SHARED CARE GUIDELINE

Drug: Testosterone

For hypogonadism due to testosterone deficiency in adult men

(For information relating to the prescribing of testosterone for other indications please visit www.lancsmmg.nhs.uk)

Introduction	**Indication (licensed):** Testosterone replacement therapy for male hypogonadism when testosterone deficiency has been confirmed by clinical features and biochemical tests. **Clinical Background:** Endogenous androgens, principally testosterone, secreted by the testes and its major metabolite DHT, are responsible for the development of the external and internal genital organs and for maintaining the secondary sexual characteristics (stimulating hair growth, deepening of the voice, development of the libido); for a general effect on protein anabolism; for development of skeletal muscle and body fat distribution; for a reduction in urinary nitrogen, sodium, potassium, chloride, phosphate and water excretion. **Background to shared care arrangements:** The best interest, agreement and preferences of the patient should be at the centre of any shared care agreement and their wishes followed wherever possible. Patients should be able to decline shared care if, after due consideration of the options, they decide it is not in their best interests. **Please note:** **The provision of shared care prescribing guidelines does not necessarily mean that the GP must agree to and accept clinical and legal responsibility for prescribing; they should only do so if they feel clinically confident in managing that condition.** **Referral to the GP should only take place once the GP has agreed to this in each individual case, and the hospital or specialist will continue to provide prescriptions until a successful transfer of responsibilities has occurred. The GP should confirm the agreement and acceptance of the shared care prescribing arrangement and that supply arrangements have been finalised. The secondary/tertiary provider must supply an adequate amount of the medication to cover the transition period. The patient should then be informed to obtain further prescriptions from the GP.** **This shared care guideline excludes:** 1. Unlicensed indications;
Form	Gel for transdermal application, intramuscular injection
Dose and administration (please refer to BNF / SPCs for full details)	**For Tostran®** (1 g of gel contains 20 mg testosterone) Apply 60 mg once daily, subsequent application adjusted according to response; maximum 80 mg per day. **For Testogel® 50mg/5g** Apply 50 mg once daily; increased in steps of 25 mg, adjusted according to response; maximum 100 mg per day. **For Testogel® 40.5mg/2.5mg**

	Apply 40.5 mg once daily; increased in steps of 20.25mg, adjusted according to response; maximum 81 mg per day. **For Testogel® 16.2mg/g** (One pump actuation delivers 1.25 g of gel containing 20.25 mg of testosterone) Apply 40.5 mg once daily; increased in steps of 20.25 mg, adjusted according to response; maximum 81 mg per day. **For Testavan® 20mg/g** (One pump actuation delivers 1.15 g (1.25 mL) of gel equivalent to 23 mg of testosterone) Apply 23 mg once daily, subsequent dosing adjusted according to response; maximum 69 mg per day. **For Sustanon 250 (250mg/ml) IM injection** The dose should be adjusted to the response of the individual patient. Usually, one injection of 1ml per 3 weeks is adequate. **For Nebido 1000mg/4ml IM injection** One ampoule of Nebido (corresponding to 1000mg testosterone undecanoate) is injected every 10 to 14 weeks. The first injection interval may be reduced to a minimum of 6 weeks as compared to the recommended range of 10 to 14 weeks for maintenance. Careful monitoring of serum testosterone levels is required during maintenance of treatment. It is advisable to measure testosterone serum levels regularly. **Individual product summary of product characteristics (SPCs) or patient information leaflets (PILs) should be consulted for detailed application instructions.**
Common Adverse Effects (please refer to BNF / SPCs for full details)	**Common or very common:** Acne; application site reaction; androgenic effects; anxiety; arthralgia; asthenia; changes in libido; cholestatic jaundice; depression; electrolyte disturbances; excessive duration of penile erection; excessive frequency of penile erection; gastro-intestinal bleeding; gynaecomastia; headache; hirsutism; hypercalcaemia; hypertension; increased bone growth; irritability; male-pattern baldness; muscle cramps; nausea; nervousness; oedema; paraesthesia; polycythaemia; precocious sexual development in pre-pubertal males; premature closure of epiphyses in pre-pubertal males; prostate abnormalities; prostate cancer; pruritus; PSA increased; seborrhoea; sodium retention; vomiting; weight gain. Changes in laboratory tests (lipids). Increase in haematocrit, red blood cell count increase, haemoglobin increase. Mastodynia (breast pain). Dizziness. Amnesia. Hyperaesthesia. Mood disorders. Diarrhoea. Alopecia. Urticaria. Hot flush. Prostate examination abnormal. Injection site reactions. **Uncommon:** Hypersensitivity. Increased appetite. Glycosylated haemoglobin increased. Hypercholesterolaemia. Blood triglycerides increased. Blood cholesterol increased. Emotional disorder. Insomnia. Restlessness. Aggression. Migraine. Tremor. Cardiovascular disorder. Bronchitis. Sinusitis. Cough. Snoring. Dysphonia. Diarrhoea. Aspartate aminotransferase increased. Erythema. Rash. Pruritis. Dry skin. Pain in extremity. Musculoskeletal stiffness. Blood creatinine phosphate increased. Nocturia. Dysuria. Prostatic intraepithelial neoplasia. Prostate induration. Testicular pain. Breast induration. Oestradiol increased. Fatigue. Hyperhidrosis. **Rare:** Liver tumours. Pulmonary oil microembolism. **Frequency not known:** Dyspnoea. Sleep apnoea. Suppression of spermatogenesis. Electrolyte changes. Jaundice and liver function test abnormalities. Urination impaired, urinary tract obstruction. Hepatic function abnormal. Myalgia. Oligospermia. Benign prostatic hyperplasia. Lipids abnormal. **Please refer to the SPC or BNF for full list.**

Contraindications / Cautions (please refer to BNF / SPCs for full details)	**Contraindications:** Breast cancer in males; history of liver tumours; hypercalcaemia; prostate cancer. Known hypersensitivity to the active substance or any of the excipients listed in the SPC (see individual product SPCs). Pregnancy. Breast-feeding. Sustanon 250 is contraindicated in patients allergic to peanuts or soya. **Cautions:** Cardiac impairment; diabetes mellitus; elderly; epilepsy; hypertension; ischaemic heart disease; migraine; hepatic or renal insufficiency; Stop therapy immediately in case of severe complications characterised by oedema with or without congestive heart failure; Pre-pubertal boys (fusion of epiphyses is hastened and may result in short stature)—statural growth and sexual development should be monitored; Skeletal metastases—risk of hypercalcaemia or hypercalciuria (if this occurs, treat appropriately and restart treatment once normal serum calcium concentration restored); Sleep apnoea; Stop treatment or reduce dose if severe polycythaemia occurs; Tumours—risk of hypercalcaemia or hypercalciuria (if this occurs, treat appropriately and restart treatment once normal serum calcium concentration restored); Thrombophilia—increased risk of thrombosis, even under anticoagulation; Risk factors for venous thromboembolism (VTE)-increased risk of thrombosis. **Potential testosterone transfer:** **If no precaution is taken, testosterone gel can be transferred to other persons by close skin to skin contact, resulting in increased testosterone serum levels and possibly adverse effects (e.g. growth of facial and/or body hair, deepening of the voice, irregularities of the menstrual cycle) in case of repeat contact (inadvertent androgenisation).** **The patient should be informed about the risk of testosterone transfer and about safety instructions present in the PIL. Testosterone gel should not be prescribed in patients with a major risk of non-compliance with safety instructions (e.g. severe alcoholism, drug abuse, severe psychiatric disorders).** **This transfer is avoided by wearing clothes covering the application area or showering prior to contact.** **MHRA Alert: Topical testosterone (Testogel): risk of harm to children following accidental exposure** (January 2023)
Potentially Serious Drug Interactions (please refer to BNF / SPCs for full details)	**Oral anticoagulants:** Changes in anticoagulant activity (the increased effect of the oral anticoagulant by modification of coagulation factor hepatic synthesis and competitive inhibition of plasma protein binding): Increased monitoring of the prothrombin time, and INR determinations, are recommended. Patients receiving oral anticoagulants require close monitoring especially when androgens are started or stopped. **Corticotrophin (ACTH) and corticosteroids:** Concomitant administration of testosterone and ACTH or corticosteroids may increase the risk of developing oedema. As a result, these medicinal products should be administered cautiously, particularly in patients suffering from cardiac, renal or hepatic disease. **Interaction with laboratory tests:**

	Androgens may decrease levels of thyroxin binding globulin, resulting in decreased T4 serum concentrations and in increased resin uptake of T3 and T4. Free thyroid hormone levels, however, remain unchanged and there is no clinical evidence of thyroid insufficiency. **Diabetic medication** Improved insulin sensitivity, glucose tolerance, glycaemic control, blood glucose and glycosylated haemoglobin levels have been reported with androgens. In diabetic patients, the dose of antidiabetic medications may need reduction.
Secondary Care Responsibilities	1) Testosterone replacement therapy must be initiated by an endocrinologist in secondary care following confirmation of the diagnosis of hypogonadism after clinical examinations and biochemical tests. 2) Record the person's preferences and concerns in their treatment plan. Patients should be able to decline shared care if, after due consideration of the options, they decide it is not in their best interests. Patients should provide explicit consent and this should be recorded in both the patients notes and on the shared care agreement form. 3) Provide information about the medication to patients, including common side effects, necessary monitoring, and where that monitoring will take place. Also, to keep the patient informed of the process at all stages to ensure continuity of treatment. 4) Titrate the dose against symptoms and adverse effects until dose optimisation is achieved, that is, reduced symptoms etc. 5) Continue all necessary physical health monitoring during the titration period and to monitor effectiveness of medication for and adverse effects, and document in the person's notes. 6) Prescribe and monitor the patient for a minimum period of three months and until the patient is on a stable dose. 7) Continue to provide prescriptions until a successful transfer of responsibilities to the GP has occurred. The secondary/tertiary provider must supply an adequate amount of the medication to cover the transition period. 8) Once Part 2 of the Shared Care Agreement Form has been returned completed and signed by the patients GP, the patient should then be informed to obtain further prescriptions from the GP after the transition period and must be made fully aware of all necessary monitoring requirements. 9) Conduct an annual face to face medication review for all patients covered by this shared care guidance. 10) Contact the GP within 3 days of a patient missing a specialist face to face appointment to advise whether treatment should be withheld 11) Accept referrals back from primary care for medication discontinuation. 12) Resume prescribing and monitoring of the patient when a decision for managed withdrawal of treatment has been taken. 13) Continue to provide emergency appointments where patients are receiving prescriptions from their GP and they feel that a prompt assessment or review of their treatment is required. 14) Provide prompt on-going advice to General Practitioners as required without necessarily requiring a new referral. 15) Provide advice to the GP as to the changes in parameters that should trigger urgent referral back to the specialist 16) Telephone details and (if appropriate) secure email addresses for both Secondary and Primary Care should be exchanged and recorded. This should include out-of-hours contact numbers. Patients and their carers should also be provided with contact details for support and help if required; both in and out of hours.

	17) Ensure that adequate training and educational support is in place for the primary care multidisciplinary team (in collaboration with the local commissioner of the service pathway i.e. ICB)
Primary Care Responsibilities	**Clinical responsibility for prescribing is held by the person signing the prescription, who must also ensure adequate monitoring.** 1) To consider requests to prescribe under shared care arrangements and reply in a timely manner by completing, signing and returning Part 2 of the Shared Care Agreement Form. 2) To provide continuation prescriptions or identify any concerns about the request to the prescriber in the specialist team. It is expected that primary care prescribers will not make changes to the dose/formulation, unless it is in consultation with the specialist team. 3) As testosterone is a schedule 4 controlled drug, the prescribed quantity should not exceed 30 days; exceptionally, to cover a justifiable clinical need and after consideration of any risk, a prescription can be issued for a longer period, but the reasons for the decision should be recorded on the patient's notes. 4) To monitor the patient as outlined below and contact the specialist team if results give rise to concern. Any ongoing monitoring requirements for individual patients discharged from secondary care will be identified by the specialist service as part of the discharge information to the GP. 5) To contact specialists within the team where concerns arise about a patient's presentation or when advice is needed. 6) To refer to secondary care if withdrawal of treatment might be indicated. **Circumstances for discontinuation of treatment in Primary Care** 1) As a joint decision with specialist team providing specific advice in case of adverse effect pending assessment. 2) Following non-attendance at annual specialist team review pending that review taking place or if there is failure to engage with the review process.
Monitoring	Secondary care should prescribe and monitor the patient for a minimum period of three months and until the patient is on a stable dose.

Monitoring Required	Schedule
Haematocrit*	Monitored at six weeks, then again at three months then as directed by the specialist service.
Haemoglobin**	Before treatment, every three months for the first year, and yearly thereafter.
Prostate and PsA**	Before treatment and once yearly thereafter (twice yearly in the elderly).
Testosterone*	Baseline and at regular intervals as directed by the specialist service. However, it is expected that testosterone levels would be monitored at six weeks, then three, six and 12 months after starting therapy and annually thereafter. **Please note (for therapeutic drug monitoring):** assess T concentrations 2–8 h following the gel application. The British Society for Sexual Medicine Guidelines on Adult Testosterone Deficiency state that for injections, the timing for blood testing is irrelevant, because the trough levels, which assess the duration of effect of the formulation, are all that are required. Clinicians should maintain serum testosterone concentrations during treatment in the mid-normal range for healthy young men (local reference ranges should be used).

	* Recommended by the specialist endocrinology service, UHMB ** Recommended by the SPC

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Version Number	Date	Amendments Made	Author
Version 1.1	July 2019	Added Testavan®. Deleted Testim®.	DP
Version 1.2	November 2019	IM testosterone added monitoring requirements for injectables added.	AG
Version 1.3	February 2020	Length of supply added.	AG
Version 1.4	February 2023	Routine update, minor changes.	JG/AG
Version 1.5	February 2024	Monitoring requirement for oestradiol, LFTs and Lipids removed as per LTH endocrinology request.	AG

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Appendix 1

Optional Shared Care Agreement form

Request by Specialist Clinician for the patient's GP to enter into a shared care agreement

PLEASE NOTE: The use of this form is not compulsory, but the same information must be communicated between the specialist service and primary care in advance of entering into a shared-care agreement.

Part 1 - To be signed by Consultant / Associate Specialist / Speciality Trainee or Specialist Nurse (who must be a prescriber)

Dear Doctor:	Click or tap here to enter text.
Name of Patient:	Click or tap here to enter text.
Address:	Click or tap here to enter text.
	Click or tap here to enter text.
	Click or tap here to enter text.
Date:	Click or tap to enter a date.
Patient NHS Number:	Click or tap here to enter text.
Patient Hospital Number:	Click or tap here to enter text.
Diagnosed Condition:	Click or tap here to enter text.

I request that you prescribe:

(1) Click or tap here to enter text.
(2) Click or tap here to enter text.
(3) Click or tap here to enter text.
(4) Click or tap here to enter text.

for the above patient in accordance with the LMMG shared care guideline(s) (Available on the LMMG website).

Last Prescription Issued:	Click or tap to enter a date.
Next Supply Due:	Click or tap to enter a date.
Date of last blood test (if applicable):	Click or tap to enter a date.
Date of next blood test (if applicable:	Click or tap to enter a date.
Frequency of blood test (if applicable:	Click or tap here to enter text.

I confirm that the patient has been stabilised and reviewed on the above regime in accordance with the Shared Care guideline.

If this is a Shared Care Agreement for a drug indication which is unlicensed or off label, I confirm that informed consent has been received from the patient.

I will accept referral for reassessment at your request. The medical staff of the department are available if required to give you advice.

Details of Specialist Clinicians

Name:	Click or tap here to enter text.
Date:	Click or tap to enter a date.
Position:	Choose an item.
Signature:	Click or tap here to enter text.

(An email from the specialist clinician will be taken as the authorised signature)
In all cases, please also provide the name and contact details of the Consultant.

When the request for shared care is made by a Specialist Nurse, it is the supervising consultant who takes medicolegal responsibility for the agreement.

Consultant	Click or tap here to enter text.

Contact Details	
Telephone Number	Click or tap here to enter text.
Extension	Click or tap here to enter text.
Email Address	Click or tap here to enter text.

Part 2 - To be completed by Primary Care Clinician (GP)

I agree to prescribe and monitor Click or tap here to enter text. for the above patient in accordance with the LMMG shared care guideline(s) commencing from the date of next supply / monitoring (as stated in Part 1 of the agreement form).

Name:	Click or tap here to enter text.
Date:	Click or tap to enter a date.
Signature:	Click or tap here to enter text.

*Please sign and return a copy **within 14 calendar days** to the address above* **OR**
If you **do not** agree to prescribe, please sign below and provide any supporting information as appropriate:
I **DO NOT** agree to enter in to a shared care agreement on this occasion.

Name:	Click or tap here to enter text.
Date:	Click or tap to enter a date.
Signature:	Click or tap here to enter text.
Further information:	Click or tap here to enter text.