Navigating the Gender Spectrum:
A General Overview of Transgender Health Care

ABSTRACT

Transgenderism is common, with quoted prevalence rates of between 0.5-1% of the population.[1,2,3] The term "transgender" reflects a broad spectrum of identities, including agender, pangender, genderqueer and genderfluid. Although there is increased public recognition of transgender issues, many physicians remain uncomfortable managing matters of transgender health. There is a paucity of high quality, long term randomized controlled trials on many transgender health topics, requiring physicians to rely largely on consensus guidelines. Integration of transgender-related subject matter into medical school curricula is one of the first steps towards enabling future physicians to increase their comfort in transgender health care.

KEYWORDS: Transgender, trans, testosterone, estrogen, androgen blockade

CME Pre-test Quiz

Despite prevailing beliefs, transgenderism is not uncommon. Studies in the United States have quoted a prevalence of 0.5% of the population,[1,2] and it is estimated that 1% of people in the United Kingdom identify as gender nonconforming.[3] Transgender health as late has received significant media attention due to the public transition of Caitlyn Jenner,[4] inclusion of gender identity in the sexual education curriculum in Ontario's schools[5] and controversies surrounding gender neutral bathroom use by transgender individuals.[6]

The term "transgender" or "trans" is defined by the World Professional Association for Transgender Health (WPATH) as "[an] Adjective to describe a diverse group of individuals who cross or transcend culturally defined categories of gender",[7] in contrast to non-trans people, who can be termed "cisgender" or "cis".

The concept of "cis" and "trans" can be compared to chemical nomenclature used to describe molecules on either side of a double bond. Using this terminology, those whose biological sex is congruent with their experienced gender is

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identified as "cis", whereas "trans" individuals have a biological sex that is incongruent with their perceived gender. Clients who transition to male are thus termed transmen, while those who transition to female are termed transwomen. This is a convenient way to classify those who identify as male and female, but some have criticized this concept as too simplistic. Indeed, gender is not a simple binary construct; it is better thought of as a spectrum. The term "trans" includes several non-binary identities including agender, pangender, gender fluid and gender queer. Given the constant evolution of terminology in this field, it is reasonable to ask each client how they identify and how they prefer to be addressed (including preferred pronouns).

GIVEN THE CONSTANT EVOLUTION OF TERMINOLOGY IN THIS FIELD, IT IS REASONABLE TO ASK EACH CLIENT HOW THEY IDENTIFY AND HOW THEY PREFER TO BE ADDRESSED.

Gender dysphoria is defined by the DSM-5 as "an incongruence between one's assigned gender and their experienced/expressed gender".[8] It was previously termed "gender identity disorder" in the DSM-III, but was changed to emphasize distress over disease.[9] There is continued debate regarding gender dysphoria's classification as a psychiatric condition that warrants definition in the DSM-5.[10]

Unfortunately, many health care providers do not feel comfortable engaging in the care of transgender clients. The U.S. National Transgender Discrimination Survey revealed that 19% of respondents were refused medical care, 28% were verbally harassed in a medical setting, 2% were physically assaulted in physician's office, and 50% had to teach their physicians how to care for them![11]

Many guidelines on transgender health management have been developed, with one of their aims to reduce the care gap that exists between patients and their providers. Due to the paucity of research in this field, most guidelines are focused on expert opinion and consensus rather than evidence from high quality research studies.[9] As such, there exist numerous guidelines with regional variations. International examples include WPATH and The Endocrine Society, with Canadian versions by the Sherbourne Health Centre in Toronto[10] and Vancouver Coastal Health.[12] Most guidelines focus on the following progression:

1. Psychological evaluation
2. Fully reversible steps, such as GnRH analogues
3. Partially reversible steps, like hormonal transition

therapy with estrogens or testosterone
4. Irreversible steps, like gender affirming surgery[13]

Prior guidelines suggested that clients undergo a "real life experience" (or RLE) prior to hormonal transitioning. The RLE is defined as "the act of fully adopting a new or evolving gender role or gender presentation.[14] It was originally intended to occur prior to hormone therapy in order to "test the person's resolve" before initiation of irreversible therapies.[14] This step is no longer felt to be necessary prior to hormonal transitioning as it may prove stressful and potentially dangerous for the client.[10] Accordingly, it is no longer listed as a prerequisite to hormonal therapy in the most recent WPATH guidelines.[7] The overall criteria outlined in the various guidelines are not intended to be rigid, as individuals may have different goals for their transition, and may not necessarily desire certain steps in the process (such as hormone therapy or surgery).

THERE ARE NO SPECIFIC HORMONE TARGET RANGES DURING TREATMENT, RATHER GOALS ARE OFTEN DEFINED BY IMPROVEMENT IN ONE'S SENSE OF WELL-BEING OR LEVEL OF FUNCTIONING.[10,13]

Criteria for hormone therapy are likewise based on expert opinion. At present, there are no randomized controlled trials for treatment interventions in transgender adults.[15]

As one example, the Sherbourne Health Centre in Toronto has set some of the following features as prerequisites for hormone transition therapy:

- A diagnosis of gender dysphoria
- Psychosocial readiness to begin treatment
- Relevant physical and laboratory investigations
- Absence of absolute contraindications
- Client understanding of risks, precautions and side effects of treatment[10]

It should be noted that there are no specific hormone target ranges during treatment, rather goals are often defined by improvement in one's sense of well-being or level of functioning.[10,13]

An important step prior to initiation of therapy is ensuring that the client has realistic expectations of what hormone therapy will and will not change. Some physical features such as breast growth in transwomen and facial hair growth in transmen may not meet the expectations of the client, despite adequate dosing of hormone therapies. The client may also not be aware that some features do not

change after hormone therapy, such as height in the adult client.

Another important topic of discussion prior to initiation of hormonal transitioning is fertility preservation. Ideally, clients would undergo cryopreservation of sperm, oocytes or embryos before hormonal therapy is initiated.[16] There are options to attempt fertility after discontinuation of hormone therapy,[17] however, the likelihood of achieving pregnancy in such situations is believed to be reduced.

ANOTHER IMPORTANT TOPIC OF DISCUSSION PRIOR TO INITIATION OF HORMONAL TRANSITIONING IS FERTILITY PRESERVATION. IDEALLY, CLIENTS WOULD UNDERGO CRYOPRESERVATION OF SPERM, OOCYTES OR EMBRYOS BEFORE HORMONAL THERAPY IS INITIATED.

Feminizing hormone therapies

Feminizing hormone therapies often involve two steps: androgen blockade, followed by estrogen administration.[18] In North America, spironolactone is the most commonly used anti-androgen, with cyproterone acetate also used in Canada. GnRH analogues like leuprolide acetate are also used for this application, but less commonly due in part to their higher cost.[19] Androgen blockers allow for a reduction of masculinizing effects from endogenous androgens, while also allowing for lower levels of estrogens to be used therapeutically, thereby minimizing potential for side effects from estrogenic medications.[20]

At present, the most commonly utilized estrogen therapies include conjugated estrogen, and estradiol, both oral and transdermal formulations. Of these options, estradiol therapies are preferred, due to their more favourable risk profile[21] and ability to be monitored by lab testing. Transdermal estradiol formulations are believed to be safest as they have no first pass effect in the liver. Because of this, they are preferred in clients over the age of 40, and in those who smoke, who have increased risk of thromboembolism.[21,22] Progestins have also been used by some clients for their perceived feminizing effects, especially on breast development.[23] Evidence for their use in this population is conflicting, and their use remains controversial.[24]

Masculinizing hormone therapies

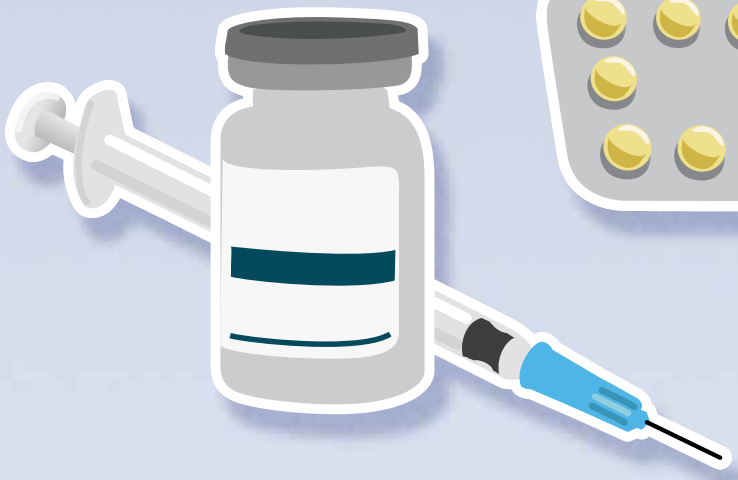
Masculinizing hormone therapies are less complicated than feminizing hormone therapies, in that testosterone is often the only medication required for hormonal transition. It allows for both cessation of menses and induction of virilization. Although several formulations of testosterone exist, the intramuscular options testosterone cypionate and testosterone enanthate are the most commonly employed among the

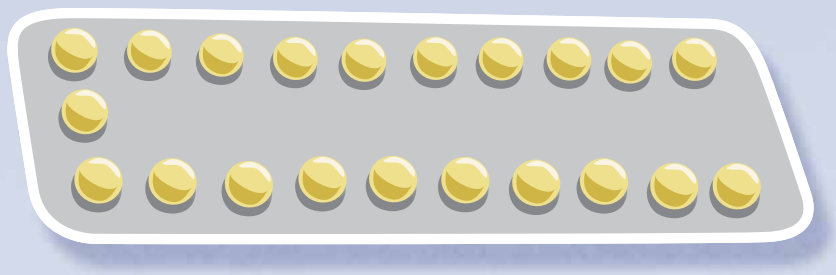
Hormonal Transition Therapy in Transgender Health

Feminizing Hormone Therapies

Androgen blockade (anti-androgen):

- Spironolactone
- Cyproterone acetate
- Leuprolide acetate (GnRH analogue)

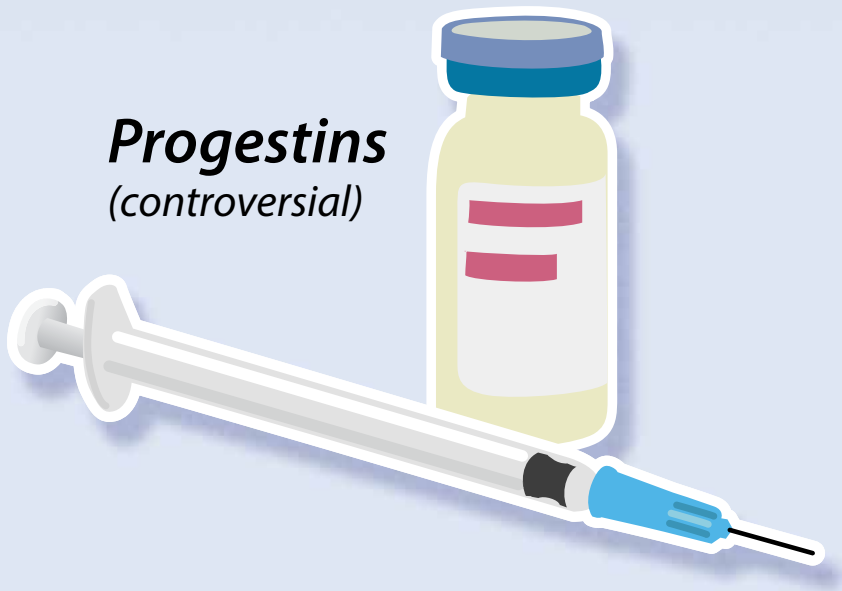




Estrogen administration:

- Conjugated estrogen
- Estradiol

Progestins
(controversial)



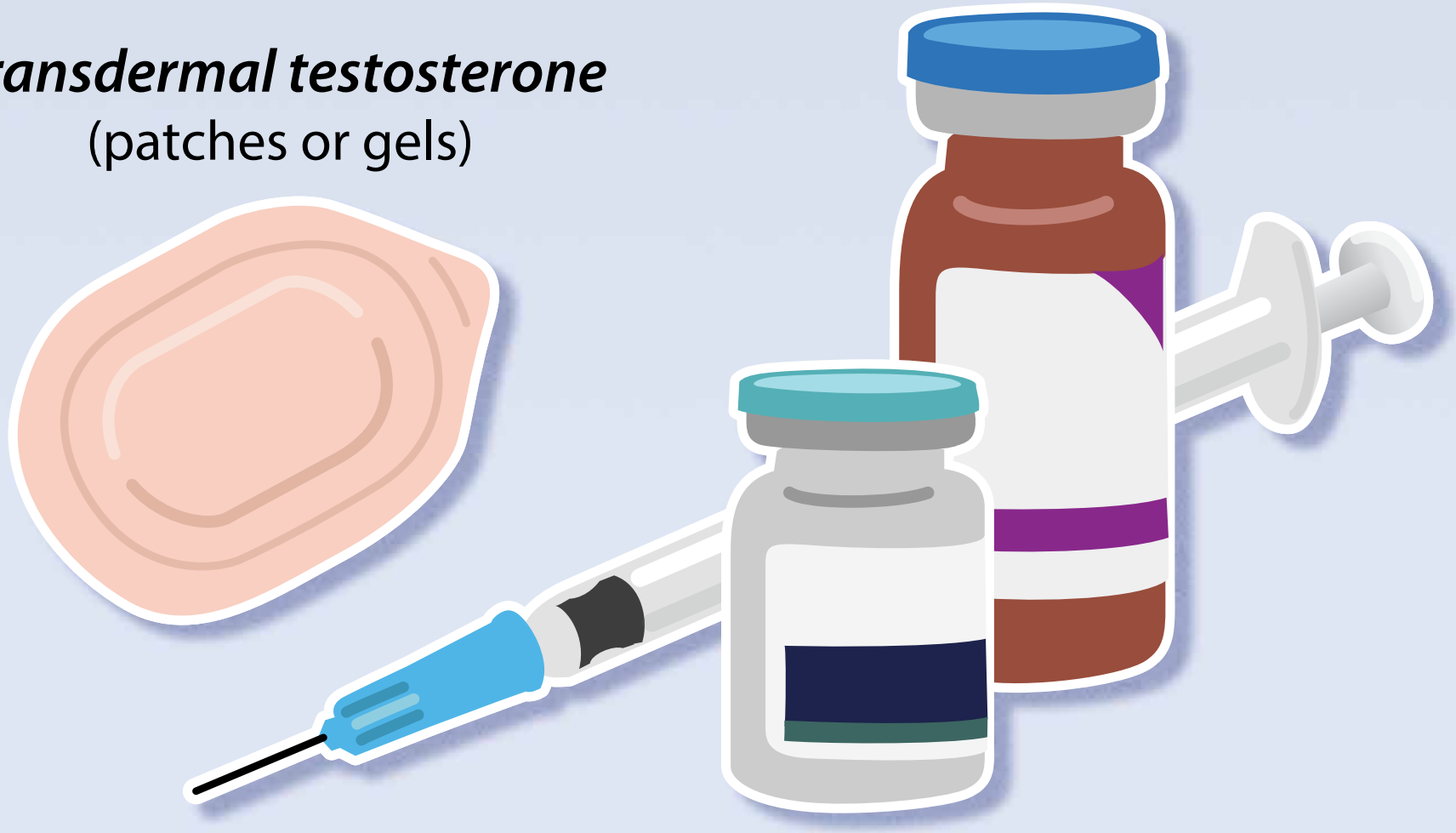
Hormonal Transition Therapy in Transgender Health

Masculinizing Hormone Therapies

Testosterone administration:

- Testosterone cypionate
- Testosterone enanthate

Transdermal testosterone
(patches or gels)



SUMMARY OF KEY POINTS

1. Transgenderism is not limited to the binary gender constructs of male and female. The term "transgender" includes a broad spectrum of identities, including agender, pangender, genderfluid and genderqueer.
2. Lack of physician comfort with medical management of the transgender patient has been linked to increased rates of refusal of medical care, as well as verbal harassment and in extreme cases physical assault.
3. Due in part to a lack of large randomized controlled trials, many transgender guideline recommendations are based on expert opinion and relatively low quality evidence.

CME

Post-test Quiz

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trans community due to their lower cost and perceived superiority to transdermal formations.[10]

Gender affirming surgeries

Several options for gender affirming surgery exist. Feminizing procedures can involve orchiectomy, penectomy and creation of a neovagina. Additional surgeries can include breast augmentation and tracheal surgery to reduce the appearance of the "Adam's Apple".[15] Masculinizing procedures are typically multistage, and in many cases more complicated than feminizing surgeries. These can include chest reconstruction (often called "top surgery"), as well as hysterectomy and bilateral salpingo-ooprectomy, which are often performed to reduce potential development of undetectable cancers.[25] Metaoidioplasty involves elongation and reconstruction of the hypertrophied clitoris to create a phallus with intact erectile function.[26] Alternatively, in phalloplasty, a neophallus can be created through use of a tissue flap.[27] Malleable rods or inflatable implants may be inserted to allow for penile erection.

Psychological outcomes

Similar to hormone therapy, there are no randomized trials that evalute psychological outcomes following transitioning, due to the ethical issues of doing so.[9] A metaanalysis of 28 studies by Murad *et al.* demonstrated that among 1833 people

CLINICAL PEARLS

Rather than assume one's gender identity, it is advisable to ask the patient how they identify, and what pronouns are preferred.

There are no specific hormonal targets during transition therapy. Instead, treatment targets are defined by the patient's goals and overall sense of well-being.

with gender dysphoria undergoing hormonal transition therapy, 80% noted improvement in symptoms of gender dysphoria and quality of life, 78% noted improved overall psychologic symptoms and 72% reported improvement in sexual function.[28]

Studies suggest that post-transition regret is relatively low, at a reported rate of 1-2%.[29] Factors that correlate with post-transition regret include disappointing surgical outcomes, coexisting psychiatric illness (such as alcohol dependency or psychosis), lack of family support and surgery performed later in life.[13]

Conclusions

Despite increased awareness of transgenderism in the medical community, there remains significant discomfort amongst many physicians in managing health issues in the transgender population. Initiatives to integrate transgender medicine teaching into medical school curricula, such as being done at the University of Louisville School of Medicine,[30] are one of many steps that will hopefully allow future physicians to be better equipped to play leading roles in transgender health care.

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