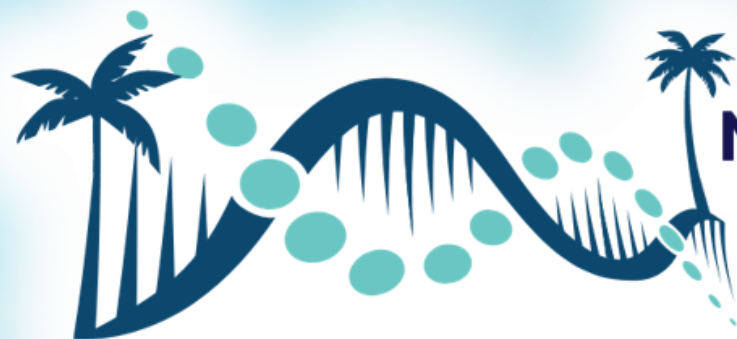




PACIFIC COAST  
REPRODUCTIVE  
SOCIETY



March 20–23 | Indian Wells, CA

**PCRS 2024**

**INNOVATION AND INTEGRATION**

**THE FUTURE OF REPRODUCTIVE MEDICINE**

# ART for Transgender and Gender Diverse Patients

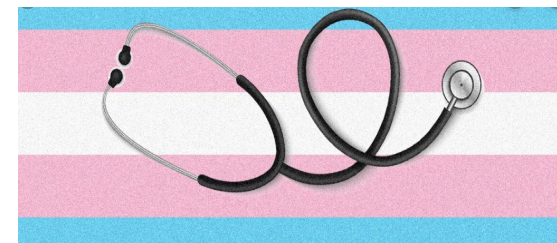
Molly B Moravek, MD, MPH

Associate Professor

Reproductive Endocrinology & Infertility

Department of Obstetrics & Gynecology

Department of Urology



## Disclosures:

- **Stock Option Holder (Individual stocks/Stock options; diversified mutual funds do not need to be disclosed):**  
NUVO Pharmaceuticals

# Learning Outcomes

1. Discuss the current state of knowledge on the effect of gender-affirming hormones on current and future reproductive capacity.
2. Develop ART plans for transgender and gender diverse patients to minimize dysphoria during treatment.
3. Identify ways in which the clinical space can be more inclusive and welcoming to gender diverse patients.

# Case

- Jason is a 23yo, assigned female at birth, who presents to your clinic with his fiancé Kate (a cisgender woman) to discuss fertility preservation prior to starting testosterone
- They plan to have children in 7-8 years using Jason's eggs, donor sperm, and Kate carrying the pregnancy. They want a big family
- You walk them through the process, including costs, and they tell you they would need to use all of the money they have saved for their wedding
- They want to know if they need to do that, or if it is okay to wait until they actually want to start their family and have saved money again



# Shifting Epidemiology

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# Increasing Prevalence

- ~1.3 million US adults
  - Transgender individuals more likely to be non-white, below the poverty line, and less likely to attend college
- US teens: 300,000
  - Youth Risk Behavior Survey
- Census Bureau now collecting SOGI



## Increasing Visibility

- Transgender celebrities
- Increased research focus
- Bathroom bills
- Military ban
- CDC banned words



# Demand for transgender health care services will continue to increase

- Increasing social acceptance
- Increasing economic access
- Increasing legal access

**Major limiting factor:  
availability of high quality  
care**



'Actually there's nothing wrong with me, but by the time I see the doctor there probably will be.'

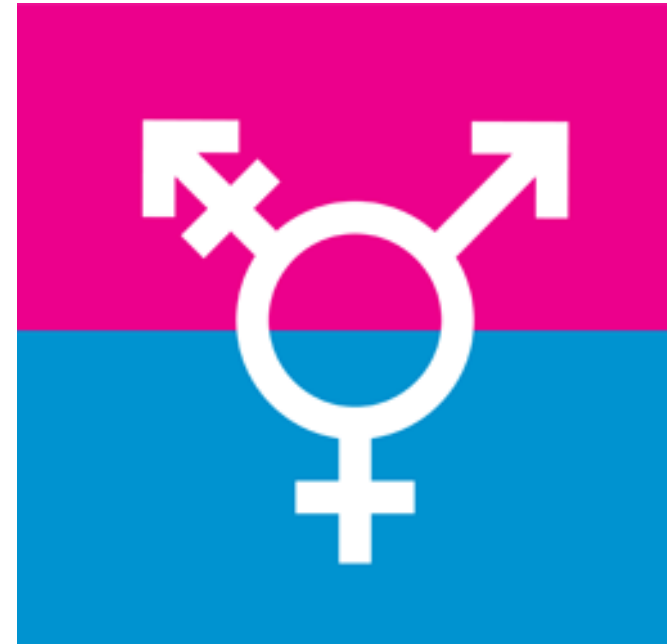


# Gender-Affirming Treatment

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# Gender-Affirming Hormone Therapy – Overview

- Transgender Men:
  - Testosterone – IM, SQ, transdermal
  - Adjuvant therapies rarely needed
  - Male range serum E2 and T levels
- Transgender Women:
  - Estradiol – PO, IM, transdermal
  - Anti-androgens – spironolactone, finasteride
  - Female range serum E2 and T levels

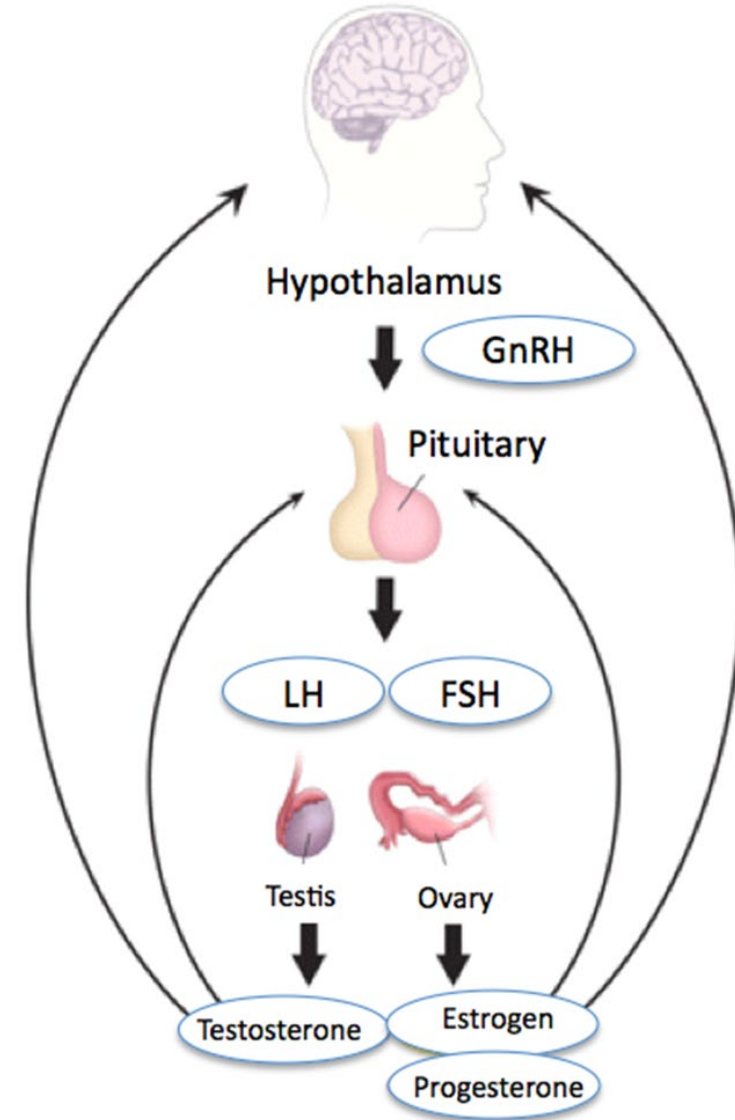


# Peri-Pubertal Children

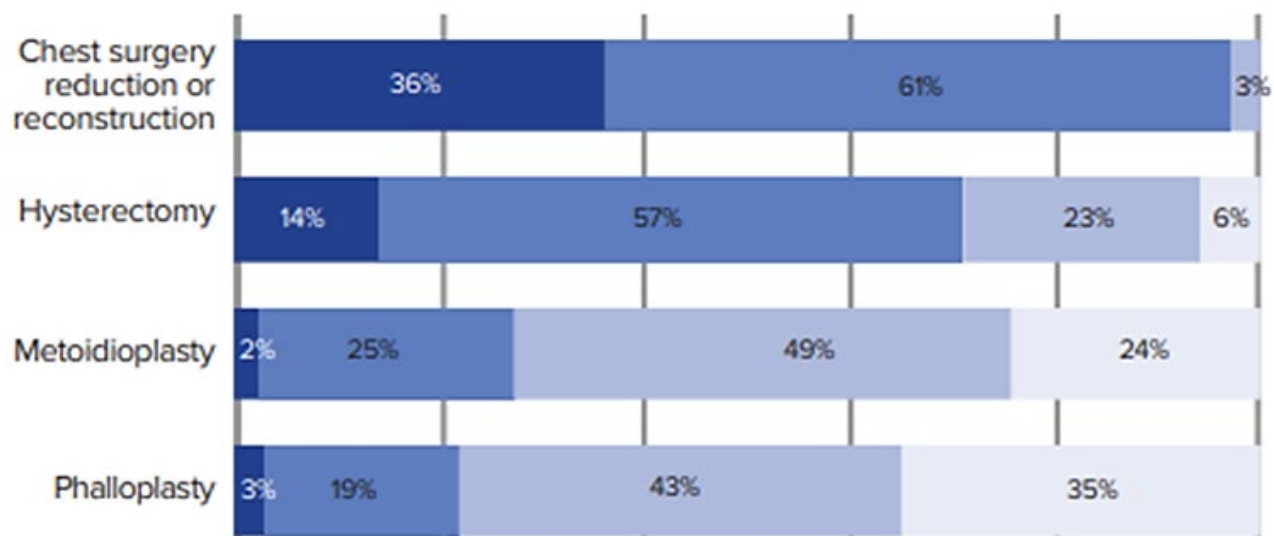
- There is no role for hormone therapy prior to puberty
- Gender dysphoria in adolescence likely to persist
- Gender dysphoria often worsens with onset of puberty
- No agreed upon age for starting hormone therapy

# Peri-Pubertal Children

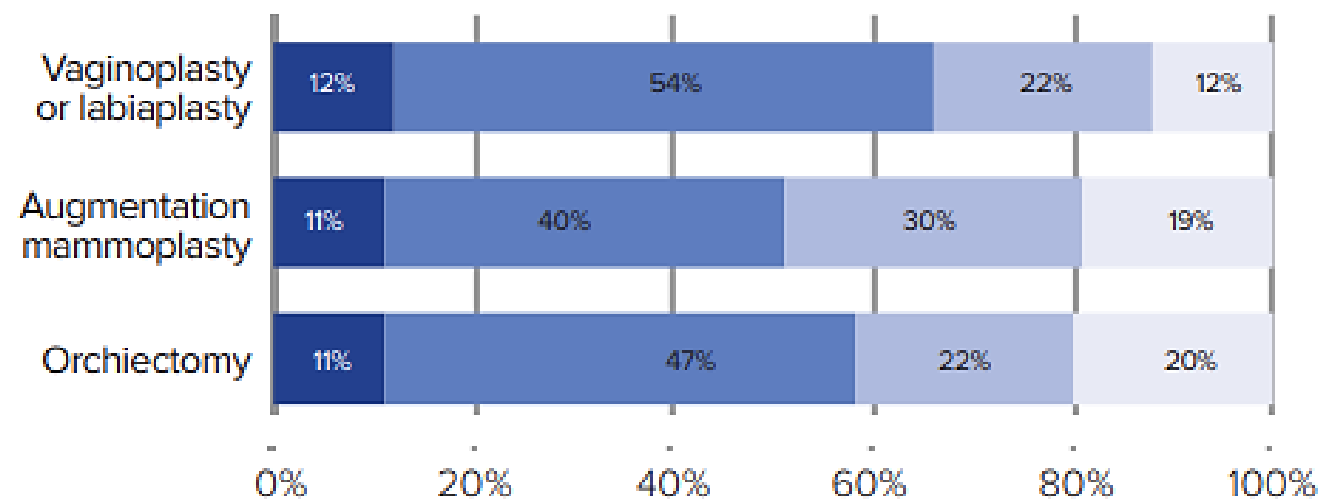
- GnRH analogues ideally initiated in tanner stage 2-3
  - Prevents development of unwanted secondary sex characteristics
- Progestins for menstrual suppression in postpubertal transmasculine youth not ready for hormone therapy



**Figure 7.12: Procedures among transgender men**



**Figure 7.14: Procedures among transgender women**



■ Have had it  
■ Want it some day  
■ Not sure if they want this  
■ Do not want this



# Reproduction in TGD Individuals

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# Effect of Gender-Affirming Tx on Fertility

- The effect of long-term gender affirming hormone therapy on future reproductive capacity is largely unknown
  - Limited human studies are observational in nature, mostly assess short-term therapy, and have mixed results
- Even less is known about fertility in individuals who had puberty halted with GnRH agonists prior to starting hormone therapy
- Many gender affirming surgeries remove the gonads, and are therefore sterilizing



# PUBMED Search (1/12/24)



**“cancer and fertility”**

**=19,836**

**“transgender and  
fertility”**

**=351**

# Medical Society Recommendations

## ASRM

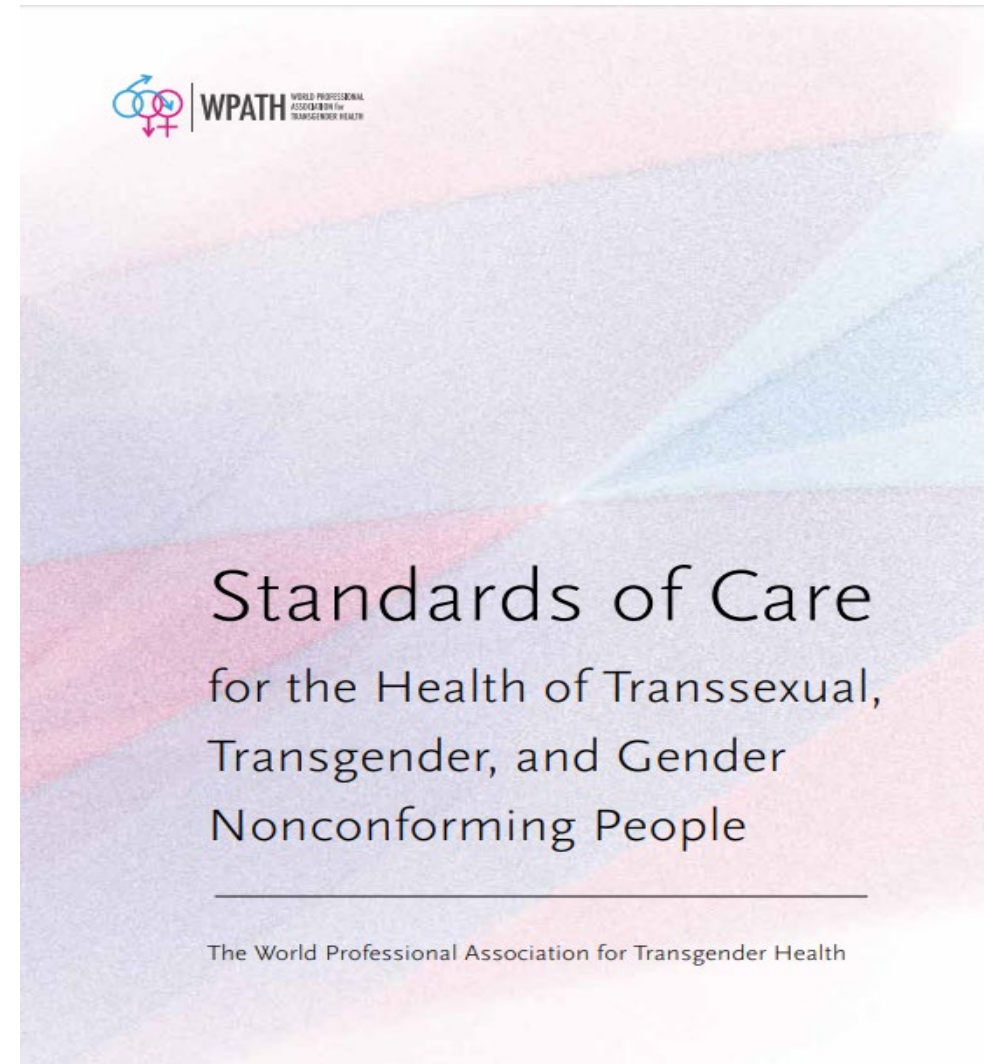
- “Providers should **offer fertility preservation** options to individuals **before gender transition**”
- “...ensure that transgender patients who seek fertility services are informed about...the **lack of data** about long-term outcomes”

## Endocrine Society

- “All individuals seeking gender-affirming medical treatment should receive information and **counsel on options for fertility preservation prior to initiating** puberty suppression in adolescents and prior to treating with hormonal therapy in both adolescents and adults”

## WPATH Guidelines

“Health care professionals... should **discuss reproductive options** with patients **prior to initiation** of these medical treatments for gender dysphoria.”



# Psychosocial Data

- ~50% transgender people express a desire to have children
- ~40% transgender men would consider gamete cryopreservation
- Transgender men with children score better on mental health scales, and transgender women with children have a lower suicide risk
- 24-36% transgender adolescents desire biologic parenthood
  - >25% “did not know”



# Utilization

- There seems to be low utilization of fertility preservation by TGNB persons undergoing medical or surgical transition
- Studies in transgender youth: 2-5% pursue fertility preservation despite counseling (all assigned male at birth)

# Options for Genetic Offspring

TRANSGENDER MEN	TRANSGENDER WOMEN
<ul style="list-style-type: none"><li>• Partner with sperm:<ul style="list-style-type: none"><li>– Willing/able to carry pregnancy—intercourse/IUI</li><li>– Not willing/able to carry pregnancy—IVF with gestational carrier</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Partner with ovaries/uterus:<ul style="list-style-type: none"><li>– Partner willing to carry pregnancy – intercourse/IUI</li><li>– Partner not willing/able to carry pregnancy – IVF with gestational carrier</li></ul></li></ul>
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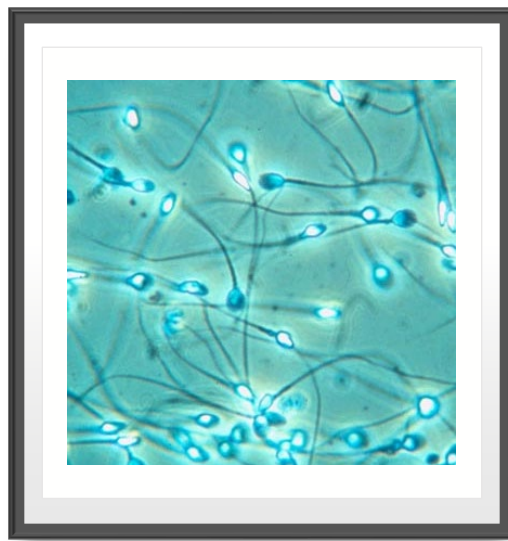


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# Fertility Considerations in Transfeminine Patients

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# Histologic Data

- Estradiol exposure leads to:
  - Smaller seminiferous tubules
  - Abnormal appearance of Sertoli and Leydig cells
  - Fatty degeneration of connective tissue
  - Impaired spermatogenesis (maturation arrest)
    - Regardless of anti-androgen use
    - Stage of maturation arrest and azoospermia incidence differed among studies

# Effect of Estradiol on Semen Analysis

- Studies examining semen parameters both on E2 and after discontinuation
- Patients on estradiol – substantially worsened parameters, but sperm still present
- Extremely variable histology (even in women on E2)
- Level of gonadotropin suppression did not necessarily reflect degree of spermatogenesis
- Bottom line: FP is possible, although may not get same level of results

# Transgender Women NOT on Estradiol

- Increased incidence abnormal semen parameters
  - Count
  - Motility
  - Morphology
- Pathophysiology unknown

# Fertility Preservation Options

- Sperm cryopreservation
  - Can do trial semen analysis in patients on hormone therapy – if azoospermic, try again after at least 3 months off therapy
- Isolation of sperm at time of gender-affirming surgery
- Testicular tissue cryopreservation
  - No data



# Fertility Considerations in Transmasculine Patients

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# Popular Press



# Study on Pregnancy in Transgender Men

- Cross-sectional survey of 41 trans-men who had a live birth, mean age 28yo
- 84% of subjects on T before pregnancy used own eggs
- 32% conceived on T
- No difference in perinatal complications in those previously on T vs not

**Table 2. Findings Among Those Who Used Testosterone Before Pregnancy of Report (n=25)**

Characteristic	Value
Age (y) when testosterone was initiated	25 (17–35)
Length of testosterone use before pregnancy (y)	
Less than 1	10 (40)
1–2	6 (24)
3–10	4 (16)
More than 10	5 (20)
Stopped taking testosterone to become pregnant	17 (68)
Duration between stopping testosterone and resumption of menses (mo)	
No menses before pregnancy	5 (20)
Less than 1	2 (8)
1	6 (24)
2	7 (28)
3	4 (16)
4–6	1 (4)
Resumed or initiated testosterone after pregnancy*	20 (48)

Data are median (range) or n (%).

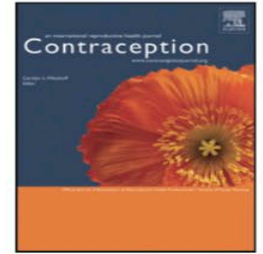
\* Of total respondents in the study (N=41).



Contents lists available at ScienceDirect

# Contraception

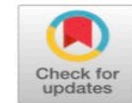
journal homepage: [www.elsevier.com/locate/con](http://www.elsevier.com/locate/con)



Original research article

## Family planning and contraception use in transgender men <sup>☆,☆☆</sup>

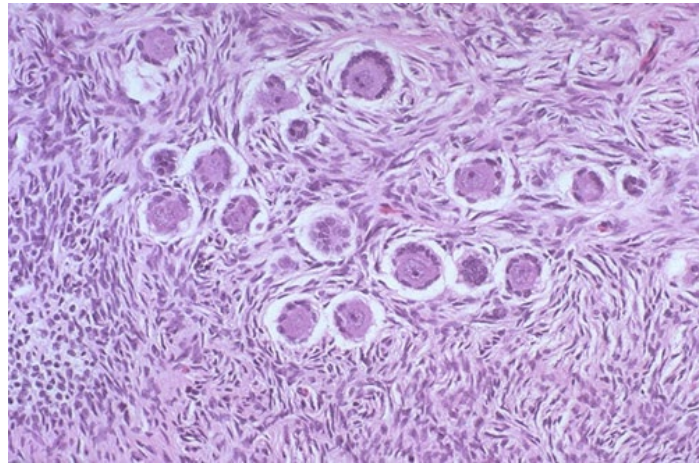
Alexis Light <sup>a,\*</sup>, Lin-Fan Wang <sup>b</sup>, Alexander Zeymo <sup>c</sup>, Veronica Gomez-Lobo <sup>a,d</sup>



- 197 transgender men
- 60 pregnancies among 32 respondents
  - 10 after stopping T, 1 while on T irregularly; most had never taken T
  - Those who had never taken T were nearly 3x more likely to have been pregnant than those who had taken T (36% vs 13.8%)
- 51% reported that their healthcare providers had not asked about their fertility desires

# Effects of Testosterone on the Ovary

- Studies performed at the time of gender-affirming oophorectomy
- Some studies show PCO morphology, while others show no difference
- Small case series, short T exposure (mean 12-37 months)



# Effect of testosterone on AMH

## Cannen et al:

- Measured AMH in 22 transmen (mean 22.4yo)
- Participants also on GnRHa and AI
- Significant suppression of AMH after 16 weeks vs baseline
  - 4.4 vs 1.4 ng/ml ( $p < 0.001$ )

## Tack et al:

- 38 transgender adolescents
- All participants on an androgenic progestin, 25 then added T
- No change in AMH at baseline, 6 months or 12months (increased)

# ART Outcomes

- Limited to small case series with promising oocyte and embryo cryopreservation results
- No ability to assess long-term outcomes for patients or offspring

Study	Design	Result
Leung 2019	N = 26 transmen (16 with prior T)	Transmen with prior T had <b>no difference in oocyte number or maturity</b> but <b>higher gonadotropins needed</b>
Adeleye 2019	N = 13 transgender men (7 with prior T) vs BMI-matched cisgender controls	Transmen with prior T had <b>fewer total oocytes but no difference in mature oocytes</b> as compared to no prior T
Amir 2020	N = 12 transgender men (6 with prior T) vs cisgender controls	<b>No difference in oocyte number or maturity</b>
Stark 2022	Case study: 2 transmen undergoing IVF while on active T treatment	<b>Stimulation on T is feasible:</b> 30 and 9 mature oocytes retrieved respectively
Moravek 2023	Case study: 2 transmen undergoing IVF while on active T treatment	<b>Stimulation on T is feasible with development to blastocyst:</b> 13 M2 -> 9 x 2PN -> 2 blastocysts; 23 M2 -> 14 x 2PN -> 8 blastocysts

# Qualitative Experiences of Fertility Preservation

- 15 adult trans men who had completed oocyte cryo:
  - 7 had started testosterone prior
  - Majority found resumption of menses and increased estradiol levels to be psychologically distressing
  - Regret and medical outcomes not assessed
- Trans adolescents report process is emotionally and physically demanding even if:
  - Strongly desire fertility preservation
  - Had time to mentally prepare
  - Report satisfactory experience



# Case Reports: Peripubertal Fert Pres

- 16yo transmasculine adolescent on GnRH agonist since age 14
- GnRH agonist maintained during stimulation
- Required gonadotropin injections x 30 days
- 4 mature oocytes cryopreserved

Rothenberg et. al, *NEJM*, 2019

- 15yo transmasculine adolescent on GnRH agonist since age 12
- GnRH agonist implant removed prior to stimulation
- 12 day stimulation; concomitant letrozole administration
- 22 mature oocytes cryopreserved

Martin et. al, *Fertil Steril*, 2021



# Ovarian Stimulation – Special Considerations

- Cessation of testosterone – likely to increase dysphoria
  - Some think T should be stopped for ~3 months
  - Others think T can be stopped just before
  - Could you maintain T during stimulation??
- Consider aromatase inhibitors to minimize E2 elevations; Progestin IUDs can be left in place
- Vaginal exams can be very distressing and T treatment may lead to vaginal atrophy
  - Consider transabdominal/transrectal or pediatric probes
- FDA lab testing

# Ovarian Tissue Cryopreservation?

- No longer considered experimental, but limited data
- Could be performed at time of gender-affirming oophorectomy (does not require hormonal stimulation)
- Provider/patient must be okay with relatively little data on both OTC and the effect of T on the ovaries





# Creating an Inclusive Space

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# Language

## Call to Action

ajog.org

### Welcoming transgender and nonbinary patients: expanding the language of “women’s health”



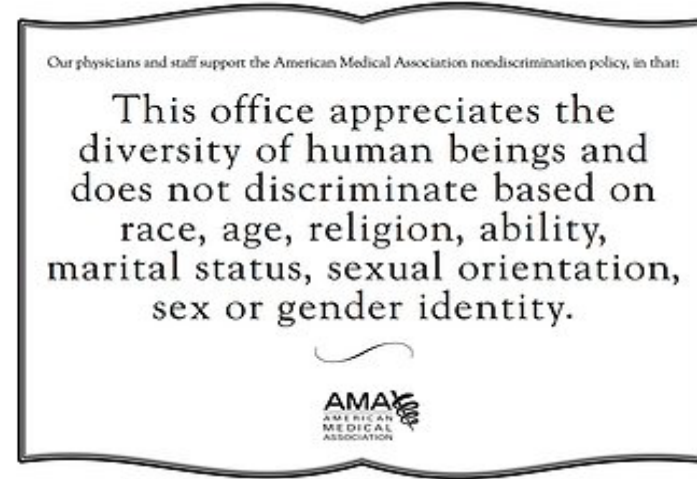
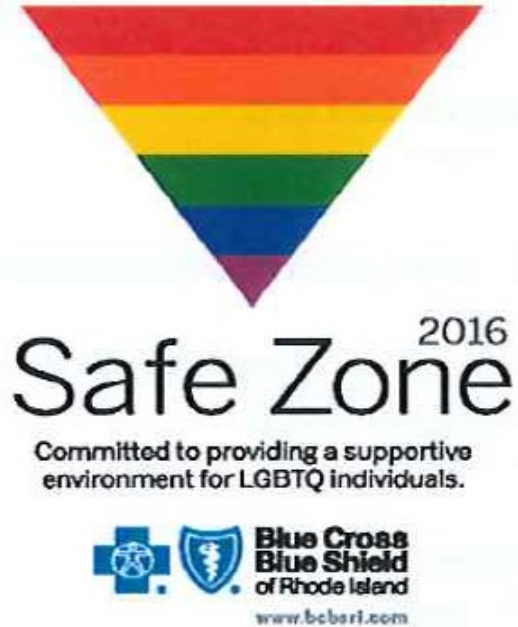
Daphna Stroumsa, MD, MPH; Justine P. Wu, MD, MPH

Over the last decade, transgender and gender-diverse people have gained greater visibility in society. At the same time, women’s health care professionals are increasingly providing clinical services for this population,<sup>1,2</sup> including gender transition-related care (eg, gender-affirming hormone therapy

**THE PROBLEM:** The widespread use of gender-specific language in sexual and reproductive health care alienates gender-diverse people from seeking care and contributes to disparities in health.

**THE SOLUTION:** Promoting gender-inclusive and affirming language in verbal and written communication is a critical step toward reducing health disparities for gender-diverse people.

# Inclusive Signage



# Inclusive intake forms

## TRANSGENDER/CISGENDER STATUS VIA THE "TWO-STEP" APPROACH

### RECOMMENDED MEASURES FOR THE "TWO-STEP" APPROACH:

#### ASSIGNED SEX AT BIRTH

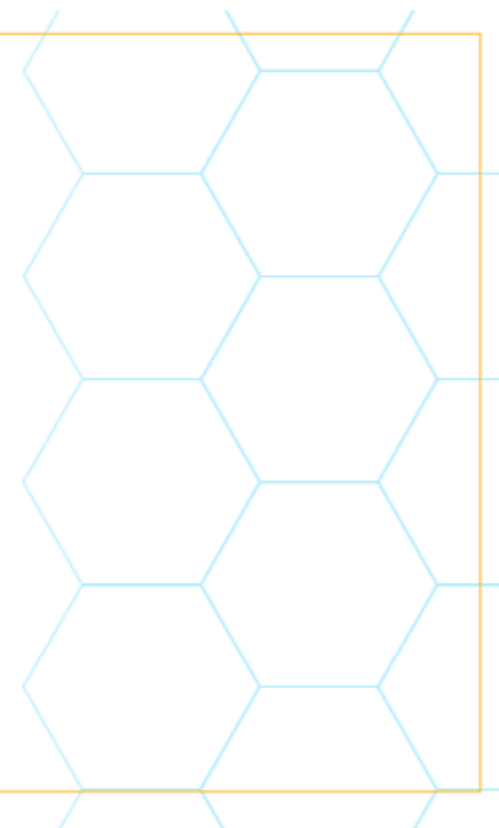
What sex were you assigned at birth, on your original birth certificate?

- Male
- Female

#### CURRENT GENDER IDENTITY

How do you describe yourself? (check one)

- Male
- Female
- Transgender
- Do not identify as female, male, or transgender



# CREOG Training Modules



Women's Health Care Physicians

Home Clinical Guidance & Publications Practice Management Education & Events

## Transgender Healthcare Curriculum

Home / About ACOG / ACOG Departments & Activities / CREOG / CREOG Search / Transgender Healthcare Curriculum

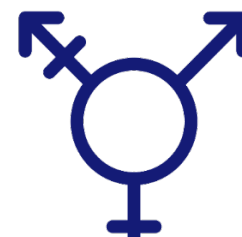
CREOG
About CREOG
Association of Program Managers of Obstetrics and Gynecology (APMOG)
Countdown to CREOG
Residency Program Directory by Regions

### Transgender Healthcare Curriculum

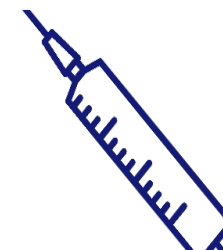
Training Modules: Improving Ob/Gyn Care for Transgender and Non-Individuals

Transgender, non-binary and gender non-conforming individuals often discrimination in health care settings. Research shows that many are ur competent, knowledgeable and culturally-appropriate health care.

To assist faculty and staff, we created modules to prepare ob/gyns and to better care for transgender, non-binary and other gender diverse pe



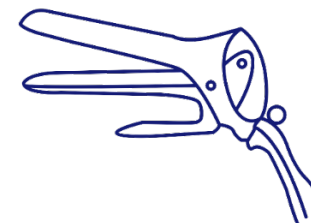
1. Intro



2. Preventive care



3. Gender affirming (transition) care



4. Common Ob/Gyn issues



5. Legal & billing

# Staff Education



## Staff: Caring for Patients and Visitors Who Are Transgender or Gender Nonconforming

Competency Criteria

Video

Quiz

Submit Score & Complete



This learning module will not be recorded in your transcript.

To receive credit, go to the Catalog Search page and search using the green "Search and Enroll" button.

see Example

Content Expert: [Halley Crissman](#)

[Submit Comments or Questions](#)

### Competency

Staff will gain understanding of Michigan Medicine's commitment to serving transgender and gender non-conforming patients and visitors.

### Critical Behaviors

- Understand the difference between sex and gender
- Understand the difference between cisgender and transgender
- Understand the different identities that exist under the transgender umbrella
- Understand barriers that transgender patients may experience in healthcare

How much time will I need?

10 minutes

Module: 5 minutes  
Quizzes: 5 minutes

Who is the audience for this lesson?

Michigan Medicine staff

What are the requirements?

View the video

Pass the quizzes with 100%

Additional Resources

Introduction

Quiz

Provider Training

Quiz

Submit Score & Complete



This learning module will not be recorded in your transcript.

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see Example

Content Expert: [Halley Crissman](#)

[Submit Comments or Questions](#)

Contact us  
Phone: 734-936-8000  
Get Help: [Service Now](#)

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### Provider Training

To view close captioning, or to view the video at full screen, please use the controls at the bottom of the video.





# Changes in EMR

**Kal-Burger-Poc, Testfour** MRN: 100022227 DOB: 07/30/2015 FYI: None PCP: Aaberg, Thomas M... Infection:  
Preferred Name: **David** CSN: 1000412204 Age/Sex: 23 m.o. / F Allergies: **Not on File** REF: None Isolation:  
Primary Cvg: BCBS/BCBS MICHIGAN P... Pronoun / Gender ID: **he/...** My Sticky Note:

Please indicate the gender with which you identify:

If you answered "Other" for the previous question, please indicate your gender identity here:

Please indicate your sex at birth:

Please indicate the pronouns you would like used when people refer to you:

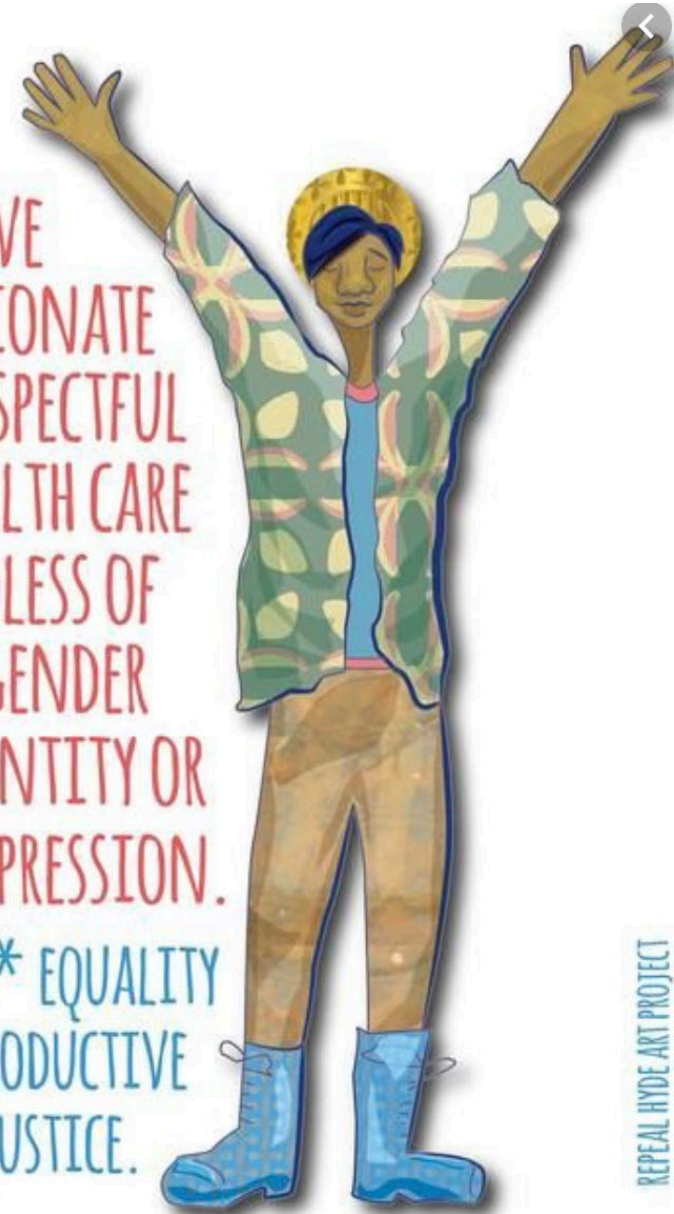
Your pronouns will be able to be seen by all clinicians.

If you answered "Other" for the previous question, please indicate your pronoun(s) here:

# Additional Information

- <http://www.wpath.org/>
- <http://transhealth.ucsf.edu/>
- <https://transequality.org/issues/national-transgender-discrimination-survey>
- <http://fenwayhealth.org/care/medical/transgender-health/>

YOU  
DESERVE  
TO HAVE  
COMPASSIONATE  
AND RESPECTFUL  
HEALTH CARE  
REGARDLESS OF  
YOUR GENDER  
IDENTITY OR  
EXPRESSION.  
TRANS\* EQUALITY  
IS REPRODUCTIVE  
JUSTICE.



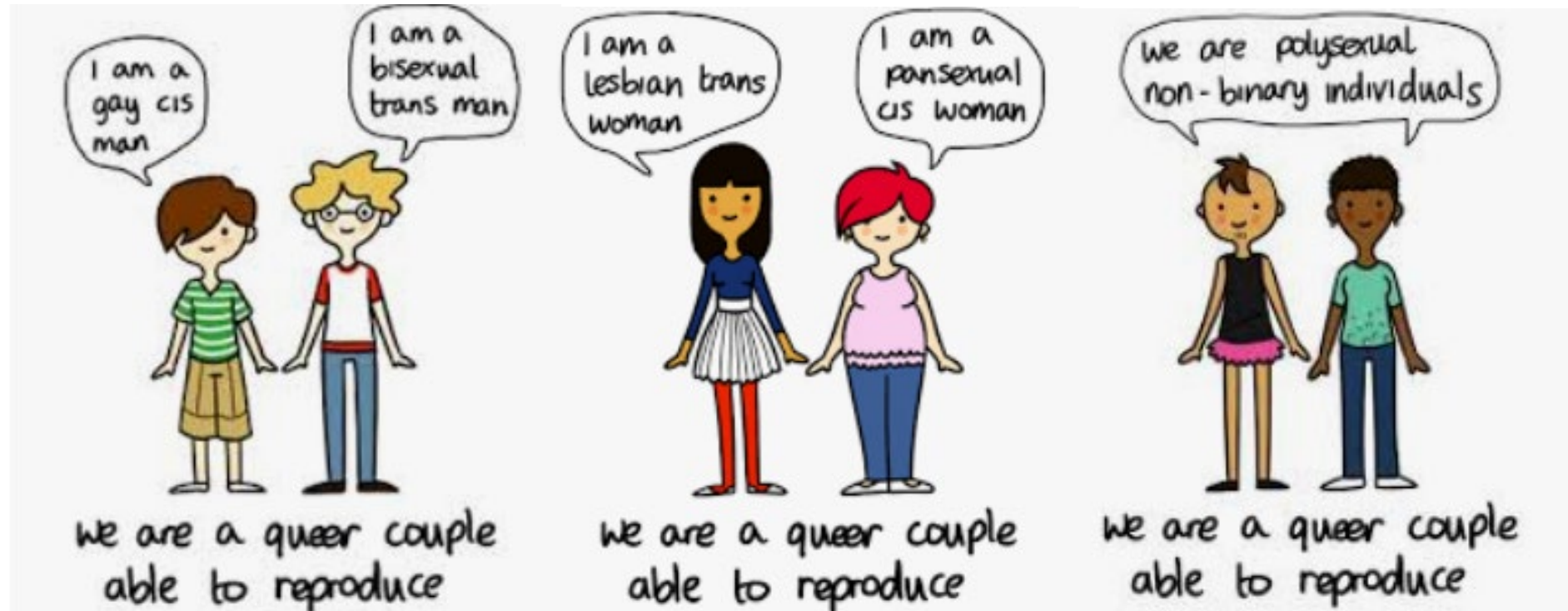
REPEAL HYDE ART PROJECT

**Endocrine Treatment of Gender-Dysphoric/  
Gender-Incongruent Persons: An Endocrine Society\*  
Clinical Practice Guideline**

Wylie C. Hembree,<sup>1</sup> Peggy T. Cohen-Kettenis,<sup>2</sup> Louis Gooren,<sup>3</sup> Sabine E. Hannema,<sup>4</sup>  
Walter J. Meyer,<sup>5</sup> M. Hassan Murad,<sup>6</sup> Stephen M. Rosenthal,<sup>7</sup> Joshua D. Safer,<sup>8</sup>  
Vin Tangpricha,<sup>9</sup> and Guy G. T'Sjoen<sup>10</sup>

<https://academic.oup.com/jcem/article/102/11/3869/4157558>

# Assume not...





March 20-23 | Indian Wells, CA

**PCRS 2024**

INNOVATION AND INTEGRATION

THE FUTURE OF REPRODUCTIVE MEDICINE

# Q&A