Social Egg freezing: family planning for Twenty-first Century women?

- **Dr Gillian Lockwood**
- **Midland Fertility**
  Tamworth - United Kingdom

- **Turku, Finland 28th November 2014**

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Where have all the babies gone?

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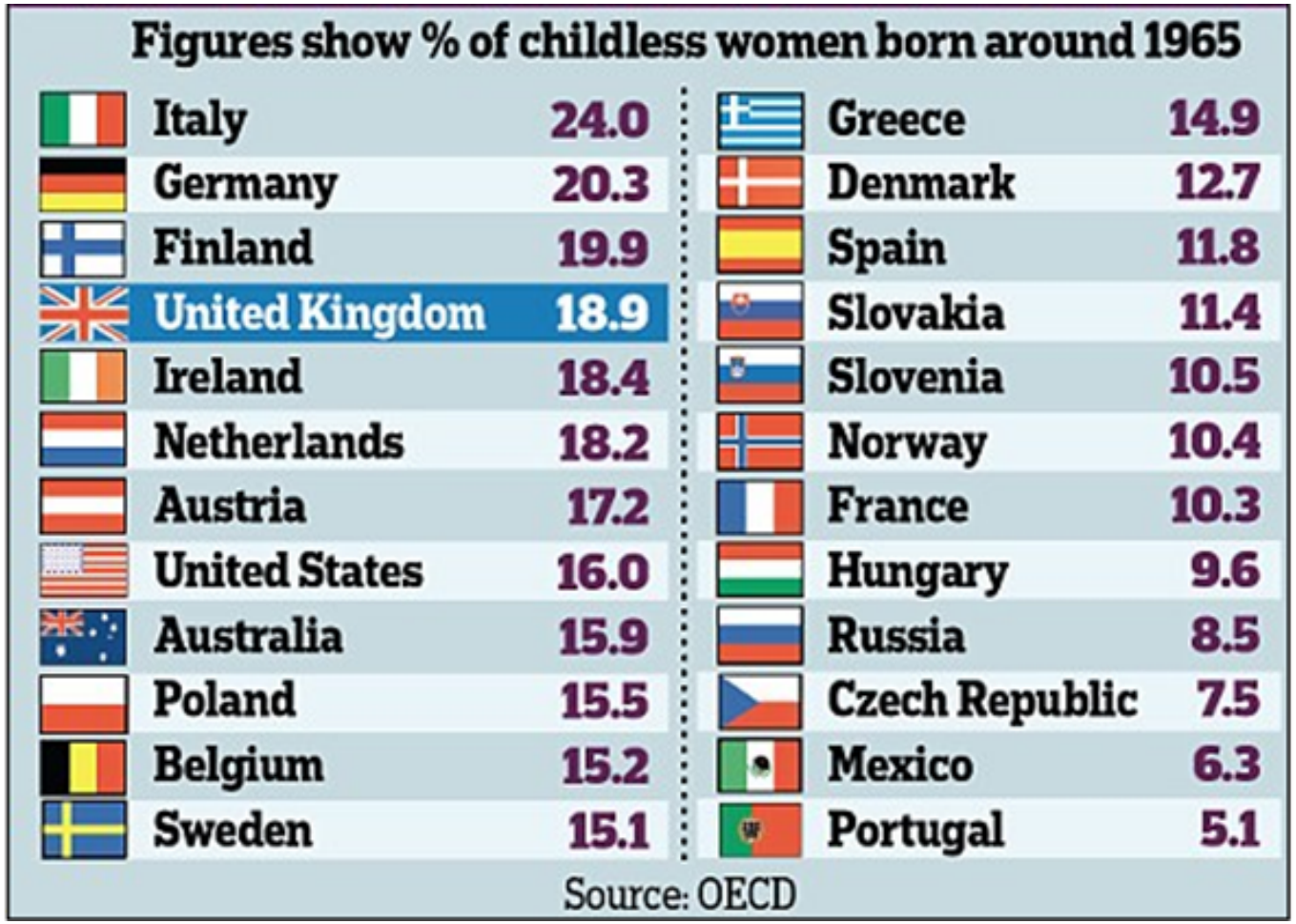
By the Age of 45…



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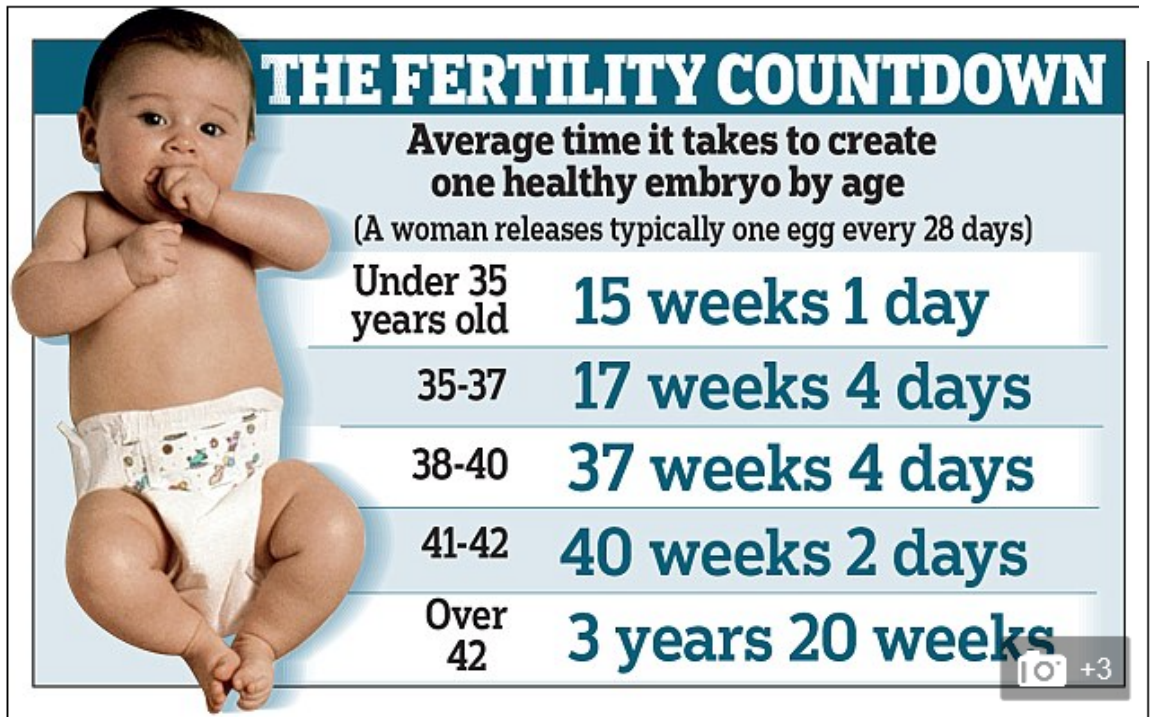
The clock IS ticking: Doctors reveal how it's TEN times harder to become pregnant aged 43 than at 37

- Number of eggs needed for pregnancy rises 'almost exponentially' after 42
- Careers and hunt for 'Mr Right' are causing women to put off motherhood
- Nearly half of all British babies are now born to women aged 30 or older
- Researcher urged women to freeze their eggs without delay

By FIONA MACRAE, SCIENCE CORRESPONDENT FOR THE DAILY MAIL

PUBLISHED: 01:21, 24 October 2014 | **UPDATED:** 14:32, 24 October 2014

Mail Online



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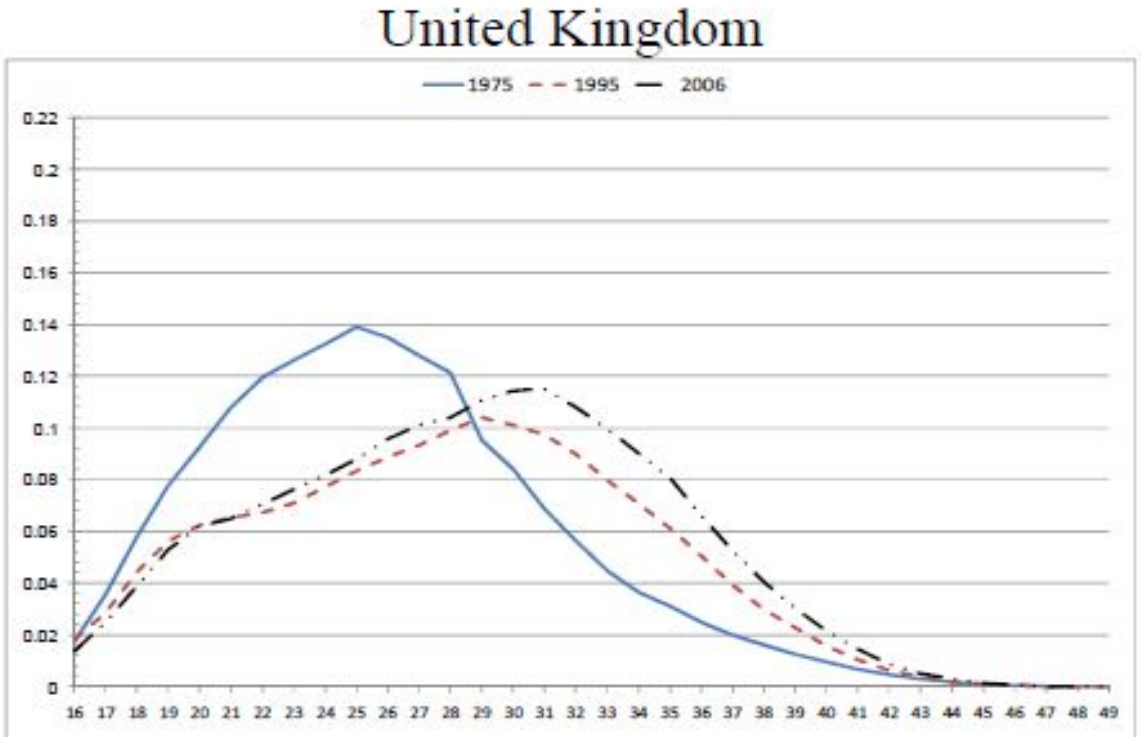
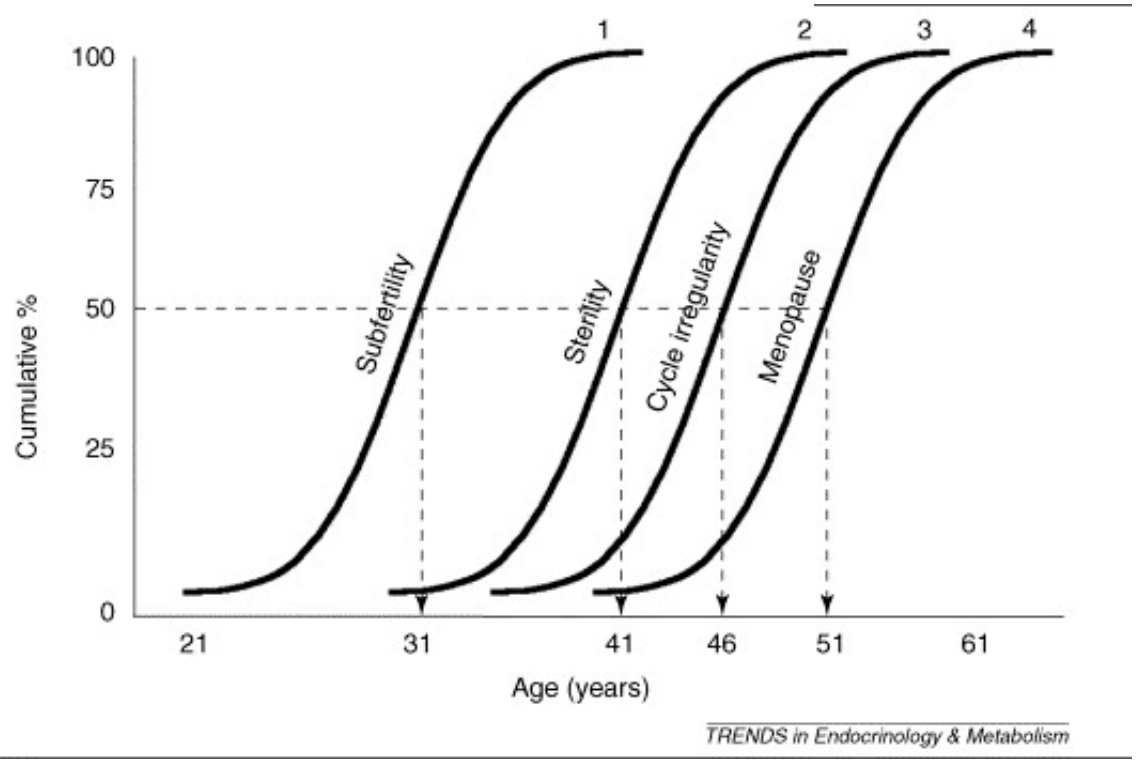
Fertility Rates and Age





Women may live until 80+

Menopause at 50

Functionally infertile 40-45y

Natural conception rare > 45y

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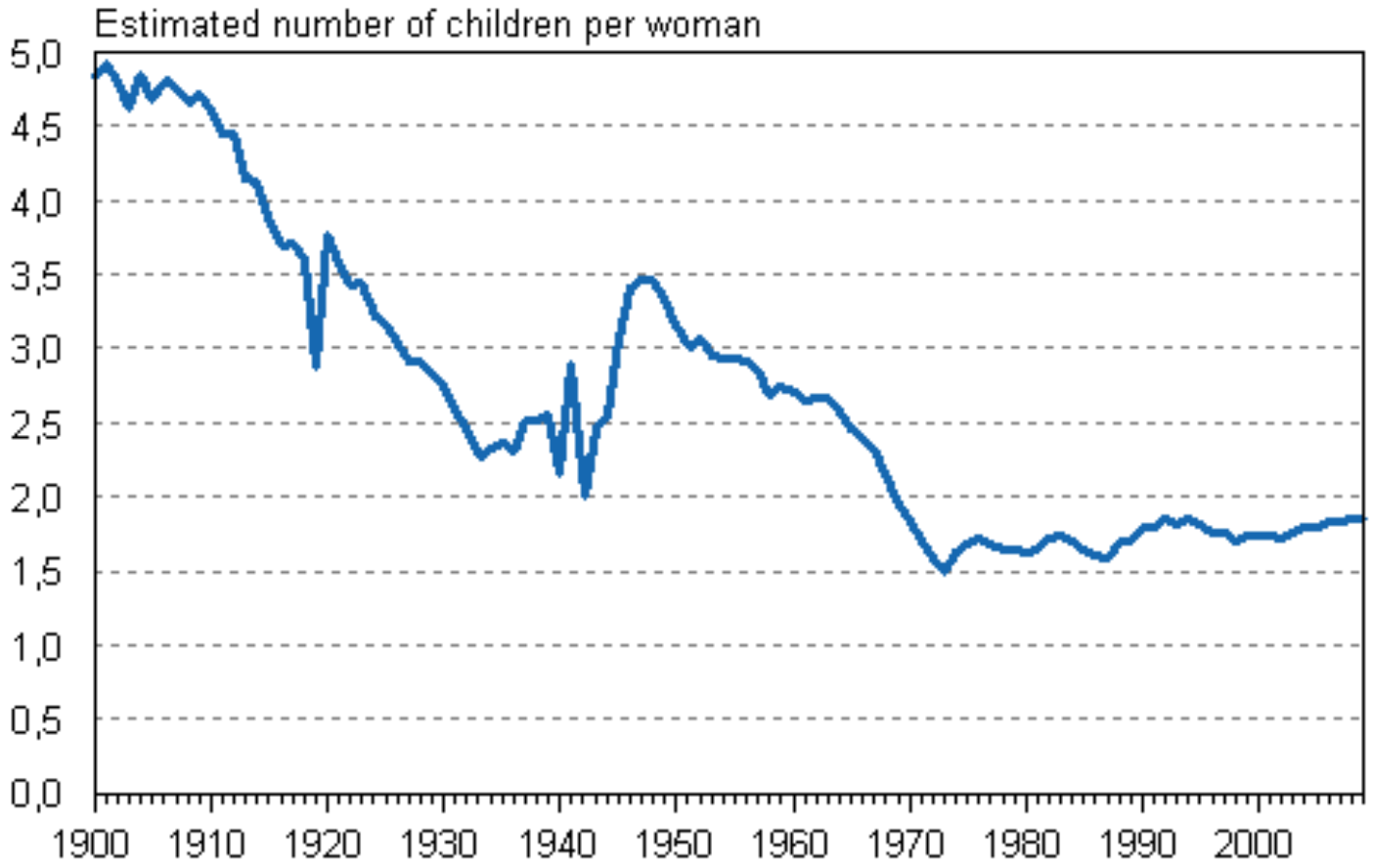
Total fertility rate in UK 1900–2009



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National Sample Survey of 1876 childless women in their 30s:

British Household Panel

- **Only 49.8% of women who said they intended to have a child did so within 6 years**
- **Childless women characteristically overestimate their number of remaining ‘childbearing’ years**
- **High-earning women who postponed motherhood were more likely to have a child at older ages**

Anne Berrington : Southampton Univ

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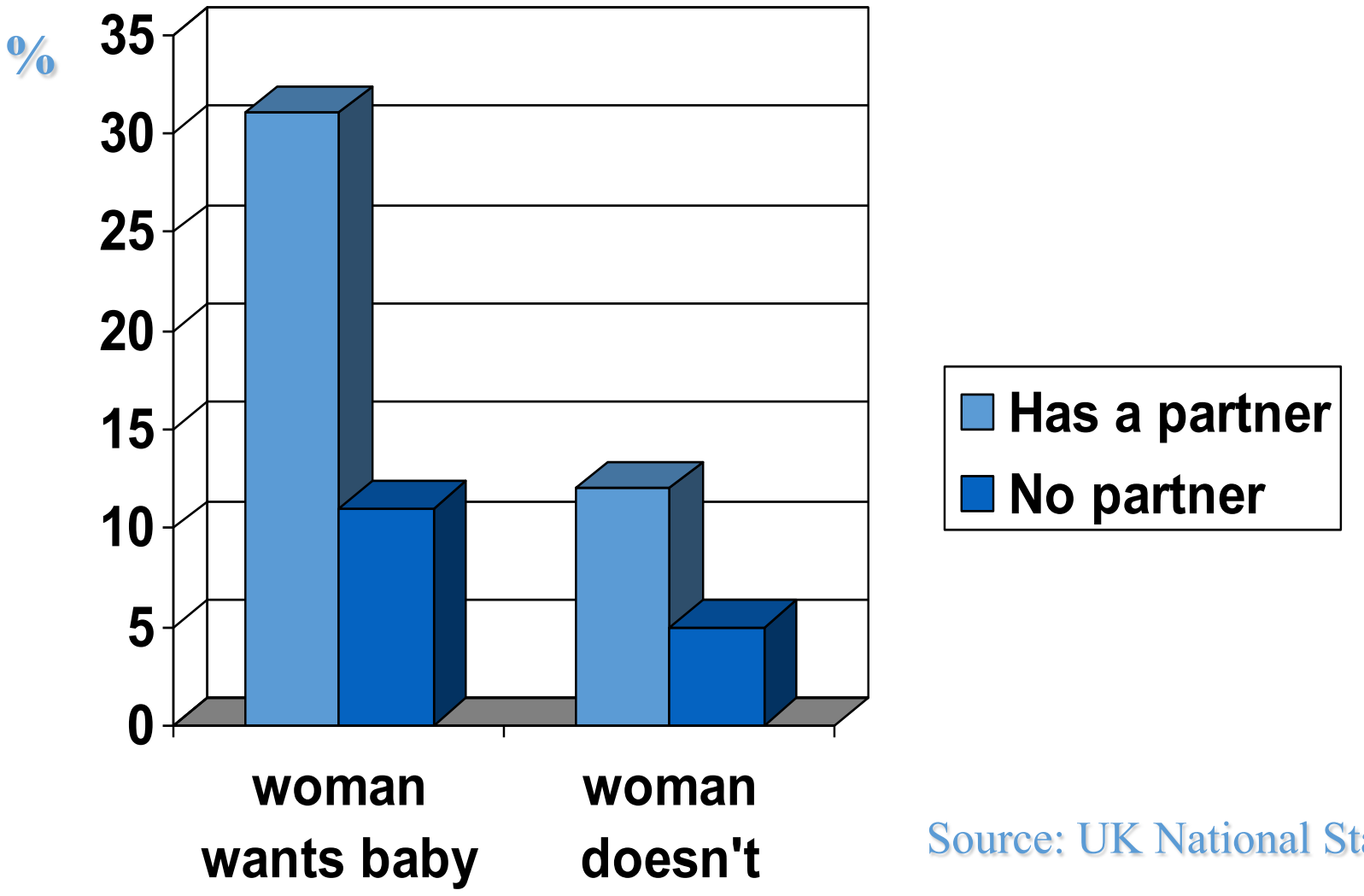
Probability of a baby at 35 : Based on childless woman with degree and average earnings



Source: UK National Statistics

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Is the situation getting worse?

Evidence from UK cohort studies (Kneale and Joshi 2008)

- National Child Development Survey: all children born in UK in one week in 1958 (NCDS)
- British Cohort Survey: all children born in the UK in one week in 1970 (BCS70)

- Identified reproductive achievement and intentions and correlated with educational level

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Estimated childlessness at age 45 years
NCDS cohort and (optimistic!) projections for the BCS70 cohort

Table 3 Estimated childlessness for the National Child Development Survey (NCDS) cohort and projected childlessness for the British Child Survey (BCS70) cohort at age 45 years.

Gender	*Education level*	*Childlessness*	
		NCDS cohort	*BCS70 cohort*
Male	Tertiary	21.7 (19.6–23.8)	30.5 (28.6–32.4)
	Intermediate	20.5 (19.1–21.9)	30.1 (28.3–31.9)
	No qualifications	24.3 (21.1–27.7)	33.9 (28.5–39.4)
Female	Tertiary	23.6 (21.4–25.9)	28.3 (26.4–30.3)
	Intermediate	14.0 (12.8–15.2)	17.3 (15.9–18.8)
	No qualifications	10.6 (8.5–12.8)	17.0 (12.6–22.0)

Source Kneale and Joshi (2008).

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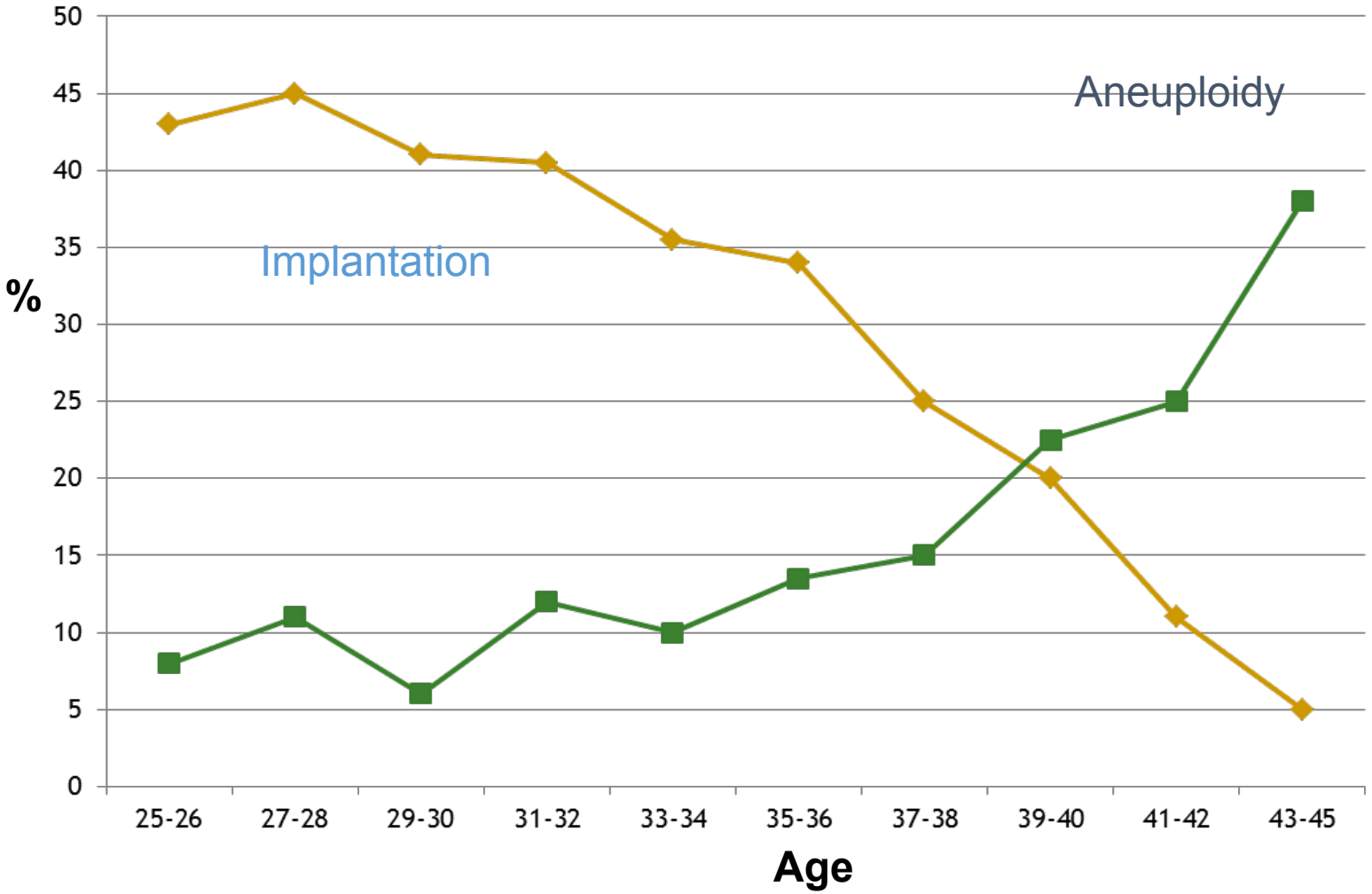
Implications of the “Biological Clock”



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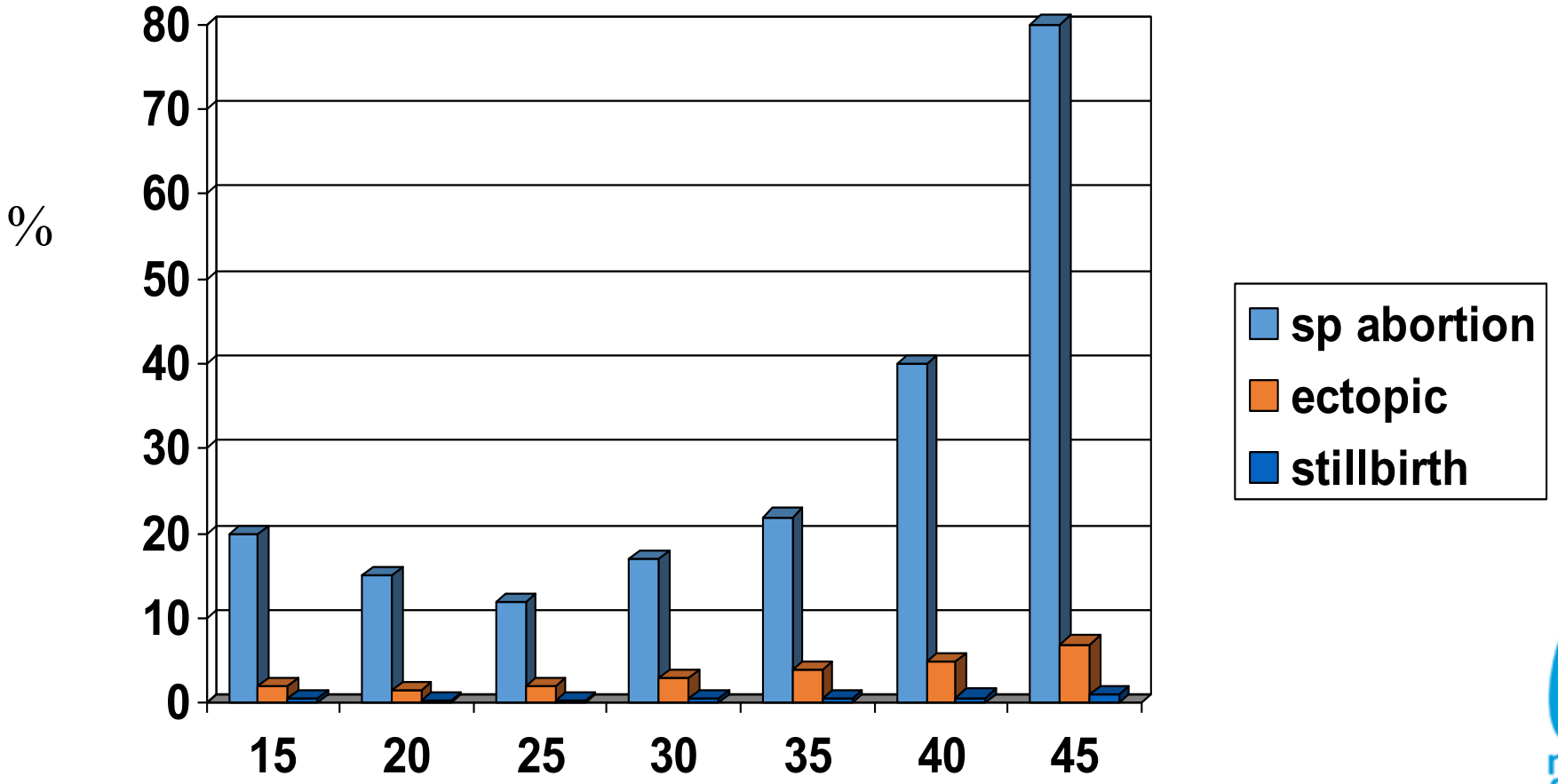
Maternal Age and Fetal loss

Danish data *Andersen et al 2000*



Maternal age at conception
(1.2 Million pregnancies)

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Demographics of parenting

- 95% of childless women and men aged 23-25 say they want to have children in the future

  (Lampic et al 2006)

- 8-15% of couples will experience difficulty at some point

  (Mosher and Bachrach 1996)

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The perils of ‘perpetual postponing’

- The risk of permanent childlessness and female age at time of starting to try to conceive is….
- 6% at age 30
- 14% at age 35
- 35% at age 40

- Just postponing a first conception attempt from 25 to 30 years reduces mean number of children from 2 to 1.7, increases infertility prevalence from 9.8 to 15.8% and increases ‘incomplete’ families from 14.8 to 24%

  (Leridon INED France)

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Unreasonable expectations…

- 59% of childless women aged 35-39 still planned to have a baby
- 30% aged 40-45 did too!

(Sobotka, Austrian survey data)

- 58% said they wanted 2 children (aged 21-23)
- Only 36% had achieved that by age 36-38

(Smallwood and Jeffries,UK Population Trends)

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Even in Sweden…… Lampic et al HR 2006

- 97% of childless university students wanted children (85% wanting 2-3)
- 2/3 of women wanted their first child between 25-29 but 12% wanted to delay their last child until their 40s
- ½ the men wanted their first child between 30 and 34 and 1/5 preferred 40-45 for their last child
- 1/3 of women but only 1/10 of men thought parenthood would affect their work status

- These findings have significant implications for secondary infertility

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The Medium
Is the Message

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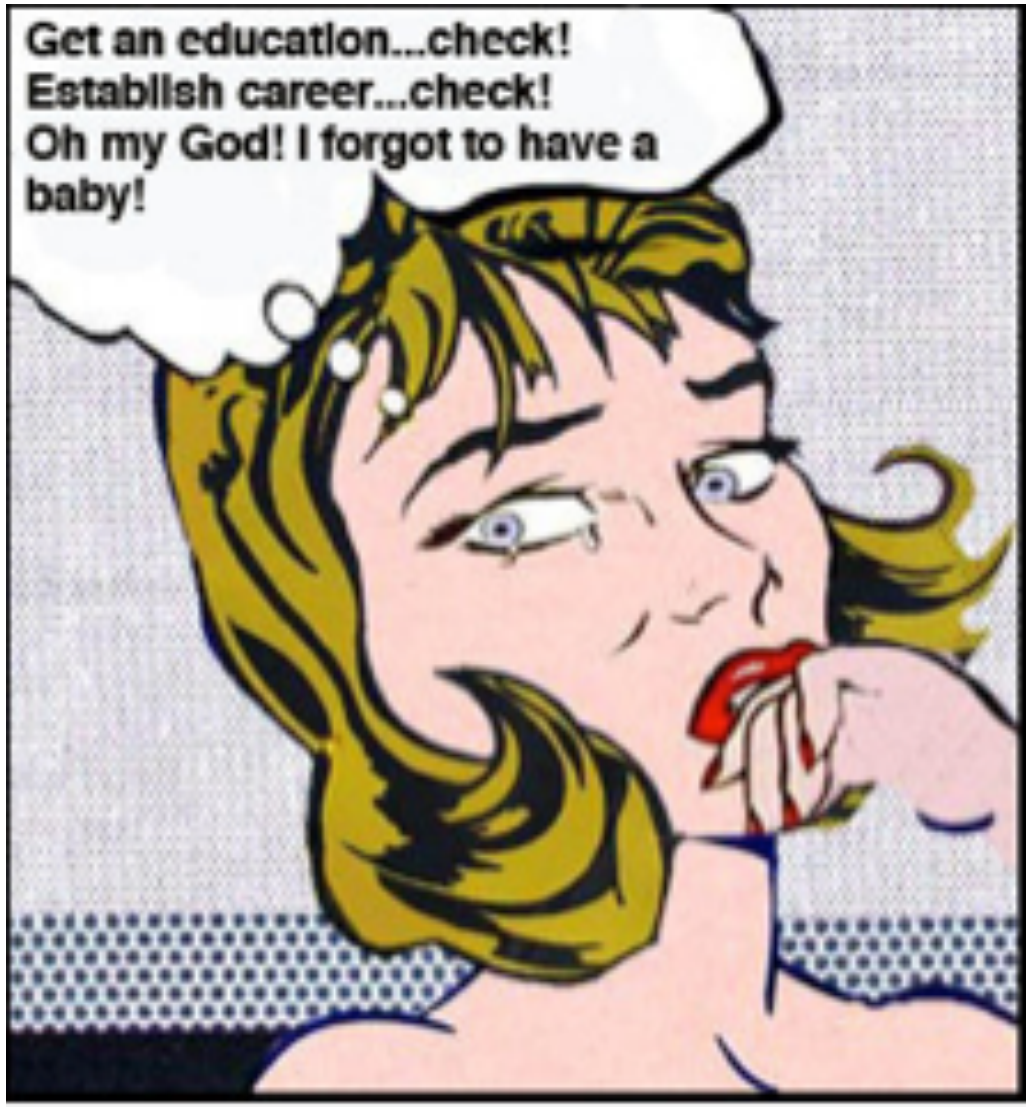
Never mind there's Always IVF!



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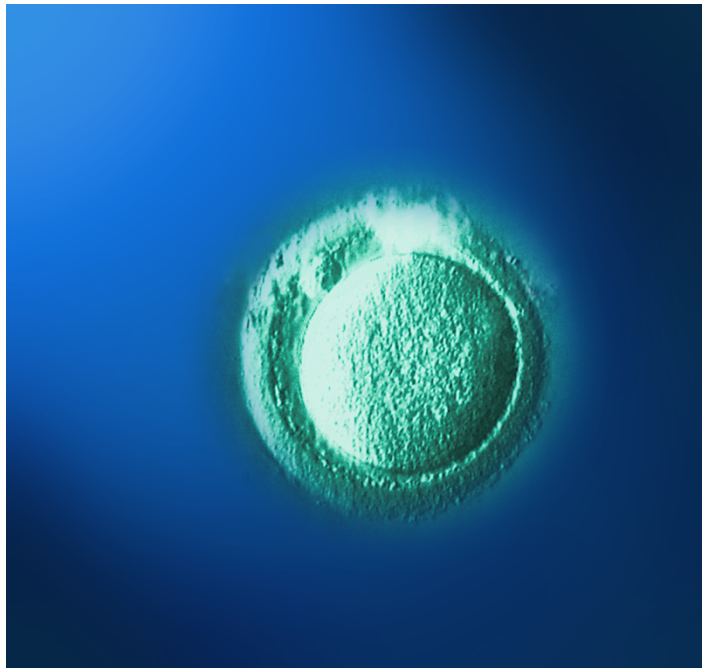
The reality: IVF LBR (UK HFEA data)

- Age 40 12.1%
- Age 41 10.3%
- Age 42 7.6%
- Age 43 4.9%
- Age 44 2.6%
- Age 45 1.6%



In what other branch of medicine would we let patients insist that we perform an elective (expensive!) operation with <5% chance of it working?

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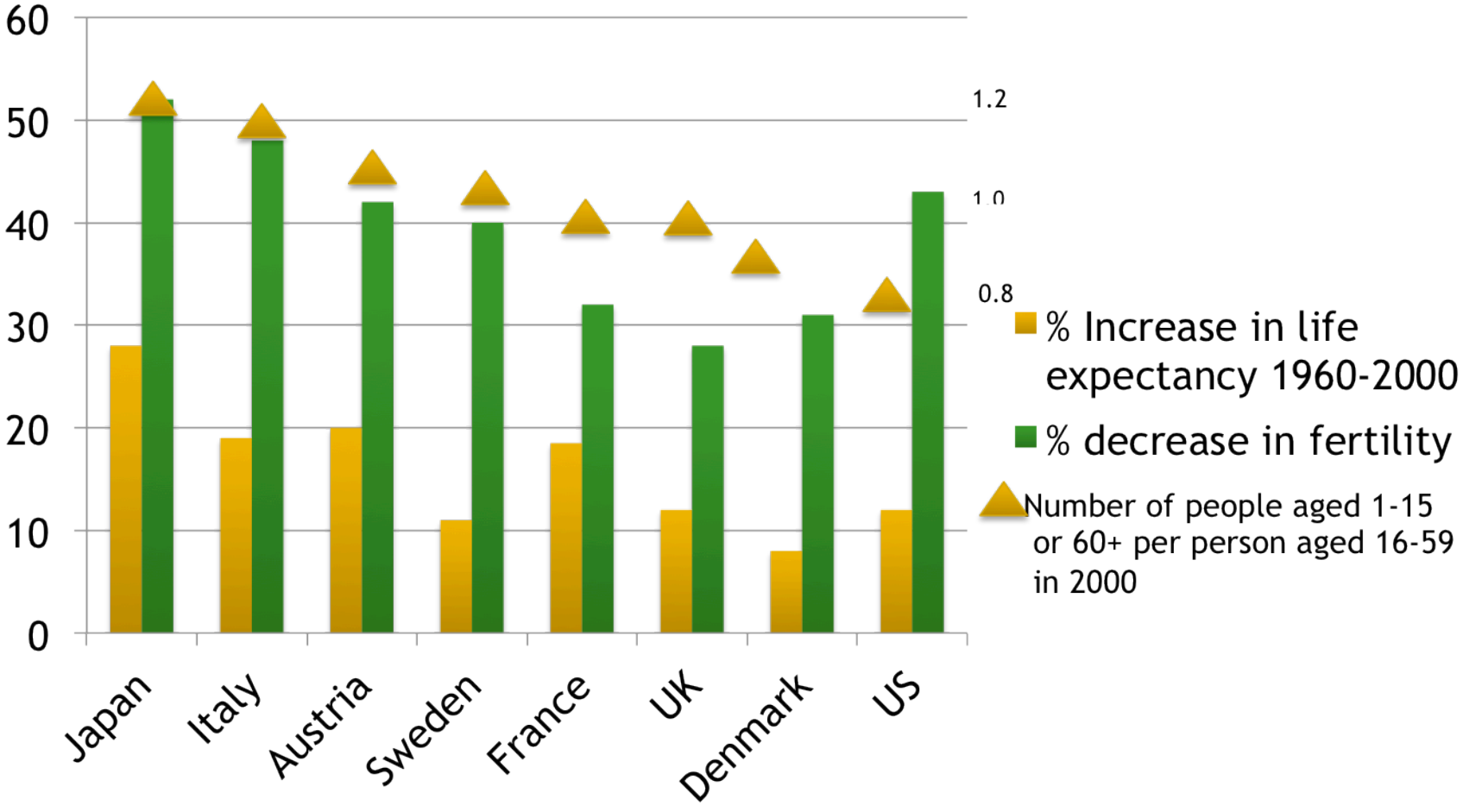
Social consequences of ‘late motherhood’

- A new ‘Generation Gap’?
- An increase in ‘lonely, only’ children
- History repeats itself


THE
SANDWICH
GENERATION

Dependency ratios, fertility decline and increasing life expectancy



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Prospects for Oocyte Freezing

- fertility preservation
- **fertility extension**
- ethical objections to embryo freezing
- better donor egg matching and quarantining
- maternal donor eggs for Turner's Syndrome girls

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Human oocyte cryopreservation

- First pregnancies achieved in 1980's

  Chen (1986) and Al Hasani et al (1987)

- Procedure abandoned for approx.

  10 years due to poor results

  - Low fertilisation rate
  - Low survival rates
  - Hardening of zona
  - Possible spindle damage

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- Vitrification

Kuwayama

Kato Clinic, Tokyo

Survival rate of 94.5%,Fertilisation rate of 90.5%,

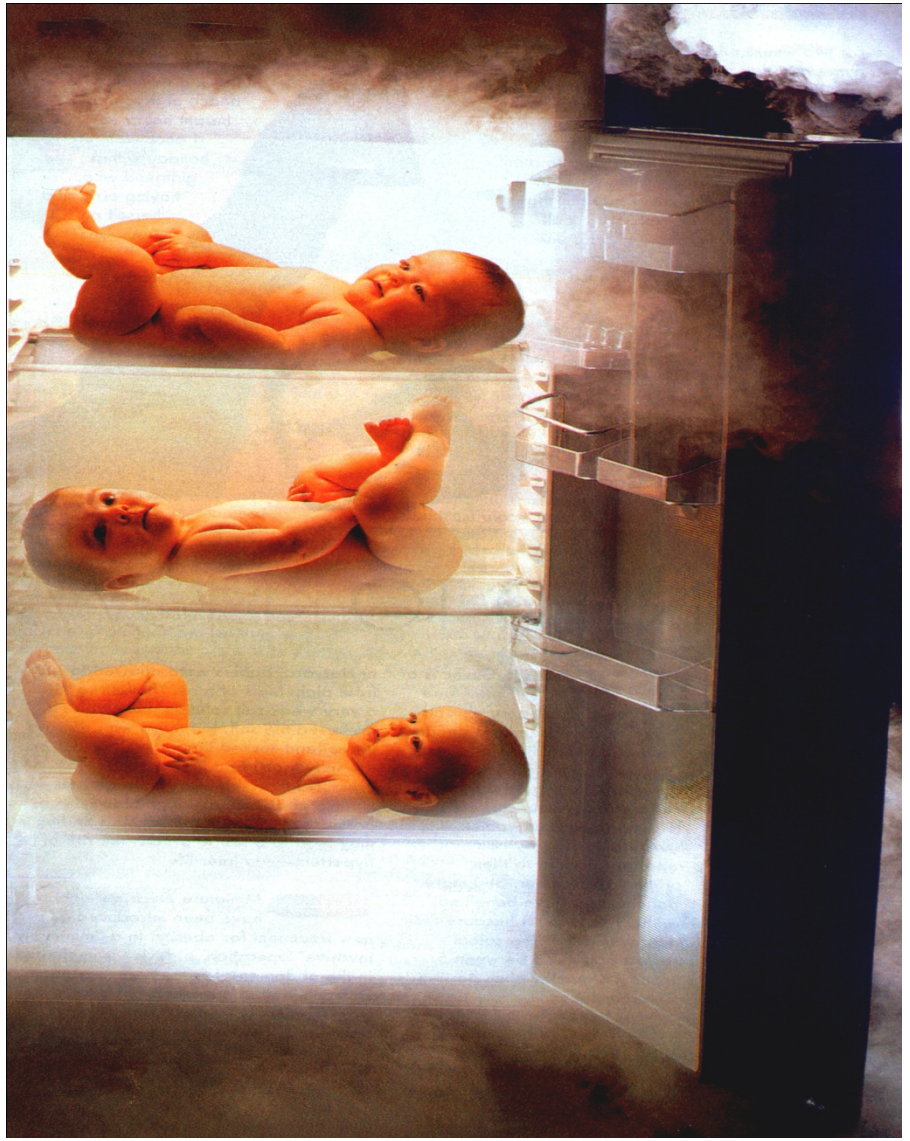
Good cleavage rate of 50%

Pregnancy rate of 41.9%

- Choline Chloride ?

Substituting sodium chloride to help protect membrane

- Polscope?



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What's the Evidence?

- Cobo, Kuwayama, Perez et al (2008)
- 30 oocyte donors and 30 recipients
- Vitrification by cryotop method with warming and ICSI after one hour (survival rate 96.7%)

- There was no difference in FR (76.3% vs 82.2%),BFR etc

- 23 ETs in vitrification group. Pregnancy rate was 65.2%, IR was 40.8% and miscarriage rate was 20%

- What is the proper comparator?

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What's the Evidence?

- Nagy,Chang,Shapiro et al Fertil and Steril (2010)
- 10 oocyte donors and 20 recipients
- Vitrification for a minimum of one hour

  (survival rate 87.5%, FR 87% and BFR 68%)

- 15 of 20 recipients became pregnant with 26/47 (55%) embryos implanting and 26 live born infants
- 2 further pregnancies were established from supernumery frozen embryos

- All outcomes were similar when compared to cycles using the SAME oocyte donors in fresh cycles

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Vitrification: Is it safe?

- Concerns because of the high concentrations of cryoprotectant required
- Recent evidence for less damage to spindle integrity and chromosome alignment (Huang et al 2007) compared to ‘slow freeze’ eggs.
- Recent report of obstetric and perinatal outcome of 200 babies born from vitrified oocytes (165 pregnancies) (Ri-Cheng Chian et al 2008)

No increased risks identified

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Social Freezing: Hope in a Tank ?

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What do ‘real’ young women think?

- 98 medical students (A) and 97 education/sports students (B) in their final year of university
- Average age 21 years
- 63% group A and 25.8% group B NOT currently in a relationship
- 85.7% group A and 49.5% group B would delay starting a family for career reasons
- 80% group A and 40% group B would consider oocyte freezing
  D. Gorthi 2010

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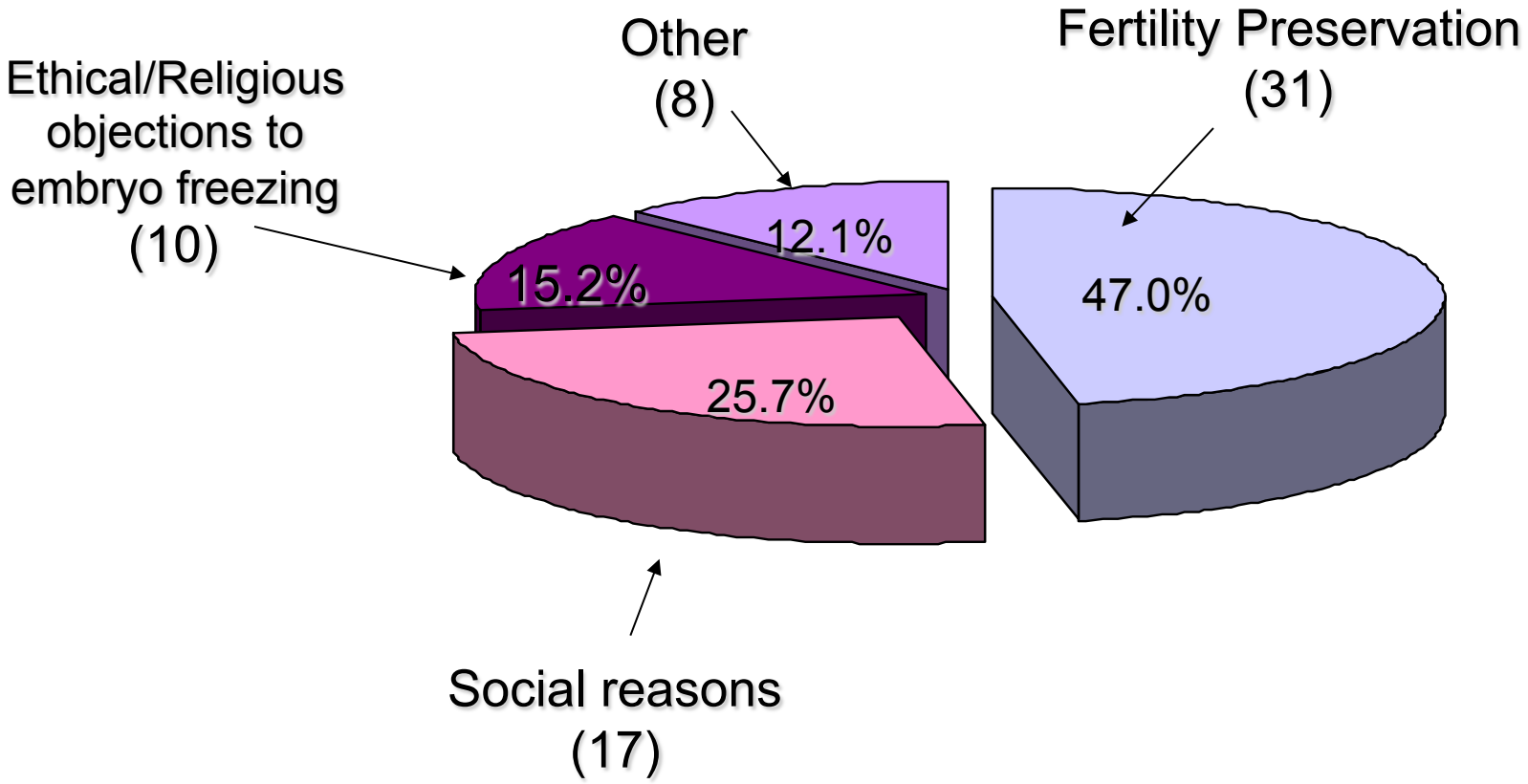
Reasons for Oocyte Cryopreservation
66 patients



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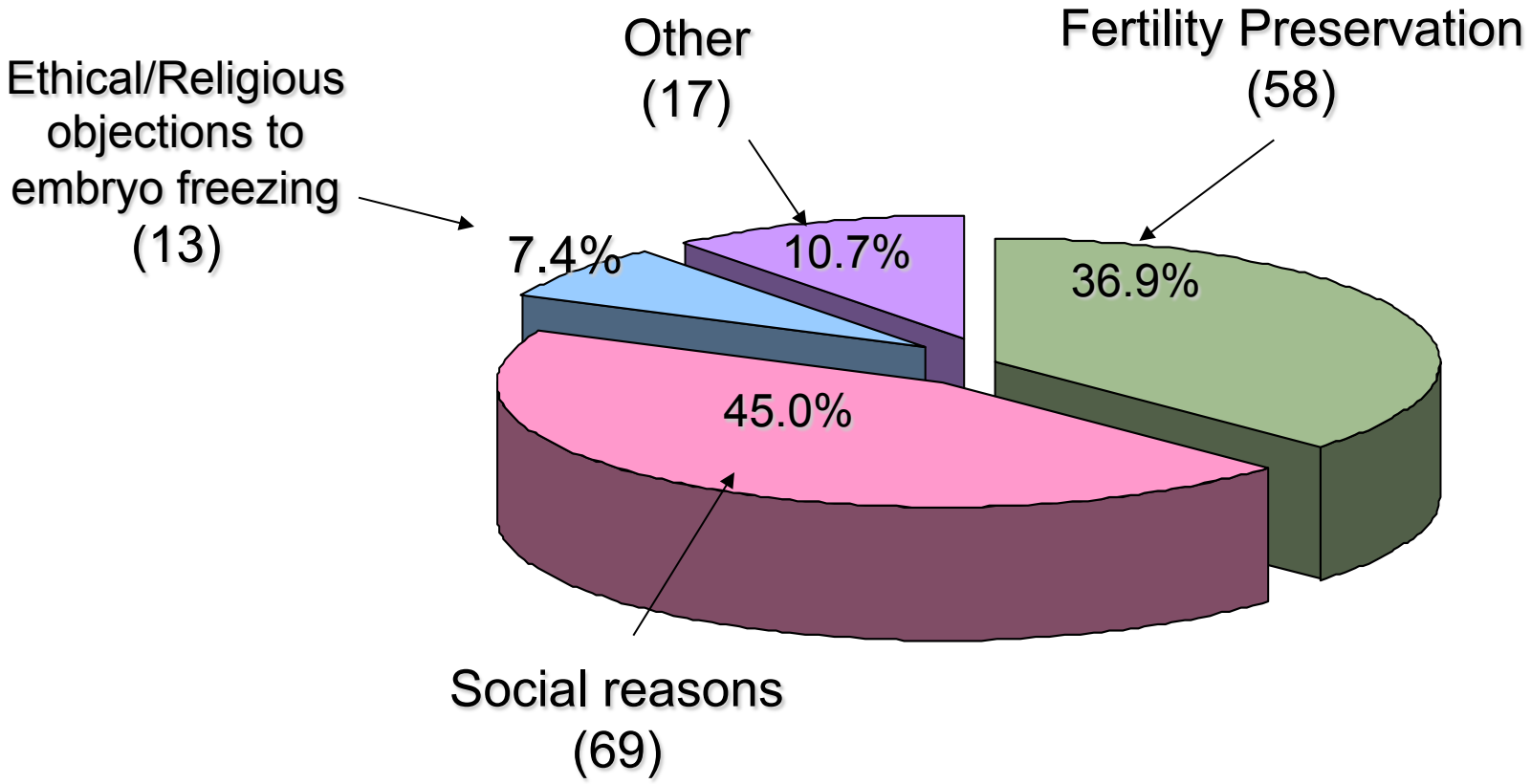
Reasons for oocyte cryopreservation
157 patients (2011)



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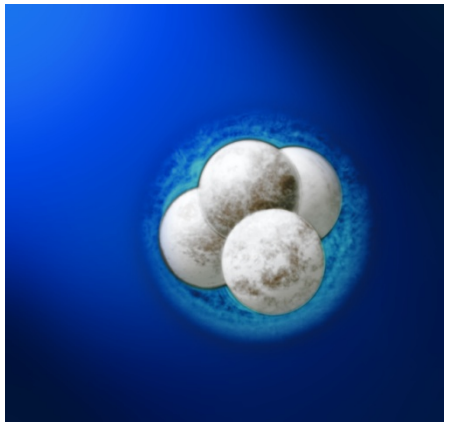
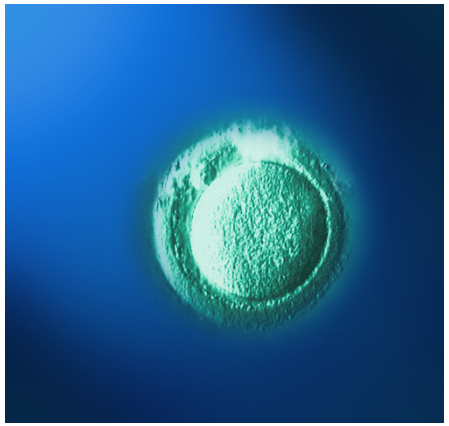
Early Results – Slow-Frozen/thawed oocytes compared with slow-frozen/thawed embryos



MFS data :
25% Clinical Preg. rate/transfer
Implantation rate of 12.6%



MFS data:
21.4% Clinical Preg. rate/transfer
Implantation rate of 17.4%

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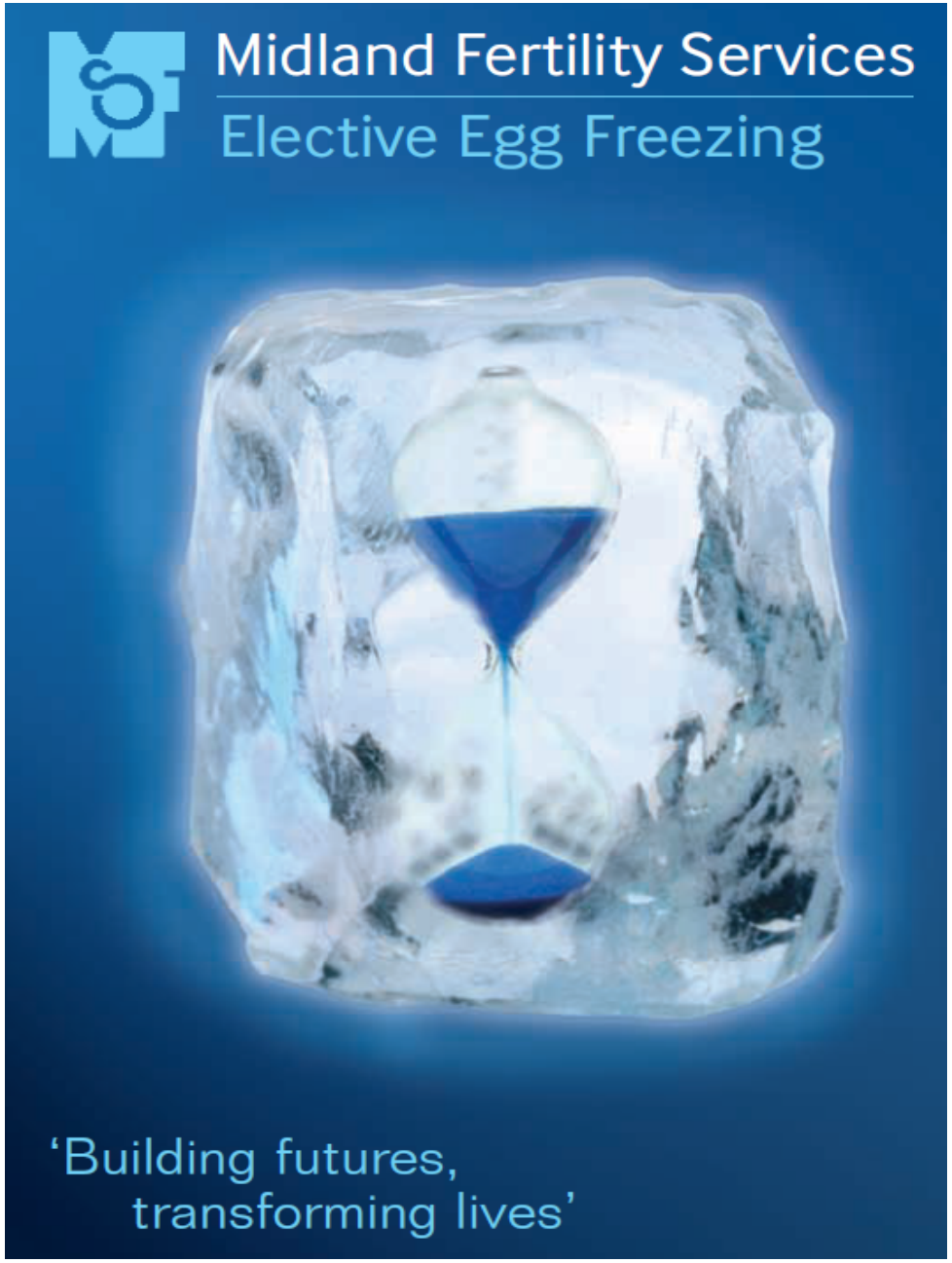
Setting up the

Social Freezing Programme



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‘Social’ egg freezing at MFS

- Screening referrals
- Introductory visit and Ovarian Reserve Testing
- Counselling
- Clinical follow-up consultation with results
- Counselling
- Cycle planning
- More Counselling!

- Less than 25% of initial referrals or enquiries come through for treatment

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Why counselling matters.

- Egg freezers are more like ‘consumers’ or ‘clients’ than patients
- Their decision to seek egg freezing is an admission of either anxiety or failure or both!
- They have a lot of psychological ‘baggage’ that must be ‘unpacked’ before they can even listen, let alone, understand the process
- They want certainty and find it hard to accept anything less than a ‘guarantee’

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Portrait of a ‘social’ egg freezer

- Aged 36
- College educated and in full-time employment (teacher, lawyer, accountant, shop-owner)
- Never been pregnant
- Recently broke up after a long term relationship over his ‘failure to commit’
- Always assumed and hoped she would ‘get married and have kids’
- Scared of ‘seeming desperate’ in a new relationship!

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The ‘Myth’ of the ‘social’ egg freezer

- She is not a selfish, ambitious, demanding and deluded ‘alpha’ type female who wants to ‘have it all’
- She doesn‘t see men as unnecessary and extraneous and is not only interested in their gametes!
- She has been waiting ‘too long’ in the hope that ‘The One’ was just around the corner!

We accept oocyte freezing for young cancer patients: So why is there a difference with ‘social’ egg freezers?

- Success not guaranteed?
- Nothing to lose?
- Unproven safety record?
- Distorting social ‘choices’?

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Time to re-brand ‘social freezing’?

Oocyte banking for anticipated gamete exhaustion (AGE) is a preventive intervention, neither social nor nonmedical.

Stoop D et al

Reprod Biomed Online 2014

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To conclude….We have the technology

- Women **are** trying to get pregnant when older
- They want their own ‘genetic’ child (or children!)
- There are few donor eggs anyway….
- Should we encourage a ‘trade’ in donor eggs?
- Pregnancy rates (with vitrification) are similar to ‘fresh’ when using ‘young’ eggs

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To conclude….The ethics

- Governments have tried bribing, bullying and lecturing but still women **are** trying to get pregnant when older
- ‘Brute Biology’ means that most women will live to 80 but most will be functionally infertile by 40
- Why are we uncomfortable with social egg freezing?
- Will ‘social’ oocyte freezing come to be seen as significant and revolutionary as the introduction of the OCP?

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27,000 babies born to mothers over 40 in 2009…..
3.8% of all babies born in the UK
One in ten babies born in London had mothers Aged 40 or over

'Women are delaying having children until they feel financially secure'

'It comes to a point where you can never afford to have children'

'The cost of housing is a significant issue..
It takes two incomes to pay one mortgage'

'Women are in relationships that they do not trust to last'

'Aged 38, women have 2-3 years, men have 2-3 decades to parent'

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Cost-benefit analysis at 35

Human Reproduction, Vol.26, No.11 pp. 3054–3060, 2011
Advanced Access publication on September 6, 2011 doi:10.1093/humrep/der284

human reproduction

ORIGINAL ARTICLE *Infertility*

Expanding reproductive lifespan: a cost-effectiveness study on oocyte freezing

L.L. van Loendersloot*, L.M. Moolenaar, B.W.J. Mol, S. Repping, F. van der Veen, and M. Goddijn

Center for Reproductive Medicine, Department of Obstetrics and Gynaecology, Academic Medical Centre, Meibergdreef 9, 1105 AZ Amsterdam, The Netherlands

*Correspondence address. Tel: +31-20-5662124; Fax: +31-20-6963489; E-mail: l.l.vanloendersloot@amc.uva.nl

Submitted on January 11, 2011; resubmitted on August 1, 2011; accepted on August 3, 2011

CONCLUSION: Oocyte freezing is more cost effective compared to IVF, if at least 61% of the women return to collect their oocytes and if one is willing to pay €19 560 extra per additional live birth. Our Markov model shows that, considering all the used assumptions, oocyte freezing provides more value for money than IVF.

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Cost-benefit analysis at 25

Fertil Steril. 2012 Mar;97(3):665-70. doi: 10.1016/j.fertnstert.2011.12.029. Epub 2012 Jan 21.

Fertility preservation for social indications: a cost-based decision analysis.

Hirshfeld-Cytron J[1], Grobman WA, Milad MP.

Author information

Abstract

OBJECTIVE: Age-related infertility remains a problem that assisted reproductive techniques (ART) have limited ability to overcome. Correspondingly, because an increasing number of women are choosing to delay childbearing, fertility preservation strategies, initially intended for patients undergoing gonadotoxic therapies, are being applied to this group of healthy women. Studies supporting the effectiveness of this practice are lacking.

DESIGN: Decision analytic techniques.

SETTING: We compared the cost-effectiveness of three strategies for women planning delayed childbearing until age 40: oocyte cryopreservation at age 25, ovarian tissue cryopreservation (OTC) at age 25, and no assisted reproduction until spontaneous conception had been attempted.

PATIENT(S): Not applicable.

INTERVENTION(S): Not applicable.

MAIN OUTCOME MEASURE(S): Cost-effectiveness, which was defined as the cost per live birth.

RESULT(S): In this analysis, the strategy of foregoing fertility preservation at age 25 and then choosing ART only after not spontaneously conceiving at age 40 was the most cost-effective option. OTC was dominated by the other strategies. Sensitivity analyses demonstrated the robustness of the model; no analysis existed in which OTC was not dominated by oocyte cryopreservation. Increasing the cost of an IVF cycle beyond $22,000 was the only situation in which oocyte cryopreservation was the most preferred strategy.

CONCLUSION(S): Neither oocyte cryopreservation nor OTC appear to be cost-effective under current circumstances for otherwise healthy women planning delayed childbearing. This analysis should give pause to the current practice of offering fertility preservation based only on the desire for delayed childbearing.

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The Perfect Graduation Present?

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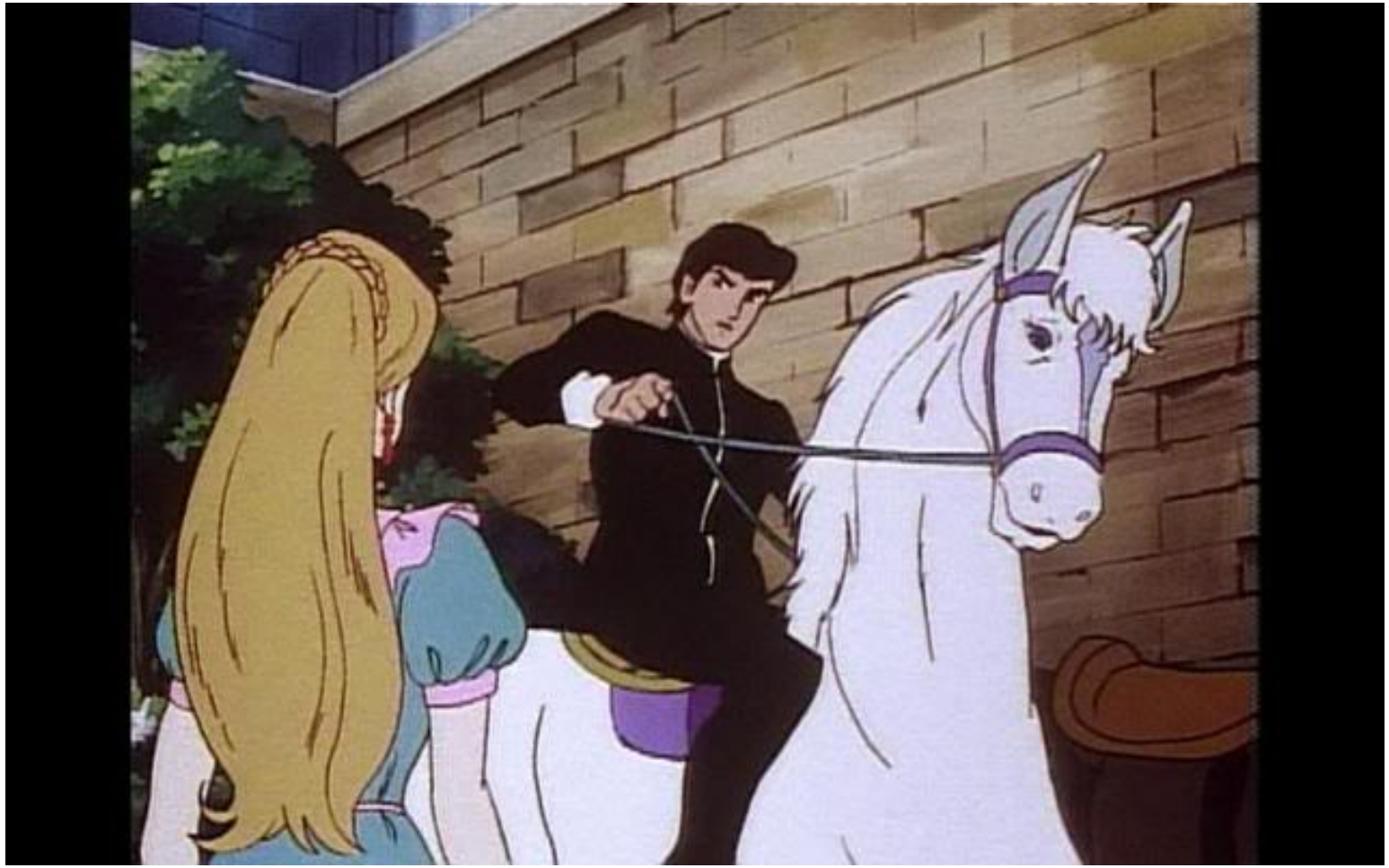
Some day my prince will come…?



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Social egg freezing
Doesn’t mean
this is inevitable…

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The Telegraph

Sex will soon be just for fun not babies, says father of the Pill

Prof Carl Djerassi claims advances in fertility treatment make it safer for parents without fertility problems to consider IVF

9/11/2014

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But beware of false hope and a false sense of security

Despite increased success, there is no guarantee with IVF whether using own oocytes, donor oocytes or cryopreserved ‘young’ oocytes

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Just because we can should we ?

Pram design for the older mum

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Thank you for your attention.

www.midlandfertility.com

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