



**Women's Health Clinical Education
Series:**

Building Families: The Options Keep Growing

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Disclosures

- I have nothing to disclose

Objectives

- Definition of infertility
- Causes of infertility
- Options for building families

Definition of Infertility Per the American Society for Reproductive Medicine (ASRM)

“Infertility” is a disease, condition, or status characterized by any of the following:

- **The inability to achieve a successful pregnancy based on a patient’s medical, sexual, and reproductive history, age, physical findings, diagnostic testing, or any combination of those factors.**
- **The need for medical intervention, including, but not limited to, the use of donor gametes or donor embryos in order to achieve a successful pregnancy either as an individual or with a partner.**
 - **In patients having regular, unprotected intercourse and without any known etiology for either partner suggestive of impaired reproductive ability, evaluation should be initiated at 12 months when the female partner is under 35 years of age and at 6 months when the female partner is 35 years of age or older.**

Nothing in this definition shall be used to deny or delay treatment to any individual, regardless of relationship status or sexual orientation.



Definition of Recurrent Pregnancy Loss

- Recurrent spontaneous abortion/miscarriage: The spontaneous loss of two or more clinical pregnancies prior to 22 completed weeks of gestational age.
- Clinical pregnancy: A pregnancy diagnosed by ultrasound visualization of one or more gestational sacs or definitive clinical signs of pregnancy. In addition to intra-uterine pregnancy, it includes a clinically documented ectopic pregnancy.
 - This definition does not include biochemical pregnancies (urine or quantitative HCG)



Timing and Frequency of Coitus

- No increase in the likelihood for pregnancy with daily coitus versus every other day
 - 15% per cycle decrease in likelihood for conception if coitus is occurring once per week
- No decrease in semen parameters with daily ejaculation even in oligospermic men
 - Semen parameters decline significantly after 10 days of non ejaculation
- “Fertile window”: 6 day period prior to and ending on the day of ovulation
 - Highest likelihood of conception 2-3 days prior to ovulation
 - Declines, but does not vanish, on the day of ovulation



Timing and Frequency of Coitus

- Cycle tracking, cervical mucous changes, changes in libido, pre ovulatory pain, mood changes accurately predict ovulation no more than 50% of the time.
- Urinary LH kits are reliable with regards to detecting the LH surge
 - Ovulation may occur up to 2 days post LH surge
 - 7% false positive detection rate
 - The false positive rate can increase in women with higher circulating LH levels as seen women with diminished ovarian reserve and clomiphene/letrozole resistant PCOS
 - At least one study has demonstrated that cervical mucous changes predict the fertile window as good as basal body temperature or urinary LH kits
- There is no substitute for coital frequency and should be recommended first line compared to other methods of timing



The Background

Approximately one in every six couples will have fertility issues

In up to 35 % of cases, when there is a male partner, he is part of the infertility problem

- In up to 20% of cases the male factor is the sole problem

Despite these statistics, the vast majority of male/female couples with fertility issues will have success without the use of high technology resources (IVF, egg and embryo donation, gestational carrier)

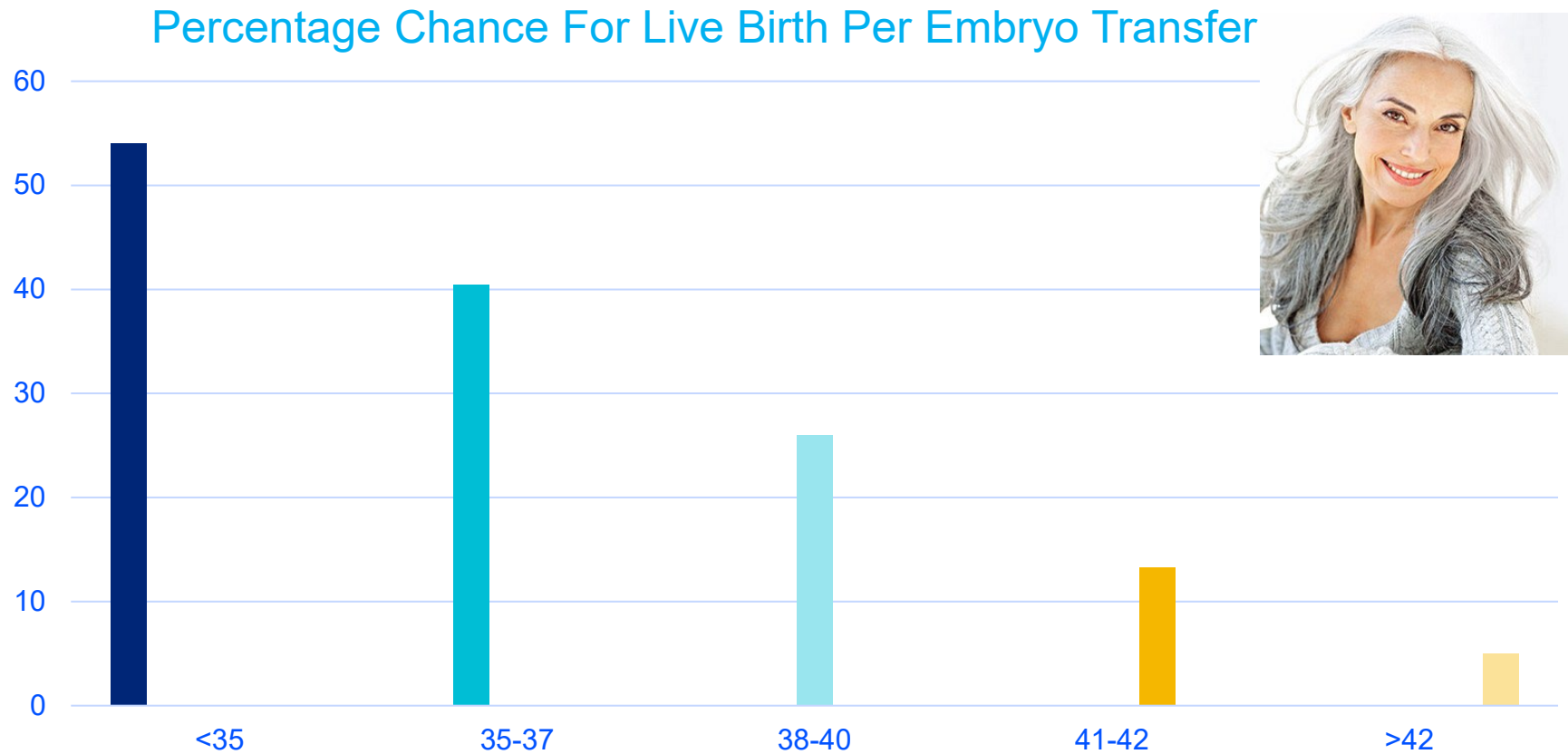
- For those that are not successful the above options will allow most patients to have a family

Causes and Evaluation of Infertility in Women

- Ovulatory dysfunction: 35-40%
 - History usually suffices: normal menstrual cycle interval 21-35 days
 - Consistency is the key
 - Rare use of mid luteal/cycle day 21 progesterone (≥ 3 ng/ml indicated ovulation)
- Fallopian tube obstruction or dysfunction: 35-40%
 - Sexually transmitted infections, endometriosis, prior pelvic surgery
 - Evaluate with hysterosalpingogram (HSG), hysterosonogram (HSN with attention to tubal patency), office hysteroscopy using liquid media (observation of flow into each tubal ostia), diagnostic/operative laparoscopy
- Uterine factors: 5-10%
 - Leiomyoma, polyps, uterine anomalies, intrauterine scar tissue
 - Evaluate with HSG, HSN, hysteroscopy



Age is More Than A Number When Thinking About Fertility



Background

- Many of the same counseling principles and treatment options for oncology patients apply to patients considering and undergoing gender affirming care as well as individuals considering their family building options

Patients with cancer

Recent advances in pediatric and adult oncology therapy have resulted in a subsequent rise in survival rates



Toxic therapies including chemotherapy and radiation can cause permanent damage to ovaries and testes



Quality of life post-cancer treatment has become a new focus for cancer patients, including the ability to bear children



The American Society of Clinical Oncologist has listed a discussion of fertility options as one of the priorities of counseling patients with newly diagnosed cancer



Chemotherapy

Alkylating Agents:
Cyclophosphamide and Busulfan

Induce apoptotic pathways in oocytes

The odds of ovaries exposed to alkylating agents experiencing ovarian failure compared to unexposed ovaries was 4:1

Age dependent, < 30 far better prognosis

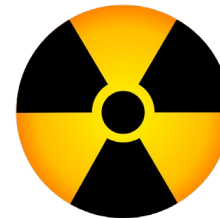
Radiation...



Two types of radiation cause damage to ovaries:
Cranial and Abdominal

High enough doses of radiation (20Gy) achieved over 6wks resulted in infertility with 95% confidence (Schmidt *et al*, 2009)

Average dose of radiation for treatment of ALL:
18-24Gy



Radiation	Dose (mGy)
Pelvic Xray	0.7
Abdominal Xray	1.0
Pelvic CT	10-20
Abdominal CT	10-20

Modified from Shetty M.

Family Building Options

Hormonal suppression

- Women with endometriosis
- Males and females with cancer

Surgery

Donor sperm

Donor eggs

Donor embryos

Gestational carrier

Family Building Options continued

In vitro fertilization

- With/without pre-implantation genetic diagnosis for inherited disorders (PGT-M)

Egg
cryopreservation

Sperm
cryopreservation

Embryo
cryopreservation

Adoption

Foster Care



THANK YOU FOR YOUR
TIME AND ATTENTION:
QUESTIONS ARE
WELCOME