



**North of Tyne and Gateshead
Area Prescribing Committee**

**GUIDELINES FOR THE USE OF MASCULINISING
HORMONE THERAPY IN GENDER DYSPHORIA**

**Information for Primary Care November 2014
(Review Date Extended to June 2017)**

This guidance has been prepared and approved for use in Newcastle, North Tyneside, Northumberland and Gateshead in consultation with the Primary and Secondary Care NHS trusts.

1. Introduction and Background

Gender dysphoria refers to discomfort or distress that is caused by a discrepancy between a person's gender identity and that person's sex assigned at birth (and the associated gender role and/or primary and secondary sex characteristic). Transsexualism is the desire to live and be accepted as a member of the opposite sex, usually accompanied by the wish to make the individual's body as congruent as possible with the preferred sex through surgery and hormone treatment (ICD-10 code F64.0).

Feminising or masculinising hormone therapy – the administration of exogenous endocrine agents to induce feminising or masculinising changes – is a medically necessary intervention for many transsexual, transgender, and gender-nonconforming individuals with gender dysphoria.

The aim of hormone treatment for transgender people is to modify secondary sexual characteristics, so that the individual's body is more in keeping with their gender identity, thus reducing the dysphoria and distress that they experience. In order to achieve this, hormones of the opposite biological sex are administered, sometimes in conjunction with medication to suppress endogenous sex hormone production. GnRH analogues are generally used in order to achieve this.

Hormone therapy can provide significant comfort to people who experience gender dysphoria who do not wish to transition to a different gender role or undergo surgery, or who are unable to do so. Hormone therapy may be

recommended for patients who do not want surgery following assessment following assessment and in accordance with UK standards (Good practice guidelines for the assessment and treatment of adults with gender dysphoria, Royal College of Psychiatrists, 2013). In some patients, hormone therapy alone may provide sufficient symptomatic relief to obviate the need for transition to a different gender role or surgery.

Not all these medicines used in this context are licensed for the treatment of gender dysphoria, nor are they likely to be. However, they are widely used medicines for other indications, which GPs will be familiar with. Hormone prescribing in this field under the guidance of a specialist service, has been shown to be safe and can be undertaken mainly in primary care. Accepting the desire for the guidelines to be evidence based, there is a great paucity of such evidence. Hormone support is based on traditional patterns of treatment. Hormone support in the Northern Region Gender Dysphoria Service is provided by a Multidisciplinary Team that includes advice from a specialist clinical endocrinologist.

Wherever possible, physiological end organ response is the aim of endocrine treatments. This is based on management of circulating hormone levels to allow accurate and individual dose titration together with suppression of the hormone effects associated with the undesired gender. Treatment is flexible and patient-led as far as is consistent with clinical safety and with the agreement of the prescriber and taking account of the individual's views of their needs.

Close liaison between the specialist clinician and GP is essential, as are physical assessment and ongoing haematological, endocrinological and biochemical monitoring. All patients receiving hormone therapies are regularly reviewed to ensure that clinical well-being is maintained. The service aims to see patients every 4 months in the first year of treatment and at least 6 monthly thereafter.

Choice of hormone preparation, method of delivery and dosage is in line with current understanding of minimum health risks and maximum efficacy. The endocrine treatment protocols outlined below aim to deliver optimum results in the safest way, and should be suitable for the majority of people. Where an individual has a medical condition that may impact on hormone treatment or vice versa, the specialist clinician may request that the GP refers the patient to the regional specialist endocrinology service (contact details available at the end of this document).

2. Transfer of Prescribing Responsibilities from Secondary to Primary Care

In March 2014 NHS England Specialist Services Circular SSC1417 was issued which described Primary Care responsibilities in relation to prescribing and monitoring of hormone therapy for patients undergoing or having undergone Gender Dysphoria treatments. Those responsibilities include prescribing hormone therapy, patient safety monitoring, provision of physical health

examinations and blood tests under the guidance of a specialist Gender Dysphoria service.

The specialist Gender Dysphoria service will assist primary care by providing specific, relevant information and support for prescribing and monitoring, including the interpretation of blood test results. Once a patient has completed the care pathway and has been discharged by the Specialist service, GPs should offer them the usual range of primary healthcare services that are available to other patients.

This guideline sets out details of the respective responsibilities of GPs and specialist services and is intended to provide sufficient information to enable GPs to prescribe testosterone preparations and GnRH analogues for trans men that have been initiated by a Gender Dysphoria specialist.

3. Referral Criteria

The Northern Region Gender Dysphoria Service is based at Walkergate Park Hospital, Newcastle. It is a service for people who experience persistent confusion and/or discomfort with their gender. This includes people who want to change physical aspects of their gender as well as those who do not.

The service is available to people over the age of 17 years living in England, although the majority of referrals are received from the North East of England and Cumbria. Some people who are distressed about their gender have other health problems such as physical disabilities or mental health difficulties. The service is open to all but people with more complex needs may require additional support from other services.

Referrals are accepted from GPs, mental health practitioners and other medical professionals. If a referral is received from a source other than the service user's GP, the support of the GP is sought prior to accepting the referral. Because of the implications of shared care, it is essential that the GP is in agreement from the outset. In addition, supplementary information about the physical and mental health of the individual is often requested from the GP, prior to accepting a referral.

4. Responsibilities

4.1 Specialist / Secondary Care Responsibilities

Comprehensive and detailed psychological assessment is undertaken by the service prior to formulating a treatment plan and making a recommendation to initiate hormone therapy. The specialist clinicians undertake a general medical and mental health interview, with specific attention to psychosexual history and current functioning. Assessment includes consideration of the service user's

expectations and goals, early life experiences, gender identity development, body image, mental and physical health history, medications, allergies, sexuality and family history, including relevant conditions such as cardiovascular disease. This allows not only for a diagnosis of gender dysphoria to be made but also allows the specialist clinician to discuss the specific and relative risks of hormone treatment for that particular individual.

We ensure service users meet the following eligibility and readiness criteria, as adapted from the World Professional Association for Transgender Health (WPATH) Standards of Care (Version 7) before taking the decision to refer to the appropriate clinician for prescription of hormones.

The criteria for hormone therapy are as follows:

1. Persistent, well-documented gender dysphoria;
2. Capacity to make a fully informed decision and to consent for treatment;
3. Aged at least 17 year.
4. If significant medical or mental health concerns are present, they must be reasonably well controlled.

The presence of co-existing mental health concerns does not necessarily preclude access to masculinising hormones; rather, these concerns need to be managed prior to or concurrent with treatment of gender dysphoria. This may require referral to local community mental health or psychological services. The GP may be asked to undertake this. The Northern Region Gender Dysphoria Service does not provide advice and guidance on the management of general mental health disorders. There is no requirement for the patient to have commenced a social role transition before a recommendation is made for hormone therapy, however, this is strongly encouraged. Masculinising hormones can have rapid, dramatic effects. The consequences of this can be dire if the service user has not addressed the psychosocial aspects of transition.

Service users are encouraged to stop smoking, take regular exercise, have a sensible diet and consume no more than 14 units of alcohol per week prior to commencing hormone therapy. The increased risks associated with lifestyle factors and hormone therapy are highlighted.

The service ensures that service users understand the limitations of hormone therapy and what can be achieved in terms of changes in secondary sexual characteristics and the timescales involved (please see table 1 below). The limited data on the long term health risks of hormone treatment is highlighted (please see table 2 below). The available data and risks are discussed in detail with service users as is the importance of long term monitoring (please see additional information on risks below). The irreversibility and / or reversibility of different aspects of treatment are discussed. In particular, there are detailed discussions of the implications for the individual's fertility and sexual functioning. Libido is increased by testosterone therapy. Testosterone therapy reduces fertility, although the degree and reversibility are unknown. However, it can

induce permanent anatomic changes in the developing embryo or fetus and thus trans men should not get pregnant whilst taking hormone therapy. Barrier methods of contraception should be used. It cannot be guaranteed that fertility will return if testosterone is stopped. Advice will be given on the administration of medication, if appropriate, for example topical preparations. If there are any concerns about the individual's ability to consent to hormone treatment, the service will undertake a capacity assessment. If a best interests decision is required the specialist will contact the GP to discuss this.

Once a treatment plan has been formulated and informed consent taken, the specialist clinician will write to the GP to advise on the most appropriate agent and dose. Information about appropriate monitoring and follow up from the service will be provided. Because of the challenges of commencing Nebido, referral to regional specialist endocrinological services is recommended in order to commence this treatment. The GP may be asked to undertake this.

Once hormone therapy is commenced, the specialist clinician will review the patient, along with the results of any investigations requested from the GP. For the first year, the service will aim to review the patient every 4-6 months, then 6 monthly for the first 3 years of treatment and yearly thereafter. The specialist clinician will assess the degree of masculinisation and screen for negative effects. If dose changes or additional treatment is required, the specialist clinician will inform the GP. However, if the specialist endocrinologist is initiating treatment with Nebido, dose changes and advice on monitoring is led by the endocrinology clinic. In other circumstances, if there are any concerns, the specialist clinician may recommend referral to the regional specialist endocrinologist and, in rare circumstances, cessation of treatment.

If the GP has concerns regards hormone treatment or requires additional advice or information, they can contact the service. The specialist clinician or an appropriate colleague will respond to any queries.

When service users are discharged from the service, specialist clinicians have detailed discussions regards long term hormone therapy. A detailed letter is sent to the GP and a copy provided to the service user, unless otherwise requested. Guidance includes information on breast awareness, advice as appropriate in relation cervical disease (if relevant) as advised by current national guidelines and a detailed discussion of the risk of developing gynaecological malignancy in the absence of hysterectomy. Advice is also given on relevant investigations. Information about the long term goals and monitoring of hormone treatment is provided. Target ranges for hormone levels are given. Advice is given regards the action to take in response to common disorders and serious complications, including cessation of treatment in the rare circumstances where this would be indicated. Information is given on the situations in which specialist advice should be sought as well as where to seek such advice. This includes contact details for the local specialist endocrinologist. It is also made clear that direct referral back

to the Northern Region Gender Dysphoria or a request for telephone advice can be made at any time in the future.

4.2 General Practitioner's Responsibilities

Initial assessment, for a patient with no previous diagnosis of gender dysphoria, by a GP or any member of the primary care team should use the holistic model. The GP takes a full history, including a mental state assessment. Any distress experienced by the patient is acknowledged during the assessment. The GP has the additional advantage of possessing a record of the patient's longitudinal medical history, which can be reviewed to aid diagnosis. Once a provisional diagnosis is reached, the GP discusses with the patient any preference they may have for a particular way forward. The GP can refer directly to the Northern Region Gender Dysphoria Service. Additional funding is not required. Assessment by community mental health services prior to referral is not obligatory, although this may be advisable if there are concerns regard coexistent mental health disorder(s).

A routine general and sexual health screen is offered by the GP before commencing hormones. The GP arranges blood tests or other investigations as recommended by the specialist clinician. A full physical examination is offered by the GP in collaboration with the specialist team. The prescribing physicians should satisfy themselves that a recent clinical examination has been recorded in the medical notes. Genital examination may cause distress to the individual and may be declined by the patient. Such refusals should be respected in all cases.

The GP provides prescription of the medication recommended by the specialist clinician. Investigations recommended by the specialist clinician are arranged in primary care. The GP can forward results to the service or give them to the service user to bring to their next appointment. If the GP has concerns about the results of investigations they can contact the service for advice.

5. Hormone Treatment for Trans Men

Endocrine normal ranges differ between laboratories as methods of assay are not always the same. Clinicians use local laboratory ranges when interpreting results as reported. Levels quoted here are indicative only. Monitoring should normally take place in a primary care.

5.1 Baseline Tests

The specialist clinician will request that the GP carries out the following baseline tests:

Blood pressure, full blood count, urea and electrolytes, liver function tests, fasting blood glucose or HbA1C, lipid profile, thyroid function, and serum testosterone,

estradiol, prolactin, LH and FSH. A pregnancy test is recommended; some trans men have vaginal sexual intercourse but may be reticent to disclose this.

5.2 Monitoring

The specialist clinician will review the patient and the effects of hormones, both positive and negative. They will request monitoring investigations initially 4 monthly, then on a 6 monthly basis for 3 years and then yearly depending on clinical assessment and results. The specialist clinician will request blood pressure, full blood count, urea and electrolytes, liver function test, fasting glucose or HbA1C, lipid profile and serum testosterone, estradiol, prolactin, LH and FSH. A combination of these may be requested depending on the needs and stage of treatment of the service user. Generally it is advised that tests are taken just prior to administration of injectable preparations or 4-6 h after application of a gel or cream.

5.3 Medication

The choice of product depends on patient choice and relevant clinical factors. Most patients receive either injectable or topical preparations. The approach to treatment is slightly different but haematocrit, haemoglobin and serum testosterone guide dosage of treatment

5.4 Haematocrit / Haemoglobin

It is anticipated that trans men (like hypogonadal cis gender men) will remain on lifelong hormone replacement therapy with testosterone. The goal is to avoid hypogonadism while reducing the potential impact of any negative effects of testosterone, the most serious of which are related to and polycythaemia and erythrocytosis, and associated adverse thrombotic events.

The adult male red blood cell mass is around 30g/L greater than that of women and children, reflecting the erythropoiesis-stimulating action of testosterone. Thus, the most important parameters are haemoglobin and haematocrit. Although both anaemia and polycythaemia or erythrocytosis have multiple causes, in a patient on testosterone these findings could likely reflect under- and over- replacement, respectively.

Although it is important to monitor serum testosterone level, the finding of haemoglobin and/or haematocrit above male reference range should prompt an overall reduction in dose, almost irrespective of serum testosterone level and/ or patient symptoms. This is because polycythaemia and erythrocytosis are associated with significantly increased risk of both venous and arterial thrombosis.

If a patient becomes significantly polycythaemic (Hb>175g/L, or Hct >0.52 or

52%), or experiences a thrombotic event, we would recommend that testosterone treatment be temporarily suspended and an Endocrinology referral be made.

5.5 Injectable preparations

Three injectable preparations are widely used and the optimal dose interval is guided by **trough serum testosterone levels** (just before the next injection is administered) and haematocrit:

- Nebido® (testosterone undecanoate) 1gm in 4mls (250mg/ml) oily injection every 10-20 weeks
- Sustanon 250® (testosterone propionate 30mg, testosterone phenylpropionate 60mg, testosterone isocaproate 60mg & testosterone decanoate 100mg) 1ml every 2-6 weeks
- Testosterone Enantate 250mg in 1ml every 2-6 weeks –(not currently included in North of Tyne and Gateshead Formulary but may be used if other preparations are unavailable)

In general terms, the aim is to achieve trough serum testosterone levels towards the lower end of the male reference range (8-12nmol/L), subject to any concomitant issues of age, sexual function and bone health. However, if haematocrit or haemoglobin is raised, this should take precedence:

- If haemoglobin and haematocrit are normal, serum testosterone is in the 8-14 nmol/L range and patient is happy, then the existing injection frequency is maintained.
- If haemoglobin and haematocrit are elevated, or heading that way, extend the Nebido® injection interval by an extra week.
- If trough testosterone is subtherapeutic and/ or the patient is unhappy, reduce interval before next injection by 1 week, but only if haemoglobin & haematocrit are normal and stable.

For Sustanon® and Testosterone Enantate, a starting dose of 250mg every 2 or 3 weeks is appropriate. Blood levels are checked every 4-6 months initially and the injection interval adjusted, according to serum testosterone and haematocrit / haemoglobin.

The dosing of Nebido® is more complex and referral to specialist endocrinology service is recommended. A 12 week interval is a reasonable starting point and a booster dose after 6 weeks can also be used to achieve steady state more quickly. However, accumulated experience suggests that many men will ultimately require a significantly longer interval between injections in steady state, sometimes even beyond 20 weeks.

From a practical perspective, this means checking FBC and testosterone for every injection if a steady state has not been achieved and every 2nd or 3rd in steady states.

Steady state is the goal, that is to say unchanged injection interval with similar trough haemoglobin and haematocrit over 3 successive Nebido® injections. Patients started on Nebido® can take 3 years to reach steady-state serum testosterone levels, during which time the injection interval typically needs to be progressively extended with each subsequent injection. Failure to do so become apparent through a progressive rise in serial trough serum testosterone levels and greatly increases the risk of developing polycythaemia/ erythrocytosis.

5.6 Topical preparations

Three topical preparations are widely used and the dose interval is guided by **serum testosterone levels taken 4-6 hours after application** and haematocrit:

- Testogel® (50mg in g (1%) sachets) 50-100mg daily
- Tostran® (10mg/0.5ml (2%) metered dose pump) 30-80mg daily
- Testim® (50mg/5g (1%) tubes) 50-100mg daily

In general terms, the aim is to achieve trough serum testosterone levels towards the middle of the male reference range (15-20nmol/L), subject to any concomitant issues of age, sexual function and bone health. However, if haematocrit or haemoglobin is raised, this should take precedence

- If haemoglobin and haematocrit are normal, serum testosterone is in the 15-20nmol/L range and patient is happy, then the existing dose is maintained.
- If haemoglobin and haematocrit are elevated, or heading that way, decrease the dose by 25-50mg daily.
- If serum testosterone is subtherapeutic and/ or the patient is unhappy, increase the dose by 25-50mg, but only if haemoglobin & haematocrit are normal and stable. We would recommend rechecking serum testosterone and FBC 2-3 months afterwards, to ensure that haemoglobin and haematocrit are normal and the serum testosterone in the desirable range.

5.7 Serum Testosterone

Most circulating testosterone is bound to plasma proteins and is biologically largely inactive, so consider also checking levels of SHBG (allowing calculation of free testosterone level) in men taking anticonvulsants. They tend to have high SHBG, so lower calculated free testosterone. Metabolic syndrome (obesity/ diabetes/ hypertension/ dyslipidaemia) also tends to result in low SHBG, so higher calculated free testosterone. In these patients, look at laboratory **calculated free testosterone**, rather than total and aim for free testosterone in the mid normal male range.

5.8 Ovarian Suppression

Achieving maximum suppression of female secondary sexual characteristics sometimes requires treatment with GnRH analogues. This is especially the case where introduction of testosterone has not led to suppression of the ovarian axis and cessation of the menstrual cycle. The goal is to achieve equivalent male levels of estradiol. They are usually introduced after testosterone.

- Goserelin implant 3.6mg every 4 weeks, increasing to 10.8mg every 12 weeks if tolerated
- Alternatives include Tripteroelin and Leuproelin, as per BNF doses
- These medications inhibit the secretion of pituitary gonadotrophins, leading to low circulating levels of estradiol and cessation of the menstrual cycle.
- They are effective, well tolerated and generally are not associated with significant side effects.
- Many side effects, such as hot flushes, depression and loss of libido do not occur as testosterone is co-administered and thus the effects of hypogonadism avoided. However, vaginal dryness can be a problem.
- The use of gonadorelin analogues in pregnancy is contra-indicated. Pregnancy should be excluded before treatment; the first injection should be given during menstruation (if this continues) or shortly afterwards or use barrier contraception for 1 month beforehand.

5.9 Managing Treatment pre and post-surgery

Cessation of testosterone is not required.

5.10 Long Term

Detailed information is provided by the specialist clinician on discharge. However, the following are relevant:

- Self-examination for breast carcinoma is required.
- Testosterone is usually life long treatment, in the absence of serious complications (see below), although lower doses and circulating levels are acceptable in older trans men.
- Monitoring tests are needed for life on 6 monthly basis for 3 years, then yearly if well
- Monitoring of bone health is required in individuals who have had a significant break from sex steroid treatment (>6 months).

6. Clinical Considerations / Risks

The safety monitoring for this treatment has been outlined. Monitoring is designed to detect major side effects of hormonal treatment and guide dosage of treatment. The side effect profile and safety is identical to that seen in genetic males having testosterone replacement for hypogonadism. The main difference in trans men is the need to monitor the effects of testosterone on the uterus.

Table 1: Effects and expected time course of masculinising hormones

Effect	Expected onset	Expected maximum effect
Skin oiliness/acne	1–6 months	1–2 years
Facial/body hair growth	3–6 months	3–5 years
Scalp hair loss	>12 months	Variable
Increased muscle mass/strength	6–12 months	2–5 years
Body fat redistribution	3–6 months	2–5 years
Cessation of menses	2–6 months	n/a
Clitoral enlargement	3–6 months	1–2 years
Vaginal atrophy	3–6 months	1–2 years

Deepened voice	3–12 months	1–2 years
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Note: This is a general guide and the timing of introduction of GnRH analogues may influence timescales. Other factors including age, genetics and amount of exercise are also of significance.

Table2: Risk level of masculinising hormones

Risk Level	Condition
Likely increased risk	Polycythaemia * (see above for further detail) Weight gain / increased visceral fat Acne Androgenic alopecia (balding) Sleep apnoea
Possible increased risk	Altered lipid profiles* ** Liver dysfunction
Possible increased risk with presence of additional risk factors	Type 2 diabetes** Hypertension** Mania and psychosis in patients with pre-existing disorders (this is associated with supraphysiologic blood levels of testosterone) Cardiovascular disease
No increased risk or inconclusive	Breast Cancer Osteoporosis Cervical cancer Ovarian cancer Uterine cancer

*Risk is greater with supraphysiologic (beyond normal male range) serum levels of testosterone, which are more likely to be found with extended intramuscular dosing, than transdermal administration

** Patients with Polycystic Ovarian Syndrome may be at greater risk

7. Additional information on risks

7.1 Polycythaemia

- Testosterone replacement can be associated with polycythaemia and this increase in blood viscosity can lead to an increased incidence of stroke. In those that have a haematocrit above 48% there appears to be an increased risk of stroke. This can occur even in young subjects as both stroke and myocardial infarction have been reported in athletes that abuse testosterone.
- Polycythaemia is seen more when injectable testosterone is used and appears to be proportional to the amount of supraphysiological testosterone that is administered. For this reason haematocrit takes precedence over serum trough levels of testosterone during injectable treatments. Polycythaemia is seen much less with other formulations.
- Polycythaemia usually responds to an increase in dose interval or reduction in dose.
- If this is inadequate, urgent referral to specialist endocrinology is advised.

7.2 Liver Dysfunction

- The incidence of hepatic dysfunction with alkylated steroid preparations such as methyl testosterone was high. These anabolic steroids are no longer used in routine testosterone replacement and so the incidence of hepatic dysfunction associated with testosterone use is less.
- In one series transient increases in liver function enzymes was seen in 4.4% of female to male transsexuals and this was prolonged (>6months) in 6.8%.
- These are usually minor and do not require cessation of treatment. Routine monitoring of the liver function in patients on testosterone replacement is recommended.
- Minor derangement of Liver function, with increases in liver enzyme levels to less than twice the upper limit of normal do not require withdrawal of testosterone therapy. Screening for other causes of hepatic dysfunction should be performed and ultrasound scanning of the liver to exclude any hepatic lesion or the presence of gall stones.
- There have been no reports of liver tumours with testosterone esters.

7.3 Lipid Profile

- The administration of testosterone in female to male transsexuals is associated with an increase in triglyceride and a decrease in plasma HDL levels both of which are proatherogenic. However total cholesterol and LDL cholesterol remain unchanged.
- These changes in lipid profile so not appear to translate into an alteration in cardiovascular risk as there is no increase in cardiovascular mortality in treated male to female transsexuals. The myocardial infarction rate is approximately half that expected in the general male population.

7.4 Gynaecological Malignancy

- The risk of developing ovarian carcinoma if the ovaries remain in situ once testosterone therapy commences is unlikely to be different to that of nulliparous women whose lifetime risk is slightly greater than that of women who have been pregnant.
- Testosterone therapy does not increase the risk of cervical cancer, although it may increase the risk of minimally abnormal Pap smears due to atrophic changes.
- Testosterone can be aromatised to oestradiol. The reported risk of endometrial hyperplasia is 15% in male to female transsexuals.
- Endometrial cancer may be of higher risk in trans men who have a uterus while their body is aromatising 'unopposed oestrogen' derived from testosterone. In this respect it is assumed that they will have the same negative response as natal females with a uterus who have the same 'unopposed' oestrogen exposure.
- Hysterectomy is recommended within 5 years of commencing testosterone therapy but some patients may elect to retain their uterus.

- Monitoring of the endometrial thickness by ultrasound scanning biannually is recommended in patients who retain their uterus. If irregular bleeding occurs then the patient should undergo ultrasound scanning and endometrial biopsy to rule out any neoplastic alteration in the endometrial epithelium.

7.5 Breast Malignancy

- The majority of patients will have mastectomy but all breast tissue is not removed and malignancy can develop in remaining breast tissue, especially because of aromatisation of estradiol. Breast screening is not possible and patients are advised to examine their chest regularly for lumps and skin or nipple changes.
- Testosterone therapy does not increase the risk of breast cancer but such patients have breast tissue and breast screening is not possible, making breast awareness especially important.

7.6 Osteoporosis

- Testosterone therapy maintains or increases bone mineral density among trans men prior to oophorectomy, at least in the first three years of treatment.
- There may be an increased risk of bone density loss after oophorectomy, but this is unlikely to be significant unless testosterone therapy is interrupted or insufficient

7.7 Cardiovascular disease

- Masculinizing hormone therapy at normal physiologic doses does not appear to increase the risk of cardiovascular events among healthy patients.
- Masculinizing hormone therapy may increase the risk of cardiovascular disease in patients with underlying risks factors.

7.8 Obstructive Sleep Apnoea

- Testosterone therapy exacerbates the symptoms of obstructive sleep apnoea. In a female to male transsexual who has symptoms of obstructive sleep apnoea, symptom scores should be assessed and referral made to a specialist in sleep disorders for treatment if the patient displays deterioration in their condition.

8. Relevant guidance

- Standards of Care for the Health of Transsexual, Transgender and Gender-Nonconforming People, Version 7, World Professional Association of Transgender Health, 2012
- Good practice guidelines for the assessment and treatment of adults with gender dysphoria, College Report 181, The Royal College of Psychiatrists, 2013
- Interim Gender Dysphoria Protocol and Service Guideline 2013/14, NHS England, 2013
- Primary Care responsibilities in relation to the prescribing and monitoring of hormone therapy for patients undergoing or having undergone Gender Dysphoria treatments Specialist Services Circular SSC1417 NHS England March 2014
- North of Tyne Area and Gateshead Prescribing Committee Formulary May 2016

The this document has been adapted from these documents, with additional information from the shared care protocol used at the Gender Identity Clinic, West London Mental Health NHS Trust, with their permission and our thanks.

9. Communication + Contacts

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