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SEXUAL ORIENTATION AND IDENTITY (J VENCILL AND M COLEMAN, SECTION EDITORS)

The Medical Management of Gender Dysphoric, Gender Fluid, Gender Nonconforming, Gender Queer, Nonbinary, and Transgender Patients: One Clinic's Approach

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Abstract

Purpose of the Review To present a practical guide to the care and treatment of gender diverse patients with and without gender dysphoria.

Recent Findings Gender diverse patients experience considerable discrimination in the healthcare system and often cannot obtain basic medical care or specialized hormonal management. There is scant evidence to guide the clinician in making the care decisions of gender diverse patients. Although some guidelines exist, these often lack the rationale and practical considerations that are necessary for the respectful care of this oppressed community.

Summary Providing healthcare to gender diverse patients, with and without gender dysphoria, and their partners can be challenging. The current article provides practical guidance and a review of the literature to support that guidance.

Keywords Transgender · Gender dysphoria · Gender diverse · Stigma in healthcare · Nonbinary

Introduction

One's innate experience of gender can be in conflict with the gender assigned at birth. This struggle may lead to profound personal discomfort (gender dysphoria) and can have a significant negative impact on the individual's life. Those who experience gender dysphoria often endure significant hardships and risks (financial, professional, social, medical, etc.) to present themselves in a manner which confirms their own sense of self (gender). Gender diverse patients *without* gender dysphoria may also endure many of the same hardships and risks.

Gender diverse patients often receive inadequate medical care for their mental health, general medical concerns, gender concerns, and gender dysphoria [1, 2, 3••, 4]. Many healthcare practitioners are ill prepared to manage the care for these individuals, either due to ignorance, their own biases, or both [5]. In our experience, the stigma can even extend to the partners of individuals with gender dysphoria, who may perceive the provider judging them for their relationship choices or assuming they also are questioning their own gender assigned at birth.

Since 1994, our sexual medicine and internal medicine practice has provided high-quality and respectful primary care for gender diverse patients, besides managing their hormonal treatments. Simply put, we try to help our patients feel comfortable in their own skin and avail themselves of appropriate medical care. We do not see pre-pubescent patients, and, therefore, will not comment on the controversies surrounding their care. We also will not discuss individuals with disorders of sex development (intersex), who often present with more complex hormonal or physical variations, though we do see these patients in our practice.

Various professional groups have developed guidelines to advise healthcare providers in the medical, surgical, and psychotherapy processes related to gender care. These include the Standards of Care issued by the World Professional Association for Transgender Health [6], the Endocrine Society [7], and the University of California, San Francisco, Center of Excellence for Transgender Health [8]. The purpose of this paper is neither to reiterate nor to critique those

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guidelines. Rather, it is to elucidate our approach and add another perspective to the care of gender diverse patients with and without gender dysphoria.

Terminology

The terms "male-to-female" (MTF) and "female-to-male" (FTM), although dated and considered by some to be offensive, historically have been used to delineate the gender assigned at birth and the experienced gender, but imply that the patient is transitioning from one to the other. This binary perspective is not applicable to all patients, as some do not want to transition or identify with the other gender. Some patients identify as "gender nonconforming," "gender fluid," "nonbinary," "gender queer," "null," and "agender," among other labels [9, 10]. Transgender, or simply "trans," is currently the most widely accepted term used to describe patients whose gender identity does not match the gender assigned at birth, regardless of whether that individual is pursuing any form of social or medical transition. The definitions of these terms continue to evolve and we have no doubt that the terms used in the present paper will be deemed inappropriate sometime in the future (possibly the near future). Nevertheless, sensitivity to the changing language remains an important aspect to delivering competent clinical care.

Healthcare providers and their staff should refer to patients using the patient's preferred identity term and be willing to change terms as the politics and patients' experience of their gender evolves, which it often does. In the lay press, it is common to distinguish "cis" or "cisgender" individuals (those whose gender assigned at birth and current gender identity are in agreement) from "trans" or "transgender" individuals (whose gender assigned at birth and current gender identity differ). The terms cis and trans were adapted from the field of chemistry, where they are used to distinguish compounds with a functional group on the same or opposite sides of a double bond. Some trans individuals will object to terms used to distinguish them from cis individuals (e.g., genetic, natal, or organic), as they see themselves as indistinguishable from cisgender individuals in their affirmed gender. Nevertheless, the distinction between cis and trans individuals is sometimes useful in discussing the reasoning for medical decisions. Ask the patient which term they would prefer.

As an example of the changing language (among both professionals and patients) genital surgeries were once referred to as sex reassignment surgery (SRS), then gender reassignment surgery (GRS), then gender reconstructive surgery (GRS), and then gender confirmatory surgery (GCS). The most current term gaining acceptance is gender-affirming surgery or gender affirmation surgery (GAS), which encompasses more than just genital interventions.

Patients with gender dysphoria can be anywhere on (or off) the gender spectrum, often requesting different combinations of hormones and surgeries. All possible combinations are seen. We recognize that the gender goals of the patient may change as the process progresses. Some patients continue to identify with the gender assigned at birth, but still report gender dysphoria and find sex hormones effectively treat their dysphoria. Others identify with the gender assigned at birth, deny gender dysphoria and decline hormones, but still experience discrimination because their gender expression varies from societal norms.

Unfortunately, we still find providers (both gender therapists and physicians) who refuse to care for patients who are not committed to "full" (surgical) transition; this has never been our policy. We also hear that some individuals in the gender diverse community reject, disparage, or ostracize other individuals who are not committed to surgical transition. Patients are often quite fearful of being rejected or thought not to be serious if they do not adhere to the stereotypical transition model. We believe that it is healthy for individuals to question their gender goals throughout the process and we encourage them to do so.

Training Medical Staff and the Challenge of Electronic Health Records

Historically, gender diverse patients have been mistreated and disrespected by the healthcare system [11, 12•, 13, 14]. The result of these experiences has led many patients to obtain black market hormones, fall prey to poorly trained healthcare providers, or decline to seek medical care altogether. It is not uncommon to hear gender diverse patients report that their previous physicians never examined them or they had to teach their providers about how to care for them.

It is important to demonstrate sensitivity and cultural competence from the patient's first contact with the provider's office. Telephone and reception staff need to be trained to address patients as they request. Intake forms need to be gender neutral and allow for a range of gender identities, sexual orientations, and relationship structures. Medical records do require the use of the patient's legal name and gender for billing and security reasons. Unfortunately, most electronic health records (EHRs) have difficulty prominently displaying the patient's preferred name and gender. Staff (including billers, phlebotomists, technicians, etc.) should be trained and sensitized to the possibility that the appearance of any given patient may not correspond to the gender marker in the record or the internal organs present ("Yes, Mr. Jones needs a pap smear"). "Misgendering" patients should be minimized to every extent possible; however, if it occurs, the staff should apologize immediately. Healthcare staff should also be encouraged to correct each other when such errors occur.

In most jurisdictions, patients can legally change names and gender markers with a letter from a therapist or a physician [6]. California now allows an X gender marker (on driver's licenses and identity cards) for those who identify as nonbinary or simply decline to state their gender (https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB179). Austria also allows nonbinary gender markers (https://www.usnews.com/news/world/articles/2018-06-29/austrian-court-oks-3rd-gender-identity-in-records).

Pronouns and Honorifics

The use of gender-neutral pronouns or meticulously avoiding pronouns can also help maintain and promote a gender-inclusive environment. There have been multiple systems proposed to eliminate gendered pronouns in the English language. Use of the singular "they" has gained some acceptance but can be awkward, confusing, and lead to incorrect grammar. We proposed a system of gender-neutral pronouns [15] (see Fig. 1), which we believe is easy to learn. Whether or not others choose our system, we believe that healthcare organizations should choose a gender-neutral pronoun system that can be used with all patients. Of course, we honor the patient's choice to use gendered pronouns rather than the neutral pronoun. Choosing one gender-neutral pronoun system avoids forcing providers and staff to learn multiple systems.

We have adopted the use of "Mx." (pronounced "mix") in place of Mr./Mrs./Miss/Ms. (https://www.nytimes.com/2015/12/03/insider/mx-did-the-times-adopt-a-new-transgender-courtesy-title.html (also see, https://en.oxforddictionaries.com/definition/mx) (see Fig. 2) and notify all patients that the choice of which honorific used is theirs. It is a reasonable alternative when the patient has not stated a preference. Mx. can promote comfort and sensitivity for patients with gender dysphoria, but also can sensitize and educate all patients to the plights of gender dysphoric individuals. We emphasize which honorific or pronoun used is the patient's choice.

The staff will be asking about your pronoun preferences (Masculine, Feminine, Gender Neutral).

You may also hear us call patients Mx. (pronounced Mix) rather than Mr., Mrs., Miss, or Ms.

Of course, we will refer to you however you prefer.

This is a work in progress. Please excuse our errors.

Fig. 2 Honorific choice

Gender Identity vs Sexual Orientation

Gender identity and sexual orientation are separate concepts. One's gender does not imply with whom the individual has sex; with whom the individual wants to have sex; or with whom the person wants to form a relationship (all of which can be different). Anyone may identify as gay, straight, bisexual, pansexual, asexual, or other sexual orientations regardless of their behavior, desires, or sexual response. Other sexual interests (or orientations) such as BDSM, fetishism, swinging, and/or polyamory may also feature prominently [16]. None of these interests necessarily influences the individual's gender identity [17]. Not unlike cisgender individuals, it is common for gender diverse individuals to find that their sexual identity, orientation, and/or behavior evolve over time [18, 54].

A Diagnosis of Polyglandular Dysfunction

"Gender dysphoria" was first proposed by Moser [19] as the most descriptive (and least pathologizing) psychiatric diagnosis. The term was adopted by the DSM-5 editors [20] replacing "gender identity disorder." Nevertheless, gender dysphoria is still a psychiatric disorder. In the same way as pregnancy is not a pathological state, but pregnant patients may need

Nominative (subject)	Oblique (object)	Possessive adjective/ determiner	Possessive pronoun	Reflexive
Traditional pronouns				
He *He* laughed	I called *him*	*His* eyes gleam	That is *his*	He washed *himself*
She *She* laughed	I called *her*	*Her* eyes gleam	That is *hers*	She washed *herself*
Our Suggestion				
E *E* laughed	I called *er*	*Er* eyes gleam	That is *ers*	E washed *erself*

E [i] is pronounced as a long e, as in he and she.
Er [ər] is pronounced like her without the h.
Ers [ɜrz] is pronounced like hers without the h.
Erself [ər'sɛlf] is pronounced like herself without the h.

Fig. 1 Gender-neutral pronouns. This figure originally appeared, in modified form, in: Charles Moser PhD, MD & Maura Devereux PA-C (2016): Gender neutral pronouns: A modest proposal, International Journal of Transgenderism, DOI: 10.1080/15532739.2016.1217446. Reprinted by permission of Charles Moser

medical and surgical care. Gender dysphoria also is not a pathological state, but patients with gender dysphoria may need medical and surgical care.

It is sometimes difficult for internists to bill insurance for the treatment of a psychiatric disorder. Early in our practice, we adopted "Other polyglandular dysfunction" (E31.8, ICD-10) as the least stigmatizing and possibly the most accurate medical diagnosis. Other polyglandular dysfunction is not defined in ICD-10 and is distinct from the other defined polyglandular disorders. Some individuals object to being given a diagnosis which identifies them as a "gender patient" to clerks, other healthcare personnel, or on insurance forms.

As mentioned above, there are individuals whose gender expression varies from societal norms, but do not experience significant gender dysphoria. There are also individuals with gender dysphoria who choose to present as the other gender without using hormones or having surgeries. Both groups may experience discrimination in healthcare (and other) settings, avoid procedures that might involve an examination of their genitals, and eschew accessing comprehensive medical care.

Before Starting Hormonal Treatment

Many patients expect to start hormones on the first appointment with a provider. We believe that is not ideal. Although it is now a WPATH recommendation rather than a requirement [6], we prefer that patients establish care with a gender-trained psychotherapist to aid in the transition. Gender-trained psychotherapists are often better equipped to support the patient through the legal, health insurance appeals, and practical considerations of gender transition. WPATH protocols suggest a referral from a gender therapist to document a long-standing sense of gender dysphoria. The referral letter should also include a statement that the patient has the capacity to make medical decisions; the presence of other comorbid psychiatric diagnoses (whether they are optimally managed or not); and whether the therapist supports providing hormones at this time. All patients should be given the opportunity to consider effects on fertility, current relationships, employment considerations, expected bodily changes, drug-drug interactions, long-term health issues, and the effects of hormones on emotions.

Baseline labs and a complete history and physical exam are recommended strongly, as many patients have eschewed medical care previously and undiagnosed medical problems are routinely found. At a minimum, a complete blood count, comprehensive metabolic panel, thyroid-stimulating hormone, and lipid panel are appropriate and establish a baseline. Individuals who are requesting feminizing hormones should also receive a baseline prolactin (estrogen can increase prolactin, [21]). Individuals who are requesting masculinizing hormones should also receive a baseline testosterone and ferritin. These labs and other issues identified from the history and physical exam may suggest additional labs or procedures needed for further evaluation.

Essentially everyone who wants hormones will receive them, but it may require controlling hypertension, hyperlipidemia, diabetes, tobacco cessation, etc. before starting. A discussion about realistic changes expected from hormonal treatment is important. Regret is not common [22], but all the cases of regret we have encountered did not follow this protocol.

Cessation of tobacco products is strongly encouraged, to minimize the risks of heart disease, strokes, and vascular problems which are associated with these hormones. We refer patients to counseling programs and internet resources and provide medication (e.g., varenicline, bupropion, and/or various forms of nicotine replacement). We inform the patient that many surgeons will refuse to operate if the patient is still smoking, which appears to be a significant incentive. For patients who cannot or will not stop, we discuss providing hormones using a harm reduction model and a preference for transdermal rather oral or injection delivery. It is impossible to know for sure, but we believe most patients cease or significantly decrease their nicotine use.

The gender transition process is difficult emotionally and financially. It often requires updating legal documents, accommodation at work, and changes in social, intimate, and professional relationships. Ongoing supportive psychotherapy is often quite helpful, but may present financial or logistical hurdles. Informed consent and reliance on a harm reduction model may be the only option for some patients, both for the initial evaluation and ongoing support [6, 23]. Concomitant anxiety or depression, in our experience, are often the result of the patient's gender dysphoria. The hormones (and the relief of starting the process) may treat those symptoms, so we often delay starting psychiatric medications until we can assess the effects of the hormones on mood.

Hormone Therapy Regimen for Feminization

Once a decision is made to start a feminizing hormone regimen, a combination of an antiandrogen and estrogen usually will be prescribed. Although softer skin and fat redistribution are seen [24], the primary physical effect

is to promote breast development. The psychological effects of the feminizing hormones are significant and often seen early in the process.

Estradiol is begun slowly and increased over several months. After 18 months of high-dose estradiol therapy, we rarely see further feminizing. We discuss weaning the estradiol dose to a lower maintenance level once additional feminizing changes cease. The estradiol weaning process is slow, often taking months between each dose reduction. Maximal breast development occurs when testosterone is suppressed to female levels [25].

The patient should be advised that they are beginning a second puberty and may experience mood changes, libido changes, and erectile dysfunction. Most patients are not disturbed by these changes, which reinforce their "new" gender. They often report that they finally feel "normal." However, sometimes these changes can be unexpected or unexpectedly undesirable. By slowing the rate of increase or decreasing the dose, patients may find they are able to adjust to the changes. If not, the regimen can be discontinued and discussions can ensue regarding non-medical interventions or referral back to a gender therapist.

In accordance with WPATH standards, oral or transdermal estrogens are preferred over injectable preparations [6]. There are no studies which establish optimal hormone regimens [6–8]. We are concerned and it is our observation that IM dosing leads to inconsistent hormone levels and can produce tuberous or "snoopy" breasts. (http://www.gpnotebook.co.uk/simplepage.cfm?ID=x20110609171331735610) Patients also seem more likely to accidentally or volitionally administer supratherapeutic doses, which increases risk but does not result in enhanced feminization. For patients over 40 and/or who smoke cigarettes, transdermal formulations are preferred to oral to avoid the first pass effects through the liver, which decreases the risk of venous thromboembolisms [26•, 27, 28].

Antiandrogens

Estradiol alone usually will not reduce serum testosterone to female levels [28]. We routinely add an antiandrogen to aid in breast development. The most common androgen blocker in North America is spironolactone. Although it is generally well tolerated, there is a risk of orthostatic hypotension and hyperkalemia. The diuretic effect of spironolactone also may be bothersome. In our early practice, we routinely prescribed medroxyprogesterone, but this practice was discontinued after medroxyprogesterone, was associated with increased risk of myocardial infarction, stroke, pulmonary embolism, deep vein thrombosis, and possibly dementia in postmenopausal women [29]. It is not known if micronized human progesterone has the same risks, but in our experience, it seems to have a weaker antiandrogen effect.

The question of whether or not to add micronized progesterone even if adequate suppression of testosterone is achieved with spironolactone remains controversial. Strong data do not exist to advocate for the addition of these agents and some data suggest that they increase risk [7, 29]. Proponents argue that the addition of progesterone more closely approximates an endogenous hormonal balance, but a significant amount of human progesterone is only present for about 10–14 days of the menstrual cycle. The proponents also argue that progesterone will enhance breast development, but we cannot find data to support that belief. Nevertheless, we provide other hormones that have inherent risks to treat the gender dysphoria. It may be appropriate in selected cases to prescribe micronized progesterone if the patient understands and accepts the risk.

For some patients, elevated testosterone levels persist even on maximal spironolactone doses. We do consider adding micronized progesterone or medroxyprogesterone in these patients after careful counseling about the risks and benefits of this approach. Orchiectomy is also an option.

We generally do not measure serum estradiol for titration, though many practitioners do [7]. If the estradiol level is high, the patient rarely wants to reduce the dose. If the level is low, we are hesitant to increase estradiol beyond a set maximum due to safety concerns. An exception would be patients with intestinal malabsorption, but in that case, we would favor switching to transdermal preparations. The practitioner should always use sound clinical judgment in determining the best regimen, balancing the risks and benefits of treatment.

Hormone Therapy for Masculinization

Testosterone is the mainstay of treatment for transmasculine individuals. In this case, serum titers are clinically significant. Although not evidence based, our goal is to have the patient's testosterone level in the normal cisgender male range at the nadir, just prior to the next injection or prior to the next application of testosterone gel. Changes that can be anticipated are beard growth, voice deepening, clitoromegaly, increased acne, increased libido, body fat redistribution, and increased muscle mass [6, 30]. Menstruation usually ceases after a few months. On occasion when menstruation is persistent, we add danazol.

In our experience, the most commonly used vehicles for testosterone supplementation are injections and topical gel preparations. Less commonly buccal films, patches, nasal sprays, and implanted pellets are used. Cost leads most patients to choose injectable testosterone. We prefer dosing weekly to reduce peaks and troughs. Intramuscular injections can be given in the upper outer buttock or ventral gluteal muscles; it is difficult but not impossible to self-administer correctly. We try to avoid intramuscular injections into the thigh, due to pain and the small risk of complications [31]. Although off-label, testosterone can be given subcutaneously,

[32] which may be easier and less painful for patients who must self-administer. Topical gels are also effective, but more expensive. Some patients find the gels to be convenient to use but there is a risk that they can be transferred passively to partners, children, housemates, or pets. Low-dose (50 mg) testosterone IM/SQ every week will produce cisgender male levels in most patients. We are concerned that higher dosing will induce hepatic and other enzymes to increase the breakdown of the testosterone and result in escalating doses [33].

The most common risk of testosterone supplementation that we see is polycythemia. Testosterone levels and hemoglobin/hematocrit should be followed closely in the early months of transition. Phlebotomy, to reduce iron stores, can prevent and treat the polycythemia. In rare cases, we unmask a genetic hemochromatosis or polycythemia vera. Though we do not routinely follow estradiol levels in transmasculine patients, it may be useful if the patients are not meeting their clinical goals. Patients are often very disturbed by higher than normal levels of estrogen. Aromatase inhibitors can be used if estrogen remains high.

For patients for whom hair loss is a primary concern, low-dose finasteride or dutasteride blocks the conversion of testosterone to dihydrotestosterone [34]. There is concern about the side effects from these medications and possibility of long-term sequelae [35, 36], so risks and benefits of these medications are discussed at length. Of note, female pattern baldness is often treated with spironolactone and transfeminine patients also report some hair regrowth on the estrogen and spironolactone [37].

The Emotional and Practical Aspects of Managing Hormonal Treatment

Hormone level fluctuations can affect every aspect of a person's life and emotions. People also have individual personalities and comorbid psychiatric conditions which affect mood, with or without changes to their hormones. Gender affirming care via hormones can be empowering, but it may also be stressful, and other psychiatric problems do not necessarily dissipate after initiating hormones. Psychiatric diagnoses including substance use disorders should be treated as with any other patient. Studies do show strong association between access to gender-affirmative treatment and psychological well-being [38, 39].

Local LGBT centers may have support groups that can be very helpful to patients as they go through their gender transition. However, not all patients have a predictable response to these formal group settings. Support and, conversely, resistance may be found where none was anticipated. Patients sometimes report experiences within a social milieu where they felt like they were pursuing gender transition in the "wrong" way. There may be peer pressure to pursue treatments that do not meet safe standards of care. We often hear: "my friend's doctor prescribed X and I want to try it too." Clinicians (and patients) should recognize that the plural of anecdote is not data. Frank and candid discussions about the risks of treatment should be ongoing.

Socio-sexual transition

One of the overlooked aspects of gender transition is the question of socio-sexual development in the affirmed gender. Males with gender dysphoria rarely have the experience of growing up female and vice versa. Even in San Francisco, many in the gay and lesbian communities are angered by the presence of "trans" individuals in their community. It is also quite common for patients to experiment with or adopt a new sexual orientation [18, 40, 41]. Somewhat surprisingly, transmen who were active in the lesbian community prior to transition often become active in the gay male community. It is not uncommon for these transmen to engage in penile-vaginal sex with gay cisgender male partners.

Some transgender patients are hesitant to engage sexually with partners, fearful of rejection or not understanding the mechanics of coitus with their new genitals. Others decline sexual activity due to discomfort with their pre-surgical genitals. Even after surgery or other physical goals have been attained, the habit of not pursuing or responding to prospective partners may persist. Some individuals may choose not to be sexual with or without a partner. We encourage patients to explore sexual expression to the degree that it is comfortable throughout the transition and post-transition periods.

Partners of these patients may be conflicted when the style and/or frequency of sexual interactions change in the setting of hormonal treatment. Relationship stress often needs to be addressed. Questions of how to maintain intimacy for patients (or their partners) who desire penile-vaginal or penile-anal sex are always addressed directly. It is not antithetical to prescribe a PDE5 inhibitor to assist in erections or intravaginal estrogen for vaginal atrophy and the resultant dyspareunia. Post-op transwomen may benefit from low-dose testosterone (keeping levels in the normal female range) to increase libido and decrease mood disorders.

We ask all patients about the need for STI screening. We commonly ask about "unsafe" sex, which the patient may deny, but then accept STI screening when offered. Those at risk should be counseled regarding pre-exposure prophylaxis (PrEP), post-exposure prophylaxis (PEP) to HIV exposure, and safer sex practices. The provider should note that PrEP is considered protective in cisgender men after 7 days of use, but for cisgender women, 3 weeks of treatment are required before it is considered protective [42, 43]. If still menstruating, birth control may be appropriate.

Long-term Gender-Affirmative Practices

In our experience, maximal breast growth usually, but not always, occurs after 18 months of high-dose estrogen and testosterone suppression. After stabilization of breast size, cessation of increased nipple sensitivity, and disappearance of breast buds, minimal additional breast growth is expected. Individuals who desire larger breasts may consider breast augmentation surgery. We counsel patients that breast augmentation be delayed until the hormonally mediated breast growth has ceased. There is little reason to continue high-dose estrogen after breast growth is stopped, though patients may be reluctant to reduce their doses. Estrogen should be weaned slowly, often requiring months between dose reductions. Low-dose estrogen may be continued indefinitely, though the recommendation to stop exogenous estrogen in menopausal women is discussed.

Testosterone supplementation may also be continued indefinitely. Some patients may choose to stop testosterone on their own for a variety of reasons including cost and convenience. Long-term risks of testosterone supplementation in patients without a prostate have not been as well documented. Concerns about cardiac risk are controversial [44]. Some data suggest that IM testosterone may be more dangerous than other forms of testosterone supplementation in older men [45].

We individualize the care of our patients. Some patients choose to avoid complete medical, surgical, legal, or social transition [46]. These individuals may choose from hormone therapy, hormone blockers, various surgical procedures, or no medical intervention to meet their goals. Some patients choose low-dose hormonal treatment to diminish the gender dysphoria, but are comfortable with their current gender role. Some patients enjoy their masculinized or feminized body, but still present to society in their gender assigned at birth.

Patients may dislike some of the changes that hormones can produce. A transwoman in our practice wanted to be feminized, but did not want breast development. That patient was prescribed tamoxifen, to block the estrogen receptors in the breast with good effect. A transman decided not to use testosterone when we could not guarantee that back hair would not develop (despite the availability of laser, electrolysis, and waxing). Other patients may want guarantees that acne or alopecia will be avoided; of course, we cannot give those guarantees.

We also support an individualized approach to surgeries and the timing of surgeries. Many transwomen choose facial feminization or breast augmentation before vaginoplasty, because it helps with their social integration. Others prioritize genital surgeries so they are not self-conscious with sex partners, in public restrooms, or to reinforce their own image.

Hormonal Treatment and Aging

Sex hormones decrease in all patients as they age, regardless of gender, gender identity, or gender dysphoria. A minority of patients will use exogenous hormones to offset symptoms associated with menopause, aging, or hormone deprivation. All patients who have had their gonads removed are at increased risk for osteoporosis and should be offered DEXA screening and osteoporosis treatment, if appropriate [47]. Everyone should strive to control or modify risk factors associated with other diseases, including hypertension, diabetes mellitus, heart disease, and tobacco-related diseases.

For patients who choose to continue hormones throughout their lifespan, risk/benefit assessments should be undertaken on a regular basis, as the role of hormones in aging is an active area of investigation [48]. Aging patients should be treated in a manner consistent with their stated gender identity and organs present.

It may be useful to consider the length of hormone treatment in addition to chronological age. Patients who initiate hormones in adolescence may have different health outcomes from patients who begin hormones later in life.

Healthcare maintenance protocols should reflect each patient's anatomic status. Transwomen still remain at risk for prostate cancer [49] and transmen who have not had their total hysterectomies and bilateral salpingo-oophorectomies may be at risk for gynecological cancers. Screening for these cancers is controversial in all patients. Transmen with a cervix should have regular pap smears under the same protocols as cis women, but the interpretation of the pap smear can be challenging [50]. Transwomen and transmen post-mastectomy, without history of breast cancer or BRCA mutations, do not need screening mammograms, as they appear to have same risk as cis men [51, 52]. We do recommend regular breast exams as breast cancer can still occur.

Many standard preventative healthcare guidelines have different recommendations for cisgender men and women, and do not even begin to consider transgender patients. For example, gender is part of the ACC/AHA cardiovascular risk assessment [53]. We recommend the practitioner calculate the risk for the patient as both "male" and "female" and discuss the risk with the patient. Depending on the patient's risk tolerance, an individual may choose to act on the higher or lower risk assessment. More research is needed to establish appropriate healthcare maintenance guidelines for transgender patients.

Conclusion

Healthcare systems need to recognize and welcome this underserved group. Ongoing training and continuing education for all staff and professionals to provide evidence-based,

respectful, and nonjudgmental care is essential. Research into the optimal hormonal regimens and the long-term consequences of the treatment is needed.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Research Involving Human Participants and/or Animals This article does not contain any studies with human or animal subjects performed by the author.

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