



ADVANCING EXCELLENCE IN TRANSGENDER HEALTH

# Reproduction Options for Transgender Persons

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# COI Disclosures

- None

# Learning Objectives

- Understand the basics of assisted reproductive technologies (ART)
- Appreciate how ART may be used to help transgender people have children using their own gametes
- Be able to counsel transgender people appropriately regarding their reproductive options using their own gametes

# INTRODUCTION: LGBT Parents

- For many years, children have been raised in families where their parents are lesbian, gay, bisexual or transgender
- Studies have found that children of lesbian or gay parents are not different than children of heterosexual parents in terms of their emotional development or relationships with others.
  - *Child Dev* 2004 Nov-Dec; **75(6)**:1886-98.

# INTRODUCTION: LGBT Parents

- Historically, many of these children were conceived and born from “traditional” heterosexual relationships, after which one parent (or in some cases both parents) “come out” as LGBT.
- More recently, LGBT people are “coming out” in their youth so that they are less likely to have children from prior “traditional” heterosexual relationships. LGBT people are now building their families by having children within LGBT relationships.

# INTRODUCTION: Demographics

- Transgender people represent a population that has previously received little attention, especially in the area of reproductive health
- Surveys show that the number of transgender individuals who self-identify as transgender is small but on the rise.
  - *Am J Public Health* 2017; **107**:1-8
- In the U.S., between 0.3 – 2% of the population identify as transgender, although this may be grossly underestimated as tools to survey gender identity are poor.
  - *Williams Institute*, 2011, 2016



# INTRODUCTION: Demographics

- WPATH estimates that worldwide, the prevalence for MTF individuals is 1 in 12,000 to 1 in 45,000, and for FTM individuals is 1 in 30,400 to 1 in 200,000.
- Most of these numbers are from European countries.
  - *Camb Q Health Ethics* 2012; **21**:287-9
- Massachusetts Behavioral Risk Factor Surveillance Survey (2007, 2009)
  - 0.5% of population between ages 18-64
- California LGBT Tobacco Survey
  - 0.1% of adult population



# INTRODUCTION: Historical Perspectives

- Previous assumptions that transgender individuals were not interested in reproduction
- Societal biases that transgender individuals *should not* retain their reproductive potential
- Until 2015, Europe had 24 countries which required sterilization prior to gender reassignment on legal documents
  - *William Mary J Race Gend Soc Justice* 2013; **20**:73
  - *Curr Opin Endocrinol Diabetes Obes* 2013; **20**:575-9



# INTRODUCTION: Historical Perspectives

- European Court of Human Rights ruled in 2017 that such requirements violate human rights law but there are still 14 countries in Europe which require sterilization prior to changing gender assignment on legal documents.
  - TGEU. Trans Rights Europe Map 2018: Forced Sterilization
- Ethicists have concluded that there is no ethical basis to deny transgender individuals access to reproductive medicine
  - *J Bioethical Inq* 2012; 9:311-6



# INTRODUCTION: Historical Perspectives

- Both the American Society for Reproductive Medicine (**ASRM**) and the European Society for Human Reproduction and Embryology (**ESHRE**) have issued opinions that transgender patients should have equal access to fertility options as cis-gender patients, and fertility preservation options should be discussed prior to gender transition
  - *Fertil Steril* 2015; **104**: 1111-5
  - *Hum Reprod* 2014; **29**:1859-65



# INTRODUCTION: Historical Perspectives

- Recent studies demonstrate that transgender people do desire parenthood, or at least wish to preserve that possibility
- In transgender women
  - 40% wanted to have children
  - 77% of their sample felt that the opportunity to preserve sperm should be routinely offered to all transgender women
    - *Int J Transgend* 2002; 6:215-21



# INTRODUCTION: Historical Perspectives

- Belgian study (2012): 54% of surveyed transgender men desired to have children, and 37% would have considered freezing gametes if that option had been available or offered to them.
  - *Hum Reprod* 2012; **27**:483-7



# INTRODUCTION: Historical Perspectives

- German study found that 76% of both transgender men and women had thought about fertility preservation prior to transition, but only 9% of transgender women and 3% of transgender men had actually completed this process
  - *J Sex Med* 2018; 15:757-67
- More transgender women preferred to build families through adoption, while more transgender men desired biological offspring and would prefer to build families through sexual intercourse or by carrying a pregnancy.
  - *LGBT Health* 2017;4:115-20



# INTRODUCTION: Historical Perspectives

- Report on Transgender Men Who Experienced Pregnancy After Female-to-Male Gender Transitioning
- Essentially normal pregnancies and no significant effect of previous testosterone use on pregnancy outcomes
  - Hypertension 12%
  - Preterm labor 10%
  - Placental abruption 10%
  - Anemia 7%
  - *Obstet Gynecol* 2014; **124(6)**: 1120-27



# INTRODUCTION: Historical Perspectives

- Studies in transgender teenagers have indicated desire for future family building exists in about half of them
  - *J Adolesc Health Off Publ Soc Adolesc Med* 2017; **61**:40-4
  - *J Adolesc Health Off Publ Soc Adolesc Med* 2018; **62**:128-35



# INTRODUCTION: Historical Perspectives

- The first and key intervention is the ability to preserve fertility through the cryopreservation of gametes prior to medical and/or surgical transition.
- In transgender women, this can be done through sperm cryopreservation at a commercial sperm bank
- In transgender men, this can be done through oocyte, embryo or ovarian tissue cryopreservation
  - *Curr Opin Endocrinol Diabetes Obes* 2013; **20**:575-9
  - *Int Rev Psychiatry Abingdon Engl* 2016; **28**:112-9



# INTRODUCTION: Historical Perspectives

- The first case report of oocyte cryopreservation in a transgender man was published in 2014
  - *Gynecol Endocrinol Off J Int Soc Gynecol Endocrinol* 2014; **30**:868-71
- Another publication reported a case series of 3 transgender men who underwent fertility preservation and subsequent transfer of embryos after in vitro fertilization (IVF)
  - *Obstet Gynecol* 2017; **129**:1031-4

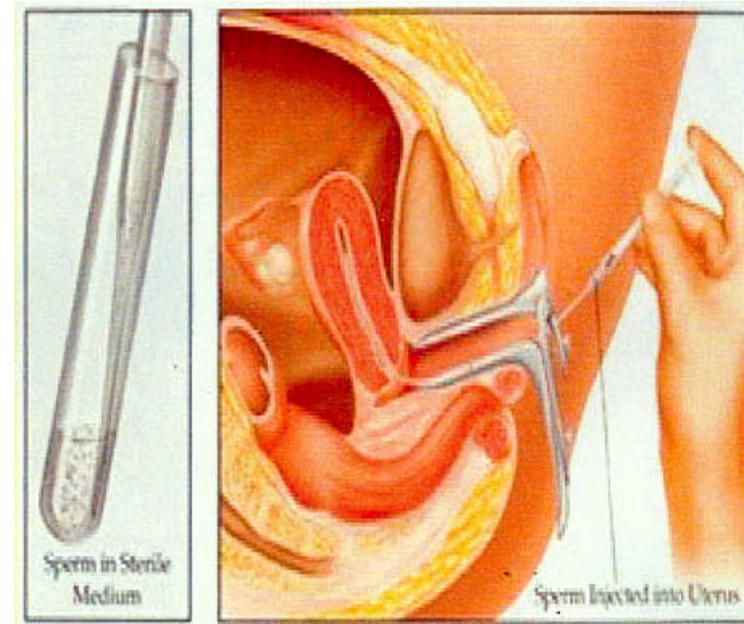


# ASSISTED REPRODUCTIVE TECHNOLOGIES: TREATMENT OPTIONS

- Alternative Insemination (AI)
- Donor Sperm
- In Vitro Fertilization (IVF)
- IVF for Transgender Men
- IVR for Transgender Women
- Donor Eggs
- Gestational Surrogacy
- Fertility Preservation for Transgender people

# Alternative Insemination (AI)

- Sperm placed into reproductive tract through means other than sexual intercourse
  - Step 1:  
**Monitor ovulatory cycles**  
Insemination generally performed 24-48 hours after luteinizing hormone (LH) surge is detected
  - Step 2: Insemination
    - Intracervical
    - Intrauterine
    - Intravaginal (home insemination)



# FDA Requirements for Sperm Donation

- **Sperm regulated as “human cells, tissues, or cellular or tissue-based products” (HCT/Ps) by the FDA**
  - American Association of Tissue Banks
  - Sperm banks may also have their own regulations
- **Anonymous donor regulations**
  - Sperm donor must be tested for infections (HIV, HTLV, HBV, HCV, CMV, WNV, Chlamydia, gonorrhea)
  - Sperm collected from donor is frozen and quarantined @ sperm bank
  - After 6 months, sperm donor must be retested for evidence of infection before quarantined sperm may be released for use
- **Known donor regulations**
  - Even when known, FDA regulations apply if a sperm bank is used for collection, or if insemination is performed by medical practitioner



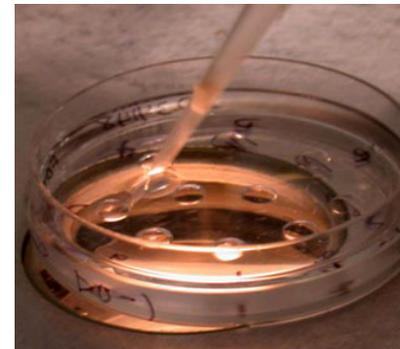
# In Vitro Fertilization (IVF)

- Assisted reproductive technology (ART) that involves handling of both eggs and sperm in laboratory
- IVF is common procedure
  - 2016: 242,618 ART procedures reported in U.S.
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  - While common, not for everyone
  - Possibility of multiple gestations if more than one embryo is transferred

## Multiple steps involved

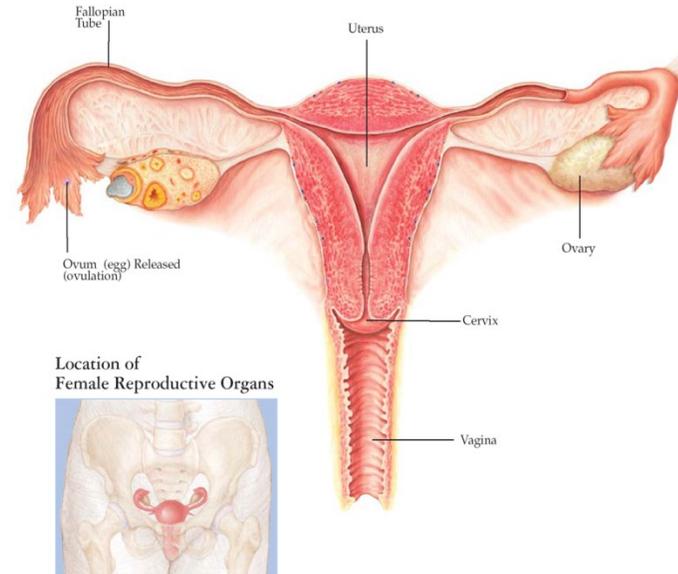
Controlled Ovarian Stimulation

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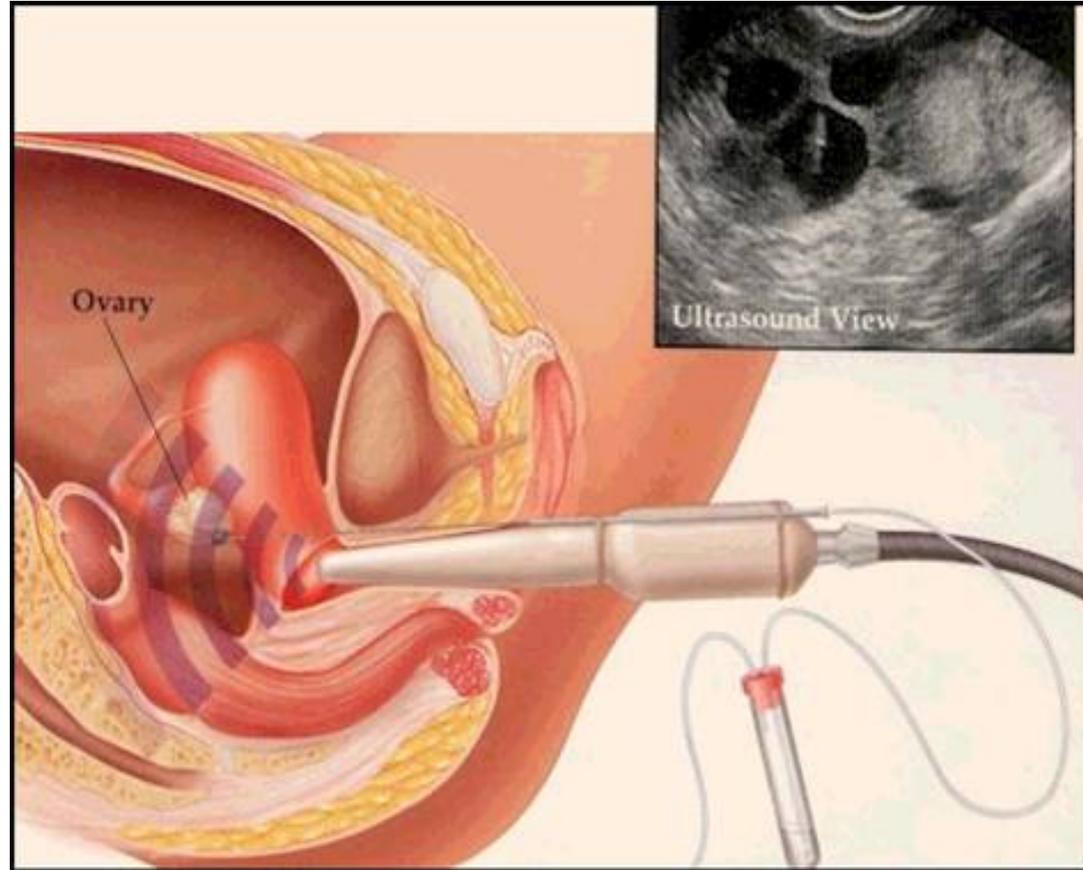
# IVF Process: Step 1

- **Controlled ovarian stimulation (COS)**
  - A large number of mature oocytes are desired to increase chances of success with IVF
  - Medications are used to stimulate maturation of multiple follicles
    - The body normally releases 1 mature oocyte each month



# IVF Process: Step 2

- Egg Collection



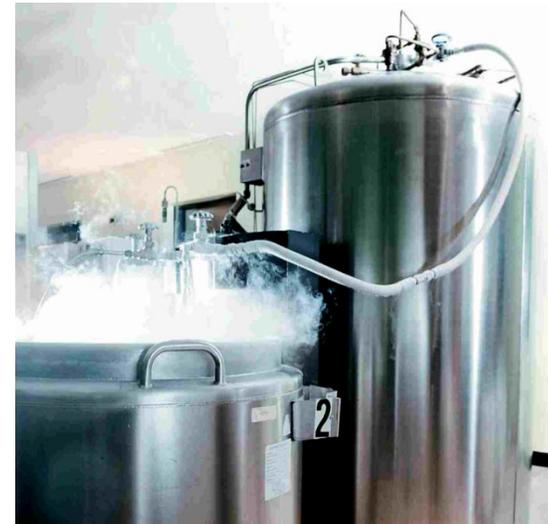
# IVF process: Step 3



- **Insemination, fertilization, and embryo culture**
  - Semen collected separately via masturbation simultaneous to egg retrieval (or frozen sperm is thawed)
  - Semen is processed to prepare for insemination
  - One of 2 types of insemination
    - Conventional (or regular) drop insemination
    - Intracytoplasmic sperm injection (ICSI)
  - Inseminated oocytes placed in Petri dish, incubated overnight
  - Oocytes examined next morning to determine fertilization status
  - Fertilized oocytes kept in embryo culture medium to allow for further growth and development – up to 6 days

# IVF Process: Step 4

- **Embryo Transfer**
  - Estrogen and Progesterone to prepare endometrium (uterine lining)
  - Embryo(s) transferred into uterus 5 days after egg retrieval
    - Number of embryos transferred determined by variety of factors
      - Age of AFAB person providing oocytes
      - Infertility issues
      - Pregnancy history
- **Embryo Cryopreservation (embryo freezing)**
  - Stored at 300 degrees below 0 for later use
  - Pregnancy success rates from transfer of frozen blastocysts are comparable to pregnancy rates from transfer of fresh embryos



# Case Report

B. H. (34) & J. H. (26) August 2013

- B. H. is transgender AMAB, married to cisgender AFAB, J.H.
- B. H. had been on hormone (estrogen) therapy since 2006
- Discontinued hormone therapy in 2011
- Spermatogenesis returned but at extremely low levels
- B.H. provided fresh sperm for IVF procedure
- J.H. went through regular IVF treatment (October 2013)
  - 29 eggs retrieved
  - 25 mature
  - 23 fertilized with ICSI
  - SET resulted in live birth, healthy baby AFAB (July 2014)
    - 14 Embryos frozen, available for future pregnancies.

# Case Report

R.B. (36)

November 2015

- R.B. is transgender AFAB, married to cis-gender AFAB
- R. B. had been on testosterone therapy since November 2011
- Discontinued testosterone therapy in October 2014
- Underwent 6 cycles of IUI with donor sperm (5/15 – 10/15)
- Did first IVF cycle in December 2015
  - 7 eggs retrieved, 6 mature, 6 fertilized
  - SET resulted in successful live birth of healthy AMAB infant (8/28/16)
    - 4 Embryos frozen
- Returned for FET cycle in November 2018
  - SET resulted in another successful live birth of healthy AFAB infant (8/24/19)



# ART for AFAB (Assigned Female at Birth) Transgender People

- **Donor Insemination**

- Known sperm donor
- Anonymous sperm donor

## **Reciprocal IVF**

Collaborative pregnancy: 1 partner provides eggs, inseminated with donor sperm, embryo(s) transferred to other partner who carries pregnancy

## **Egg or Embryo Donation and/or Surrogacy**

Older AFAB people

Infertility factor



# Reciprocal IVF

- IVF using eggs of one partner and womb of another
- Helps both partners feel equal biologic tie to the child
- Either medically necessary or elective
- Growing in popularity
- Cost can be a factor



# Case Report

C. F. (22) & E. H. (21)      April 2012

- E. H. is transgender AFAB person
- E. H. provided eggs
- C. F. is cis-gender AFAB person
- IVF cycle (November 2012)
  - SET into C. F. – not pregnant
- FET cycle (January 2013)
  - SET into C. F. – pregnancy resulted in live birth - healthy baby AFAB (October 2013)
- IVF cycle (June 2016)
  - SET into C.F. – pregnancy resulted in live birth – healthy baby AFAB (April 2017)
  - 4 frozen embryos available for potential additional children



# IVF for AMAB (Assigned Male at Birth) Transgender People

- IVF using **Donor Eggs** and/or **Gestational Surrogate**
- Sperm from intended parent(s) used to inseminate eggs provided by an egg donor
- Resultant embryos transferred to a gestational surrogate to carry the pregnancy



# Egg Donors

- Healthy AFAB people, ideally between age 21-30 years
- Two types of egg donors
  - Known/directed
    - AFAB family members or close friends
  - Compensated
    - Recruited and matched through Egg Donor Agency
    - Frozen eggs from Donor Egg Bank

# Compensated Egg Donation

- Compensated for their time, effort, inconvenience, wages lost from work, expenses, etc.
- Not “selling” their eggs: compensation is not dependent on number of eggs
- Typical compensation range: \$3,000 - \$10,000 per donation
- Guidelines established by American Society for Reproductive Medicine (ASRM) are intended to assure that monetary compensation is not coercive or construed as “purchasing” eggs
- Legal contract needed



# Frozen Donor Egg Banks

- Until recently, oocyte cryopreservation was considered “experimental”
- Analogous to Frozen Donor Sperm Bank
- Six to eight eggs per batch
- Significantly lower cost: oocytes from one donor is shared amongst 2 or more recipients.
- Logistically simpler to coordinate treatment

# Egg Donor Screening

- **Detailed Questionnaire**

- personal information, medical history, family history, etc.

- **Psychological Screening**

- written test and interview by psychologist/social worker

- **Medical Screening**

- general health, basic genetic screening (e.g. Cystic Fibrosis, etc.)

- **Infectious Disease Screening**

- HIV, Hepatitis B & C, WNV, syphilis, gonorrhea, chlamydia

# Surrogacy

- **Traditional Surrogacy**
  - Surrogate is inseminated with sperm from intended parent
- **Gestational Surrogacy**
  - Embryo created from sperm of intended parent and egg from intended parent or egg donor, transferred into uterus of surrogate
- **Legal Implications**



# Gestational Surrogates

- **Must have had at least one successful live birth of their own child**
- **Known Surrogate – relative or close friend**
- **Compensated Surrogate** - recruited and matched through an agency
- **Legal contract needed**

# Screening of Gestational Surrogates

- **Detailed Questionnaire**
  - Personal information, medical and obstetrical history, etc.
- **Psychological Screening**
  - Written psychological test and interview by psychologist/social worker
- **Psychosocial Evaluation**
  - Joint counseling session with intended parent(s)
- **Medical Screening**
  - General health and fitness for pregnancy



# Fertility Preservation for Transgender People

- Gamete banking
- Embryo banking



# Fertility Preservation for Transgender Women

- Bank frozen sperm in sperm bank
- Hormonal treatment causes suppression of spermatogenesis
- Bank sperm BEFORE hormonal treatment

# Fertility Preservation for Transgender Women

Options for using frozen sperm in future:

- If in a relationship with an AFAB person, may do alternative insemination
- If in a relationship with an AMAB person, would need to do DE/GS

# Fertility Preservation for Transgender Men

- ❑ Bank frozen eggs in egg bank
  - ❑ Oocyte cryopreservation is no longer considered experimental
  
- ❑ Bank frozen embryos
  - Requires doing IVF
  - May use sperm from AMAB partner, known sperm donor or anonymous sperm donor

# Fertility Preservation for Transgender Men

- ❑ If in relationship with an AMAB person
  - ❑ Thaw frozen oocytes, inseminate with partner's sperm, need GS
  - ❑ Thaw frozen embryos, need GS
  
- ❑ If in relationship with a AFAB person
  - Thaw frozen oocytes, inseminate with donor sperm, AFAB partner carries pregnancy or use GS
  - Thaw frozen embryos, AFAB partner carries pregnancy or use GS

# Case Report

B. L. (23)

January 2012

- B. L. is transgender AFAB
- Had not initiated medical transition
- Requested freezing eggs for fertility preservation
- Treatment in May 2012
  - 24 eggs retrieved
  - 16 mature & frozen

# Case Report

A. C. (24)                      February 2013

- A. C. is transgender AFAB, engaged to marry cisgender AFAB
- Had been on testosterone therapy since April 2010
- Stopped testosterone in June 2013
- Began menstruating again in August 2013
- First treatment (November 2013)
  - 14 eggs retrieved
  - 12 mature & frozen
- Second treatment (January 2014)
  - 23 eggs retrieved
  - 17 mature & frozen



# SUMMARY

- The same assisted reproductive technologies (ART) which have been used to treat heterosexual infertile couples have been adapted for use to help lesbians and gay men have children, and may also be adapted for use to help transgender people build their families.
- It is the responsibility of health care providers who treat transgender people to counsel them about the possibility of having children through assisted reproductive technologies, but this requires planning ahead, preferably prior to transition.



# QUESTIONS ???

