Understanding the Terms

- **Biological Sex**: Male vs Female as determined by sex chromosomes, gonadal structures, non-ambiguous internal/external genitalia, congenitally determines sex hormones, and reproductive capacity. (Biological Term)
- **Gender Identity**: a persons subjective, psychological self-perception or self-identification with "male" or "female" characteristics. (Sociological Term)
- **Gender Incongruence:** incongruence between ones biological sex and gender identity (experienced gender)
    - **Gender Dysphoria**: a medial term defined by the American Psychiatric Association and found in the DSM-5, state of gender incongruence associated associated with significant distress or impairment in social, school, or other important areas of functioning.
- **Transgender**: broad spectrum of individuals who identify (experience) a gender other than that associated with their biological sex.

Burden of Disease

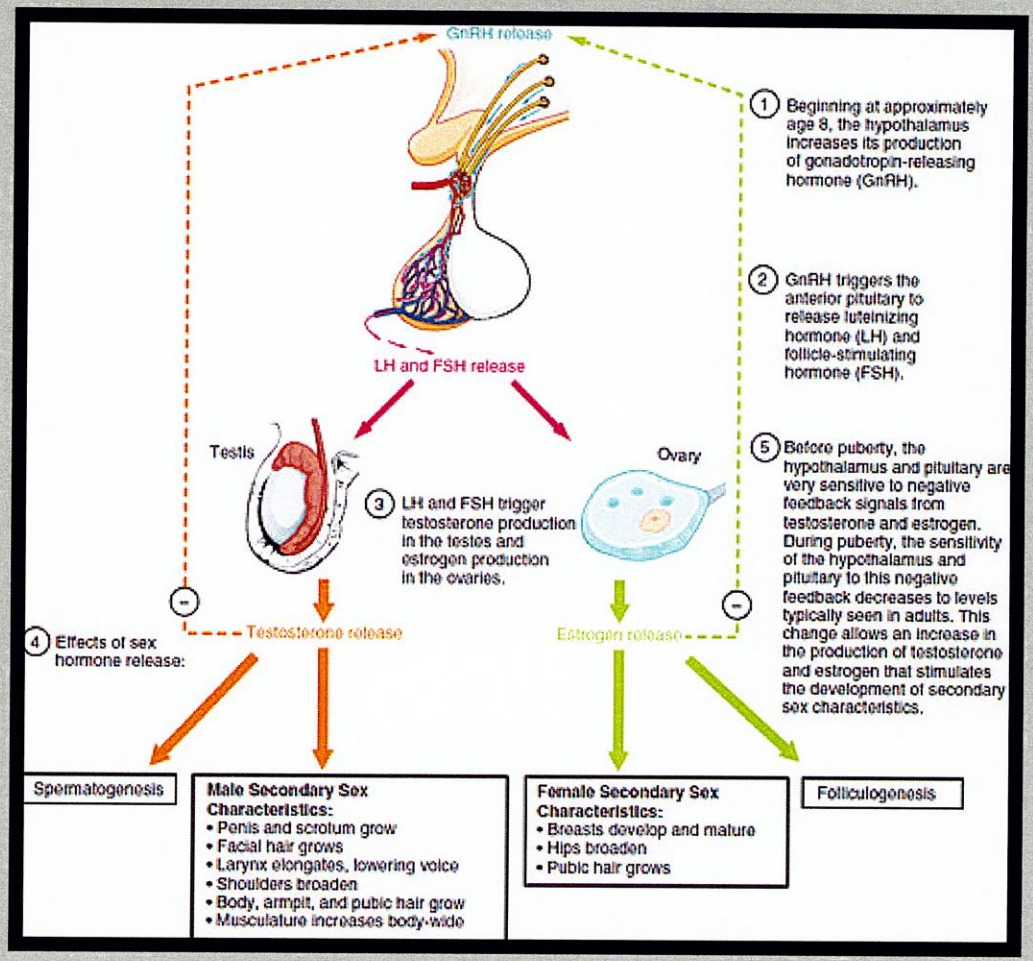
- Individuals with Gender Dysphoria:
  - 40% have attempted suicide in their lifetime (9x great than the US average). - 2015 US transgender Survey by the National Center for Transgender Equality
  - Rates of persistence into adulthood vary (DSM-5 Data):
    - Biological Males: 2.2-30%
    - Biological Females: 12-50%
  - Meta-analysis of 10 studies demonstrated 85.2% of gender dysphoric children experienced remittence of dysphoria around or after puberty. (J, Ristori&T Steensma, "Gender Dysphoria in childhood," *International Review of Psychiatry* 28:1, January 12, 2016)

Gender Transition

- Process whereby a person experiencing gender incongruity changes appearance and self-presentation from being consistent with the individual's biological sex to being more consistent with the individual's experienced psychological gender identity.
  - Social Transition: changing of one's name, clothing, hairstyle, public self-identification usually with the request/desire that others affirm this public identity.
  - Puberty Blockers - supplemental hormones that prevent preadolescent child from progression through pubertal physical changes.
  - Cross Sex Hormone Supplementation -
  - Surgical Reconstruction/Modifications to secondary sexual characteristics.

Role of GnRh in secondary sexual development.

GnRh is the target up Puberty Blockers such as Lupron.



Results of Blockade of Normal Puberty

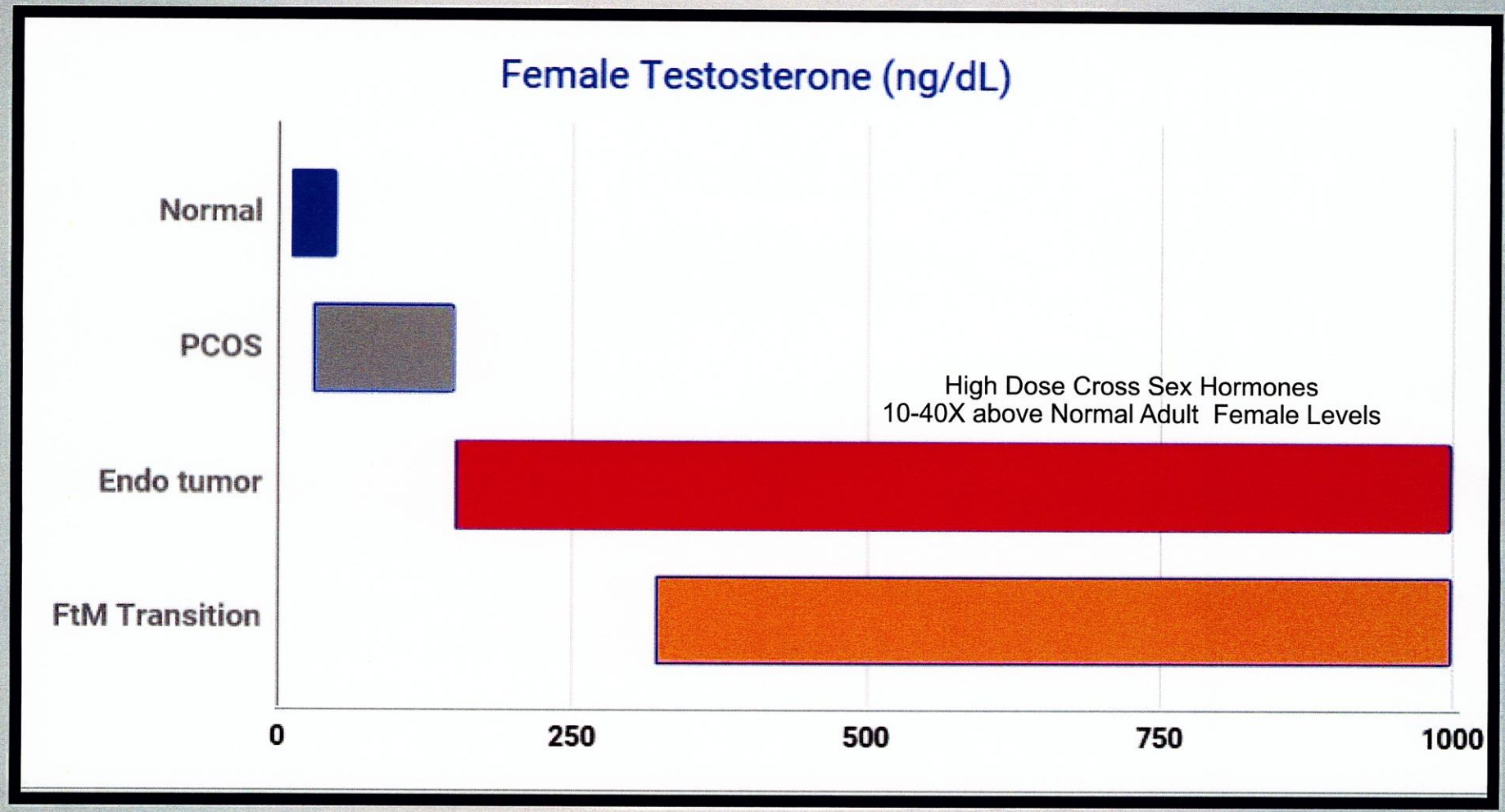
Male	*Female*
Stunting of penile and testicular growth	Menopause like state
	Blockade of normal breast development
Sexual dysfunction: Impairment of erection, orgasm, ejaculation	Decreased blood flow to vagina and vulva
	Sexual dysfunction: Thinning of vaginal epithelium, vaginal atrophy
Prevention of spermatogenesis - infertility	Prevention of menses/ovulation - infertility
Disruption of normal brain development	Disruption of normal brain development
Disruption of normal bone development/ strength - Inc. Fracture Risk	Disruption of normal bone development/ strength - Inc. Fracture Risk

Neuropsychological Effects of Puberty Blockers

- Leaves a young person in developmental limbo without the benefit of pubertal hormones or secondary sexual characteristics which would tend to consolidate gender identity.
    - Early Study: 70 Children received puberty suppression in the Netherlands from 2000-2008. No adolescent withdrew from puberty suppression and all started cross sex hormone treatment. (100% persistence rate)
    - Compare this to the 85% desistance rate in pre-pubertal children allowed to transition through puberty naturally
    - Use of puberty blockers will likely dramatically increase the rate of gender dysphoria persistence and may prevent some young people from becoming comfortable with their birth sex.
- No evidence that it decreases suicidal ideation, a surrogate measure for mental distress:
    - Pediatrics 2020 Article: Children receiving puberty blockers were twice as likely to have had a suicide attempt resulting in patient care in the last 12 months (did not reach statistical significance).
    - 2011 Swedish Study: Increased physical and mental health conditions in gender transitioned people over 30 years. Suicide rate was reported to be 19 times higher than the Swedish Population.

Potential Complications of Cross Sex Hormone Replacement

Males on Estrogen	*Females on testosterone*
Increased risk of myocardial infarction and death due to cardiovascular disease	Increased risk of myocardial infarction and death due to cardiovascular disease
Thromboembolism 5X Increased risk	Erythrocytosis
Stroke 2X increased risk	Severe liver dysfunction
Gall stones	Hypertension
Hypertriglyceridemia	
Breast Cancer	Breast, uterine, ovarian cancer
Gynecomastia	Hirsuitsm, deepening of the voice



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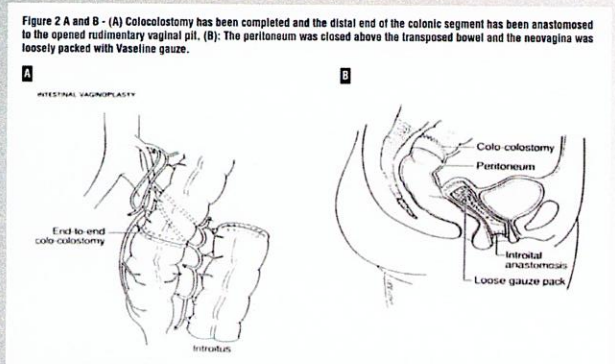
2017 Endocrine Society Guidelines on Gender Dysphoria

Gender Reassignment Surgery

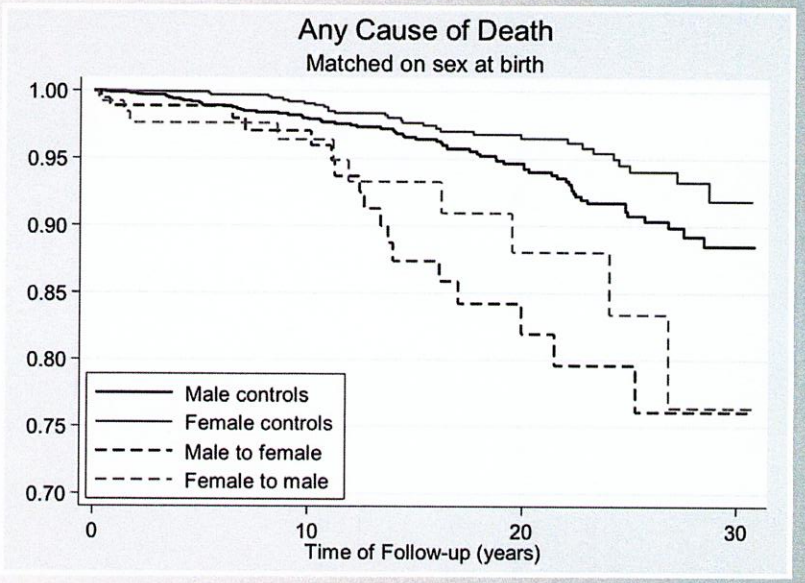
Male to Female Transition



Shane Morrison, Thomas Satterwhite, David Grant, Johanna Kirby, Donald Laub, Judy VanMaasdam. Long-Term Outcomes of Rectosigmoid Neocolporrhaphy in Male-to-Female Gender Reassignment Surgery. Plastic and Reconstructive Surgery 136(2):386–394, AUG 2015.

Female to Male Transition

- Mastectomy with permanent loss of breast tissue and function.
- Removal of Female Reproductive organs resulting in permanent sterility



1. Dhejne C, Lichtenstein P, Boman M, Johansson AL, L¨angstr¨om N, Land´en M. Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden. PLoS One. 2011;6(2):e16885.

First Do No Harm