BMJ Best Practice

Care of transgender adults

Straight to the point of care

Last updated: Jan 28, 2025

Table of Contents

Summary

'Transgender' is an umbrella term that is used to describe people whose gender identity is different from their birth-assigned sex (known as gender incongruence/gender dysphoria). Differences and debates about appropriate terminology exist, and there is no single term which effectively and uncontroversially describes all people experiencing gender incongruence/dysphoria.

Many transgender adults will not seek specialist medical intervention, and prevalence is likely underestimated; UK census data from 2021 suggest prevalence to be about 0.5%.

For those seeking gender-affirming medical or surgical treatment, the diagnosis should be confirmed by a medical professional with appropriate experience. Treatment is complex and should only be undertaken as part of a package of care provided by a multidisciplinary team with extensive experience in this area.

Options for gender-affirming care include hormone therapies and surgeries. Adjunctive options include hair removal, speech and language therapy and supportive counselling. Management is highly individualised, and that there is no ‘one size fits all’ approach to treatment. Transgender people may choose to undergo all, some, or none of the above interventions to support their gender affirmation.

Although gender incongruence is not in itself a mental disorder, transgender people are at increased risk of certain mental health conditions, for example, depression and anxiety, compared with the general population; rates of autism spectrum disorder are also elevated.

Definition

Transgender people (often called trans people) experience gender incongruence to at least some degree.

Gender incongruence, as defined in ICD-11, is characterised by a marked and persistent discordance between an individual´s experienced gender and their birth-assigned sex, which often leads to a desire to ‘transition’, in order to live and be accepted as a person of the experienced gender, for example, through hormonal treatment, surgery or other healthcare services.[1] The ICD diagnosis does not require distress or dysfunction to be present.[1]

In contrast, gender dysphoria (as defined in DSM-5-TR) is characterised by a marked gender incongruence that is accompanied by distress or dysfunction.[2]

The precise nature of gender transition may vary widely between individuals. Although gender transition can involve a change in physical characteristics, it may additionally (or alternatively) involve social aspects such as changing styles of clothing and hair, changing name, arranging new identity documents, or simply the use of a more suitable gendered pronoun.[3]

It is important to note that only some gender non-conforming people experience gender dysphoria at some point in their lives.[4]

Differences and debates about appropriate terminology are common, and, given the diversity of presentation, there is no single term which effectively and uncontroversially describes all people experiencing gender dysphoria and incongruence.[4]

Inclusive language and environments are important in enabling optimal access to care for transgender adults.[5]

OVERVIEW

This topic uses the terminology ‘transgender person’ to refer to people experiencing gender incongruence/dysphoria, whether or not there is distress or dysfunction present.

The term ‘transgender man’ is used to mean a person who was assigned female at birth, but who identifies as a man or trans man.

The term ‘transgender woman’ is used to mean a person who was assigned male at birth, but who identifies as a woman or trans woman.

Note that gender identity and sexual orientation are separate; transgender people may identify as heterosexual, homosexual, bisexual, or none of the above.[6]

The historical terms ‘transvestite’ and ‘transsexual’ are considered outdated and stigmatising, and their use should generally be avoided, unless a person specifically claims or identifies with these terms. ‘Gender identity disorder’ (as defined in DSM-IV) is also now considered an obsolete term.

Note: This topic covers the care of transgender adults only. In children and adolescents, presentation is particularly complicated, may be associated with higher levels of comorbidity, and may change form as patients mature, making specialist multidisciplinary assessment especially important.

Epidemiology

It is difficult to estimate the size of the transgender population, given the diversity within this group, including the fact that many individuals do not seek care from specialised centres.[2] [10] For both those assigned male and those assigned female at birth, prevalence is estimated to be <0.1%.[2] This figure is based on gender-affirming treatment-seeking populations, and is therefore likely to be an underestimation.[2] According to (anonymous) UK census data from 2021, around 0.5% of the population disclosed that their gender identity and sex registered at birth were different.[11]

Some observations suggest children and adults with gender incongruence and gender dysphoria show more features of autism spectrum disorder than the general population.[12] [13] Gender incongruence and dysphoria may be associated with intersex, genetic, or sex chromosome abnormalities. These should not be assumed to be causative, and their presence rarely alters clinical management.

As a group, transgender people experience an increased risk of general mental health issues, including depression, anxiety, post-traumatic stress disorder, suicidality, and substance use disorders.[1] [2][14] A number of external social factors including stigma, discrimination, and minority stress have been suggested as contributors.[15]

Aetiology

The causes of gender incongruence/gender dysphoria are unknown. At first, hypotheses about causation addressed psychological factors and came mostly from a psychoanalytic perspective. Over the decades, however, available evidence has suggested a multifactorial aetiology, with biological and social factors rising in importance.[16] [17]

There is known to be a slightly elevated rate of gender incongruence and dysphoria among people with Klinefelter's syndrome and congenital adrenal hyperplasia.[18] [19] [20] [21] [22] It is also known that birth-assigned males with gender incongruence and dysphoria are more likely than the general population to be left-handed.[23] A genetic association has been postulated as one possible cause of gender incongruence and gender dysphoria; a review of case report studies suggests higher rates in monozygotic twins versus dizygotic twins.[24] There is some evidence to suggest that CYP17 is a gene associated with the development of gender incongruence and gender dysphoria in birth-assigned females.[25]

Some observations suggest children and adults with gender incongruence and gender dysphoria show more features of autism spectrum disorder (ASD) than the general population.[12] [13] [26] At one gender clinic prevalence of autistic traits consistent with a clinical diagnosis of ASD among individuals undertaking treatment was 5.5%, compared with reports of 0.5% to 2.0% ASD diagnoses in the general population.[26] Transgender people with ASD sometimes have an atypical presentation of gender dysphoria/incongruence, which makes a correct diagnosis and determination of treatment options for gender dysphoria/incongruence more difficult.[12] [27]

Pathophysiology

As a general rule, neurological and physiological function in transgender people appear to be the same as in the general population.

However some small differences in brain structure have been suggested. One small study showed that the size of the bed nucleus of the brain's stria terminalis was in keeping with the person's sense of gender rather than their birth-assigned sex.[28] Another study showed white matter changes in birth-assigned female transgender people prior to hormone treatment that were akin to those seen in non-transgender males.[29] Magnetic resonance imaging of transgender women suggests the presence of a larger, female-like putamen compared to that found in controls (non-transgender males).[30]

Case history

Case history #1

A 45-year-old transgender person, who is birth-assigned as male, requests a prescription for oestrogens and a rapid referral for gender reassignment surgery. She identifies as a transgender woman, and uses the pronouns 'she/her'. She is dressed as a woman, and gives a lifelong history of lifelong cross-dressing, which became sexually exciting at puberty. The sexual excitement diminished in her 20s, to be replaced by a sense of relaxation and comfort when in a female role, described as being able to express her feminine side. She is married to a woman, but separated, and together they have 2 children. The sexual content of their marriage (never very great) diminished after their birth. She hid her cross-dressing from her wife until she discovered her female clothes and assumed that she was having an affair. Although initially accepting of her dressing in female clothes, her wife became increasingly dissatisfied as she spent more time in a female role and suggested that they might live together as sisters. Moving away from her wife and children, she began to purchase oestrogens from the internet. She lived as a woman for all purposes aside from at work, where nothing was known of her female life outside work. She began to feel increasingly unhappy in her male work life, feeling that she was only truly herself when living as a woman.

Case history #2

A 35-year-old transgender person, who is birth-assigned as female, requests treatment with androgens and a bilateral mastectomy. He identifies as a transgender man, and uses the pronouns 'he/him'. He looks masculine and is often taken to be a male somewhat younger than his chronological age. He gives a history of being a 'tomboy' as a child, and at secondary school he was widely assumed to be lesbian. Declaring himself to be a lesbian in his late teens, he moved in lesbian social circles for some years and made relationships with women with some ease. These tended to founder after a few months because partners complained that, rather than being a masculine woman, he was more like a man. Although his libido was good and he was an attentive sexual partner, he could not bear attention being paid to his own (female) sexual characteristics, and the one-sided nature of the sexual relationship became, after a time, disturbing to his partners. Eventually he felt that his sense of masculinity could no longer be denied, and he decided to live as a man. He is desperate to halt his menstrual periods, seeking treatment with androgens to increase facial and body hair, and to lose his breasts.

Other presentations

The majority of birth-assigned male people with gender incongruence/dysphoria (i.e., transgender women) present with a background of cross-dressing. A smaller number give a history of earlier, very feminine homosexuality associated with a low libido and an ever-increasing sense of femaleness that drove them to live as a woman and to be viewed by others (including gay men) as a woman. Birth-

assigned female transgender people (i.e., transgender men) very often have a history of childhood masculine behaviour, and many have (for a while at least) been identified by themselves or others as masculine lesbian women.

A small proportion of people of either birth-assigned sex present with pronounced gender incongruence or gender dysphoria in childhood, even from their earliest years. They were often taken to be members of the other sex in childhood and very often experienced sexual attraction to others with the same birth-assigned sex. However it is important to note that childhood gender incongruence or gender dysphoria does not necessarily continue into adulthood.[4] A number of studies in prepubescent children with gender dysphoria/incongruence suggest that persistence into adulthood occurs in 12% to 27% of children.[7] [8] [9]

Approach

Only a proportion of transgender people will present to a medical professional with the aim of accessing gender-affirming care. For transgender people seeking gender-affirming treatment, the initial presentation is usually to a primary care clinician, endocrinologist or mental health specialist. Consensus recommendations from international guidelines recommend that when a transgender person seeks gender-affirming treatment with hormones or surgery, the diagnosis of gender incongruence or gender dysphoria should be made by qualified healthcare providers who are familiar with the diagnostic criteria, and who are experienced in assessing for the presence of any confounding/ coexisting mental or physical health problems which may complicate the diagnosis.[4] [31]

The role of the primary care clinician is typically to carry out the initial assessment before referring to specialist services; alternatively patients may be referred to specialist gender services by a psychologist, non-specialist psychiatrist or sexual health clinician. Service models vary substantially according to location, but as an overarching principle, diagnostic assessment within a specialist multidisciplinary team is strongly recommended.[31] In practice, if a specialised gender service is unable to assess a patient within a reasonable timeframe, referral to endocrinology or mental health services may be required as an interim measure, depending on the unique clinical scenario and circumstances of the individual.[32] It is important to note that in parts of the world, specialist services for transgender people are limited or entirely unavailable, and so primary care providers may need to take on a much greater greater role in the assessment and management of transgender people seeking gender affirming care, indicating an often unmet need for specialised professional education and training.[4]

Transgender people may be more likely to engage in risky sexual practices, particularly those experiencing social marginalisation.[33] [34] Sexual history taking may therefore be important to assess risk and guide screening for sexually transmitted infections (STIs), but requires sensitivity and awareness of the person's comfort level and non-verbal cues. This may take place in either primary or secondary care, but note that in some circumstances it may be appropriate to defer sexual history taking to a follow-up consultation, in order to first establish a good therapeutic alliance. Sexual practices vary greatly, and should not be assumed. Transgender people may have male, female or other transgender partners.

Initial primary care assessment

A full history, including mental state assessment, is recommended as part of the initial primary care assessment.[32] Clinicians should ask about past and present use of hormones and gonadal surgeries, and about any future plans for hormones or surgeries. It is not uncommon for people to self-administer medically unsupervised hormones and/or hormone blockers obtained from the internet, particularly if there is limited access to care, carrying an increased risk of adverse effects compared to medically supervised treatment.[35] [36] Clinicians should ask about the use of any herbal remedies or dietary supplements, and ask about any use of silicone injections, which may be administered using unsterile techniques, increasing the risk of bloodborne infection.

Transgender people may experience an increased risk of general mental health issues, including depression, anxiety, post-traumatic stress disorder, suicidality and substance use disorders.[1] [2][14] A number of external social factors including stigma, discrimination and minority stress have been suggested as contributing factors.[15] Primary care may represent a safe space for the disclosure of mental health symptoms and concerns, and primary care screening and assessment for mental health conditions is therefore likely to be valuable on an ongoing basis. It is important not to assume that all

mental health concerns are necessarily related to the person's gender identity.[37] Social history taking may identify important sources of support or stress, including family and economic factors.

Secondary care assessment, including diagnosis

As the diagnosis is the gateway to potentially irreversible treatment, it is necessary to identify any comorbidities, exclude differential diagnoses, and make a proper diagnosis using the relevant diagnostic criteria (see Diagnostic criteria).[4] [31] Diagnosis is typically made by a mental health professional, but, depending on local service models, another healthcare professional (e.g., endocrinologist or primary care provider) may make the diagnosis, providing that they have appropriate experience, training, and knowledge of diagnostic criteria. Ideally, diagnosis should be made by a clinician who is working within the context of a specialist, multidisciplinary gender identity team.

Clinicians should follow local guidance relevant to their country of practice; for example, US guidance from the Endocrine Society offers detail on the criteria necessary to make a diagnosis of gender dysphoria/incongruence in adults.[31] Clinicians should establish whether relevant diagnostic criteria for gender dysphoria/gender incongruence are met, according to the diagnostic criteria relevant to their location of practice.[1] [2]

It is important that all mental health concerns or differential diagnoses (e.g., body dysmorphic disorder) which may complicate/otherwise explain the diagnosis are assessed and potentially treated, prior to considering gender-affirming treatment.[4] [31] Assess whether there is a serious intention to change social gender role, or whether the stated desire for hormone treatment or surgery is aimed at removing the characteristics of one sex without seeking the characteristics of the other, or acquiring the characteristics of both, and vitally, with no change of social gender role at all. This last aspect is more in keeping with body dysmorphic disorder or autogynephilia.[27]

Clinicians should identify and assess any underlying medical conditions or risk factors (e.g., cardiovascular risk factors, history of breast cancer) which may complicate or preclude hormonal treatment.[4] Those receiving endocrine treatment who have relative contraindications to hormones such as smoking, diabetes, liver disease, should have an in-depth discussion with their physician concerning the risks and benefits of therapy.[31]

Clinicians should assess capacity to consent for gender-affirming treatment, explore the patient's goals for treatment including expectations of treatment, establish that the desire for transition is appropriate and persistent, confirm their understanding of the risks versus benefits, and discuss the potential impact on future fertility including fertility preservation options.[4] [31]

Clinical presentation

Determine whether there is a preceding history of gender dysphoria or incongruence of childhood, using informants if possible. As children, transgender people may have demonstrated marked gender non-conformity in peer preferences, mannerisms, role-playing, dreams, fantasies, and gender-typed play and toy preferences. They may have stated that they did not wish to develop secondary sexual characteristics of their assigned gender, asked to have primary sexual characteristics removed, or hoped that they would grow into an adult of their expereinced gender.[2]

The history should elicit whether the person has adopted the behaviours of their experienced gender and whether they have taken measures to alter their primary and secondary sexual characteristics. Individuals assigned male at birth may shave their facial, body, and leg hair, and/or bind their genitals. Individuals

assigned female at birth may bind their breasts. Transgender people are often reluctant to let sexual partners see or touch their genitals.[2]

The most common manifestation of gender dysphoria/incongruence in birth-assigned males is cross-dressing. Cross-dressing can be described as the wearing of clothes of the other sex in order to enjoy the temporary experience of membership of the other sex.

Transgender people may adopt a first name consistent with their experienced gender.[2]

Physical examination is usually unremarkable. Clothing, hairstyle, vocal style, and mannerisms may resemble those of the patient's experienced gender.[2]

Laboratory investigations

Serum androgens should be checked in both birth-assigned women and birth-assigned men, both as a baseline and during any hormonal treatment.[32] At diagnosis, the presence of elevated serum testosterone and dihydrotestosterone and unsuppressed follicle-stimulating hormone and luteinising hormone suggests a partial androgen insensitivity syndrome, which requires genetic counselling for the family. Low testosterone and elevated gonadotrophins in males suggests Klinefelter's syndrome. Elevated androgens in birth-assigned females may suggest polycystic ovary syndrome.

Recommended baseline blood tests include liver function tests, lipids, haematocrit and haemoglobin (to evaluate for polycythaemia), and prolactin.[32]

In some locations, it is common practice to measure prostate-specific antigen (PSA) in birth-assigned males at the age of 45 years and over prior to initiation of hormone therapy, to obtain a baseline level, and to rule-out undiagnosed prostate cancer. It is important to note that following the initiation of hormone treatment, PSA may be a less-useful measuring tool for prostate cancer, given that PSA levels ordinarily plummet in those taking gender-affirming hormone therapy; extra care is needed in interpreting results.[38]

Vitamin D levels are routinely measured in some centres, given the high rate of vitamin D deficiency within the transgender population.[39]

A routine sexual health screen to assess for STIs may be carried out in either primary or secondary care, as guided by any specific risk factors noted in the sexual history.

History and exam

Key diagnostic factors

incongruence between birth-assigned sex and experienced gender (common)

- Gender incongruence, as defined in ICD-11, is characterised by a marked and persistent discordance between an individual´s experienced gender and their birth-assigned sex, which often leads to a desire to 'transition', in order to live and be accepted as a person of the experienced gender, for example, through hormonal treatment, surgery or other healthcare services.[1]

altered appearance or affect (common)

- Patients may adopt the clothing, hairstyles, vocal styles, and mannerisms of their experienced gender.[2]

Risk factors

Weak

autism spectrum disorder (ASD)

- Some observations suggest people with gender incongruence and gender dysphoria show more features of ASD than the general population.[12] [13] [26] At one gender clinic prevalence of autistic traits consistent with a clinical diagnosis of ASD among individuals undertaking treatment was 5.5%, compared with reports of 0.5% to 2.0% ASD diagnoses in the general population.[26]

congenital adrenal hyperplasia

- Associated with a slightly elevated rate of gender incongruence/dysphoria.[20] [21] [22]

Klinefelter's syndrome

- Associated with a slightly elevated rate of gender incongruence/dysphoria.[18]

Investigations

1st test to order

Test	Result
serum testosterone • Used to exclude associated conditions. • High testosterone with high or normal follicle-stimulating hormone and luteinising hormone suggests partial androgen insensitivity syndrome. • Low testosterone and elevated gonadotrophins in males suggests Klinefelter's syndrome. • High androgens in females may suggest polycystic ovary syndrome. • Morning draw of the specimen is recommended.	**normal**
serum dihydrotestosterone • Routinely measured in some (but not all) centres. May be used to exclude associated conditions. • High testosterone and dihydrotestosterone with high or normal follicle-stimulating hormone and luteinising hormone suggests partial androgen insensitivity syndrome. • Morning draw of the specimen is recommended.	**normal**
serum follicle-stimulating hormone (FSH) and luteinising hormone (LH) • Used to exclude associated conditions. • High testosterone with high or normal FSH and LH suggests partial androgen insensitivity syndrome. • Low testosterone and elevated gonadotrophins in males suggest Klinefelter's syndrome.	**normal**
serum prolactin • Used to exclude associated conditions. • Elevation may suggest prolactinoma or drug use. • Post-treatment, prolactin should not rise above 1000 IU. • Should be repeated every 6 months while the patient is on hormonal therapy.	**normal**
serum liver function tests • Serum aspartate aminotransferase, alkaline phosphatase, and gamma glutamyl transpeptidase should be followed up every 6 months while the patient is on hormonal therapy.	**normal baseline**
serum lipid screen • LDL-cholesterol may rarely rise with hormone treatment. Dyslipidaemia should be treated as it would be for any other cause. • Should be repeated every 6 months.	**should be normal initially**
FBC • Elevated mean corpuscular volume (MCV) denotes possible alcohol use disorder. Haemoglobin (Hb) may rise following androgen treatment, particularly in smokers. • Should be followed up every 6 months.	**MCV and Hb should be normal initially**

Other tests to consider

Test	Result
serum prostate-specific antigen (PSA) in birth-assigned males • In some locations, it is common practice to measure PSA in birth-assigned males at the age of 45 years and over prior to initiation of hormone therapy, in order to obtain a baseline level, and to rule-out undiagnosed prostate cancer. • Note that following the initiation of hormone treatment, PSA may be a less-useful measuring tool for prostate cancer, given that PSA levels ordinarily plummet in those taking gender-affirming hormone therapy; extra care is needed in interpreting results.[38] • Total PSA is the initial test of choice (i.e., the sum of both the free and bound forms).	**elevated PSA (value should be correlated with patient age and exposure to gender-affirming hormone treatment) indicates suspicion of prostate cancer**
Serum 25-hydroxyvitamin D • Vitamin D levels are routinely measured in some centres, given the high rate of vitamin D deficiency within the transgender population.[39] • 25-hydroxyvitamin D is the major circulating form of vitamin D used to determine vitamin D status.[40]	**vitamin D deficiency: ≤50 nmol/L (≤20 ng/mL); vitamin D insufficiency: between 52-72 nmol/L (21-29 ng/mL)**

Differentials

Condition	Differentiating signs / symptoms	Differentiating tests
Autogynephilia	• Defined as sexual arousal in a birth-assigned male associated with the thought or image of themself as a woman.[2] This is a controversial diagnosis and is not listed specifically as a paraphilic disorder in DSM-5-TR, and is instead given as a specifier to transvestic disorder (see below).[2] The person may seek hormone treatment and/or surgery to obtain female bodily characteristics (usually breasts) but either does not want to change social gender role or makes no more than token gestures in this regard. • Often a greater degree of earlier sexual activity than in gender incongruence/ dysphoria. The sexualised element to the desire for female characteristics may not be disclosed to medical professionals. May be present in addition to gender dysphoria, according to DSM-5-TR.[2]	• No distinguishing tests: diagnosis is clinical.
Body dysmorphic disorder	• Patient may abhor and seek the removal of either primary or secondary sexual characteristics but has no sense of wanting any other gender role or plan to change social gender role. • Aside from this preoccupation, function in birth gender role has often been quite good.	• Diagnosed according to DSM-5-TR or ICD-11 criteria.[1] [2]
Psychosis	• Patient's presentation has the psychological texture of a delusion. Patient is not very worried about how others perceive him/her as a member of the other sex. • Often a history of psychosis or delusions. Sometimes	• Diagnosed according to DSM-5-TR or ICD-11 criteria.[1] [2]

Condition	Differentiating signs / symptoms	Differentiating tests
	negative symptoms or affective symptoms present at the time of interview. • Gender-related delusions may also occur in up to 20% of people with schizophrenia.[2]	
Transvestic disorder	• Wearing of the clothes of the other sex is associated with sexual arousal. The clothes are often sexualised. The behaviour may be accompanied by masturbation. After orgasm there is often a sense of shame and the rapid removal of the clothes, accompanied by a (transitory) resolution never to cross-dress again. • Found almost exclusively in males. • May occasionally be accompanied by gender dysphoria/incongruence, or be a precursor to gender dysphoria/incongruence in pre-pubertal birth-assigned males.[2]	• Diagnosed according to DSM-5-TR criteria.[2] (Diagnosis does not appear in its own right in ICD-11)

Criteria

International classification of diseases 11th revision (ICD-11)[1]

Published by the World Health Organization, ICD-11 represents a significant shift in the classification of gender identity-related health compared to ICD-10. Outdated diagnostic categories including 'gender identity disorder of children' and 'transsexualism' have been replaced to reflect modern understanding of sexual health and gender identity. The new diagnostic categories have also been moved out of the 'Mental and behavioural disorders' chapter and into the new 'Conditions related to sexual health' chapter, as it is stigmatising to associate gender diversity with mental ill health.

Gender incongruence

- Characterised by a marked and persistent incongruence between an individual's experienced gender and the assigned sex.
- Gender variant behaviour and preferences alone are not a basis for assigning the diagnoses in this group.

Gender incongruence of adolescence or adulthood

- Characterised by a marked and persistent incongruence between an individual´s experienced gender and the assigned sex, which often leads to a desire to 'transition', in order to live and be accepted

as a person of the experienced gender, through hormonal treatment, surgery or other health care services to make the individual´s body align, as much as desired and to the extent possible, with the experienced gender.

- The diagnosis cannot be assigned prior the onset of puberty.
- Gender variant behaviour and preferences alone are not a basis for assigning the diagnosis.

Separate ICD-11 criteria exist for the diagnosis of children; however, children with gender dysphoria/incongruence are not covered by this topic.

[WHO: International Classification of Diseases 11th Revision] (https://icd.who.int/en)

[WHO: FAQs Gender incongruence and transgender health in the ICD] (https://www.who.int/standards/classifications/frequently-asked-questions/gender-incongruence-and-transgender-health-in-the-icd)

Diagnostic and statistical manual of mental disorders, 5th edition, text revision (DSM-5-TR)[2]

Gender dysphoria in adolescents and adults

- A marked incongruence between one's experienced/expressed gender and assigned gender, of at least 6 months' duration, as manifested by at least two of the following:
    - A marked incongruence between one's experienced/expressed gender and primary and/or secondary sex characteristics (or in young adolescents, the anticipated secondary sex characteristics).
    - A strong desire to be rid of one's primary and/or secondary sex characteristics because of a marked incongruence with one's experienced/expressed gender (or in young adolescents, a desire to prevent the development of the anticipated secondary sex characteristics).
    - A strong desire for the primary and/or secondary sex characteristics of the other gender.
    - A strong desire to be of the other gender (or some alternative gender different from one's assigned gender).
    - A strong desire to be treated as the other gender (or some alternative gender different from one's assigned gender).
    - A strong conviction that one has the typical feelings and reactions of the other gender (or some alternative gender different from one's assigned gender).
- The condition is associated with clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- Two specifiers exist:
    - With a disorder of sex development (e.g., congenital adrenal hyperplasia or androgen insensitivity syndrome).
    - Post-transition: the individual has transitioned to full-time living in the experienced gender (with or without legalisation of gender change) and has undergone (or is preparing to have) at least one gender-affirming medical procedure or treatment regimen (e.g., regular gender-affirming hormone treatment or gender reassignment surgery confirming the experienced gender).
- Separate DSM-5-TR criteria now also exist for the diagnosis of children; however, children with gender dysphoria/incongruence are not covered by this topic.

'Gender identity disorder' and related terms should be avoided due to their connotations with mental ill health and the associated stigma. [APA: gender dysphoria] (https://www.psychiatry.org/File%20Library/Psychiatrists/Practice/DSM/APA_DSM-5-Gender-Dysphoria.pdf)

Approach

The aim of treatment is to improve the quality of life to the maximum attainable degree by means of the safe and sustainable relief of gender incongruence/dysphoria. Options for gender-affirming care include hormone therapies and surgeries. Adjunctive options include hair removal, speech and language therapy and supportive counselling. Management is highly individualised, and that there is no 'one size fits all' approach. Transgender people may choose to undergo all, some, or none of the above interventions to support their gender affirmation.

Meta-analysis evidence demonstrates that, for the majority of transgender people, gender-affirming treatment (including hormonal therapy) results in significant improvements in quality of life and psychosocial functioning.[41] [42] [43]

Several large professional medical bodies have published guidance on care of transgender people, including gender-affirming care; this includes US guidance from the Endocrine Society and American College of Obstetricians and Gynecologists (ACOG), and international guidance from the World Professional Association for Transgender Health (WPATH).[4] [31] [44]

An overarching general principle is that reversible steps are successfully negotiated before irreversible steps are contemplated.[4] A multidisciplinary approach to management is strongly recommended; relevant disciplines include (but are not limited to) endocrinology, surgery, voice and communication, primary care, reproductive health, sexual health, and mental health.[4] All transgender people seeking gender-affirming medical treatment should be given information on options for fertility preservation prior to treatment with hormones or surgery.[31]

It is important to note that transgender people as a group experience relatively poorer access to health services compared to other patient groups. Barriers include bias and stigma by healthcare professionals as well as lack of knowledge around best practices, including safety and efficacy of treatments.[45] [46] An open, non-judgemental and inclusive approach is important and may help to encourage people to be forthcoming with their concerns, and less likely to obtain hormones from unlicensed sources.[44] As with any patient group, effective patient-clinician collaboration and shared decision making can facilitate development of therapeutic alliance.

When caring for transgender people use their patient-identified name and gender-neutral terminology until pronoun preferences are made clear. The most straightforward way to determine pronouns is simply to ask, 'What are your preferred pronouns?' Using the wrong pronoun can cause transgender people to feel invalidated or disrespected, particularly if it occurs repeatedly. If you make a mistake, apologise and carry on, aiming to get it right thereafter.[47]

Healthcare workers should also be aware of the lack of standardisation in recording gender identity and that there may be insufficient options in electronic health record platforms.

Outside of specific transgender-related care, transgender people have similar health care needs to the general population. However, depending on their history of gender-affirming care (e.g., hormone therapy), some specific primary and preventive care considerations may be required. When treating people who take gender-affirming hormones, it is important to remember these may affect laboratory test results (e.g., liver function tests, prostate specific antigen [PSA]) and modify disease-specific risk factors or increase the risk of in-hospital complications (e.g., venous thromboembolism).[48]

Social transition

Social transition is the process of adopting a new or evolving gender role or gender presentation in everyday life. Whether social transition should necessarily precede hormone treatment is a matter of some debate. Usually, clinicians maintain that hormone treatment should generally not be started unless the patient has already changed gender role.[31] This may include legally changing registration to that of the preferred sex and changing the person's name on all documents, as well as making friends, family, and other contacts aware of this change and asking them to treat the person as the chosen sex. Based on clinical experience, advantages of this approach are that it can allow both patient and clinician to appreciate the degree to which the change in gender expression and role can be practically applied. Regrets following gender-affirming treatment are rare, but do occur; regret is more likely to occur in those who experience difficulties with social transition.[41] [49] Furthermore, changes of social gender role to a non-binary role may be harder to accomplish than people anticipate, and after experiencing an initial period of social transition to a non-binary role, some people may prefer to modify their social transition in favour of developing a more distinct, social gender role.

Less commonly, hormone treatment is used for patients who do not wish to make a social gender role transition, or who are unable to do so.[4] Some patient groups maintain that hormone treatment should precede a change of gender role. Clinical experience suggests that potential disadvantages of this approach are that it involves a prolonged period of treatment with hormones, with associated potential for adverse effects, that may result in the person being unhappy with the degree of bodily change (which may be permanent), and indefinitely postponing any change of role.

Patients with autogynephilia may seek hormone treatment without any change of gender role and may put forward this argument (explicitly or covertly) to achieve that aim. Their autogynephilia may subsequently dissipate, leaving them with unwanted feminisation.

There is universal agreement that a period of social transition of at least 6 months to 1 year (including at least 1 year of consistent hormone treatment, unless unsuitable or contraindicated) should precede any genital surgery.[4] [31] Longer periods may be needed if there are any problems living in the new gender role, to allow time for these problems to be addressed. Patients should not undergo surgical treatment until they are thriving (not merely surviving) in their new gender role.

Note that legal transition should not be dependent on use of medication or surgery, and varies according to local (i.e., national or state) laws; clinicians and patients should consult their relevant local legal guidance.[44]

Fertility and contraception

Pre-treatment discussion of the consequence of medical and surgical treatment on fertility is essential, including a discussion of fertility preservation options, including sperm banking, oocyte preservation, embryo preservation and (less commonly) ovarian or testicular tissue cryopreservation.[31] [44] All patients should be counselled on barrier methods of contraception for prevention of sexually transmitted infections. Gender-affirming hormone therapy is not effective contraception; transgender people with retained gonads should be counselled about the possibility of pregnancy if they are having sexual activity that involves sperm and oocytes. Testosterone therapy is contraindicated during pregnancy, but transgender men may safely achieve pregnancy after cessation of testosterone.[44]

Gender-affirming hormone treatment

Hormone therapy for transgender people is given with the aim of achieving one or more of the following goals:[4][31]

- Reduce endogenous hormone levels (with a resultant reduction in secondary sex characteristics of the person's birth-assigned sex).
- Replace these endogenous hormones with those of the reassigned sex following principles of hormone replacement for hypogonadal patients.
- Provide hormone replacement therapy (HRT) to prevent the effects of hypogonadism following surgical treatment.

Individualised treatment is required based on the patient's goals, any medical contraindications, and the side effect profile of the medications used. According to the WPATH, criteria for starting hormone therapy include:[4]

- Gender incongruence is marked and sustained.
- The individual meets diagnostic criteria for gender incongruence prior to gender-affirming hormone treatment in regions where a diagnosis is necessary to access health care.
- The individual demonstrates capacity to consent for the specific gender-affirming hormone treatment.
- Other possible causes of apparent gender incongruence have been identified and excluded.
- Mental health and physical conditions that could negatively impact the outcome of treatment have been assessed, with risks and benefits discussed.
- The individual understands the effect of gender-affirming hormone treatment on reproduction and they have explored reproductive option.

Transgender care is an interdisciplinary field, and so coordination of care and referral for hormone treatment within a patient's overall care team is recommended.

Hormone treatment varies with the birth sex of the patient.

Clinicians should stress the importance of smoking cessation, as smoking increases the thromboembolic risk from oestrogen treatment and polycythaemia with testosterone treatment (see Smoking cessation).

Feminising treatment for transgender women

The term 'transgender woman' is used to mean a person who was assigned male at birth, but who identifies as a woman or trans woman.

A thorough discussion of the risks versus benefits of treatment is essential prior to treatment initiation, and guides shared decision-making.

Gender-affirming hormone treatment aims to elicit in a birth-assigned male patient the secondary sexual changes seen in birth-assigned females at puberty. These changes will be superimposed on whatever male pubertal changes have already occurred and will not reverse them. Effects of treatment may include breast growth, increased body fat percentage, decreased libido, decreased testicular size and decreased erectile function.[44] There is no effect on vocal quality.[44] Facial and bodily hair growth is slowed only slightly and never stopped. For information on expected timing of feminising effects of oestrogen (see Patient discussions).

According to the Endocrine Society in the US, risks associated with oestrogen therapy in transgender women include:[31]

- Very high risk of adverse outcomes
    - Thromboembolic disease
- Moderate risk of adverse outcomes
    - Macroprolactinoma
    - Breast cancer
    - Coronary artery disease
    - Cerebrovascular disease
    - Cholelithiasis
    - Hypertriglyceridaemia

ACOG advises that there are no absolute contraindications to feminising therapy in transgender women.[44] However, clinicians should evaluate for (and potentially treat) a number of conditions at baseline, given that relative risks may be increased with hormone treatment; these include hormone sensitive cancer, coronary artery disease, cerebrovascular disease, hyperprolactinaemia, hypertriglyceridaemia, and cholelithiasis.[4]

WPATH advises that people seeking feminising treatment who have a history of thromboembolic events (e.g., deep vein thrombosis or pulmonary embolism) should undergo evaluation and treatment prior to the initiation of hormone therapy.[4] For those with non-modifiable risk factors which may increase the risk of thromboembolic disease, for example, a known history of thrombophilia, a past history of thrombosis, or a strong family history of thromboembolism, WPATH advise that offering an anticoagulant in addition to treatment with transdermal oestrogen may decrease the risk of thromboembolism, although data to guide treatment decisions are extremely limited.[4]

- Oestrogen, with or without an agent to suppress androgen, is used as feminising treatment in transgender women. However, there are no randomised controlled trials to assess the safety and efficacy of this treatment.[50] A wide variety of different formulations and preparations are available, and local formularies vary considerably. In practice, both oral and transdermal oestrogens are commonly used. In theory, transdermal oestrogen may be associated with a lower risk of venous thromboembolism (VTE) and stroke (based on knowledge of the 'first pass effect' and from extrapolation of data derived from post-menopausal women receiving HRT).[51] Any absolute risk will be dependent on the individual's baseline risk for VTE. In clinical practice, oral oestrogen is commonly used in transgender women who have a low baseline risk for VTE. For those aged 45 years or over, or with other risk factors for VTE, transdermal preparations are usually preferred.[44]
- Currently available data do not provide clear guidance on dose titration; instead this should generally be based on patient goals.[44] As with any medication, use of the lowest dose possible to achieve the desired results is recommended.[44] Based on clinical experience, one approach is to start treatment with a low/moderate dose and build over time. Ultimately the goal is to reach a dose that produces a serum oestradiol in the normal female pre-menopausal range.[44] Clinical experience suggests that high-dose treatment from the outset may be associated with early duct fusion and the eventual formation of small, hard, conical breasts that cannot be made larger or more naturally textured with any subsequent hormonal manipulation.
- Usually, adjunctive therapy is required to achieve testosterone levels in the normal female range (androgen suppression), particularly in younger people(<40 years).[31] Androgen suppression using a gonadotrophin-releasing hormone (GnRH) agonist is preferred where available, given favourable safety and efficacy data.[31] [52] This treatment carries fewer adverse effects than when used for prostate cancer and is usually well tolerated, with bone density being protected

by the parallel sex steroid therapy. Disadvantages of GnRH agonists are the requirement for parenteral administration and a relatively greater cost, which sometimes prevents placement on available formularies. GnRH agonists are used routinely in some countries, including the UK, but in other parts of the world, including the US, their use is limited due to cost and insurance coverage difficulties.

- Alternative options for androgen suppression where GnRH agonists are not available include spironolactone, cyproterone, and 5-alpha reductase inhibitors.[4] [31] Spironolactone is commonly used in the US.[44] Cyproterone is available in most countries, but not the US; overall, its use is decreasing due to its association with a number of adverse effects, including hyperlipidaemia and raised prolactin levels.[53]
- Progesterone is not indicated, as there is insufficient evidence that the benefits outweigh the risk; although there are anecdotal reports of its use for breast development, there is currently insufficient evidence as to the efficacy of this, and it is known to raise the risk of breast cancer and has been associated with depression.[4]
- It typically takes 2 or more years for patients to achieve maximal feminising results from hormones. If there was gonadal suppression with a GnRH agonist, the same dose will be needed after any genital surgery, although in later life doses might need to be lowered to achieve the same hormone levels as hepatic sex steroid metabolism can decrease with age. For patients who go on to have orchidectomy, hormone therapy with oestrogen is usually continued lifelong, unless contraindications develop.[4]
- For recommended blood test monitoring regimens for patients newly started and established on hormone therapy (see Monitoring).

Masculinising treatment for transgender men

The term ‘transgender man’ is used to mean a person who was assigned female at birth, but who identifies as a man or trans man.

A thorough discussion of the risks versus benefits of treatment is essential prior to treatment initiation, and guides shared decision-making.

Gender-affirming hormone treatment aims to elicit in a birth-assigned female patient the secondary sexual changes seen in birth-assigned males at puberty. These changes will be superimposed on whatever female pubertal changes have already occurred and will not reverse them. Goals of treatment may include development of facial hair, deepening of the voice, and increasing body hair and muscle mass. Other effects of treatment may include fat redistribution, hairline recession, changes in body odour, reduced libido, cessation of menses, vaginal atrophy and increased clitoral size.[44] Vaginal atrophy may increase susceptibility to small amounts of vaginal tearing during penetrative sexual intercourse (similar to in post-menopausal women), and so prescription of a topical lubricant/oestrogen may be required.[44] For information on expected timing of masculinising effects of testosterone (see Patient discussions).

According to the US Endocrine Society, risks associated with testosterone therapy in transgender men include:[31]

- Very high risk of adverse outcomes
    - Polycythaemia (haematocrit > 50%)
- Moderate risk of adverse outcomes
    - Severe liver dysfunction (transaminases > threefold upper limit of normal)

- Coronary artery disease
- Cerebrovascular disease
- Hypertension
- Breast or uterine cancer

According to the ACOG, the only absolute contraindications to masculinising treatment with testosterone are current pregnancy, unstable coronary artery disease and polycythaemia (haematocrit greater than 55%).[44] WPATH note that relative contraindications to masculinising treatment with testosterone include severe hypertension and sleep apnoea, since both may be exacerbated by testosterone administration.[4]

- Preparations, doses, and licensing restrictions for testosterone vary according to country of practice. A variety of preparations and routes of administration are available, including injectables, gels, patches, and buccal tablets.
- The aim of therapy is to achieve serum testosterone levels in the normal physiological range for young males at all times.[44]
- Data from studies reported in the literature between 1980 and 2010 suggest that treatment of female-to-male transgender people with supra-physiological doses of testosterone is associated with minimal adverse effects and no increase in mortality, breast cancer, vascular disease, or other major health problems.[54] However clinicians can achieve a good clinical response and minimise the risk of adverse effects by avoiding supraphysiological levels of testosterone.
- Androgens are administered in doses sufficient to induce menopause, usually once monthly but, more rarely, as often as once every 2 weeks. Once menopause is achieved, it is often possible to decrease the frequency without menstrual periods returning.
- Gonadotrophin suppression is not usually needed in transgender men, as androgens alone suppress ovarian function very well. All patients should be offered the opportunity for gamete storage before hormone treatment, as is the case for any medically mandated treatment that removes natural fertility.[4]
- It typically takes 2 or more years for patients to achieve maximal masculinising/feminising results from hormones. If there was gonadal suppression with a GnRH agonist, the same dose will be needed after any genital surgery; although, in later life doses might need to be lowered to achieve the same hormone levels, as hepatic sex steroid metabolism can decrease with age.
- For patients who go on to have gonadectomy, hormone therapy with oestrogen or testosterone is usually continued lifelong, unless contraindications develop.[4]
- For recommended blood test monitoring regimens for patients newly started and established on hormone therapy, (see Monitoring).

Gender-affirming surgery

Some transgender people live successfully in their preferred gender role without surgery, but for others, genital surgery is the final (and most considered) step in the treatment process.[4]

According to the WPATH, criteria for genital surgery include:[4]

- Gender incongruence is marked and sustained.
- Meets diagnostic criteria for gender incongruence prior to gender-affirming surgical intervention in regions where a diagnosis is necessary to access health care.
- Demonstrates capacity to consent for the specific gender-affirming surgical intervention.
- Understands the effect of gender-affirming surgical intervention on reproduction and they have explored reproductive options.
- Other possible causes of apparent gender incongruence have been identified and excluded.

- Mental health and physical conditions that could negatively impact the outcome of gender-affirming surgical intervention have been assessed, with risks and benefits have been discussed.
- Stable on their gender affirming hormonal treatment regime (which may include at least 6 months of hormone treatment or a longer period if required to achieve the desired surgical result, unless hormone therapy is either not desired or is medically contraindicated).*

*This was graded as a suggested criterion. Note that there is an absence of consensus as to whether or not hormone treatment should always precede certain surgical procedures, and if so, for what duration. WPATH notes that gender-affirming hormone treatment leads to anatomical, physiological and psychological changes. The onset of anatomical changes (clitoral growth, vaginal atrophy) may begin early after initiation of treatment, with peak effects expected at 1-2 years. Depending on the surgical result required, a period of hormone treatment may be necessary prior to surgery for anatomical reasons, for example, to cause clitoral viralisation prior to phalloplasty, or may be desired, for example, to cause breast growth and skin expansion prior to breast augmentation. Hormone treatment prior to surgery may also be preferred for psychological reasons.[4] For patients not taking hormone treatment, an individualised approach is required, ideally with multidisciplinary input, and it is important that surgeons carefully review the impact that a lack of prior hormone therapy may have on any proposed surgery. Furthermore, many clinics prefer that the patient has experienced 1-2 years in the desired gender role prior to surgery.[32]

Counselling to discuss expectations and limitations of surgery is essential, including likely effects on sexual function. Requirements on clinical authorisation of gender-affirmation procedures differ according to location of practice, and clinicians should consult local guidance; for example, in some locations (e.g., the US), agreement between a mental health professional and a physician overseeing hormone therapy is required for authorisation and medical clearance prior to surgery.[31] Genital surgeries should be performed within centres with specialist expertise wherever possible.

Ongoing mental health and psychosocial support may be required before and after surgery, as appropriate. Lifelong urological follow-up is encouraged for transgender men who have undergone metoidioplasty/phalloplasty.[4] Long-term follow-up by the primary surgeon/gynaecologist/primary care physician is encouraged for transgender women who have undergone vaginoplasty.[4]

The percentage of people who regret their gender-affirming surgical intervention is low (estimated to be between 0.3% and 3.8%).[4] Regret may be temporary or permanent; in this scenario multidisciplinary input is recommended in order to explore this further, with possible outcomes being medical and/or surgical treatment to continue the transition, or revision surgery to return anatomy to the sex assigned at birth.[4]

Transgender women: feminising treatments and surgeries

Hair removal

- This can be done with electrolysis or laser treatment. All other methods are non-permanent.

Speech and language therapy

- Transgender women wishing to achieve increased congruence between their voice and experienced gender may benefit from referral to a speech and language therapist/pathologist with specific training and experience in this field.[44]

Aesthetic procedures

- Options are varied, and include liposuction, lipofilling, gluteal augmentation, and hair reconstruction.[44]

Head and neck surgery

- Thyroid cartilage reduction surgery is sometimes needed in tall, thin, patients whose thyroid cartilage is unacceptably prominent. It is usually an unproblematic procedure. It can be combined with a cricothyroid approximation.
- Cricothyroid approximation can be done alone or combined with a thyroid cartilage reduction. It alters vocal quality to a more feminine pitch. It should only be attempted when speech therapy has failed, and usually requires follow-up speech therapy.[44]
- Craniofacial surgery is a complex and sometimes very radical surgery that is sometimes helpful but should only be contemplated when treatment with hormones has been fully utilised and when simpler cosmesis has failed.

Augmentation mammoplasty

- Although not a formal prerequisite, it is desirable that patients receive feminising hormone treatment (for a minimum of 12 months) prior to surgery.[32] Based on clinical experience, a minimum of 2 years is preferable. This is because it can be aesthetically problematic if natural breast development under oestrogen stimulation follows an augmentation mammoplasty.

Genital surgery

- Patients should be stable on their gender affirming hormonal treatment regime (which may include at least 6 months of hormone treatment or a longer period if required to achieve the desired surgical result, unless hormone therapy is either not desired or is medically contraindicated).
- Furthermore, many clinics prefer that the patient has experienced 1-2 years in the desired gender role. The patient must, over that period of time, have shown improved psychological, social, and, probably, occupational function.[32]
- Genital surgery typically involves penectomy and orchidectomy. The surgery uses the existing genitals to fashion a vulva, neoclitoris and hood, labia, and (often) neovagina.[44]
- Pre-operative genital hair removal is sometimes needed, particularly in patients who have been circumcised. Clinical experience suggests that the cosmetic results can be very good.

Transgender men: masculinising treatments and surgeries

Aesthetic procedures

- Options are varied, and include liposuction, lipofilling, and pectoral implants.[44]

Bilateral mastectomy (‘top surgery’)

- There is no consensus about when patients should undergo bilateral mastectomy.[31] Although hormone therapy is not a formal prerequisite to bilateral mastectomy, nearly all practitioners take the view that bilateral mastectomy should come after a change of gender role and treatment with androgens. Some patient groups argue that it should precede both. Body weight and shape can change considerably when patients are treated with androgens, and it may be that an initially good post-surgical appearance alters negatively with subsequent androgen treatment. Difficulties may arise when a patient initially asserts that a non-binary role is desired, and requests bilateral mastectomy and chest reconstruction without preceding treatment with testosterone. There may then be a subsequent evolution to a more clearly male role and corresponding need for testosterone treatment, which may have a negative impact on the patient’s post-surgical appearance.

Hysterectomy and bilateral oophorectomy

- Previously, total hysterectomy and oophorectomy were recommended for transgender men taking testosterone therapy, but WPATH now recommends against routine oophorectomy or hysterectomy solely for the purpose of preventing ovarian or uterine cancer for transgender people undergoing testosterone treatment and who have an otherwise average risk of malignancy.[4] [31] Gender-affirming hormones have not been shown to affect cancer risk, but the quality of evidence is low and longer-term studies are needed.[55]
- The route of hysterectomy is dependent on clinical findings, surgical, and patient preference.[44]
- Approaches include laparoscopic, transvaginal, and transabdominal. An advantage of the laparoscopic approach is that it avoids leaving a large abdominal scar. Vaginal access may be difficult if patients are nulliparous and have often not experienced penetrative intercourse. A transabdominal approach may utilise any incision other than a Pfannenstiel incision, as this incision is pathognomonic of gynaecological surgery and the resulting scar may look unusual in a male.

Phalloplasty

- This complex, often multi-stage procedure is typically considered only when the patient has received continuous hormone treatment, unless contraindicated, for 1 year at the very minimum.[32] Furthermore, many clinics prefer that the patient has experienced 1-2 years in the desired gender role. The patient must, over that period of time, have shown improved psychological, social, and, probably, occupational function.
- Donor sites for phalloplasty can include the forearm, abdominal skin, or tissue from elsewhere on the body. The complexity, duration, and expense of the procedure are such that only a minority of patients choose to undergo this surgery. Clinical experience suggests that the cosmetic and functional results are fairly good, but the result in even the best centres is clearly distinguishable from a native penis.

Primary care: special considerations

The primary health care needs of transgender people are similar to those of any other patient.[4] However for people receiving gender-affirming care, some additional considerations may be required. Depending on service arrangements, primary care practitioners may be involved in the prescription of gender-affirming hormone therapy, preferably in conjunction with a specialist secondary-care based team, and with access to an endocrinologist if necessary.[32] Physical assessment and ongoing monitoring of heamatological, endocrinological and biochemical parameters are essential, and ideally should be carried out under shared/collaborative care arrangements with secondary care (see Monitoring).

Note that in some (less common) clinical circumstances, a non-specialist, for example, primary care clinician may consider prescribing a ‘bridging prescription’ of hormonal treatment to cover the patient’s care until they are able to access specialist services, as part of a harm reduction approach. This provides the opportunity to undertake blood tests and health checks to screen for contraindications to treatment. The suitability of this approach depends on the training and experience of the individual clinician, as well as on local guidelines and policy, and should only typically be considered when:[56]

- The patient is already self-prescribing, or seems highly likely to self-prescribe, with hormones obtained from an unregulated source (online or otherwise on the black market).
- The bridging prescription is intended to mitigate a risk of self-harm or suicide.
- The clinician has sought the advice of a gender specialist and prescribes the lowest acceptable dose in the circumstances.

It is important to note that in some parts of the world, speciality services for transgender people are limited or wholly unavailable, highlighting a need for all health providers to undergo training in the safe provision of gender-affirming care.[4]

With respect to preventive health care, evidence on the long-term impact of gender-affirming hormone treatment is currently lacking. Cancer screening should commence, in general, according to local guidance, although there are a few specific issues to consider for people on hormonal therapy and/or those who have received surgery (e.g., with respect to breast, cervical, and prostate cancer screening, and osteoporosis screening) (see Monitoring).[4]

Treatment algorithm overview

Please note that formulations/routes and doses may differ between drug names and brands, drug formularies, or locations. Treatment recommendations are specific to patient groups: see disclaimer

Ongoing		(summary)
transgender women (male-to-female transgender persons whose sex assigned at birth was male)		
	1st	**individualised multidisciplinary management**
	adjunct	**oestrogens**
	adjunct	**androgen suppression therapy**
	adjunct	**speech and language therapy**
	adjunct	**hair removal**
	adjunct	**head and neck surgery**
	adjunct	**augmentation mammoplasty**
	adjunct	**genital surgery**
	adjunct	**other aesthetic procedures**
transgender men (female-to-male transgender persons whose sex assigned at birth was female)		
	1st	**individualised multidisciplinary management**
	adjunct	**androgens**
	adjunct	**bilateral mastectomy**
	adjunct	**hysterectomy and bilateral oophorectomy**
	adjunct	**phalloplasty**
	adjunct	**other aesthetic procedures**

Treatment algorithm

Please note that formulations/routes and doses may differ between drug names and brands, drug formularies, or locations. Treatment recommendations are specific to patient groups: see disclaimer

Ongoing

transgender women (male-to-female transgender persons whose sex assigned at birth was male)

1st **individualised multidisciplinary management**

» A multidisciplinary approach to management is strongly recommended; relevant disciplines include (but are not limited to) endocrinology, surgery, voice and communication, primary care, reproductive health, sexual health, and mental health.[4] However it is important to note that in some parts of the world, speciality services for transgender people are limited or wholly unavailable; in this setting, non-specialist clinicians, for example, primary care providers may need to take on a greater role in the provision gender-affirming care, highlighting the need for continuing training and professional development in line with current best practices.[4]

» Options for gender-affirming care include hormone therapies and surgeries. Adjunctive options include hair removal, speech and language therapy and supportive counselling. Management is highly individualised, and that there is no 'one size fits all' approach. Transgender people may choose to undergo all, some, or none of the above interventions to support their gender affirmation.

» Transgender people as a group experience relatively poorer access to health services compared to other patient groups. Noted barriers include bias and stigma by healthcare professionals and a lack of knowledge around best practices, including safety and efficacy of treatments.[45] [46] An open, non-judgemental and inclusive approach is important and may help to encourage people to be forthcoming with their concerns, and less likely to obtain hormones from unlicensed sources.[44]

» Transgender people also experience an increased risk of general mental health issues, including depression, anxiety, post-traumatic stress disorder, suicidality, and substance use disorders.[1] [2][14] Ongoing screening, assessment, and management of any mental health conditions is therefore important.

Ongoing

» Usually, clinicians maintain that hormone treatment should generally not be started unless the patient has already changed gender role.[31] This may include legally changing registration to that of the preferred sex and changing the person's name on all documents, as well as making friends, family, and other contacts aware of this change and asking them to treat the person as their experienced sex.

» Based on clinical experience, advantages of this approach are that it can allow both patient and clinician to appreciate the degree to which the change in gender expression and role can be practically applied. Regrets following gender-affirming treatment are rare, but do occur; regret is more likely to occur in those who experience difficulties with social transition.[41] [49]

» Less commonly, hormone treatment is used for patients who do not wish to make a social gender role transition, or who are unable to do so.[4]

» There is universal agreement within international standards of care that social transition of at least 1 year (plus 1 year of continuous hormone treatment) should precede any genital surgery.[4] [31] Longer periods may be needed if there are any problems living in the new gender role. Patients should not undergo surgical treatment until they are thriving (not merely surviving) in their new gender role.

» Note that legal transition should not be dependent on use of medication or surgery, and varies according to local (i.e., national or state) laws; clinicians and patients should consult their relevant local legal guidance.[44]

adjunct **oestrogens**

Treatment recommended for SOME patients in selected patient group

» Hormonal treatment is preferably done working as part of a multidisciplinary team containing (or having easy access to) an endocrinologist.

» Criteria for hormone therapy include the following:[4]

- Gender incongruence is marked and sustained.
- The individual meets diagnostic criteria for gender incongruence prior to gender-affirming hormone treatment in regions

Ongoing

where a diagnosis is necessary to access health care.

- The individual demonstrates capacity to consent for the specific gender-affirming hormone treatment.
- Other possible causes of apparent gender incongruence have been identified and excluded.
- Mental health and physical conditions that could negatively impact the outcome of treatment have been assessed, with risks and benefits discussed.
- The individual understands the effect of gender-affirming hormone treatment on reproduction and they have explored reproductive options.

» A thorough discussion of the risks versus benefits of treatment is essential prior to treatment initiation, and guides shared decision-making.

» Gender-affirming hormone treatment aims to elicit in a birth-assigned male patient the secondary sexual changes seen in birth-assigned females at puberty. These changes will be superimposed on whatever male pubertal changes have already occurred and will not reverse them. Effects of treatment may include breast growth, increased body fat percentage, decreased libido, decreased testicular size, and decreased erectile function.[44] There is no effect on vocal quality.[44] Facial and bodily hair growth is slowed only slightly and never stopped. For information on expected timing of feminising effects of oestrogen see Patient discussions .

» Oestrogen is either used alone, or with adjunctive androgen suppression therapy. A wide variety of different formulations and preparations are available, and local formularies vary considerably. In practice, both oral and transdermal oestrogens are commonly used. In theory, transdermal oestrogen may be associated with a lower risk of venous thromboembolism (VTE) and stroke (based on knowledge of the 'first pass effect' and from extrapolation of data derived from post-menopausal women receiving hormone replacement therapy).[51] Any absolute risk will be dependent on the individual's baseline risk for VTE. In clinical practice, oral oestrogen is commonly used in transgender women who have a low baseline risk for VTE. For those

Ongoing

aged over 45 years or with other risk factors for VTE, transdermal preparations are usually preferred.[44]

» Currently available data do not provide clear guidance on dose titration; instead this should generally be based on patient goals.[44] As with any medication, use of the lowest dose possible to achieve the desired results is recommended.[44] Based on clinical experience, one approach is to start treatment with a low/moderate dose and build over time. Ultimately the goal is to reach a dose that produces a serum oestradiol in the normal female pre-menopausal range.[44] Clinical experience suggests that high-dose treatment from the outset is associated with early duct fusion and the eventual formation of small, hard, conical breasts that cannot be made larger or more naturally textured with any subsequent hormonal manipulation.

» It typically takes 2 or more years for patients to achieve maximal feminising results from hormones. If there was gonadal suppression with a gonadotrophin-releasing hormone agonist, the same dose will be needed after any genital surgery, although in later life doses might need to be lowered to achieve the same hormone levels as hepatic sex steroid metabolism can decrease with age.

» For patients who go on to have orchidectomy, hormone therapy with oestrogen is usually continued lifelong, unless contraindications develop.[4]

» For recommended blood test monitoring regimens for patients newly started and established on hormone therapy see Monitoring .

» Consult your guidelines and drug formularies for oestrogen options and formulations.

adjunct **androgen suppression therapy**

Treatment recommended for SOME patients in selected patient group

» Used in transgender women in whom native androgen production is not suppressed by full-dose oestrogen therapy.[57] These tend to be younger patients (<40 years). Androgen suppression using a gonadotrophin-releasing hormone (GnRH) agonist is preferred where available, given favourable safety and efficacy data.[31] [52] This treatment carries fewer side effects than when used for prostate cancer and

Ongoing

is usually well tolerated, with bone density being protected by the parallel sex steroid therapy.

» Disadvantages of GnRH agonists are the requirement for parenteral administration and a relatively greater cost, which sometimes prevents placement on available formularies. GnRH agonists are now used routinely in some countries, including the UK, but in other parts of the world, including the US, their use is limited due to cost and insurance coverage difficulties.

» Alternative options for androgen suppression where GnRH agonists are not available include spironolactone, cyproterone, and 5-alpha reductase inhibitors.[4] [31] Spironolactone is commonly used in the US.[44] Cyproterone is available in most countries, but not the US; overall, its use is decreasing due to its association with a number of adverse effects, including hyperlipidaemia and raised prolactin levels.[53]

» It typically takes 2 or more years for patients to achieve maximal feminising results from hormones. If there was gonadal suppression with a GnRH agonist, the same dose will be needed after any genital surgery, although in later life doses might need to be lowered to achieve the same hormone levels as hepatic sex steroid metabolism can decrease with age.

» For patients who go on to have orchidectomy, hormone therapy with oestrogen is usually continued lifelong, unless contraindications develop.[4]

» For recommended blood test monitoring regimens for patients newly started and established on hormone therapy see Monitoring .

» Consult your guidelines and drug formularies for GnRH agonist options and formulations.

adjunct **speech and language therapy**

Treatment recommended for SOME patients in selected patient group

» Transgender women wishing to achieve increased congruence between their voice and experienced gender may benefit from referral to a speech and language therapist/pathologist with specific training and experience in this field.[44]

adjunct **hair removal**

Treatment recommended for SOME patients in selected patient group

Ongoing

» This can be done with electrolysis or laser treatment. All other methods are non-permanent.

adjunct **head and neck surgery**

Treatment recommended for SOME patients in selected patient group

» Thyroid cartilage reduction is a usually unproblematic procedure that is sometimes needed in tall, thin, patients whose thyroid cartilage is unacceptably prominent. It can be combined with a cricothyroid approximation.

» A cricothyroid approximation procedure can be done alone or combined with a thyroid cartilage reduction. It alters vocal quality to a more feminine pitch. It should only be attempted when speech therapy has failed, and usually requires follow-up speech therapy.[44]

» Craniofacial surgery is a complex and sometimes very radical surgery that is sometimes helpful but should only be contemplated when treatment with hormones has been fully utilised and when simpler cosmesis has failed.

adjunct **augmentation mammoplasty**

Treatment recommended for SOME patients in selected patient group

» Although not a formal prerequisite, it is desirable that patients receive feminising hormone treatment for a minimum of 12 months prior to augmentation mammoplasty.[32] Based on clinical experience, a minimum of 2 years is preferable. This is because it can be aesthetically problematic if natural breast development under oestrogen stimulation follows an augmentation mammoplasty.

adjunct **genital surgery**

Treatment recommended for SOME patients in selected patient group

» Some transgender people live successfully in their preferred gender role without surgery, but for others, genital surgery is the final (and most considered) step in the treatment process.

» Criteria for genital surgery include the following:[4]

- Gender incongruence is marked and sustained.
- Meets diagnostic criteria for gender incongruence prior to gender-affirming surgical intervention in regions where a

Ongoing

diagnosis is necessary to access health care.

- Demonstrates capacity to consent for the specific gender-affirming surgical intervention.
- Understands the effect of gender-affirming surgical intervention on reproduction and they have explored reproductive options.
- Other possible causes of apparent gender incongruence have been identified and excluded.
- Mental health and physical conditions that could negatively impact the outcome of gender-affirming surgical intervention have been assessed, with risks and benefits have been discussed.
- Stable on their gender affirming hormonal treatment regime (which may include at least 6 months of hormone treatment or a longer period if required to achieve the desired surgical result, unless hormone therapy is either not desired or is medically contraindicated).*

» *This was graded as a suggested criterion.

» Furthermore, many clinics prefer that the patient has experienced 1-2 years in the desired gender role. The patient must over that period of time have shown improved psychological, social, and, probably, occupational function.[32]

» Genital surgery typically involves penectomy and orchidectomy. The surgery uses the existing genitals to fashion a vulva, neoclitoris and hood, labia, and (often) a neovagina. Pre-operative genital hair removal is sometimes needed, particularly in patients who have been circumcised. Clinical experience suggests that the cosmetic results can be very good.

» Ongoing mental health and psychosocial support may be required before and after surgery, as appropriate. Long-term follow-up by the primary surgeon/gynaecologist/primary care physician is encouraged for transgender women who have undergone vaginoplasty.[4]

adjunct **other aesthetic procedures**

Treatment recommended for SOME patients in selected patient group

MANAGEMENT

Ongoing

		» Options are varied, and include liposuction, lipofilling, gluteal augmentation, and hair reconstruction.[44]
transgender men (female-to-male transgender persons whose sex assigned at birth was female)		
	1st	**individualised multidisciplinary management** » A multidisciplinary approach to management is strongly recommended; relevant disciplines include (but are not limited to) endocrinology, surgery, voice and communication, primary care, reproductive health, sexual health, and mental health.[4] However it is important to note that in some parts of the world, speciality services for transgender people are limited or wholly unavailable; in this setting, non-specialist clinicians, for example, primary care providers may need to take on a greater role in the provision of gender-affirming care, highlighting the need for continuing training and professional development in line with current best practices.[4] » Options for gender-affirming care include hormone therapies and surgeries. Adjunctive options include hair removal, speech and language therapy and supportive counselling. Management is highly individualised, and that there is no 'one size fits all' approach to treatment. Transgender people may choose to undergo all, some, or none of the above interventions to support their gender affirmation. » Transgender people as a group experience relatively poorer access to health services compared to other patient groups. Noted barriers include bias and stigma by health care professionals and a lack of knowledge around best practices, including safety and efficacy of treatments.[45] [46] An open, non-judgemental and inclusive approach is important and may help to encourage people to be forthcoming with their concerns, and less likely to obtain hormones from unlicensed sources.[44] » Transgender people also experience an increased risk of general mental health issues, including depression, anxiety, post-traumatic stress disorder, suicidality and substance use disorders.[1] [2][14] Ongoing screening, assessment, and management of any mental health conditions is therefore important.

Ongoing

» Usually, clinicians maintain that hormone treatment should generally not be started unless the patient has already changed gender role.[31] This may include legally changing registration to that of the preferred sex and changing the person's name on all documents, as well as making friends, family, and other contacts aware of this change and asking to treat the person as their experienced sex.

» Based on clinical experience, advantages of this approach are that it can allow both patient and clinician to appreciate the degree to which the change in gender expression and role can be practically applied. Regrets following gender-affirming treatment are rare, but do occur; regret is more likely to occur in those who experience difficulties with social transition.[41] [49]

» Less commonly, hormone treatment is used for patients who do not wish to make a social gender role transition, or who are unable to do so.[4]

» There is universal agreement within international standards of care that social transition of at least 6 months to 1 year (plus a year of continuous hormone treatment) should precede any genital surgery.[4] [31] Longer periods may be needed if there are any problems living in the new gender role. Patients should not undergo surgical treatment until they are thriving (not merely surviving) in their new gender role.

» Note that legal transition should not be dependent on use of medication or surgery, and varies according to local (i.e., national or state) laws; clinicians and patients should consult their relevant local legal guidance.[44]

adjunct **androgens**

Treatment recommended for SOME patients in selected patient group

» Treatment is preferably done working as part of a multidisciplinary team containing (or having easy access to) an endocrinologist.

» Criteria for hormone therapy include the following:[4]

- Gender incongruence is marked and sustained.
- The individual meets diagnostic criteria for gender incongruence prior to gender-affirming hormone treatment in regions

Ongoing

where a diagnosis is necessary to access health care.

- The individual demonstrates capacity to consent for the specific gender-affirming hormone treatment.
- Other possible causes of apparent gender incongruence have been identified and excluded.
- Mental health and physical conditions that could negatively impact the outcome of treatment have been assessed, with risks and benefits discussed.
- The individual understands the effect of gender-affirming hormone treatment on reproduction and they have explored reproductive options.

» A thorough discussion of the risks versus benefits of treatment is essential prior to treatment initiation, and guides shared decision-making.

» Gender-affirming hormone treatment aims to elicit in a birth-assigned female patient the secondary sexual changes seen in birth-assigned males at puberty. These changes will be superimposed on whatever female pubertal changes have already occurred and will not reverse them. Goals of treatment may include development of facial hair, deepening of the voice, and increasing body hair and muscle mass. Other effects of treatment may include fat redistribution, hairline recession, changes in body odour, reduced libido, cessation of menses, vaginal atrophy and increased clitoral size.[44] Vaginal atrophy may increase susceptibility to small amounts of vaginal tearing (similar to in post-menopausal women), and so prescription of a topical lubricant/oestrogen may be required.[44] For information on expected timing of masculinising effects of testosterone see Patient discussions .

» Androgens are administered in dosages sufficient to induce menopause, usually once monthly but, more rarely, as often as once every 2 weeks. Once menopause is achieved, it is often possible to decrease the frequency without menstrual periods returning.

» Gonadotrophin suppression is generally not needed, as androgens alone usually suppress ovarian function very well.

Ongoing

» The aim of therapy is to achieve serum testosterone levels in the normal physiological range for young males at all times.

» It typically takes 2 or more years for patients to achieve maximal masculinising results from hormones.[4]

» For patients who go on to have oophorectomy, hormone therapy with testosterone is usually continued lifelong, unless contraindications develop.[4]

» For recommended blood test monitoring regimens for patients newly started and established on hormone therapy see Monitoring .

» Consult your guidelines and drug formularies for testosterone options and formulations. Preparations, doses, and licensing restrictions for testosterone vary according to country of practice. A variety of preparations and routes of administration are available, including injectables, gels, patches, and buccal tablets.

adjunct **bilateral mastectomy**

Treatment recommended for SOME patients in selected patient group

» There is no consensus about when patients should undergo bilateral mastectomy. Although hormone therapy is not a formal prerequisite to bilateral mastectomy, most practitioners take the view that it should come after a change of gender role and treatment with androgens. Some patient groups would argue that it should precede both.

adjunct **hysterectomy and bilateral oophorectomy**

Treatment recommended for SOME patients in selected patient group

» Some transgender people live successfully in their preferred gender role without surgery, but for others, genital surgery is the final (and most considered) step in the treatment process.

» Criteria for genital surgery include the following:[4]

- Gender incongruence is marked and sustained.
- Meets diagnostic criteria for gender incongruence prior to gender-affirming surgical intervention in regions where a diagnosis is necessary to access health care.

Ongoing

- Demonstrates capacity to consent for the specific gender-affirming surgical intervention.
- Understands the effect of gender-affirming surgical intervention on reproduction and they have explored reproductive options.
- Other possible causes of apparent gender incongruence have been identified and excluded.
- Mental health and physical conditions that could negatively impact the outcome of gender-affirming surgical intervention have been assessed, with risks and benefits have been discussed.
- Stable on their gender affirming hormonal treatment regime (which may include at least 6 months of hormone treatment or a longer period if required to achieve the desired surgical result, unless hormone therapy is either not desired or is medically contraindicated).*

» *This was graded as a suggested criterion.

» The aim of hormone therapy prior to oophorectomy and hysterectomy is principally to introduce reversible oestrogen suppression, before the patient undergoes irreversible surgical intervention.

» Furthermore, many clinics prefer that the patient has experienced 1-2 years in the desired gender role. The patient must, over that period of time, have shown improved psychological, social, and, probably, occupational function.[32]

» Some transgender men desire hysterectomy and/or oophorectomy as part of masculinising surgery. Previously, consideration of hysterectomy and bilateral oophorectomy was recommended within 2 years to obviate the risk of gynaecological malignancy.[31] However, the World Professional Association for Transgender Health now recommends against routine oophorectomy or hysterectomy solely for the purpose of preventing ovarian or uterine cancer for transgender people undergoing testosterone treatment and who have an otherwise average risk of malignancy.[4]

» The route of hysterectomy is dependent on clinical findings, surgical, and patient preference.[44] Approaches include

Ongoing

laparoscopic, transvaginal, and transabdominal. An advantage of the laparoscopic approach is that it avoids leaving a large abdominal scar.

» Vaginal access may be difficult if patients are nulliparous and have often not experienced penetrative intercourse. A transabdominal approach should utilise any incision other than a Pfannenstiel incision because this incision is pathognomonic of gynaecological surgery and the resulting scar may look unusual in a male.

adjunct **phalloplasty**

Treatment recommended for SOME patients in selected patient group

» Some transgender people live successfully in their preferred gender role without surgery, but for others, genital surgery is the final (and most considered) step in the treatment process.

» Criteria for genital surgery include the following:[4]

- Gender incongruence is marked and sustained.
- Meets diagnostic criteria for gender incongruence prior to gender-affirming surgical intervention in regions where a diagnosis is necessary to access health care.
- Demonstrates capacity to consent for the specific gender-affirming surgical intervention.
- Understands the effect of gender-affirming surgical intervention on reproduction and they have explored reproductive options.
- Other possible causes of apparent gender incongruence have been identified and excluded.
- Mental health and physical conditions that could negatively impact the outcome of gender-affirming surgical intervention have been assessed, with risks and benefits have been discussed.
- Stable on their gender affirming hormonal treatment regime (which may include at least 6 months of hormone treatment or a longer period if required to achieve the desired surgical result, unless

Ongoing

hormone therapy is either not desired or is medically contraindicated).*

» *This was graded as a suggested criterion.

» Furthermore, many clinics prefer that the patient has experienced 1-2 years in the desired gender role. The patient must, over that period of time, have shown improved psychological, social, and, probably, occupational function.[32]

» This is a complex, often multi-stage procedure.

» Donor sites for phalloplasty can include the forearm, abdominal skin, or tissue from elsewhere on the patient's body. The complexity, duration, and expense of the procedure are such that only a large minority of patients chose to undergo this surgery.

» Clinical experience suggests that the cosmetic and functional results are fairly good, but the result in, even the best centres, is clearly distinguishable from a native penis.

adjunct **other aesthetic procedures**

Treatment recommended for SOME patients in selected patient group

» Options are varied, and include liposuction, lipofilling, and pectoral implants.[44]

Secondary prevention

Patients taking hormonal therapies should avoid prothrombogenic states such as obesity, smoking, or inactivity.

Hormone therapy may increase cardiovascular risk, particularly for trangender women taking feminising hormone therapy. For those with non-modifiable risk factors which may increase the risk of thromboembolic disease, for example, a known history of thrombophilia, a past history of thrombosis, or a strong family history of thromboembolism, offering an anticoagulant in addition to treatment with transdermal oestrogen may decrease the risk of thromboembolism, although data to guide treatment decisions are extremely limited.[4]

Note that traditional cardiovascular risk calculators do not take into account the use of current or past hormones. Factors to consider when estimating cardiovascular risk include the dose, length and age of onset of hormone therapy.[4] As a general guide, when estimating cardiovascular risk, it may be appropriate to use birth-assigned sex for those who have transitioned in later life, and to use a patient's affirmed gender for those who have been taking hormone therapy since adolescence/young adulthood.[61]

Patient discussions

Terminology

The terminology used to describe transgender people is complex, changing, and has the potential to cause distress if used inappropriately. Healthcare professionals are advised to address transgender people as they would prefer to be addressed, whether or not they have officially changed their name. A simple way to do this is to ask the person what pronouns they use. It may also be helpful to share your own pronouns too, if you wish. Some transgender people prefer gendered pronouns such as 'she', 'her', and 'hers' or 'he', 'him', and 'his'. Others prefer gender-neutral pronouns such as 'they', 'them', and 'theirs'. A change in pronouns may be an important aspect of transition.[60] Clinicians may be concerned about the possibility of using the wrong pronoun when talking to a transgender person (often described as 'misgendering'). If this happens, often the best way to approach this is simply to apologise and carry on with the conversation, and aim to use the correct pronouns in future.

Fertility, pregnancy, and contraception

Pre-treatment discussion of the consequence of medical and surgical treatment on fertility is essential, including a discussion of fertility preservation options, including sperm banking, oocyte preservation, embryo preservation, and (less commonly) ovarian or testicular tissue cryopreservation.[31] [44] All patients should be counseled on barrier methods of contraception for prevention of sexually transmitted infections. Gender-affirming hormone therapy is not effective contraception; transgender people with retained gonads should be counselled about the possibility of pregnancy if they are having sexual activity that involves sperm and oocytes. Testosterone treatment is contraindicated during pregnancy, but transgender men may safely achieve pregnancy after cessation of testosterone.[44]

Thromboembolic disease

Transgender people receiving hormone therapy should be educated on the symptoms and signs of thromboembolic disease and advised to present promptly for investigation, should these symptoms occur.

Timing of hormone-induced changes

People receiving hormone treatment require information on the likely extent and timing of hormone-induced changes. Although the data on this is limited, and a large degree of natural variation can be expected, the following information from the Endocrine Society is helpful as a general guide.[31]

Expected timing of masculinising effects of testosterone[31]

- Onset in the first 1-6 months:
    - Increased skin oiliness/acne (maximum effect 1-2 years)
    - Fat redistribution (maximum effect 2-5 years)
    - Cessation of menses
    - Clitoral enlargement (maximum effect 1-2 years)
    - Vaginal atrophy (maximum effect 1-2 years).
- Onset in the first 6-12 months:
    - Facial/body hair growth (maximum effect 4-5 years)
    - Scalp hair loss
    - Increased muscle mass/strength (maximum effect 2-5 years)
    - Deepening of voice (maximum effect 1-2 years).

Expected timing of feminising effects of oestrogen and anti-androgen therapy[31]

- Onset in the first 1-3 months:
    - Decreased sexual desire (maximum effect 3-6 months)
    - Decreased spontaneous erections (maximum effect 3-6 months).
- Onset in the first 3-6 months:

- Redistribution of body fat (maximum effect 2-3 years)
- Decreased muscle mass and strength (maximum effect 1-2 years)
- Softening of skin and decreased oiliness (maximum effect unknown)
- Breast growth (maximum effect 2-3 years)
- Decreased testicular volume (maximum effect 2-3 years).

- Onset in the first 6-12 months:
  - Decreased terminal hair growth (maximum effect greater than 3 years).
- Variable timing of onset:
  - Male sexual dysfunction
  - Decreased sperm production (maximum effect greater than 3 years)
  - Scalp hair.

FOLLOW UP

Monitoring

Monitoring

Clinical review

- For patients receiving hormone treatment, medical evaluation by the hormone-prescribing physician every 2-3 months in the first year, and every 6-12 months thereafter, is recommended.[4][31] [44] This is to monitor for appropriate signs of masculinisation/feminisation, and for the development of any adverse reactions (e.g., venous thromboembolism, cardiovascular impairment). It typically takes at least 2 years for patients to achieve maximal masculinising/feminising results from hormones.[31]
- Patients who undergo gonadectomy require hormone replacement treatment, surveillance, or both, to prevent adverse effects associated with chronic hormone deficiency.[31]

Blood tests

- For patients receiving hormone treatment, laboratory (blood test) monitoring is recommended every 2-3 months in the first year, and every 6-12 months thereafter.[4][31] [44] A clinical priority is maintaining testosterone/oestrogen levels within the physiological range for birth-assigned female/birth-assigned male patients respectively, given that supraphysiological doses may lead to an increased risk of adverse effects.[31] Long-term monitoring of lipids, prolactin, liver functional tests (plus haematocrit in transgender men only) from baseline is advisable, although derangements are rare. The Endocrine Society guidelines contain detailed standard monitoring plans for patients on both testosterone and oestrogen cross-hormone therapy, including recommended serum hormone levels.[31]
- Note that there are particular considerations with regard to testosterone monitoring according to whether a topical or injected preparation is used. With topical testosterone preparations levels should be measured at least 6 hours after the preparation was applied, making sure the blood is drawn from a different site to the one the preparation was earlier applied. Injected preparations need a peak and trough level. The trough is the level that pertains to the day the injection is due and should be at the bottom end of the normal male range. The peak level is that which applies a week after the injection is given, and should be at the top end of the normal male range. This ensures that at no point in the dosing cycle is the level supraphysiologically high or low. Longer acting preparations need a single, trough, measurement that should be at the bottom end of the normal range.

Mammography in transgender women

- It is not clear whether there is any need for mammographic breast cancer screening in transgender women. Data are sparse, but only five breast cancers have ever been reported in this patient group, and these were in patients on unsupervised treatment regimes that included progesterone (which raises the risk of cancer in birth-assigned females on hormone replacement therapy). Avoiding the use of progesterone in treatment seems greatly to decrease the risk of breast cancer.[57] Based on a potential increased risk of breast cancer with feminising hormones, the Endocrine Society guidelines suggest that transgender taking feminising hormones follow breast screening guidelines recommended for birth-assigned women.[31] It may be necessary to take into consideration the length of time of hormone use, dosing, current age, and the age at which hormones were initiated.[4]

Mammography in transgender men

- If mastectomy has not been performed, standard breast screening guidance applies.[4]

Prostate screening in transgender women

- Transgender women treated with oestrogens should follow screening guidelines for prostatic disease and prostate cancer recommended for birth-assigned men.[31] Manual prostate checks may be performed via the vaginal canal in transgender women who have received genital surgery,

as the prostate is located on the anterior wall of the vagina.[4] Although there are case reports of prostate cancer in transgender women, most were in people who started hormone therapy after the age of 50 years, and it is considered likely that these people had pre-existing lesions before initiating hormone treatment.[59] It is important to note that following the initiation of gender-affirming hormone treatment, prostate-specific antigen (PSA) may be a less-useful measuring tool for prostate cancer, given that PSA levels ordinarily plummet in transgender women taking gender-affirming hormone therapy, meaning that extra care is needed in interpreting results.[38] Guidance on screening and recommended PSA ranges in transgender women is currently lacking; establishment of a baseline PSA level prior to hormone therapy is often recommended.

Gynaecological monitoring

- Anyone with an intact uterus, cervix, or ovaries should be offered the usual screens for malignancies of these organs.[4] Gender-affirming hormones have not been shown to affect cancer risk, but the quality of evidence is low and longer-term studies are needed.[55]
- Previously, total hysterectomy and oophorectomy were recommended for transgender men taking testosterone therapy, but the World Professional Association for Transgender Health now recommends against against routine oophorectomy or hysterectomy solely for the purpose of preventing ovarian or uterine cancer for transgender men undergoing testosterone treatment and who have an otherwise average risk of malignancy.[4] [31]
- Patients re-registered as male may be automatically dropped out of cervical cancer screening programmes and should be advised to proactively seek such screening.

Bone mineral density measurement

- This is recommended for patients with risk factors for osteoporosis, and in particular for those who stop hormone treatment following gonadectomy.[31]

Aortic aneurysm screening

- Transgender women should be offered abdominal aortic aneurysm screening in keeping with routine screening programmes for birth-assigned men.

Complications

Complications	Timeframe	Likelihood
oestrogen- or androgen-related obesity	**long term**	**high**
Both oestrogens and androgens increase appetite, so unless actual consumption is kept constant, weight gain will result.		
oestrogen-related thromboembolic disease	**long term**	**low**
Oestrogen treatment raises the risk of thromboembolic disease, particularly in smokers.[31] Non-smoking status should be strongly recommended prior to treatment. For those with non-modifiable risk factors which may increase the risk of thromboembolic disease, e.g. a known history of thrombophilia, a past history of thrombosis, or a strong family history of thromboembolism, offering an anticoagulant in addition to treatment with transdermal oestrogen may decrease the risk of thromboembolism, although data to guide treatment decisions are extremely limited.[4]		
androgen-related polycythaemia	**long term**	**low**
Particularly before hysterectomy and oophorectomy, when higher doses of androgens may sometimes be employed to achieve menopause. The American College of Obstetricians and Gynaecologists list polycythaemia (haematocrit greater than 55%) as an absolute contraindication to testosterone treatment.[44] Androgen treatment raises haematocrit, particularly in smokers. Hysterectomy and oophorectomy may allow dose reduction, or phlebotomy may be needed.[57]		
oestrogen- or androgen-related hyperprolactinaemia	**long term**	**low**
Particularly at outset of treatment. Oestrogens and androgens can cause prolactin to rise. Only levels of over 1000 IU require endocrine advice.[57]		
oestrogen- or androgen-related dyslipidaemia	**long term**	**low**
Dyslipidaemia is not common, but is worthwhile monitoring. If apparent it is treated in the usual manner with diet and statins.		
bone loss	**long term**	**low**
Bone mass is generally preserved with use of either sex steroid. The risk of osteoporosis is increased for patients who stop sex hormone treatment following gonadectomy.[31] Screening for osteoporosis is recommended for patients with risk factors, and in particular for those who stop hormone treatment following gonadectomy.[31]		
mental health disorders	**variable**	**medium**
Trangender people are at increased risk for mental health problems, including suicidal ideation, prior to gender-affirming treatment and legal gender change. This risk may persist after gender reassignment if the individual struggles to adjust.[2] Furthermore, a number of external social factors including stigma,		

Complications	Timeframe	Likelihood
discrimination, and minority stress have been suggested as contributing factors.[15] Primary care screening and assessment for mental health conditions is likely to be valuable on an ongoing basis.		

Prognosis

In general, transgender people are at increased risk of stigmatisation and discrimination which can lead to depression, suicidality, relationship difficulties, and economic consequences such as unemployment.[15] Mental health problems may persist after gender reassignment in some individuals, particularly if they struggle to adjust to their new identity.[2]

Meta-analysis evidence demonstrates that, for the majority of transgender people, gender-affirming treatment (including hormonal therapy) results in significant improvements in quality of life and psychosocial functioning.[41] [42] [43] The percentage of people who regret their gender-affirming surgical intervention is low (estimated to be between 0.3% and 3.8%).[4] Regret may be temporary or permanent; in this scenario multidisciplinary input is recommended in order to explore this further, with possible outcomes being medical and/or surgical treatment to continue the transition, or revision surgery to return anatomy to the sex assigned at birth.[4]

A retrospective cohort study found that adult transgender people who received hormone treatment were at a 2-fold increased mortality risk compared to the general population. The increased risk was not attributable to hormone treatment, but rather emphasised the importance of holistic transgender healthcare, including appropriate treatment of cardiovascular disease.[58]

Diagnostic guidelines

United Kingdom

Good practice guidelines for the assessment and treatment of adults with gender dysphoria (https://www.rcpsych.ac.uk/improving-care/campaigning-for-better-mental-health-policy/college-reports/2011-2013-college-reports)

Published by: Royal College of Psychiatrists **Last published:** 2013

Europe

European Society for Sexual Medicine Position statement "assessment and hormonal management in adolescent and adult trans people, with attention for sexual function and satisfaction" (https://academic.oup.com/jsm/article-abstract/17/4/570/6973560?redirectedFrom=fulltext&login=false)

Published by: European Society for Sexual Medicine **Last published:** 2020

International

Standards of care version 8 (https://www.wpath.org/publications/soc)

Published by: World Professional Association for Transgender Health **Last published:** 2022

International Classification of Diseases 11th revision (ICD-11) (https://icd.who.int/en)

Published by: World Health Organization **Last published:** 2022

North America

Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, Text Revision (DSM-5-TR) (https://ebooks.appi.org/product/diagnostic-statistical-manual-mental-disorders-fifth-edition-text-revision-dsm5tr)

Published by: American Psychiatric Association **Last published:** 2022

Health care for transgender and gender diverse individuals (https://www.acog.org/clinical/clinical-guidance/committee-opinion)

Published by: The American College of Obstetricians and Gynecologists **Last published:** 2021 (Reaffirmed 2024)

Assessment and treatment of gender dysphoria and gender variant patients: a primer for psychiatrists (https://www.psychiatry.org/Psychiatrists/Search-Directories-Databases/Resource-Documents/2018/Assessment-and-Treatment-of-Gender-Dysphoria-and-G)

Published by: American Psychiatric Association **Last published:** 2018

Treatment guidelines

United Kingdom

Guidelines for the care of trans patients in primary care (https://www.rcgp.org.uk/representing-you/policy-areas/lgbt)

Published by: Royal College of General Practitioners Northern Ireland **Last published:** 2017

Good practice guidelines for the assessment and treatment of adults with gender dysphoria (https://www.rcpsych.ac.uk/improving-care/campaigning-for-better-mental-health-policy/college-reports/2011-2013-college-reports)

Published by: Royal College of Psychiatrists **Last published:** 2013

Europe

European Society for Sexual Medicine Position statement "assessment and hormonal management in adolescent and adult trans people, with attention for sexual function and satisfaction" (https://academic.oup.com/jsm/article-abstract/17/4/570/6973560?redirectedFrom=fulltext&login=false)

Published by: European Society for Sexual Medicine **Last published:** 2020

International

Standards of care version 8 (https://www.wpath.org/publications/soc)

Published by: World Professional Association for Transgender Health **Last published:** 2022

North America

Health care for transgender and gender diverse individuals (https://www.acog.org/clinical/clinical-guidance/committee-opinion)

Published by: The American College of Obstetricians and Gynecologists

Last published: 2021 (Reaffirmed 2024)

Assessment and treatment of gender dysphoria and gender variant patients: a primer for psychiatrists (https://www.psychiatry.org/Psychiatrists/Search-Directories-Databases/Resource-Documents/2018/Assessment-and-Treatment-of-Gender-Dysphoria-and-G)

Published by: American Psychiatric Association

Last published: 2018

Endocrine treatment of gender-dysphoric/gender-incongruent persons (https://www.endocrine.org/guidelines-and-clinical-practice/clinical-practice-guidelines)

Published by: Endocrine Society

Last published: 2017

Guidelines for psychological practice with transgender and gender nonconforming people (https://www.apa.org/practice/guidelines)

Published by: American Psychological Association

Last published: 2015

Online resources

1. WHO: International Classification of Diseases 11th Revision (https://icd.who.int/en) *(external link)*

2. WHO: FAQs Gender incongruence and transgender health in the ICD (https://www.who.int/standards/classifications/frequently-asked-questions/gender-incongruence-and-transgender-health-in-the-icd) *(external link)*

3. APA: gender dysphoria (https://www.psychiatry.org/File%20Library/Psychiatrists/Practice/DSM/APA_DSM-5-Gender-Dysphoria.pdf) *(external link)*

REFERENCES

Key articles

- World Health Organization. International statistical classification of diseases and health related problems (ICD). 11th revision. Jan 2022 [Internet publication]. Full text (https://icd.who.int/en)
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 5th edition (DSM-5). Washington, DC: American Psychiatric Publishing; 2022.
- Coleman E, Radix AE, Bouman WP, et al. Standards of care for the health of transgender and gender diverse people, version 8. Int J Transgend Health. 2022;23(suppl 1):S1-S259. Full text (https://www.tandfonline.com/doi/full/10.1080/26895269.2022.2100644) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/36238954?tool=bestpractice.bmj.com)
- Richards C, Barrett J. Trans and Non-binary Gender Healthcare for Psychiatrists, Psychologists, and Other Health Professionals. Cambridge, UK: Cambridge University Press; 2020.
- Hembree WC, Cohen-Kettenis PT, Gooren L, et al. Endocrine treatment of gender-dysphoric/gender-incongruent persons: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2017 Nov 1;102(11):3869-903. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/28945902?tool=bestpractice.bmj.com)
- The American College of Obstetricians and Gynecologists. Health care for transgender and gender diverse individuals: ACOG Committee Opinion, Number 823. Obstet Gynecol. 2021 Mar 1;137(3):e75-88. Full text (https://journals.lww.com/greenjournal/fulltext/2021/03000/health_care_for_transgender_and_gender_diverse.31.aspx) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/33595253?tool=bestpractice.bmj.com)

References

1. World Health Organization. International statistical classification of diseases and health related problems (ICD). 11th revision. Jan 2022 [Internet publication]. Full text (https://icd.who.int/en)
2. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 5th edition (DSM-5). Washington, DC: American Psychiatric Publishing; 2022.
3. Winter S, Diamond M, Green J, et al. Transgender people: health at the margins of society. Lancet. 2016 Jul 23;388(10042):390-400. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/27323925?tool=bestpractice.bmj.com)
4. Coleman E, Radix AE, Bouman WP, et al. Standards of care for the health of transgender and gender diverse people, version 8. Int J Transgend Health. 2022;23(suppl 1):S1-S259. Full text (https://www.tandfonline.com/doi/full/10.1080/26895269.2022.2100644) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/36238954?tool=bestpractice.bmj.com)
5. Practice Committee of the American Society for Reproductive Medicine. Inclusive language and environment to welcome lesbian, gay, bisexual, transgender, queer, questioning, intersex, and

asexual+ patients. Fertil Steril. 2024 Jun;121(6):954-60. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/38430081?tool=bestpractice.bmj.com)

6. Centers for Disease Control and Prevention. Transgender persons. Apr 2023 [internet publication]. Full text (https://www.cdc.gov/lgbthealth/transgender.htm)

7. Drummond KD, Bradley SJ, Peterson-Badali M, et al. A follow-up study of girls with gender identity disorder. Dev Psychol. 2008 Jan;44(1):34-45. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/18194003?tool=bestpractice.bmj.com)

8. Wallien MS, Cohen-Kettenis PT. Psychosexual outcome of gender-dysphoric children. J Am Acad Child Adolesc Psychiatry. 2008 Dec;47(12):1413-23. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/18981931?tool=bestpractice.bmj.com)

9. Singh D, Bradley SJ, Zucker KJ. A Follow-up study of boys with gender identity disorder. Front Psychiatry. 2021;12:632784. Full text (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8039393) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/33854450?tool=bestpractice.bmj.com)

10. Collin L, Reisner SL, Tangpricha V, et al. Prevalence of transgender depends on the "case" definition: a systematic review. J Sex Med. 2016 Apr;13(4):613-26. Full text (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4823815)

11. UK Parliament. 2021 census: what do we know about the LGBT+ population? 16 Jan 2023 [internet publication]. Full text (https://commonslibrary.parliament.uk/2021-census-what-do-we-know-about-the-lgbt-population/#:~:text=Around%20262%2C000%20people%20(0.5%25),identity%20as%20'trans%20woman)

12. Van Der Miesen AI, Hurley H, De Vries AL. Gender dysphoria and autism spectrum disorder: a narrative review. Int Rev Psychiatry. 2016;28(1):70-80. Full text (http://www.tandfonline.com/doi/full/10.3109/09540261.2015.1111199) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/26753812?tool=bestpractice.bmj.com)

13. Glidden D, Bouman WP, Jones BA, et al. Gender dysphoria and autism spectrum disorder: a systematic review of the literature. Sex Med Rev. 2016 Jan;4(1):3-14. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/27872002?tool=bestpractice.bmj.com)

14. Terada S, Matsumoto Y, Sato T, et al. Factors predicting psychiatric co-morbidity in gender-dysphoric adults. Psychiatry Res. 2012 Dec 30;200(2-3):469-74. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/22884214?tool=bestpractice.bmj.com)

15. Bockting WO, Miner MH, Swinburne Romine RE, et al. Stigma, mental health, and resilience in an online sample of the US transgender population. Am J Public Health. 2013 May;103(5):943-51. Full text (https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2013.301241) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/23488522?tool=bestpractice.bmj.com)

16. Swaab DF, Chung WC, Kruijver FP, et al. Sex differences in the human hypothalamus in the different stages of human life. Neurobiol Aging. 2003 May-Jun;24(suppl 1):S1-16. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/12829102?tool=bestpractice.bmj.com)

REFERENCES

17. American Psychiatric Association. Assessment and treatment of gender dysphoria and gender variant patients. 2018 [internet publication]. Full text (https://www.psychiatry.org/Psychiatrists/Search-Directories-Databases/Resource-Documents/2018/Assessment-and-Treatment-of-Gender-Dysphoria-and-G)

18. Diamond M, Watson LA. Androgen insensitivity syndrome and Kleinfelter's syndrome: sex and gender considerations. Child Adolesc Psychiatr Clin N Am. 2004 Jul;13(3):623-40. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/15183377?tool=bestpractice.bmj.com)

19. Peterson RE, Imparato-McGinley J, Gautier T, et al. Male pseudohermaphroditism due to steroid 5 alpha reductase deficiency. Am J Med. 1977 Feb;62(2):170-91. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/835597?tool=bestpractice.bmj.com)

20. Meyer-Bahlburg HF. Hormones and psychosexual differentiation: implications for the management of intersexuality, homosexuality and transsexuality. Clin Endocrinol Metab. 1982 Nov;11(3):681-701. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/7139993?tool=bestpractice.bmj.com)

21. Dittmann RW, Kappes MH, Kappes ME, et al. Congenital adrenal hyperplasia II: gender-related behavior and attitudes in female salt-wasting and simple virilizing patients. Psychoneuroendocrinology. 1990;15(5-6):421-34. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/2101964?tool=bestpractice.bmj.com)

22. Dittmann RW, Kappes MH, Kappes ME, et al. Gender related behavior and attitudes in female patients and sisters. Psychoneuroendocrinology. 1990;15(5-6):401-20. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/2101963?tool=bestpractice.bmj.com)

23. Cohen-Kettenis PT, van Goozen SH, Doorn C, et al. Cognitive ability and cerebral lateralization in transsexuals. Psychoneuroendocrinology. 1998 Aug;23(6):631-41. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/9802133?tool=bestpractice.bmj.com)

24. Heylens G, De Cuypere G, Zucker KJ, et al. Gender identity disorder in twins: a review of the case report literature. J Sex Med. 2012 Mar;9(3):751-7. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/22146048?tool=bestpractice.bmj.com)

25. Bentz EK, Hefler LA, Kaufmann U, et al. A polymorphism of the CYP17 gene related to sex steroid metabolism is associated with female-to-male but not male-to-female transsexualism. Fertil Steril. 2008 Jul;90(1):56-9. Full text (https://www.fertstert.org/article/S0015-0282(07)01228-9/fulltext) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/17765230?tool=bestpractice.bmj.com)

26. Pasterski V, Gilligan L, Curtis R. Traits of autism spectrum disorders in adults with gender dysphoria. Arch Sex Behav. 2014 Feb;43(2):387-93. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/23864402?tool=bestpractice.bmj.com)

27. Richards C, Barrett J. Trans and Non-binary Gender Healthcare for Psychiatrists, Psychologists, and Other Health Professionals. Cambridge, UK: Cambridge University Press; 2020.

28. Le Vay S. The sexual brain. Boston, MA: MIT Press;1993.

29. Rametti G, Carrillo B, Gómez-Gil E et al. The microstructure of white matter in male to female transsexuals before cross-sex hormonal treatment. A DTI study. J Psychiatr Res. 2011 Jul;45(7):949-54. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/21195418?tool=bestpractice.bmj.com)

30. Luders E, Sánchez FJ, Gaser C, et al. Regional gray matter variation in male-to-female transsexualism. Neuroimage. 2009 Jul 15;46(4):904-7. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/19341803?tool=bestpractice.bmj.com)

31. Hembree WC, Cohen-Kettenis PT, Gooren L, et al. Endocrine treatment of gender-dysphoric/gender-incongruent persons: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2017 Nov 1;102(11):3869-903. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/28945902?tool=bestpractice.bmj.com)

32. Royal College of Psychiatrists. Good practice guidelines for the assessment and treatment of adults with gender dysphoria. Oct 2013 [internet publication]. Full text (https://www.rcpsych.ac.uk/docs/default-source/improving-care/better-mh-policy/college-reports/cr181-good-practice-guidelines-for-the-assessment-and-treatment-of-adults-with-gender-dysphoria.pdf)

33. Nuttbrock L, Hwahng S, Bockting W, et al. Lifetime risk factors for HIV/sexually transmitted infections among male-to-female transgender persons. J Acquir Immune Defic Syndr. 2009 Nov 1;52(3):417-21. Full text (https://journals.lww.com/jaids/fulltext/2009/11010/lifetime_risk_factors_for_hiv_sexually_transmitted.17.aspx) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/19550351?tool=bestpractice.bmj.com)

34. Sevelius JM. Gender Affirmation: A framework for conceptualizing risk behavior among transgender women of color. Sex Roles. 2013 Jun 1;68(11-12):675-89. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/23729971?tool=bestpractice.bmj.com)

35. Rotondi NK, Bauer GR, Scanlon K, et al. Nonprescribed hormone use and self-performed surgeries: "do-it-yourself" transitions in transgender communities in Ontario, Canada. Am J Public Health. 2013 Oct;103(10):1830-6. Full text (https://ajph.aphapublications.org/doi/10.2105/AJPH.2013.301348?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub++0pubmed)

36. Becerra Fernández A, de Luis Román DA, Piédrola Maroto G. Morbidity in transsexual patients with cross-gender hormone self-treatment [in Spanish]. Med Clin (Barc). 1999 Oct 23;113(13):484-7. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/10604171?tool=bestpractice.bmj.com)

37. American Psychological Association. Guidelines for psychological practice with transgender and gender nonconforming people. Am Psychol. 2015 Dec;70(9):832-64. Full text (https://www.apa.org/practice/guidelines/transgender.pdf) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/26653312?tool=bestpractice.bmj.com)

38. Nik-Ahd F, Jarjour A, Figueiredo J, et al. Prostate-specific antigen screening in transgender patients. Eur Urol. 2023 Jan;83(1):48-54. Full text (https://www.sciencedirect.com/science/article/pii/S0302283822026379?via%3Dihub) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/36344317?tool=bestpractice.bmj.com)

39. Chen H, Wiepjes CM, van Schoor NM, et al. Changes of vitamin D-binding protein, and total, bioavailable, and free 25-hydroxyvitamin D in transgender people. J Clin Endocrinol Metab. 2019 Jul

1;104(7):2728-34. Full text (https://academic.oup.com/jcem/article/104/7/2728/5342944) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/30785996?tool=bestpractice.bmj.com)

40. Holick MF, Binkley NC, Bischoff-Ferrari HA, et al. Evaluation, treatment, and prevention of vitamin D deficiency: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2011 Jul;96(7):1911-30. Full text (https://academic.oup.com/jcem/article/96/7/1911/2833671) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/21646368?tool=bestpractice.bmj.com)

41. Murad MH, Elamin MB, Garcia MZ, et al. Hormonal therapy and sex reassignment: a systematic review and meta-analysis of quality of life and psychosocial outcomes. Clin Endocrinol (Oxf). 2010 Feb;72(2):214-31. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/19473181?tool=bestpractice.bmj.com)

42. Baker KE, Wilson LM, Sharma R, et al. Hormone therapy, mental health, and quality of life among transgender people: a systematic review. J Endocr Soc. 2021 Apr 1;5(4):bvab011. Full text (https://academic.oup.com/jes/article/5/4/bvab011/6126016) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/33644622?tool=bestpractice.bmj.com)

43. Fisher AD, Castellini G, Ristori J, et al. Cross-sex hormone treatment and psychobiological changes in transsexual persons: two-year follow-up data. J Clin Endocrinol Metab. 2016 Nov;101(11):4260-9. Full text (https://academic.oup.com/jcem/article/101/11/4260/2765000) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/27700538?tool=bestpractice.bmj.com)

44. The American College of Obstetricians and Gynecologists. Health care for transgender and gender diverse individuals: ACOG Committee Opinion, Number 823. Obstet Gynecol. 2021 Mar 1;137(3):e75-88. Full text (https://journals.lww.com/greenjournal/fulltext/2021/03000/health_care_for_transgender_and_gender_diverse.31.aspx) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/33595253?tool=bestpractice.bmj.com)

45. Safer JD, Coleman E, Feldman J, et al. Barriers to healthcare for transgender individuals. Curr Opin Endocrinol Diabetes Obes. 2016 Apr;23(2):168-71. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/26910276?tool=bestpractice.bmj.com)

46. Schuster MA, Reisner SL, Onorato SE. Beyond bathrooms--meeting the health needs of transgender people. N Engl J Med. 2016 Jul 14;375(2):101-3. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/27376582?tool=bestpractice.bmj.com)

47. British Medical Association. Managing patients with gender dysphoria. Wed 2023 [internet publication]. Full text (https://www.bma.org.uk/advice-and-support/gp-practices/gp-service-provision/managing-patients-with-gender-dysphoria)

48. Rosendale N, Goldman S, Ortiz GM, et al. Acute Clinical Care for Transgender Patients: A Review. JAMA Intern Med. 2018 Nov 1;178(11):1535-43. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/30178031?tool=bestpractice.bmj.com)

49. Weyers S, Elaut E, De Sutter P, et al. Long-term assessment of the physical, mental, and sexual health among transsexual women. J Sex Med. 2009 Mar;6(3):752-60. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/19040622?tool=bestpractice.bmj.com)

50. Haupt C, Henke M, Kutschmar A, et al. Antiandrogen or estradiol treatment or both during hormone therapy in transitioning transgender women. Cochrane Database Syst Rev. 2020 Nov 28;11:CD013138. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/33251587?tool=bestpractice.bmj.com)

51. Vinogradova Y, Coupland C, Hippisley-Cox J. Use of hormone replacement therapy and risk of venous thromboembolism: nested case-control studies using the QResearch and CPRD databases. BMJ. 2019 Jan 9;364:k4810. Full text (https://www.bmj.com/content/364/bmj.k4810) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/30626577?tool=bestpractice.bmj.com)

52. Dittrich R, Binder H, Cupisti S, et al. Endocrine treatment of male-to-female transsexuals using gonadotropin-releasing hormone agonist. Exp Clin Endocrinol Diabetes. 2005 Dec;113(10):586-92. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/16320157?tool=bestpractice.bmj.com)

53. Patel KT, Adeel S, Rodrigues Miragaya J, et al. Progestogen use in gender-affirming hormone therapy: a systematic review. Endocr Pract. 2022 Dec;28(12):1244-52. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/36007714?tool=bestpractice.bmj.com)

54. Traish AM, Gooren LJ. Safety of physiological testosterone therapy in women: lessons from female-to-male transsexuals (FMT) treated with pharmacological testosterone therapy. J Sex Med. 2010 Nov;7(11):3758-64. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/20722789?tool=bestpractice.bmj.com)

55. Joint R, Chen ZE, Cameron S. Breast and reproductive cancers in the transgender population: a systematic review. BJOG. 2018 Nov;125(12):1505-12. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/29706033?tool=bestpractice.bmj.com)

56. General Medical Council. Trans healthcare. Jan 2024 [internet publication]. Full text (https://www.gmc-uk.org/professional-standards/ethical-hub/trans-healthcare#self-medicating)

57. Barrett J. Transsexualism and other disorders of gender identity: a practical guide to management. Abingdon, UK: Radcliffe Medical Publishing; 2007.

58. de Blok CJ, Wiepjes CM, van Velzen DM, et al. Mortality trends over five decades in adult transgender people receiving hormone treatment: a report from the Amsterdam cohort of gender dysphoria. Lancet Diabetes Endocrinol. 2021 Oct;9(10):663-70. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/34481559?tool=bestpractice.bmj.com)

59. Trum HW, Hoebeke P, Gooren LJ. Sex reassignment of transsexual people from a gynecologist's and urologist's perspective. Acta Obstet Gynecol Scand. 2015 Jun;94(6):563-7. Full text (https://obgyn.onlinelibrary.wiley.com/doi/10.1111/aogs.12618) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/25721104?tool=bestpractice.bmj.com)

60. British Medical Association. Inclusive care of trans and non-binary patients. Mar 2022 [internet publication]. Full text (https://www.bma.org.uk/advice-and-support/equality-and-diversity-guidance/lgbtplus-equality-in-medicine/inclusive-care-of-trans-and-non-binary-patients)

61. UCSF Transgender Care. Guidelines for the primary and gender-affirming care of transgender and gender nonbinary people. Jun 2016 [internet publication]. Full text (https://transcare.ucsf.edu/guidelines)

Disclaimer

BMJ Best Practice is intended for licensed medical professionals. BMJ Publishing Group Ltd (BMJ) does not advocate or endorse the use of any drug or therapy contained within this publication nor does it diagnose patients. As a medical professional you retain full responsibility for the care and treatment of your patients and you should use your own clinical judgement and expertise when using this product.

This content is not intended to cover all possible diagnosis methods, treatments, follow up, drugs and any contraindications or side effects. In addition, since such standards and practices in medicine change as new data become available, you should consult a variety of sources. We strongly recommend that you independently verify specified diagnosis, treatments and follow-up and ensure it is appropriate for your patient within your region. In addition, with respect to prescription medication, you are advised to check the product information sheet accompanying each drug to verify conditions of use and identify any changes in dosage schedule or contraindications, particularly if the drug to be administered is new, infrequently used, or has a narrow therapeutic range. You must always check that drugs referenced are licensed for the specified use and at the specified doses in your region.

Information included in BMJ Best Practice is provided on an “as is” basis without any representations, conditions or warranties that it is accurate and up to date. BMJ and its licensors and licensees assume no responsibility for any aspect of treatment administered to any patients with the aid of this information. To the fullest extent permitted by law, BMJ and its licensors and licensees shall not incur any liability, including without limitation, liability for damages, arising from the content. All conditions, warranties and other terms which might otherwise be implied by the law including, without limitation, the warranties of satisfactory quality, fitness for a particular purpose, use of reasonable care and skill and non-infringement of proprietary rights are excluded.

Where BMJ Best Practice has been translated into a language other than English, BMJ does not warrant the accuracy and reliability of the translations or the content provided by third parties (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages). BMJ is not responsible for any errors and omissions arising from translation and adaptation or otherwise.Where BMJ Best Practice lists drug names, it does so by recommended International Nonproprietary Names (rINNs) only. It is possible that certain drug formularies might refer to the same drugs using different names.

Please note that recommended formulations and doses may differ between drug databases drug names and brands, drug formularies, or locations. A local drug formulary should always be consulted for full prescribing information.

Treatment recommendations in BMJ Best Practice are specific to patient groups. Care is advised when selecting the integrated drug formulary as some treatment recommendations are for adults only, and external links to a paediatric formulary do not necessarily advocate use in children (and vice-versa). Always check that you have selected the correct drug formulary for your patient.

Where your version of BMJ Best Practice does not integrate with a local drug formulary, you should consult a local pharmaceutical database for comprehensive drug information including contraindications, drug interactions, and alternative dosing before prescribing.

Interpretation of numbers

Regardless of the language in which the content is displayed, numerals are displayed according to the original English-language numerical separator standard. For example 4 digit numbers shall not include a comma nor a decimal point; numbers of 5 or more digits shall include commas; and numbers stated to be less than 1 shall be depicted using decimal points. See Figure 1 below for an explanatory table.

BMJ accepts no responsibility for misinterpretation of numbers which comply with this stated numerical separator standard.

This approach is in line with the guidance of the International Bureau of Weights and Measures Service.

Figure 1 – BMJ Best Practice Numeral Style

5-digit numerals: 10,000

4-digit numerals: 1000

numerals < 1: 0.25

Our full website and application terms and conditions can be found here: Website Terms and Conditions.

Contact us

+ 44 (0) 207 111 1105
support@bmj.com

BMJ
BMA House
Tavistock Square
London
WC1H 9JR
UK

Contributors:

// Authors:

James Barrett, FRCPsych, BSc, MSc

Consultant Psychiatrist and Lead Clinician
Charing Cross Gender Identity Clinic, London, UK
DISCLOSURES: JB declares that he has no competing interests. JB is an author of a number of references cited in this topic.

// Peer Reviewers:

Leighton John Seal, MBBS, BSC, PhD, FRCP

Consultant and Honorary Reader in Diabetes and Endocrinology
St. George's University Hospital, NHS foundation trust, London, UK
DISCLOSURES: LS has received an honorarium for giving a lecture in a non-promotional meeting on the subject of gender dysphoria by Besins healthcare.

Jack Drescher, MD

Clinical Professor of Psychiatry
Columbia University, NY
DISCLOSURES: JD declares that he has no competing interests.

Rebecca Luff, BSc(Hons)

Individual with lived experience of gender dysphoria.
DISCLOSURES: RL declares that she has no competing interests.