the lab efficiency of the technique (RCT) (Rienzi et al., 2010)
- 2010: Cumulative ongoing pregnancy rate with oocyte vitrification in a standard infertility program (Ubaldi et al., 2010)
- 2010: Prospective randomized study with donor oocytes demonstrates clinical efficiency of the technique (RCT) (Cobo et al., 2011)
- 2011: Efficiency of oocytes vitrification in the infertile population (RCT) (Parmegiani et al., 2011)
- 2012: Multicentric longitudinal cohort study to confirm reproducibility (Rienzi et al., 2012)

g.en.e.r.a.

Evidence from the Lab

Comparison of concomitant outcome achieved with fresh and cryopreserved donor oocytes vitrified by the Cryotop method

Ana Cobo, Ph.D.,¹ Masahiko Kawanaka, Ph.D.,² Sonia Pérez, Ph.D.,³ Amparo Ruiz, M.D.,⁴ Antonio Pellicer, M.D.,⁵ and José Remohí, M.D.,⁶

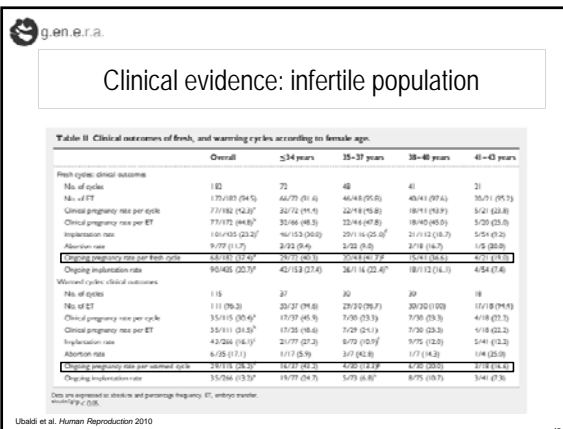
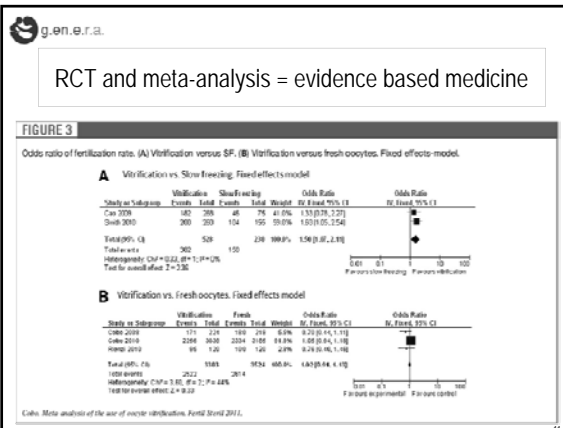
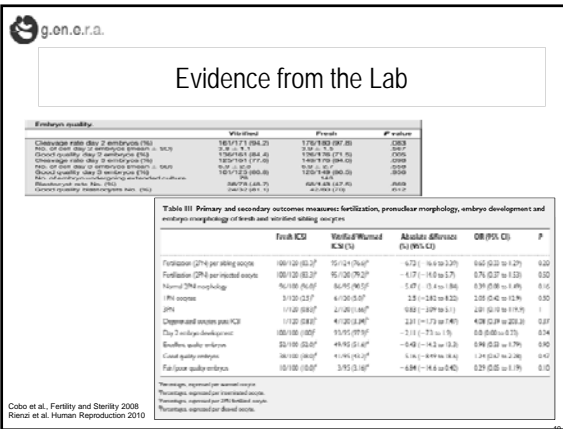
¹IVI Universidad de Valencia, Valencia, Spain and ²Kan Ikeno Clinic, Nishikubo-ku, Chiyoda, Tokyo, Japan


Embryo development of fresh 'versus' vitrified metaphase II oocytes after ICSI: a prospective randomized sibling-oocyte study

Antonio Pellicer, Masahiko Kawanaka, Sonia Pérez, Amparo Ruiz, Ana Cobo, Elena Barón, Elia Colomán, Pablo Sánchez, and José Remohí

human reproduction

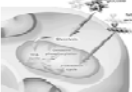
Our keynote speaker was selected on 1141 bases of full-text article downloads during the first six months of publication in HUMAN REPRODUCTION.




 g.en.e.r.a.

Vitrification potential risks

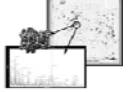
As for IVF in general, oocytes and embryos are exposed to some stress when working in vitro that may compromise physiology, gene expression and development.



metabolome

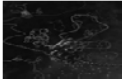



transcriptome



proteome

Suboptimal in vitro conditions and extra stress can lead to irreversibly long-term alterations in the characteristics of foetal and postnatal growth and development (Lucifero et al., 2004)



 g.en.e.r.a.


Conclusions

"Compared to the extended life expectancy of modern humans, women face a relatively early loss of fecundity. This was referred to as 'BIOLOGICAL INEQUITY,' a situation from which oocyte cryopreservation may now for the first time help them to escape." *Dondorp et al., 2009*





Vitrification is at the moment the most efficient approach for oocyte cryopreservation (as reported by RCT and meta-analysis).

Vitrification allows at any stage of development:

- Excellent survival and development ability
- Consistent and reproducible results
- Optimal timing of cryopreservation

 g.en.e.r.a.

Is oocyte vitrification an alternative to embryo cryopreservation?

Survival	85 – 90%	90 – 95%	85 – 95%	70 – 95%
Implantation	15 – 18%	15 – 20%	20 – 30%	25 – 40%
Number	10	7	5	3

"To him who devotes his life to science, nothing can give more happiness than increasing the number of discoveries, but his cup of joy is full when the results of his studies immediately find practical applications"

Louis Pasteur



www.generaroma.it

CLINICA VALLE GIULIA, Roma
SALUS - ASI MEDICAL, Marostica
GENERIA UMBERTIDE, Perugia

CLINICAL DIRECTOR: Filippo Maria Ubaldi

LABORATORY DIRECTOR: Laura Rienzi

Rome

Elena Baroni

Silvia Colamaria

Maddalena Giuliani

Fabio Sapienza

Susanna Ferrero

CIPA

Michele Ermini

Beatrice Ermini



Mauro Schimberni

Annalise Giallonardo

Giovanna Vettraino

Marostica

Antonio Ciconte

Silvia Venanzi

Laura Buffo

Antonio Gugole

Angelo Moratello

Daniela Zuccarello

Umbertide

Antonio Angelini

Emanuela Migliorati

Fabrizio Fiorini

Rome

Stefania Romano

Laura Albricci

Antonio Capalbo

Roberta Maggiulli

Federica Sanges

Catello Scarica

Elena levoli

Lisa Dovere

Marta Stoppa

Danilo Cimadomo

Marostica

Benedetta Iussig

Ludovica Dusi

Umbertide

Nicoletta Barnocchi

Letizia Papini



Oocyte banking in an egg-donation programme

Elisabeth Clare Larsen MD PhD
The Fertility Clinic - Rigshospitalet Copenhagen University Hospital
Denmark

5/18/2013 ESHRE 2013 PCC1

Conflict of interest

- I confirm, that I do not have have any commercial or financial relationships related to this presentation and its contents

5/18/2013 ESHRE 2013 PCC1

Learning objectives

- To give an overview in the the principles of egg-donation:
 - Definition
 - Indications
 - The procedure (fresh cysle)
- To give a *short* introduction to oocyte banking:
 - Definition
 - Indications
- To present the latest research in the field of:
 - *Oocyte banking in an egg-donation programme*
 - Discuss PROs and CONS

5/18/2013 ESHRE 2013 PCC1

Egg-donation: historical background

- First pregnancies reported in 1983 and 1984
- Observation:
 1. Pregnancy rates independent of the age of the recipient
 2. A fertility treatment that overcomes the age-related decline in female fertility
- Today, there is a widespread use of this technique

5/18/2013

ESHRE 2013 PCC1

Egg-donation Definition:

- Fertility treatment where a woman (*the donor*) donates unfertilized eggs to a couple where the female partner (*the recipient*) has no functional eggs in the ovaries.



5/18/2013

ESHRE 2013 PCC1

Egg-donation Important:

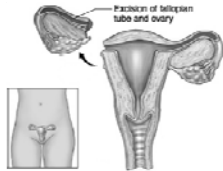
- The donor needs hormonal stimulation to develop eggs
- The recipient needs estrogen replacement to develop a receptive endometrium
- Well synchronized replacement of high-quality embryos is crucial
- The recipient is pregnant
- The recipient delivers the baby
- Efficient treatment
 - Pregnancy rate – 46.2% per transfer (ESHRE 2007)
 - Delivery rate – 30.2% per transfer (ESHRE 2007)

5/18/2013

ESHRE 2013 PCC1

Egg-donation

- **Indication:**
- Both Ovaries removed
 - Endometriosis
 - Borderline cysts

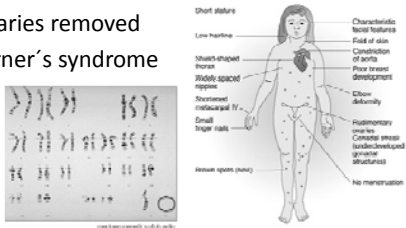


5/18/2013

ESHRE 2013 PCC1

Egg-donation

- **Indication:**
- Ovaries removed
- Turner's syndrome



5/18/2013

ESHRE 2013 PCC1

5/18/2013 11

Egg-donation

- **Indication:**
- Ovaries removed
- Turner's syndrome
- Premature menopause
 - < 40 years



5/18/2013

ESHRE 2013 PCC1

Egg-donation

- **Indication:**
- Ovaries removed
- Turner's syndrome
- Premature menopause
– < 40 years
- Anti-neoplastic treatment in childhood and adolescence (ovarian failure)



5/18/2013

ESHRE 2013 PCC1

Egg-donation

- **Indication:**
- Ovaries removed
- Turner's syndrome
- Premature menopause
– < 40 years
- Anti-neoplastic treatment in childhood and adolescence (ovarian failure)
- Low ovarian reserve (IVF failure – low responders)

5/18/2013

ESHRE 2013 PCC1

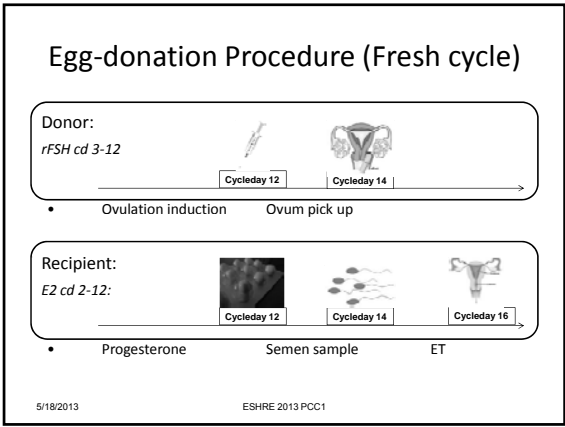
Egg-donation

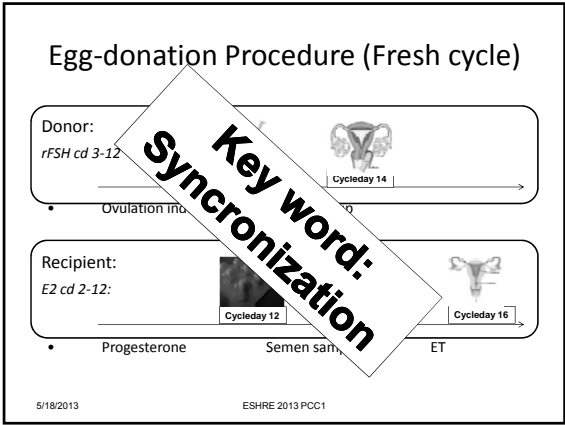
- **Indication:**
- Ovaries removed
- Turner's syndrome
- Premature menopause
– < 40 years
- Anti-neoplastic treatment in childhood and adolescence (ovarian failure)
- Low ovarian reserve (IVF failure)
- Possibility in women with genetic diseases where preimplantation genetic diagnosis (PGD) is not a possibility or if the woman refrain from PGD



5/18/2013

ESHRE 2013 PCC1





**Key word:
Synchronization**

Synchronization – a challenge with pitfalls

- Donor:
 - Normally regular cycles (23-35 days)
 - Complete control
 - contraceptive pill one-two months before donation
- Recipient:
 - Normally hormonal replacement therapy
 - Before oocytedonation
 - Estrogen replacement for up to 50 days

5/18/2013 ESHRE 2013 PCC1

Oocyte banking - definition

Oocyte banking is the procedure by which a woman stores unfertilized oocytes for future fertility use



5/18/2013

ESHRE 2013 PCC1

Oocyte banking - Indications

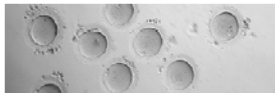
- Young women with malignant diseases
 - Potentially sterilizing therapy
- Young women with a low ovarian reserve
 - Ovarian surgery, endometriosis
- Infertile women at risk of developing ovarian hyperstimulation syndrome (OHSS)
- Unavailability of a male gamete on the day of ovum pick-up
- **Egg-donation**
- Social freezing
 - Women who wish to delay motherhood

5/18/2013

ESHRE 2013 PCC1

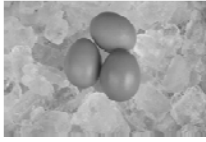
Oocyte banking - Procedure

- Conventional ovarian stimulation
- Ovum pick up
- Oocytes are denuded
- Oocytes are vitrified



5/18/2013

ESHRE 2013 PCC1



Oocyte banking in an egg-donation programme
Does it work?
YES !!

5/18/2013

ESHRE 2013 PCC1

Human Reproduction, Vol. 26, No. 4, pp. 992-996, 2011
 Printed in the United Kingdom © 2011 Oxford University Press

ORIGINAL ARTICLE Embryology

Efficacy of oocyte vitrification combined with blastocyst stage transfer in an egg donation program

Case control study from 2011
 Conclusion: "Vitrified oocytes preserve the potential to develop into high quality embryos similar to embryos from fresh oocytes"

5/18/2013

ESHRE 2013 PCC1

Human Reproduction, Vol. 26, No. 4, pp. 992-996, 2011
 Printed in the United Kingdom © 2011 Oxford University Press

ORIGINAL ARTICLE Embryology

Efficacy of oocyte vitrification combined with blastocyst stage transfer in an egg donation program

Javier I. Garcia*, Luis Noriega-Portillo, and Luis Moragas-Herz

Table 1	Study group	Controls	P
Oocytes (n)	312	786	
Metaphase II oocytes (n)	283 (91%)	696 (89%)	
Vitrified oocytes (n)	283	-	
Oocytes survived (n)	253 (89.4%)	-	
Injected oocytes (n)	251	695	
Fertilized oocytes (n)	191 (76%)	608 (87%)	
Good embryos day 2	90.8%	84.2%	NS

NS = Not significant

5/18/2013

ESHRE 2013 PCC1

Oocyte cryopreservation for donor egg banking

Ana Cobo ^a, José Remohí ^a, Ching-Chien Chang ^b, Zsolt Peter Nagy ^{b,*}

Donation cycles (n)	1051
Recipient cycles (n)	919
Age recipient (years)	41.2 (mean)
Total oocytes warmed (pr recipient)	12786 oocytes (12.9)
Total oocytes for ICSI (pr recipient)	11949 oocytes (11.4)
Fertilization rate (two PN)	8920 (74.7%)
High quality embryos on day 3 (n)	5366 (44.9%)
Embryos extended culture (n)	3568
High quality embryos on day 5	1427 (40%)
Implantation rate (fresh cycle)	655/1655 39,6%
Embryos cryopreserved	1915
Clinical pregnancies (n) per transfer (%)	502 (55,4%!!!)

5/18/2013

ESHRE 2013 PCC1

Oocyte cryopreservation for donor egg banking

Ana Cobo ^a, José Remohí ^a, Ching-Chien Chang ^b, Zsolt Peter Nagy ^{b,*}

Donation cycles (n)	1051
Recipient cycles (n)	919
Age recipient (years)	41.2 (mean)
Total oocytes warmed (pr recipient)	12786 oocytes (12.9)
Total oocytes for ICSI (pr recipient)	11949 oocytes (11.4)
Fertilization rate (two PN)	8920 (74.7%)
High quality embryos on day 3 (n)	5366 (44.9%)
Embryos extended culture (n)	3568
High quality embryos on day 5	1427 (40%)
Implantation rate (fresh cycle)	655/1655 39,6%
Embryos cryopreserved	1915
Clinical pregnancies (n) per transfer (%)	502 (55,4%!!!)

5/18/2013

ESHRE 2013 PCC1

Oocyte cryopreservation for donor egg banking

Ana Cobo ^a, José Remohí ^a, Ching-Chien Chang ^b, Zsolt Peter Nagy ^{b,*}

Donation cycles (n)	1051
Recipient cycles (n)	919
Age recipient (years)	41.2 (mean)
Total oocytes warmed (pr recipient)	12786 oocytes (12.9)
Total oocytes for ICSI (pr recipient)	11949 oocytes (11.4)
Fertilization rate (two PN)	8920 (74.7%)
High quality embryos on day 3 (n)	5366 (44.9%)
Embryos extended culture (n)	3568
High quality embryos on day 5	1427 (40%)
Implantation rate (fresh cycle)	655/1655 39,6%
Embryos cryopreserved	1915
Clinical pregnancies (n) per transfer (%)	502 (55,4%!!!)

5/18/2013

ESHRE 2013 PCC1

Oocyte banking in an egg-donation programme - CONs

- Cost:
 - Expensive in laboratory utilities
 - Time consuming in the laboratory
- Frozen cycle? – good results with vitrified oocytes!

5/18/2013 ESHRE 2013 PCC1

Oocyte banking in an egg-donation programme - CONs

- Cost:
 - Expensive in laboratory utilities
 - Time consuming in the laboratory
- Frozen cycle? – good results with vitrified oocytes !
- What about double vitrification?
 - Vitrified oocytes – surplus blastocysts after transfer – vitrified blastocysts?

5/18/2013 ESHRE 2013 PCC1

Cobo A. Outcome of cryotransfer of embryos developed from vitrified oocytes: double vitrification has no impact on delivery rates. *Fertility and Sterility*, 02/28/2013

Group 1 (vitrified oocytes)	Group 2 (fresh oocytes)
<ul style="list-style-type: none"> • 471 warming cycles • 796 embryos thawed • Survival rate 97.2% • Delivery rate per cycle: 33.8% 	<ul style="list-style-type: none"> • 2629 warming cycles • 4394 embryos thawed • Survival rate 95.7% • Delivery rate per cycle: 30.9%

5/18/2013 ESHRE 2013 PCC1

Cobo A. Outcome of cryotransfer of embryos developed from vitrified oocytes: double vitrification has no impact on delivery rates. *Fertility and Sterility*, 02/28/2013

Group 1 (vitrified oocytes)	Group 2 (fresh oocytes)
• Delivery rate per cycle:	• Delivery rate per cycle:
• 33.8%	• 30.9%

Controlled for confounding factors:

1. Egg-donation or autologous cycles,
2. Day-3 or blastocyst transfer
3. Natural or hormonal replacement cycle for ET
4. Single or double embryo transfer
5. Previous cycles
6. Number of oocytes
7. Doses of gonadotropins
8. Estradiol levels on the day of hCG

5/18/2013 ESHRE 2013 PCC1

Cobo A. Outcome of cryotransfer of embryos developed from vitrified oocytes: double vitrification has no impact on delivery rates. *Fertility and Sterility*, 02/28/2013

Group 1 (vitrified oocytes)	Group 2 (fresh oocytes)
• Delivery rate per cycle:	• Delivery rate per cycle:
• 33.8%	• 30.9%

Controlled for confounding factors:

1. Egg-donation or autologous cycles,
4. Single or double embryo transfer
5. Previous cycles
6. Number of oocytes
7. Doses of gonadotropins
8. Estradiol levels on the day of hCG

Double vitrification has no impact on delivery rates

5/18/2013 ESHRE 2013 PCC1

Oocyte banking in an egg-donation programme – PROs:

- Firstly:
- A large donor pool
- Recipients are guaranteed 5 to 7 mature eggs per cycle
- Low risk of cycle cancellation
 - Less than 3%

5/18/2013 ESHRE 2013 PCC1

Oocyte banking in an egg-donation programme – PROs:

- Secondly:
- Synchronization not required!!
- Donor eggs used when endometrial preparation in recipient is completed
 - No prolonged use of estrogen replacement with the risk of cancellation (breakthrough bleeding)
- No canceled cycles due to donors who fail pre-screening or has an unexpected low response
- Permission of a more accurate screening of infectious diseases
 - Oocytes in “quarantine” for 6 months until confirmation of serology of the donor

5/18/2013

ESHRE 2013 PCC1

Indeed more PROs than CONs

5/18/2013

ESHRE 2013 PCC1

**Egg banking in the United States:
current status of commercially
available cryopreserved oocytes**

Alexander M. Quake, M.D., Ph.D., Alexander Mohamed, M.D., M.F.J.I., Karine Chung, M.D.,
Kristin A. Sanderson, M.D., and Richard J. Paulson, M.D.

5/18/2013

ESHRE 2013 PCC1

Egg banking in the United States: current status of commercially available donor eggs

Article from 2013
Conclusion: Frozen donor eggs are currently widely available in the United States

Alexander M. Ouzas, M.D., Ph.D., Alexander Matamed, M.D., M.P.H., Karine Chung, M.D., Kristin A. Bendikson, M.D., and Richard J. Paulson, M.D.

5/18/2013 ESHRE 2013 PCC1

Important figures

- Seven commercial egg banks in the United States
 - All 7 answered the survey
- Existed for 2 years (median)
 - Range 1-8 years
- Currently 21.5 donors (median)
 - Range 6-100 donors
- Currently 120 available oocytes (median)
 - Range 20-1000 oocytes
- Recommended number of eggs was 6 per cycle
 - Range 4-7

5/18/2013 ESHRE 2013 PCC1

TABLE 1
 Characteristics of the seven identified commercial egg banks in the United States.

CFR	Freezing technique	Years in existence	No. of donors used to date	No. of donors currently available	No. of oocytes recommended
1	Vitrification	8	18	160	6
2	Vitrification	2	100	100	6
3	Vitrification	2	25	500	6
4	Vitrification	1	6	600	7
5	Vitrification	2	70	1,000	6
6	Vitrification	5	15	120	6
7	Slow freeze	7	60	250	4
Ouzas, Commercial egg banks in the U.S. Fertil Steril 2013.					
TOTAL:			294 donors	3130 eggs	

5/18/2013 ESHRE 2013 PCC1

Take home messages

- Egg-donation has high and comparable pregnancy and delivery rates when using fresh and vitrified oocytes
- Double vitrification does not affect delivery rates
- In an egg-donation programme oocyte banking has more PROs than CONs
- Vitrification of donor-oocytes is the solution for the logistic problems commonly occurring in an egg donation programme
- Oocyte banking is a promising new phenomenon

5/18/2013

ESHRE 2013 PCC1

Thank you

Elisabeth Clare Larsen MD PhD
The Fertility Clinic
Juliane Marie Centre
Rigshospitalet
Denmark



5/18/2013

ESHRE 2013 PCC1

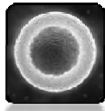
References

- Mouzon J de. Assisted reproductive technology in Europe, 2007: results generated from European registers by ESHRE. Hum Reprod 2012, 4: 954-56.
- Garcia JJ et al. Efficacy of oocyte vitrification combined with blastocyst transfer in an egg donation program. Hum Reprod 2011, 4: 782-90.
- Cobo et. al. Oocyte cryopreservation for donor egg banking. RBM-Online 2011, 23: 341-46.
- Cobo et al. Outcome of cryotransfer of embryos developed from vitrified oocytes: double vitrification has no impact on delivery rates Fertil and Steril 02/28/2013 Clinical Article.
- Quaas AM. Egg banking in the United States: current status of commercially available cryopreserved oocytes. Fertil Steril 2013, 3: 827-31.

5/18/2013

ESHRE 2013 PCC1

OOCYTE CRYOPRESERVATION: APPLICATIONS AND OUTCOMES IN THE USA



Nicole Noyes M.D.
Professor
NYU Fertility Center
NYU School of Medicine
New York, New York USA

ESHRE Pre-Congress
London
July 7, 2013

Learning Objectives

Appreciate the current status of oocyte cryopreservation as the technology becomes increasingly applied to females with the need and/or desire

Indications for Oocyte Cryopreservation

1. Medical

- Newly-diagnosed malignancy requiring gonadotoxic therapy
- Non-cancer medical conditions
 - Sickle cell, Systemic lupus erythematosus, Scleroderma, BRCA gene mutation carrier
- IVF indications
 - Lack of sperm day of retrieval
 - Risk for ovarian hyperstimulation syndrome

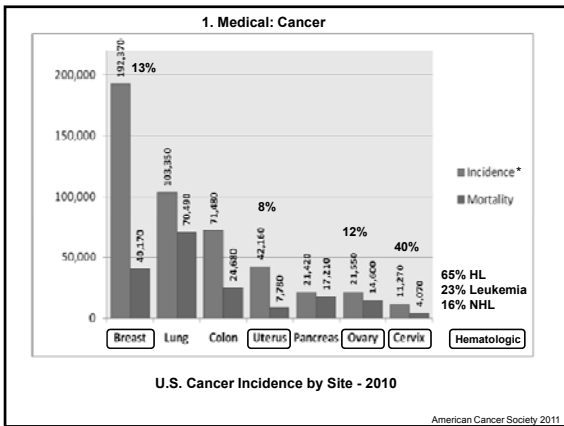


Bhutanese woman carrying hay to her home 2007

2. Oocyte donation - "Donor Banks"

3. Personal reasons for deferring parenthood

4. Emergencies



2006 ASCO Guideline Summary

JOURNAL OF CLINICAL ONCOLOGY | ASCO SPECIAL ARTICLE

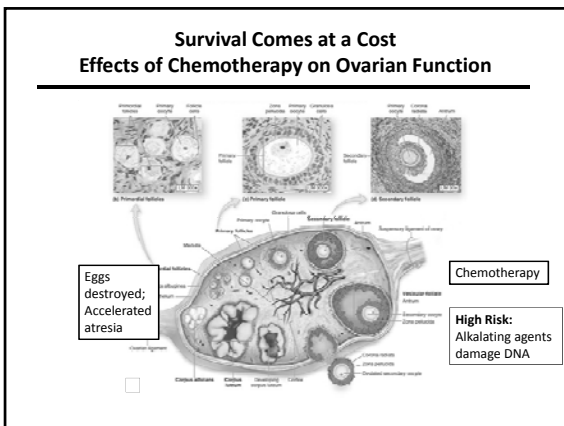
American Society of Clinical Oncology Recommendations on Fertility Preservation in Cancer Patients

Stephanie J. Lee, Leslie R. Schover, Ann H. Partridge, Joseph A. Sparano, W. Henshèr Wallace, Karen Higgins, Lindsey N. Beck, Lawrence V. Brennan, and Kristak Oluy

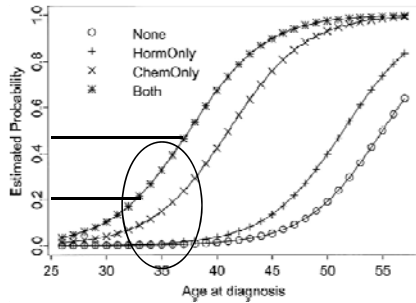
As part of informed consent prior to therapy, oncologists should address the possibility of infertility with patients as early in treatment planning as possible¹

FP is an important, if not necessary, consideration when planning cancer treatment in reproductive-age patients

¹ Lee SJ, Schover LR, et al., J Clin Oncol 2006



Probability of Menopause During 1st Year after Breast Cancer Diagnosis



Goodwin, P. J. et al. J Clin Oncol 1999;17:2365.

Bone Marrow Transplantation
Associated with Ovarian Failure

- Bone Marrow Ablation/Transplantation
 - Myeloproliferative chemotherapy (high dose cyclophosphamide + busulfan or thiotepa) and irradiation

Ovarian Failure following BMT

Sanders, 1996	99%
Teinturier, 1998	72%
Thibaud, 1998	80%
Meirow, 1999	79%
Grigg, 2000	100%

2. Donor Egg Banking
Demand at an all-time high



USA: 15,000 DE transfers/year (SART.org 2009)

U.S. Donor Egg Banks



The right donor.
The best experience.

Welcome to the Pacific Northwest Donor Egg Bank.
Thank you for your generous interest in helping a family with your donation. We're here for you every step of the way.
At the Pacific Northwest Donor Egg Bank, we offer all the convenience and security of a private egg bank with the added security, care and support of a professional, non-profit organization.
We're here for you every step of the way.

3. Personal Indications



4. Emergencies



My beach house street

Hurricane Sandy
October 2012

DIMINISHING OVARIAN RESERVE

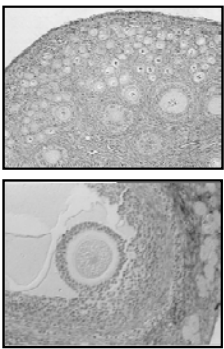
20 weeks gestation: 6-7 x 10⁶ oocytes
No further germ cell proliferation
Progressive atresia begins

Birth: 1-2 x 10⁶ oocytes
Oocytes arrested at prophase 1
as primordial or primary oocytes

Puberty: 300,000 (15%) oocytes
Monthly cohort of follicles initiate
growth and development
one "ovulates"
others become atretic

Age 30: 240,000 (~12%) oocytes
Age 40: 60,000 (~3%) oocytes
accelerated atresia

Coincident is a ↓ in quality of oocytes



F E R T I L E

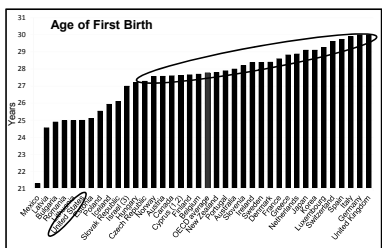
WOMEN ARE WAITING TO HAVE CHILDREN

U.S. Census Data

Women
65 million of reproductive age

Birthrate Decline
teenage
20-29 yrs
30-34 yrs

Birthrate Rise
35-39 yrs
40-44 yrs
(highest since 1969)



2008, Organization for Economic Cooperation and Development. www.OECD.org

Given the choice, both men and women prefer
Reproductive Autonomy

Not only are people having children later, they're having less children.

WHY?

Professional/life aspirations, responsibility, economics, readily available birth control and less "need" for offspring in the early reproductive years

Hutterites:


Average # live births per woman:

1950s → 9 - 10
1980s → 5

Why?

Technology

Advanced farm equipment



Oocyte Cryopreservation History

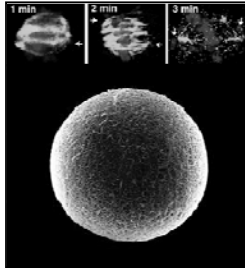
- First human pregnancy was reported in 1986

- Early results disappointing

- Low oocyte survival, fertilization and pregnancy rates

- Why oocytes difficult to freeze –

- Large cell size (100 micrometers)
- Ice crystal formation
 - Aqueous: High water content (80%)
 - Chromosomal arrangement (spindle)



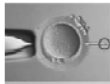
Zerres 2001 Fertil Steril 75: 769

Oocyte Cryopreservation Breakthroughs

- Fine-tuning dehydration protocols through modifications in cryoprotectant combinations, concentrations and exposure times

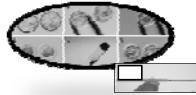
- Fertilization by Intracytoplasmic Sperm Injection (ICSI) - 1995

- Circumvents zona pellucida hardening that may occur during freezing process

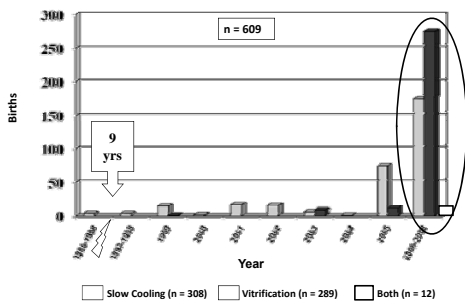


Gook et al. ICSI and embryo development of human oocytes cryopreserved using 1,2-propanediol. Hum Reprod 1995; 10:2637

- Development of novel "cryotools"



History Human Oocyte Cryopreservation Worldwide Literature-Reported Live Births



Noyes, Borini, Porcu. Reprod Biomed Online 2009;18:769

Human Reproduction Update, Vol.13, No.6 pp. 591-595, 2007
 Advance Access publication September 10, 2007

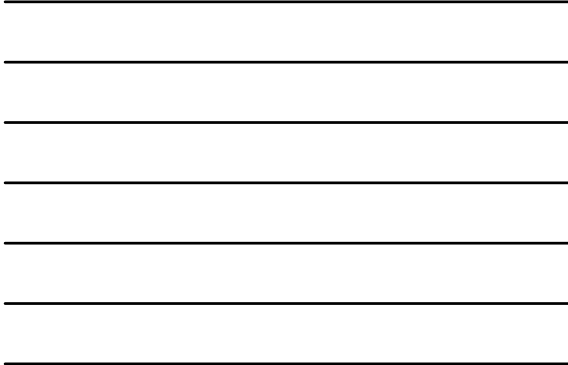
doi:10.1093/hrop/13.6.591

Human oocyte cryopreservation

Debra A. Cook^{1,2,3} and David H. Edgar^{1,2}

¹Reproductive Services/Melbourne IVF, Royal Women's Hospital, 132 Grattan Street, Carlton, Victoria 3053, Australia; ²Department of Obstetrics and Gynaecology, University of Melbourne, Melbourne, Australia

Comprehensive review of oocyte cryopreservation safety and success as of 2007



Article
 Over 900 oocyte cryopreservation babies born with no apparent increase in congenital anomalies

Debra A. Cook^{1,2,3} and David H. Edgar^{1,2}

Department of Obstetrics and Gynaecology, Royal Women's Hospital, 132 Grattan Street, Carlton, Victoria 3053, Australia; ²Department of Obstetrics and Gynaecology, University of Melbourne, Melbourne, Australia; ³Reproductive Services, Royal Women's Hospital, 132 Grattan Street, Carlton, Victoria 3053, Australia

Abstract
 Over 900 babies born to women who had frozen oocytes for assisted reproduction have been born with no apparent increase in congenital anomalies. This study was designed to determine if there is an increase in congenital anomalies in babies born to women who had frozen oocytes for assisted reproduction compared with babies born to women who had not frozen oocytes for assisted reproduction.

Experimental Designation

Cumulative Oocyte Preservation Outcome Data

No increase in birth anomalies

Table 5. Birth anomalies in assisted conceptions versus oocyte cryopreservation, fetal loss conceptions or natural conceptions

Birth anomaly	Approximate incidence in natural conception births	Incidence in total of 926 oocyte cryopreservation births (%)
All	Over 10	12 (over 1%)
Chromosomal	Over 10-25	1
Cardiac defects	Over 125	3
Neural tube defects	Over 100	0
Cleft lip and palate	Over 710	1
Clubfoot	Over 115	1
Amniotic-Chorio syndrome	Over 1200	1
Chromosomal	Over 1000	1
Pharyngeal atresia	Over 10,000-12,000	1
Hydrocephalus-Taybi syndrome	Over 100,000-125,000	1



Oocyte Cryopreservation Survey of USA IVF centers

- 442 centers contacted: 282 (64%) responded over 49 states
- 51% of programs currently offer oocyte cryopreservation
- 337 live births from 857 thaw cycles: 39.3% live birth rate

~Similar to embryo thawing success

Rudick, Oppen, Paulson, Bondilikon, Chung. Fertil Steril 2010. Epub ahead of print. DOI: 10.1016/j.fertster.2010.04.079

TABLE 3
 Oocyte cryopreservation outcomes

Outcome or parameter	Total responses (n = 442)
ALL OF USAS STATES	
Mean age	32.7 y
Range	18-50 y
Mean cycle	231 (43%)
Mean cycle	207 (42%)
Mean cycle	281 (42%)
Time of cycle	
Mean	0
Range	0-200
Total	587
No. of thawed cycles	
Mean	1
Range	0-10
Total	862
Fertilization rates	
Mean	67%
Range	0-100%
Total	10%
No. of live births	
Mean	1
Range	0-8
Total	337

Table 3. Live births from oocyte cryopreservation in the United States (live birth rate)



Supporting Data for Oocyte Banking

Donor Oocyte Cycles
Randomized Controlled Trial - Vitrified vs. Fresh

	Vitrified Oocytes n = 295	Fresh Oocytes n = 289
Mean age of egg donor (y)	26.7	26.6
Estradiol day hCG (pg/ml)	2879	2892
Mean no. oocytes	10.3	11.2
Fertilization %	74.2	73.3
Mean no. embryos transferred	1.7	1.7
Implantation rate %	39.9	40.9
Clinical pregnancy rate/transfer %	55.4	55.6

* No significant difference in any parameter

Cobo et al. Human Reprod 2010;25:2239

Oocyte Cryopreservation

Donor Oocyte – Fresh vs. Vit
77 transfers

Kostas M. Trokoudis, M.D.,^a Constantinos Pitarides, M.Sc.,^a and Xiao Zhang, M.D., Ph.D.^{b*}
^a Poulos IVF Center, Nicosia, Cyprus and ^b Oak Fertility Center, Cork, Ireland

TABLE 2
Cycle outcomes: comparative data for recipients of fresh and vitrified oocytes.

Outcomes	Fresh	Vitrified	P value
Oocyte survival (%)	N/A	192 (91.4%)	N/A
Fertilisation rate (%)	214 (86.6%)	192 (91.4%)	.50
No. of fertilised oocytes per recipient ± SD	6.7 ± 0.26	6.6 ± 0.25	.70
No. of cleaved embryos per recipient ± SD	5 ± 0.27	4.3 ± 0.23	.08
Good embryos on day 3 (%)	124 (80.4%)	100 (84.3%)	.39
Embryos transferred per recipient ± SD	0.98 ± 0.08	0.95 ± 0.09	.70
Embryos cryopreserved per recipient	6 (13.5%)	5 (13.9%)	.51
Clinical pregnancy rate per embryo transfer (%)	20/41 (48.8%)	20/36 (55.6%)	.55
Implantation rate (%)	22/95 (23.2%)	20/91 (22.1%)	.8
Ongoing pregnancy rate per embryo transfer (%)	18/41 (43.9%)	17/36 (47.2%)	.89
Live-birth rate (%)	17/41 (41.5%)	17/36 (47.2%)	.81

Note: N/A = not applicable; SD = standard deviation.
Pitarides. Vitrified oocytes for donation. Fertil Steril 2011.

Trokoudis et al. Fertil Steril 2011 May;95:1998

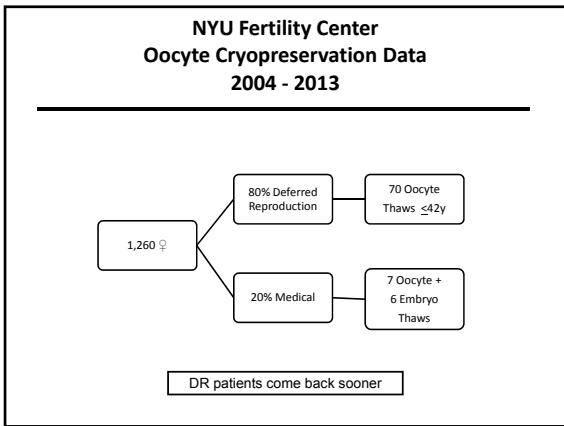
Embryo development of fresh 'versus' vitrified metaphase II oocytes after ICSI: a prospective randomized sibling-oocyte study

Table II Clinical outcomes of cycles performed with vitrified/warmed oocytes

	Patients included (N = 40)
Number of warmed oocytes (mean ± SD)	3.1 ± 0.30
Number of embryos transferred (mean ± SD)	2.1 ± 0.88
Number of embryos transfer performed (%)	36/40 (90%)
Clinical pregnancy rate per cycle (%)	15/40 (37.5)
Clinical pregnancy rate per transfer (%)	15/27 (55.6)
Ongoing pregnancy rate per cycle (%)	12/40 (30.0)
Ongoing pregnancy rate per transfer (%)	12/27 (44.4)
Implantation rate (%)	19/91 (20.9)
Ongoing implantation rate (%)	16/93 (17.2)

OC can offer comparable outcomes to fresh IVF even when using a restricted # of oocytes

Renzi et al. Hum Reprod 2010;25:66



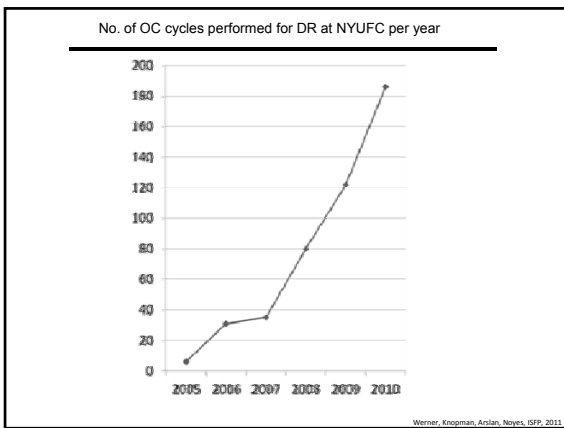
NYU Fertility Center Non-Cancer Thaw Data Oocytes From Women ≤Age 42

n = 70 cycles: 21 donor + 49 autologous

	Donor 21-31 y (n = 21)	Autologous 25-34 y (n = 17)	Autologous 35-39 y (n = 18)	Autologous 40-42 y (n = 14)
Mean age (y)	29	32	38	41
No. MII thawed	11	16	9	8
No. transferred	2.1	2.1	2.1	2.5
Pregnant n (%)	17 (81%)	10 (59%)	7 (39%)	3 (21%)
Spont Abortion	3	1	1	1
Ongoing/Delivered	14 (67%)	9 (53%)	6 (33%)	2 (14%)
	2 ong*, 12 del (8 single, 4 twin)	1 ong, 8 del (5 single, 3 twin)	2 ong, 4 del (4 single)	1 ong, 1 del (1 single)

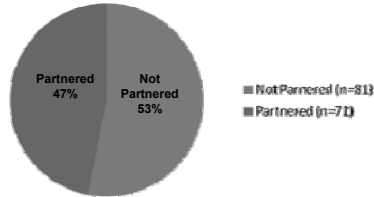
Excludes PGD/PGS cycles and ≥43y oocytes. *1 baby from refrozen embryos.

Ongoing/LBR: 31/70 = 44% (Autologous: 17/49 = 35%)
 25 women have delivered 32 liveborn infants + 6 ongoing pregnancies



NYU Experience - Cancer

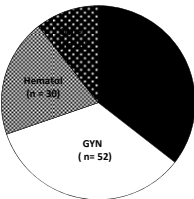
- After documenting success using OC techniques, we began offering OC as a FP measure for cancer patients
- Patients offered Oocyte (OC) and/or Zygote Cryopreservation (ZC)
- Evaluation includes 166 female cancer patients referred for FP from April 2005 to October 2012. 152 pursued treatment (mean age 31 y):



Cancer Patients Electing Fertility Preservation Demographics and Cycle Outcomes

n = 152 patients; 162 cycles

Diagnosis

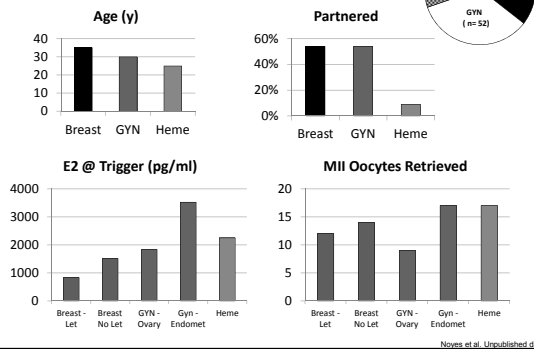


Patient age (y)	31
No. days from REI consult to retrieval when treatment deemed urgent	17 (8 - 30)
No. days ovarian stimulation	10 (5 - 12)
E2 day of ovulation trigger (pg/ml)	1785 (319 - 6881)
No. oocytes retrieved (n = 2,878)	18 (0* - 75)
No. mature (MII) oocytes (n = 2,195)	14 (0* - 53)

	OC - Cancer (n = 50)	OC with thaw - Non-Cancer (n = 32)	p
Age (y)	31 ± 1	32 ± 1	0.9
No. MII frozen	15 ± 2	14 ± 2	0.9

Werner et al. JARG 2010;27:613

NYUFC Data - By Cancer Type 2005 - 2012

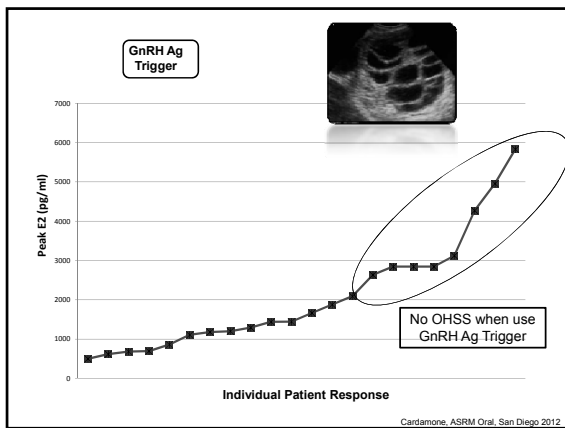


Young Patients Cycle Outcomes – Pts <25 y vs. Donors

	Study group (n= 51)	Control group (n= 50)	P-value
# Stimulation Days	13 ± 3	11 ± 4	0.03*
Peak E ₂ (pg/ml)	2114 ± 1406	2161 ± 1075	0.8
# Oocytes	20 ± 13	24 ± 14	0.1
% MII Oocytes	82	86	0.3

Don't dose up unless prior chemotherapy

Cardamone, ASRM Oral, San Diego 2012

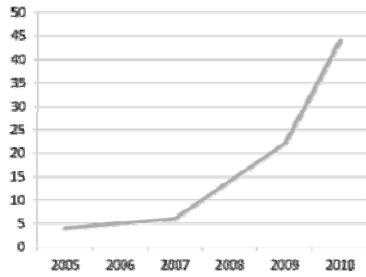


Medical Thaw Cycles

12 patients completed 19 cycles: 12 zygote and 7 oocyte thaws

Diagnosis	Age (y)	No. Eggs Frozen	No. 2PN Frozen	No. Thawed	No. Transferred	Outcome
Cervical Cancer	28	12		14	2	Twice Ongoing
CNS	29	8		8	3	Neg
*Uterus Sarcoma	31	6		6	2	Neg
Breast	33	12		12	2	Ongoing
Breast	30.5	14		8	4	Neg Singleton
Ovary	34		8	3	2	Neg Ongoing
Ovary LMP	34		10	3	2	Neg Neg
Ovary LMP	39		3	3	2	Neg Neg
*Cervix Adenocarcinoma	29	15	14	2	1	Singleton
Ewing's Sarcoma	29	12	11	2	2	Singleton Ongoing
*Cervix Adenocarcinoma	30	4	3	3	2	Neg Neg
Breast	32	22	25	9	2	Spont Ab Spont Ab
Means	32 y	12	9	8 oocytes 4 zygotes	3 (oocytes) 2 (zygotes)	6/19 (50%) successful; 1 twice

Number Medically-Indicated OB Cycles Performed per Year



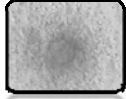
Hurricane Sandy


- 19 cycles performed elsewhere
- 9 oocyte cryopreservation cycles in lieu of IVF
- Mean age: 35±2 y
- 60% ongoing pregnancy rate

Conclusions

- Oocyte cryopreservation is a reasonable FP option being embraced in the USA for expanding list of indications
- Ideally, oocyte cryopreservation offers the broadest clinical application, has achieved the greatest strides in the last decade and now can result in reasonable pregnancy outcomes in appropriately selected candidates
- Prior to proceeding with any FP measure, interested individuals require thoughtful counseling and should be provided realistic statistics and options related to their reproductive future
- Disposition issues must be considered and discussed, especially in the setting of cancer
 - Ethics, Heir rights
- Cost/Insurance coverage
 - Removal of an “experimental” label should improve insurance coverage for some patients/indications




THANK YOU
nicole.noyes@nyumc.org








Counseling of women opting for oocyte cryopreservation for prevention of age related fertility loss or 'Social Freezing'

Prof. Dr. Julie Nekkebroeck
ESHRE 07/07/2013 - London

Learning Objectives




- Have more insight in the profile of women applying for oocyte vitrification for non-medical reasons
- Learn about why social freezers need counseling
- Learn about how to counsel social freezers

2

Overview of the presentation

- What is social freezing?
- What is counseling?
- Are social freezers in need of counseling?
- Guidelines for counseling
- How do we counsel at the CMG UZBrussel?
- Overview of the population sample
- Conclusions
- References

3

What is social freezing?

- Women will deliberately postpone motherhood
- Mostly career women
- No guarantee on childbearing hence, false hope
- A stress-inducing high technological fertility treatment without having an actual fertility problem
- Safety of the ART techniques for later fertility and the impact on child development



What about women's benefits and reproductive autonomy and equal opportunities for men and women?



Universitair Ziekenhuis Brussel



Centrum voor Medische Genetica



Centrum voor Reproductieve Geneeskunde

4

What is counseling?

Definition and aims of counseling

- Support, guidance and advice rather than change
- Explore, understand and resolve infertility (treatment) issues
- Clarify ways of dealing with the problem
- Consider the needs of the patient and other affected persons
- Different functions and/or goals



Universitair Ziekenhuis Brussel



Centrum voor Medische Genetica



Centrum voor Reproductieve Geneeskunde

5

Counseling within infertility (Strauss, B., Boivin, J. 2002)

What is counseling?

Different types of counseling

- Information gathering and analysis
 - Implications and decision-making counseling
 - Support counseling
 - Crisis counseling
 - Therapeutic counseling
- } patient-centered care
- } infertility counseling
- } psychotherapy



Universitair Ziekenhuis Brussel



Centrum voor Medische Genetica



Centrum voor Reproductieve Geneeskunde

6

Counseling within infertility (Strauss, B., Boivin, J. 2002)

Social freezers in need of counseling?

1. **High Distress levels**
2. **Third party reproduction**
 - To be avoided with oocyte vitrification
3. **Fertility service because of social circumstances**
 - Single motherhood
 - Lesbian motherhood
 - **Oocyte vitrification**
 - **NO fertility (medical) problem at the moment**
 - *"Cryopreservation for social and not medical reasons means that the freezing institution is dealing with a customer and not an infertile patient. The management of customer expectations is radically different from infertile patients as there is 'nothing wrong with them'; they are simply using a service". Bio News 2009.*

Guidelines for counseling in infertility: outline version (Boivin, J. et al. 2001)

Social freezers in need of counseling? High Distress

Personal Factors	Social freezers?
Pre-existing psychopathology	?
Primary infertility	NO
Being a woman	YES
Parenting = central goal	?
Avoidance coping strategy	?
Situational Factors	Social Freezers?
Poor partner relationships	YES
Impoverished social network	NO
Frequent reminders of infertility	NA
Treatment Factors	Social Freezers?
Side effects of the medication	YES
Miscarriages	NO
Prior treatment failure	NO

Social freezers in need of counseling?

YES, they are!!

Because:

- **Use of a fertility service for non-medical reasons**
 - Offer implication and informed decision-making counseling
- **(High) Distress might be experienced**
 - Offer support counseling / crisis counseling

Guidelines for Counseling

Do's

Discuss:

- Fertility preservation for what it is
- Best chance of having a child
- Small percentage of women actually using the oocytes
- Alternatives
- Nature, risks and limitations of the procedure, the storage conditions, the time frame for use, the costs, the use and fate of the left-over oocytes
- Number of oocytes required for successful reproduction
- The long-term safety of the of children

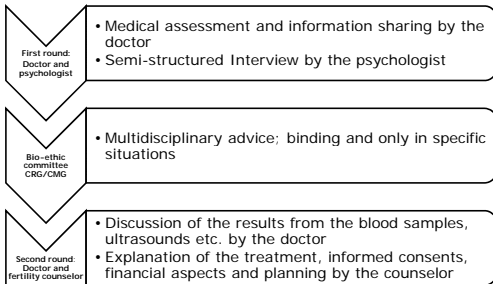
Don't's

- Raise false hopes!
- Present this option as a warrant for successful future reproduction (Harwood, 2009)
- Recommend oocyte cryopreservation for women > 38 years

ESHRE Task Force on Ethics and Law
(Dondorp et al., 2012)



Procedure at the CRM UZBrussel



11

Procedure: Responsibilities of the psychologist

- Perform a screening interview
- Formulate an advice concerning treatment
 - **Gatekeeper** function
- In case of contra-indication(s): presentation of the case at the Bio-ethics committee (CRG/CMG)
- Offer psychological advice or support prior, during or after treatment on request of the doctor or the patient
- **Re-evaluation when the candidate wants to recuperate her cryopreserved oocytes!!**



12

Procedure: Screening interview

- **Socio-demographics:** age, nationality, profession, education
- **Family background:** parents, siblings, quality of the family relations
- **Relationships:** relational status, number, duration and quality of relations in the past, desire partner vs. desire for a child, actively searching for a partner
- **Desire for a child:** presence of the desire, reason for childlessness
- **Discovery** of the possibility to vitrify oocytes
- **Motives** to opt for this treatment and/or alternatives
- **Openness** and received support
- **The treatment:** ethical/moral aspects, (des)advantages, number, financial aspects
- **Use of the vitrified oocytes:** age, pathways to conception, destination of left-over oocytes

Procedure: Contra-indications

- Intake interview did not take place before the 40st birthday
- Hormonal problems – Fertility status?
- Psychiatric problems confirmed by a psychiatric diagnose and/or a team of specialists and/or for which a therapy was necessary (medication/psychotherapy)
- Dependency problems (alcohol, drugs, psycho pharmaceutical drugs)
- Financial problems
- Mental retardation
- Physical impairment (motor, visual and/or audibility) and/or suffering from a chronic degenerative and/or genetic disorder

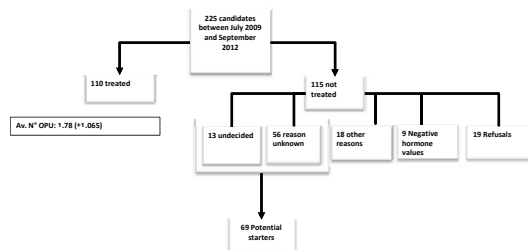
Or a combination of the above

Advice from the Bio-ethics committee of the Centre for Reproductive Medicine and the Centre for Medical Genetics



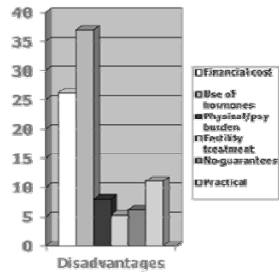
Overview of our population sample

225 candidates between July 2009- September 2012



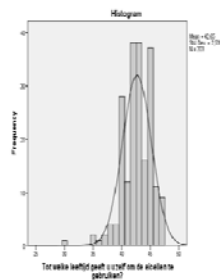
Attitudes and concerns

- **No moral, religious (99.6%) or ethical objections (94.2%)**
- **No concerns about:**
 - Undergoing a fertility treatment while being considered fertile (94.7%)
 - Lack on information on the development and health of the children (94.8%)
- **Other disadvantages:**
 - Fears; stigmatization, gynecological examination, switched oocytes, child-development



Treatment aspects

- **71.4% can afford different treatment cycles on their own**
- **26.8% can afford one treatment cycle**
- **Repeat the treatment 2.11 (±.64) times** depending on;
 - How the first attempt was experienced
 - Number of oocytes retrieved the first time



Use of the vitrified oocytes

- **In 79.6% of the cases, when having met the right partner:**
 1. Natural conception
 2. IVF with fresh material
 3. Use the vitrified oocytes
- **No longer in need of the vitrified oocytes:**
 - N°1: Donate for Scientific research (33,3%)
 - N°2: Destruction (14.6%)
 - N°3: Known donation (9.1%)
 - N°4: Anonymous donation (6.8%)
 - No idea (25.6%) – Absolutely no destruction (6.8%)

Conclusions: Preliminary profile

- Highly educated single women of an older reproductive age
- Struggling with relationships but having a strong desire for a partner
- Pivotal events
- Simultaneously actively engaging in finding a partner
- Advantages
- Aware of the risks and limitations of the treatment
- Disadvantages
- Precious goods

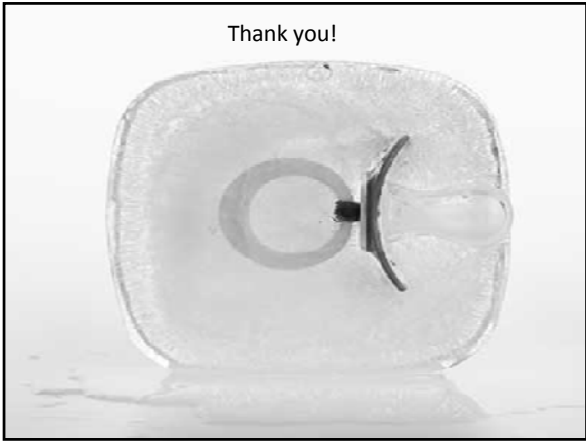
Conclusions: Counseling


- Women applying for oocyte vitrification for non-medical reasons are to be counseled
- Implication and informed decision-making counseling
- Non-directive with respect for the reproductive autonomy
- Support counseling in case of emotional distress
- More research is needed in order to refine counseling:
 - Follow-up of the vitrification experience
 - Online survey addressing: attitudes towards work, experiences in close relationships, personality features

References

- W. Dondorp, de Wert G., Pennings G., Shenfield F., Devroey P., Tarlatzis B., Barri P. and Diedrich K. (2012). Oocyte cryopreservation for age-related fertility loss. *Human Reproduction*, vol. 27, No 5, pp. 1231-1237
- J. Boivin, T.C. Appleton, P. Baetens, J. Baron, J. Bitzer, E. Corrigan, K.R. Daniels, J. Darwish, D. Guerra-Diaz, M. Hammar, A. Mc Whinnie, B. Strauss, P. Thorn, T. Wischmann and H. Kentenich (2001). Guidelines for counseling in infertility: outline version. *Human Reproduction*, Vol. 16, No 6, pp. 1301-1304.
- B. Strauss and J. Boivin Counseling within infertility. In Boivin J, Kentenich H, editors. *Guidelines for counseling in infertility*. Oxford University Press; 2002, p 4-6.

Thank you!






Ethical issues of Social oocyte freezing
 Françoise Shenfield, UCLH, London, member Ethics and Law TF

ESHRE annual meeting , 2013, PCC paramedical

Disclaimer


The speaker has nothing to disclose



PCC 1: Fertility preservation, the new frontier, 2013

Learning objectives

- To understand what are the **ethical issues** raised by social oocyte cryopreservation (freezing): SOC
- To be able to **analyse** them in a systematic manner , whether **general** or **specific**
- To be able to question the **objections** to social freezing (convenience) and argue "pros and cons" (**dialectics**)
- To understand the legal/demographic and sociological context for access to ART (in Europe) , and its **application to social freezing**



ESHRE PCC1, annual meeting 2013

Back to basics: bioethics, and how?

- "Philosophy is not a doctrine, but an activity with the aim to logically clarify one's thinking" Wittgenstein
- Ethics (branch of philosophy) : **logical analysis of our moral dilemmas**
- Why? Because we are "citizens in the city" (not "merely "paramedical, medical, scientists,)
- Ethics challenges our beliefs and "a priori " positions in a logical fashion; bioethics applies to science and medicine
- Tools (short guide): (3 to) four principles: respect of **autonomy; bene v non maleficence; justice**



ESHRE PCC 1, annual meeting 2013

The tools applied to ART and SOC

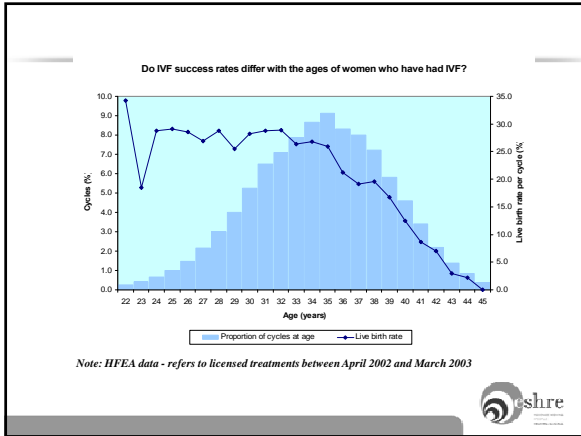
- The (3 to) 4 principles Beauchamp and Childress
 - **Autonomy** (respect of): women (like men) are autonomous v society/ a profession decides what is good for them ("paternalism"); but the "career woman " may not "choose" to postpone maternity
 - **Beneficence/Non maleficence**: 1 (or 2) patient(s) + **future offspring* in ART**
 - **Justice**: **access** via a state funding system; only privately (? equity); or in an insurance system; **is there an alternative? (egg donation)**
- *welfare of the child, in our specialty



SOC: useful, needed, necessary? (the facts)


- There is a "**demographic age shift toward later conception** (which) results in an increased age in the subfertile population and...
- an **increased demand** for medical care" (de Graaff, Land, Kessels and Evers, Fert and Ster, 95, 1, January 2011: 61-66)
- **Access varies** between (European/ worldwide) countries: legal and financial issues (political); this **includes age** (UK v France)
- Justice: **equity** of access, limitless access (justice and equity), or **age limits** (added to other limits already in place)?
ovarian reserve decrease with female age v male fertility
- There is increased **Cross Border Reproductive Care (CBRC)**, **mostly for egg donation**






Scientific background

- **Scientific background** (discussed today):
 1. radical change of **technical efficiency** since **vitrification**, non inferior to fresh oocyte in OD programme (**Cobo et al 2010**); **ASRM (2013)**: not "research" anymore
 2. "**Unexplained**" **infertility**: more and more "older women, or prejudiced ovarian reserve"
 3. less "scientifically": much web information, not so much at school or university



Objections to SOC (a feminist pragmatic approach)

- Against nature? : our daily (**scientific**) work indeed!
- Increased medicalisation of reproduction and the myth of the "selfish career woman": the devil and the deep blue sea: the **medical** (preserving) model accepted for ca patients, **decried** for healthy patients but ...knowing one's reproductive ability will decrease affects ..."a person most central life project (s)" and is essential part of wellbeing for many
- Too many > 50 pregnant? (maleficence+ for woman and future child) : make the news headlines but a rare event
- In practice, should there be limits to this new reproductive autonomy?



Limits or limitless autonomy?

- **Empowering women** by **informed** decision making: the key to **autonomy**; (potential for) **success** (rates) declining with age, number of oocytes needed for 1 pregnancy (from 20 -25 vitrified if 4-5% live birth rate per vitrified oocyte; to around 10 if success rate is around 10% (*how do you define success?*))
- **Age limits:** 1. for cryo : **honesty in information** (no distorted advertising), with age related expectations of number oocytes and number cycles needed as well as costs, safety (non male)
 2. for use : dangers of maternity >50





Doing good v less harm (including Welfare Child)

- **Beneficence:** "emancipation written in stone" (Homburg et al) v "appeal to the limits of medicine" (see contraception, sterilisation); the woman might have remained childless if no SOC
- **Non maleficence:** how much burden (depends on age and number of cycles necessary); should we **stop offering at 35?** : **need for proper independent evidence based counselling**
- **Welfare of the child and age of the mother/parents:** risk of pregnancy > 50 (**use same limits as egg donation**); **at least one parent able to fulfill parental role till child becomes adult** (Ethics and law TF)



Justice and societal implications

- **Who will pay?** Fear that natural reproduction will be replaced by ART and cost to society....but ART may be more cost effective with younger eggs in older women (Mertens and Pennings 2012)
- **Coverage:** the state, the woman, insurance, fairness and postponed conditional reimbursement
- Left over oocytes may be used for **research and donation:** use the HFEA model at time of cryopreservation ("if I die or become mentally incapacitated..."): **prior consent**
- **From OC to OD** will rekindle several (ethical) questions: 1. gametes **anonymity** France v UK for instance;
2. **compensation** (disproportionate?, egg sharing, freeze and share agreement)



Other (ethical) advantages

- The **status of the embryo v status of gametes: 30 years + of debate**; cases like the Evans case avoided?
Evans v United Kingdom, 46 Eur. H.R. Rep. 34(2008), Grand Chamber, European Court of Human Rights | 04 October 2007 (IVF, ca ovary, divorce); no infringement of article 8 ("respect of family and private life), article 2 (embryo no right to life) and no discrimination" (article 14)
- **Transmission of maternal genetic input v egg donation: the Evans case** ; also « **younger eggs** » used at later age (less genetic anomalies)
- Easier management of OD cycle



Other (legal) advantages S.H. v Austria

- (egg donation) subsidiarity: the ECtHR held that the individual member states of the Council of Europe should themselves decide **whether, how, and when** to allow citizens to use reproductive technology
- Austria prohibits egg donation altogether and sperm donation for IVF because it favours genetic ties in parent-child relationships and wishes to protect women who might be exploited by egg donation. Austria does not object to sperm donation for artificial insemination because it is a well-known and not particularly sophisticated method that can easily be performed at home and would be difficult to prevent (*where is equality?*)
- *Would SOC help Austrian women?*



POLEMIQUE AUX ETATS UNIS : DES FEMMES ONT CONGELÉ LEURS OVULES. UN BEBE POUR PLUS TARD ?



Peut-on aller au congélateur à leur insu ou au lieu d'être puni pour le père idéal des Américains font congeler leurs ovules pour dilater leur grossesse. Des entreprises ont tenté de briser l'affaire.

shre

FROZEN EGG BANK Inc. Selling eggs v donation, + - compensation (eg 900 euros, egg sharing..)



Basic Package (6 eggs).....\$15,000
Premium Package (12 eggs).....\$25,000

shre

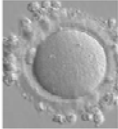
Recommendations (Ethics and Law TF)

- **Should be available to those who want to “protect their reproductive potential against the threat of time**
- Offer in **expert** centres and not raise false hopes, with personalised information
- **Explain** relatively new, little follow up offspring and long term **safety**
- **Policy makers** to consider how to **compensate** women who have stored oocytes at time of use
- **Freeze and share:** counsel re gametes donation implications
- ART professionals promote and contribute age awareness in fertility matters

shre

Oocyte freezing as "insurance"

- requires good ovarian function
- risks of ovarian stimulation & egg collection
- success rates rising vitrification
- unknown risks to future offspring
 - no long-term outcome data
 - short term




References


ESHRE TF Ethics and Law 13, Pennings et al (2007): The welfare of the child in medically assisted reproduction. Hum Rep 22 (10):2585–2588

Homburg R, Van der Veen F, Silver SJ (2009): Oocyte vitrification-women's emancipation written in stone. Fert and Ster (91): 1319-1320

Mertes and Pennings (2011) : Social egg freezing: for better, not for worse. RBM Online 23: 824-829

Lockwood G (2011): Social egg freezing: the prospect of reproductive immortality or adangerous delusion? RBM online, 23 (3): 334-40

ESHRE TF on Ethics and Law, Dondorp et al (2012): Oocyte cryopreservation for age -related fertility loss. Hum Rep 27 (5): 1231-1237



ESHRE PCC 1 London 2013

You can now register for these upcoming ESHRE Campus events:

- Application and challenges of emerging technologies in preimplantation and prenatal diagnosis
12-13 September 2013 - Prague, Czech Republic
- Female genital tract congenital malformations: new insights in an old problem
27-28 September 2013 - Thessaloniki, Greece
- Introducing new techniques into the lab
4-5 October 2013 - Barcelona, Spain
- Polycystic ovary syndrome: A new look at an old subject
25-26 October 2013 - Rome, Italy
- Infections from conception to birth: role of ART
7-8 November 2013 - Berlin, Germany
- Endoscopy in reproductive medicine
20-22 November 2013 - Leuven, Belgium
- From early implantation to later in life
28-29 November 2013 - Brussels, Belgium

Mark your calendar for:

- Premature ovarian insufficiency
6-7 December 2013 - Utrecht, The Netherlands

www.eshre.eu
(see "Calendar")

Contact us at info@eshre.eu



NOTES

NOTES

NOTES

NOTES

NOTES

NOTES

NOTES

NOTES

