



Step-by-Step: Male Genital Examination

Examination of male genitals and secondary sexual characteristics.

Testicular volume

Testicular volume is assessed using an orchidometer; a sequential series of beads ranging from 1 mL to 35 mL (see Image 1). Testicular volume is measured using the following steps:

1. Conduct the examination in a warm environment, with the patient lying on his back
2. Gently isolate the testis and distinguish it from the epididymis. Then stretch the scrotal skin, without compressing the testis
3. Use your orchidometer to make a manual side-by-side comparison between the testis and beads (see image 2)
4. Identify the bead most similar in size to the testis, while making allowance not to include the scrotal skin.

Normal testicular volume ranges

Childhood	Puberty	Adulthood
< 3 mL	4-14 mL	15-35 mL

Clinical notes

- Asymmetry between testes is common (e.g. 15 mL versus 20 mL) and not medically significant
- Asymmetry is sometimes more marked following unilateral testicular damage
- Testes are roughly proportional to body size
- Reduced testicular volume suggests impaired spermatogenesis
- Small testes (<4 mL) from mid puberty are a consistent feature of Klinefelter syndrome

Examination of secondary sexual characteristics

Gynecomastia

- Gynecomastia is the excessive and persistent development of benign glandular tissue evenly distributed in a sub-areolar position of one or both breasts (see image 3)
- Can cause soreness and considerable embarrassment
- Common during puberty, usually resolves in later adolescence
- Causes include marijuana, androgen abuse, abnormal liver function
- Distinguish glandular tissue from sub-areolar fat in obese subjects
- Rare secondary causes include hypothalamic/pituitary and adrenal/testis tumours (oestrogen excess)
- Rapidly developing gynecomastia may indicate testicular tumour
- In contrast to gynecomastia, breast cancer can be located anywhere within the breast tissue and feels firm or hard

Onset of puberty

- Average onset is 12-13 years

Virilisation

- Facial and body hair development
- Muscle development
- Penile growth



Image 1 – Orchidometer

Why use an orchidometer?

Testicular volume is important in the diagnosis of androgen deficiency, infertility and Klinefelter syndrome.



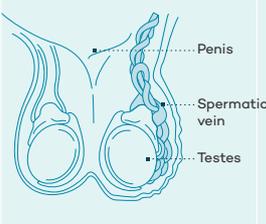
Image 2 – Example of 30 mL and 4 mL adult testis



Image 3 – Gynecomastia

(Photo courtesy of Mr G Southwick, Melbourne Institute of Plastic Surgery)

Examination of testis and scrotal contents

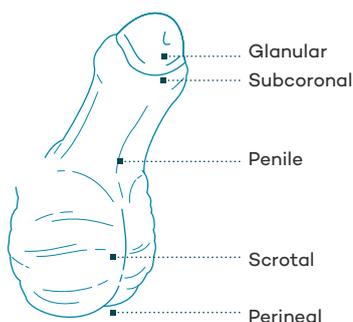
Testis	Gently palpate the testis between your thumb and first two fingers. Note: Atrophic testes are often more tender to palpation than normal testes.	If a testis cannot be felt, gently palpate the inguinal canal to see if testis can be 'milked' down. Note: Testis retraction can be caused by cold room temperature, anxiety and cremasteric reflex.	Examine the testis surface for irregularities. It should be smooth, with a firm, soft rubbery consistency. Note: A tumour may be indicated by deep or surface irregularity, or differences in consistency between testes.
Epididymis	Locate the epididymis, which lies along the posterior wall of the testis. It should be soft, slightly irregular and non-tender to touch.	<ul style="list-style-type: none"> Tenderness, enlargement or hardening can occur as a result of obstruction (vasectomy) or infection. This can be associated with obstructive infertility. Cysts in the epididymis are quite common. These are something mistaken for a testicular tumour. 	
Vas deferens	Locate the vas deferens, a firm rubbery tube approximately 2-3 mm in diameter. The vas deferens should be distinguished from the blood vessels and nerves of the spermatic cord.	Nodules/thickening around the vas deferens ends may be apparent after vasectomy. Absence of the vas deferens is a congenital condition associated with low semen volume and azoospermia.	
Varicocele	Perform examination with the man standing. A Valsalva manoeuvre or coughing helps delineate smaller varicoceles.	<p>Indicators include:</p> <ul style="list-style-type: none"> Palpable swelling of the spermatic veins above testis Swelling is usually easy to feel and can be compressed without discomfort Nearly always on left side Associated with infertility 	  <p>(Photo courtesy of Prof. D de Kretser)</p>

Examination of penile abnormalities

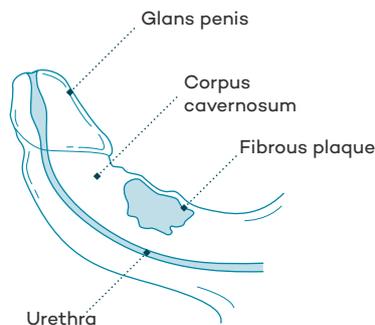
Hypospadias	Peyronie's disease	Micropenis	Phimosis	Urethral stricture
Abnormal position of meatus on the underside of the penile shaft. May be associated with a notched penile head.	Fibrous tissue, causing pain and curvature of the erect penis. Check for tenderness or thickening.	May indicate androgen deficiency prior to puberty.	The foreskin cannot be pulled back behind the glans penis. Can be normal in boys up to 5-6 years.	Abnormal urethral narrowing, which alters urination. Can be caused by scar tissue, disease or injury.

Hypospadias

Position of urethral opening



Peyronie's Disease



(Photo courtesy of Dr M Lowy, Sydney Centre for Men's Health)

Male Child and Adolescent Genital Examination

Examination of male genitals and secondary sexual characteristics in children and adolescence.



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When should I perform an examination?

A physical examination including male children and adolescents is vital for the detection of conditions such as testicular cancer, Klinefelter syndrome, penile and hormonal abnormalities.

How do I approach an examination with young patients?

Good communication can assist the process of physical examinations with children and adolescents.

- Communicate with both the patient and his parents, using simple language and visual aids if available
- Explain why you need to perform the examination and ask for permission to proceed
- Allow the patient to ask questions and express any discomfort before/during the examination
- When it seems appropriate, humour can be used (particularly with children) to reduce anxiety, foster rapport and improve cooperation before or during the examination
- If you refer the patient to another specialist, take the time to explain why, and what may be involved

Childhood history and examination

Presentation with acute testicular pain

- Testicular torsion
- Refer immediately for evaluation for possible surgery
- This is a medical emergency
- Later follow up review (e.g. epididymo–orchitis)

History

- Undescended testes (increased risk of testicular cancer, and associated with inguinal hernia)
- Inguinal-scrotal surgery or hypospadias

Testicular examination

- Undescended testes
- Testicular volume: Normal childhood (pre-pubertal) range of testicular volume is ≤ 3 mL

Penile examination

- Hypospadias
- Micropenis

When is it best to perform an examination?

1. Part of a standard health check-up with new or existing patients
2. On presentation of relevant disorders or symptoms, including:

Risk Factor	Associated disorder
Undescended testes as an infant	Testicular cancer
Delayed puberty	Androgen deficiency
Gynecomastia	Androgen deficiency, Klinefelter syndrome, Testicular cancer
Past history of testicular cancer	Testicular cancer
Acute testicular - groin pain	Testicular cancer
Testicular pain or lumps	Testicular torsion

Adolescent history and examination

Presentation with acute testicular pain

- Testicular torsion
- Refer immediately for evaluation for possible surgery
- This is a medical emergency
- Later follow up review (e.g. epididymo–orchitis)

History

- Undescended testes
- Pubertal development
- Testicular trauma, lump, cancer
- Gynecomastia
- Prior inguinal-scrotal surgery or hypospadias

Testicular examination

- Testicular volume
 - Normal pubertal range is 4-14 mL
 - < 4 mL by 14 years indicates delayed or incomplete puberty
 - Small testes (< 4 mL) may suggest Klinefelter syndrome
 - Adult testis size is established after completion of puberty
- Scrotal and testicular contents
 - Abnormalities in texture or hard lumps (tumour or cyst)

Penile examination

- Hypospadias
- Micropenis
- Infections (STI) or inflammation
- Foreskin: balanitis, phimosis

Examination of secondary sexual characteristics

- Gynecomastia: excessive and/or persistent breast development
- Delayed puberty (average onset is 12-13 years). Indicators:
 - Short stature compared to family, with reduced growth velocity
 - Absent, slow or delayed genital and body hair development compared to peers
 - Anxiety, depression, school refusal, or behaviour change in school years 8-10 (age 14-16 years)

Puberty: delayed onset or poor progression

Presentation

- Short stature compared to family
- Absent, slow or delayed genital development
- Anxiety, depression, school refusal, behaviour change

(±) Other features

- Headache/visual change (CNS lesions)
- Inability to smell (Kallmann's syndrome)
- Behavioural or learning difficulty (47,XXY)
- Unusual features (rare syndromes)

Primary investigations

- Growth chart in context of mid parental expectation (velocity, absolute height)
- Penile size (standard growth chart)
- Testicular volume (> 4 mL: puberty imminent)
- Bone age

Specific investigations

- LH/FSH (may be undetectable in early puberty, but if raised can be useful)
- Total testosterone level (rises with onset of puberty)
- Karyotype (if suspicion of 47,XXY)

General investigations

- U&E, FBE & ESR, coeliac screen, TFT

Treatment and specialist referral

- If all normal for prepubertal age, observe for 6 months
- Refer to paediatric endocrinologist if patient is >14.5 years without pubertal onset and/or a specific abnormality

Klinefelter syndrome (47,XXY)

Presentation

- Small testes < 4 mL characteristic from mid puberty
- Presentation varies with age, and is often subtle
- Behavioural and learning difficulties
- Gynecomastia (adolescence)
- Poor pubertal progression (adolescence)

Investigations

- Total testosterone level (androgen deficiency)
- LH/FSH level (both elevated)
- Karyotype

Treatment and specialist referral

- Refer to paediatric endocrinologist
- Refer for educational and allied health assistance if needed

Refer to Clinical Summary Guide 10: Klinefelter Syndrome

Testicular mass

Presentation

- Painless lump
- Self report, incidental
- Past history undescended testes (cancer risk)
- Consider possibility of epididymal cyst

Primary investigations

- Testicular ultrasound

Treatment and specialist referral

- Refer to uro-oncologist
- Offer pre-treatment sperm cryostorage

Refer to Clinical Summary Guide 6: Testicular Cancer

Penile abnormality

Presentation

- Hypospadias
- Micropenis
- Phimosi

Treatment and specialist referral

- Refer to urologist for investigation and treatment plan
- Refer to paediatric endocrinologist for investigation of micropenis

Gynecomastia

Presentation in adolescence

- Excessive and/or persistent breast development
- More prominent in obesity
- Often normal, resolves over months

Rare secondary causes

- Hypothalamic pituitary lesions
- Adrenal/testis lesions (oestrogen excess)

Treatment and specialist referral

- If persistent or acute onset, refer to paediatric endocrinologist



Male Adulthood Genital Examination

Examination of male genitals and secondary sexual characteristics in adults.

When should I perform an examination?

1. As part of a standard health check-up with new or existing patients
2. 45-49 year old health assessment (MBS) (Note, Aboriginal and Torres Strait Islander men are eligible at younger ages)
3. Prior to initiation of drug treatment (e.g. testosterone, PDE5 inhibitors) or investigation of conditions such as infertility or prostate disease
4. On presentation of relevant risk factors and symptoms (below)

Risk Factor	Associated disorder
Undescended testes as an infant	Testicular cancer
Past history of delayed puberty	Androgen deficiency
Gynecomastia	Androgen deficiency, Klinefelter syndrome, Testicular cancer
Infertility	Androgen deficiency, Testicular cancer
Erectile dysfunction (ED)	Co-morbidities
Past history of testicular cancer	Testicular cancer
Pituitary disorders	Androgen deficiency, Male infertility
Osteoporosis and atraumatic fractures	Androgen deficiency
Haemochromatosis	Androgen deficiency, Male infertility

Symptoms	Associated disorder
Testicular pain or lumps	Tumour or cyst
Reduced libido, hot flushes, fatigue, gynecomastia, ED, mood changes, reduced beard or body hair, poor or reduced muscle development	Androgen deficiency

How do I best approach an examination with my patient?

- Posters or pamphlets in your clinic can raise awareness about men's health examinations and convey that patients can discuss reproductive health concerns with you
- Explain why you need to perform the examination and ask for permission to proceed
- Allow the patient to ask questions and express any discomfort before/during the examination
- Ask specific questions during history-taking, to assist those patients reluctant to raise sensitive problems

Adulthood history and examination

Presentation with acute testicular pain

- This is a medical emergency
- Testicular torsion
- Refer immediately for evaluation for surgery
- Later follow up review (e.g. epididymo-orchitis)

History

- Fertility in current and past relationships
- Testicular trauma, cancer, STI
- Inguinal-scrotal surgery (undescended testes, childhood hernia)
- Symptoms of androgen deficiency
- Systemic treatment for malignancy, immunosuppression, organ transplant (for possible testicular damage)
- Gynecomastia
- Occupational or toxin exposure

Testicular examination

Testicular volume

- Normal range of adult testicular volume: 15-35 mL
- Small testes <4 mL suggests Klinefelter syndrome

Scrotal and testicular contents

- Abnormalities in the texture or hard lumps: suggests tumour or cyst
- Enlargement, hardening or cysts of the epididymides
- Varicocele
- Nodules or absence of vas deferens

Penile examination

- Hypospadias
- Peyronie's disease
- Micropenis
- Urethral stricture
- Evidence of infection (STI) or inflammation
- Foreskin: balanitis, phimosis

Secondary sexual characteristics of androgen deficiency

- Reduced facial, body and pubic hair
- Gynecomastia
- Reduced or poor muscle development

Prostate and other examinations

- In suspected prostate disease, digital rectal examination may be considered, or an initial referral to urologist
- If prostate enlargement, tenderness or nodularity is found, refer to urologist
- General medical review of erectile dysfunction. Focus on cardiovascular risk (BP, pulses) & diabetes (including neuropathy)

Androgen deficiency (AD)

Presentation

- Symptoms of AD in men of any age
- Following testis surgery, torsion, trauma, cancer treatment
- Incidental findings of small testes
- In association with infertility

Primary investigations

- Total testosterone level (two morning fasting samples) and LH/FSH level

Investigations if low total testosterone with normal or low LH/FSH

- Serum prolactin (prolactinoma)
- MRI pituitary (various lesions)
- Olfactory testing (Kallmann's syndrome)
- Iron studies (haemochromatosis)
- Also commonly seen with co-morbidities (obesity, depression, chronic illness): focus on underlying condition

Other investigations

- SHBG/calculated free total testosterone (selected cases, e.g. obesity, liver disease)
- Bone density study (osteoporosis)
- Semen analysis (if fertility is an issue)
- Karyotype (if suspicion of 47,XXY)

Treatment and specialist referral

- Testosterone Replacement Therapy (TRT)

*Contraindicated in prostate and breast cancer

*Withhold treatment until investigation complete

- In general, TRT is not justified in older men with borderline low testosterone levels and without underlying pituitary or testicular disease
- Low-normal total testosterone is common in obesity or other illness and may not reflect AD. Address underlying disorders first.
- Consult a specialist to plan long term management:
 - Refer to endocrinologist
 - Refer to fertility specialist as needed

Refer to Clinical Summary Guide 4: Androgen Deficiency

Klinefelter syndrome (47,XXY)

Presentation

- Small testes <4 mL characteristic from mid puberty. Infertility (azoospermia) or androgen deficiency
- Other features vary, and are often subtle. These include taller than average height, reduced facial and body hair, gynecomastia, behavioural and learning difficulties (variable), osteoporosis and feminine fat distribution

Primary Investigations

- Total testosterone level (androgen deficiency)
- LH/FSH level (both elevated)
- Karyotype confirmation

Other investigations

- Bone density study (osteoporosis)
- Semen analysis (usually azoospermic)
- TFT (hypothyroidism)
- Fasting blood glucose (diabetes)

Treatment and specialist referral

- Develop a plan in consultation with an endocrinologist
- Refer to endocrinologist, as TRT is almost always needed
- Refer to fertility specialist as appropriate, for sperm recovery from testis (occasionally) or donor sperm

Refer to Clinical Summary Guide 10: Klinefelter Syndrome

Penile abnormality

Presentation

- Hypospadias
- Peyronie's disease
- Micropenis
- Urethral stricture
- Phimosis

Treatment and specialist referral

- Refer to urologist for investigation and treatment plan

Testicular mass

Presentation

- Painless lump
- Self report, incidental
- Past history undescended testes (cancer risk)
- Confirm lump is in testis rather than epididymal cyst

Primary investigations

- Testicular ultrasound

Treatment and specialist referral

- Refer to uro-oncologist
- Offer pre-treatment sperm cryostorage

Refer to Clinical Summary Guide 6: Testicular Cancer

Gynecomastia

Presentation in adulthood (common)

- Excessive and/or persistent breast development
- Androgen deficiency
- Chronic liver disease
- Hyperprolactinaemia
- Adrenal or testicular tumours
- Drugs (e.g. spironolactone), marijuana, sex steroids
- Distinguish from 'pseudogynecomastia' of obesity

Primary investigations

- Total testosterone level, estradiol, FSH/LH
- LFTs, iron studies (haemochromatosis)
- Serum prolactin (pituitary tumour)
- Karyotype (if suspicion of 47,XXY)
- β hCG, α FP, ultrasound (testicular cancer)

Treatment and specialist referral

- Refer to endocrinologist
- Refer to plastic surgeon (after evaluation) if desired

Male infertility

Presentation

- Failure to conceive after 12 months of regular (at least twice weekly) unprotected intercourse
- Consider early evaluation if patient is concerned and/or advancing female age an issue

(\pm)Other features:

- Testis atrophy (androgen deficiency)
- Past history undescended testis (cancer risk)
- Psychosexual issues (primary/secondary)
- Past history STI (obstructive azoospermia)

Primary investigations

- Semen analysis: twice at 6-week intervals. Analysis at specialised reproductive laboratory if abnormalities
- FSH: increased level in spermatogenic failure
- Testicular ultrasound (abnormal physical examination, past history of undescended testes)
- Total testosterone and LH (small testes <12 mL or features of androgen level) Treatment and specialist referral
- Healthy lifestyle, cease smoking
- Advice on natural fertility timing
- Identification of treatable factors (often unexplained and no specific treatment)
- Refer to an endocrinologist as necessary
- Refer to a fertility specialist (ART widely applicable)

Refer to Clinical Summary Guide 5: Male Infertility





Androgen Deficiency

Diagnosis and management

Androgen deficiency (AD)

- Androgen deficiency is common, affecting 1 in 200 men under 60 years
- The clinical presentation may be subtle and its diagnosis overlooked unless actively considered

The GP's role

- GPs are typically the first point of contact for men with symptoms of AD
- The GP's role in the management of AD includes clinical assessment, laboratory investigations, treatment, referral and follow-up
- Note that in 2015 the PBS criteria for testosterone prescribing changed; the patient must be referred for a consultation with an endocrinologist, urologist or member of the Australasian Chapter of Sexual Health Medicine to be eligible for PBS-subsidised testosterone prescriptions

Androgen deficiency and the ageing male

- Ageing may be associated with a 1% decline per year in serum total testosterone starting in the late 30s
- However, men who remain in good health as they age may not experience a decline in testosterone
- The decline may be more marked in obese men
- Estimates suggest AD affects up to 1 in 10 men over 60 years
- Acute and chronic illnesses result in decreased serum testosterone and may present with AD-like symptoms
- The role of testosterone replacement therapy (TRT) in older men with modest declines in serum testosterone remains controversial
- The most consistent effects of TRT are on:
 - body composition and bone
 - selected aspects of mood and cognition
 - libido
- Most studies of men with age-related AD have not shown any significant improvement in erectile function (ED) with TRT
- The use of TRT for ageing men who do not meet the established criteria (PBS guide) is not recommended
- Older men treated outside of guidelines should be informed that long-term risks/benefits are not yet documented

Diagnosis

Medical history

- Undescended testes
 - Surgery of the testes
 - Pubertal development
 - Previous fertility
 - Genito-urinary infection
 - Co-existent medical illness*
 - Change in general well-being or sexual function**
 - Degree of virilisation
 - Prescription or recreational drug use
- * Pituitary disease, thalassaemia, haemochromatosis.

** AD is an uncommon cause of ED. However, all men presenting with ED should be assessed for AD

Examination and assessment of clinical features of AD

Pre-pubertal onset – Infancy

- Micropenis
- Small testes

Peri-pubertal onset – Adolescence

- Late/incomplete sexual and somatic maturation
- Small testes
- Failure of enlargement of penis and skin of scrotum becoming thickened/pigmented
- Failure of growth of the larynx
- Poor facial, body and pubic hair
- Gynecomastia
- Poor muscle development

Post-pubertal onset – Adult

- Regression of some features of virilisation
- Mood changes (low mood, irritability)
- Poor concentration
- Low energy (lethargy)
- Hot flushes and sweats
- Decreased libido
- Reduced beard or body hair growth
- Low semen volume
- Gynecomastia
- Reduced muscle strength
- Fracture (osteoporosis)
- Erectile dysfunction (uncommon)

Refer to Clinical Summary Guide 6: Testicular Cancer

Laboratory assessment of AD

- Normal range serum total testosterone 8-27 nmol/L (but may vary according to the assay used)
- Two morning fasting samples of serum total testosterone*, taken on different mornings

Guidelines for the diagnosis of AD (PBS criteria):

1. AD in a patient with an established pituitary or testicular disorder
2. For men aged 40+:
 - Testosterone < 6 nmol/L**
 - OR
 - Testosterone between 6 and 15 nmol/L and LH greater than 1.5 times the upper limit of the eugonadol reference range for young men**

* If a second total testosterone sample is indicated, a LH level should also be ordered.

** These criteria apply to men without underlying pituitary or testicular pathology, to be eligible for PBS subsidy.

Other investigations

- SHBG/calculated free testosterone (selected cases - obesity, liver disease)
- Semen analysis (if fertility is an issue)
- Karyotype (if suspicion of Klinefelter syndrome, 47,XXY)

Investigations if low total testosterone with normal or low LH/FSH:

- Serum prolactin (prolactinoma)
- Iron studies (haemochromatosis)
- MRI (various lesions)
- Olfactory testing (Kallmann's syndrome).

Causes of hypogonadism (AD)

Testicular (primary)

- Chromosomal: Klinefelter syndrome (most common cause)
- Undescended testes
- Surgery: bilateral orchidectomy
- Trauma
- Infection: mumps orchitis
- Radiotherapy/chemotherapy/drugs (spironolactone, ketoconazole)
- Systemic disease: haemochromatosis, thalassaemia, myotonic dystrophy

Hypothalamo-pituitary (secondary)

- Idiopathic hypogonadotrophic hypogonadism: Kallmann's syndrome
- Pituitary microadenoma (<1 cm) or macroadenoma (>1 cm) - functional or non-functional: in men typically macroprolactinoma
- Other causes of hypothalamic pituitary damage: surgery, radiotherapy, trauma, infiltrative disease such as haemochromatosis

Klinefelter syndrome

- Is the most common genetic male reproductive disorder (1 in 550 men)
- Is the most common cause of hypogonadism
- Reproductive features: small testes <4 mL, infertility, failure to progress through puberty, gynecomastia, eunuchoidal proportions, diminished or absent body hair, decreased skeletal muscle mass
- Other: learning difficulties & behavioural problems, particularly in adolescence

Refer to Clinical Summary Guide 10: Klinefelter Syndrome

Clinical notes and contraindications

- Absolute contraindications to TRT are known or suspected hormone-dependent malignancies (prostate or breast) or haematocrit >55%
- Relative contraindications include haematocrit >52%, untreated sleep apnoea, severe obstructive symptoms of BPH and advanced congestive heart failure
- Fertility: Exogenous testosterone results in suppression of spermatogenesis in eugonadal men. For men with secondary causes of AD, and in whom fertility is desired, gonadotropin therapy should be instituted
- Low-normal serum testosterone common in obesity or other illness may not reflect AD. Address underlying disorders first
- Withhold treatment until all investigations are complete
- Certain adverse effects must be prospectively sought, especially in older men, including polycythaemia and sleep apnoea, however the testosterone preparations discussed do not cause abnormal liver function

Management

Assessment of treatment indications

PBS-approved indications for the prescription of testosterone are:

- Micropenis, pubertal induction, or constitutional delay of growth or puberty, in males <18 years

- AD in males with established pituitary or testicular disorders
- AD (confirmed by at least 2 morning fasting samples, both < 6 nmol/L) in males aged 40+ who do not have established pituitary or testicular disorders other than ageing.

Testosterone replacement therapy (TRT)

Clinical note: Dosing ranges are provided below as dosage should be titrated according to clinical response and serum testosterone levels

T formulation	Usual (starting) dosage	Dosage range
Injections (IM)		
Sustanon®, Primoteston®	250 mg every 2 weeks	10 to 21-day intervals
Reandron®	1000 mg every 12 weeks following loading dose at 6 weeks (i.e. 0, 6, 18, 30 weeks)	Longer term: 8 to 16-week intervals
Transdermal patch		
Androderm®	2.5 mg and 5.0 mg preps: 5 mg applied nightly	2.5 to 5 mg daily
Transdermal gel		
Testogel®	1%: 50 mg in 5 g sachet or pump pack dispenser; applied daily	2.5 to 10 g gel (25 mg to 100 mg T) daily
Transdermal cream		
AndroForte®5	5% (50 mg/mL): 2 mL (100 mg) applied to the torso once daily	Review levels in 1 month, up to 4 mL daily
Oral undecanoate		
Andriol Testocaps®	40 mg capsule: 160 to 240 mg in 2 to 3 doses daily	80 to 240 mg daily

* Sustanon® is not available on the Australian Pharmaceutical Benefits Scheme (PBS)

Follow-up

Monitoring TRT is essential

- Testosterone levels: results should be interpreted in context of the treatment modality being used
- Prostate: PSA, as per standard guidelines
- Cardiovascular risk factors: blood pressure, diabetes, lipids, as per guidelines
- Osteopaenia/osteoporosis (fractures): bone density-DEXA
- Polycythaemia: haemoglobin and haematocrit, pre-treatment, at 3 and 6 months, and annually thereafter
- Sleep apnoea: clinical assessment for presence of sleep apnoea (polysomnography)

Specialist Referral

- It is a requirement for PBS-subsidised testosterone that the patient is referred for a specialist consultation (endocrinologist, urologist or member of the Australasian Chapter of Sexual Health Medicine) and the name of the specialist must be included in the authority application
- Refer to an endocrinologist to plan long-term management of AD
- Refer to a fertility specialist as needed
- Refer to a paediatric endocrinologist if >14.5 years old with delayed puberty



Male Infertility

Diagnosis and management

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The GP's role

- Do not wait before beginning assessments
- GPs can begin with simple, inexpensive and minimally invasive investigations
- Infertility needs to be assessed and managed as a couple, and may require several different specialists
- See Healthy Male's Male Fertility Assessment tool to accompany this guide on our website

Diagnosis

Brief assessment and pre-pregnancy advice

Age	What age is the couple?
Fertility history	How long have they been trying to conceive, and have they ever conceived previously (together/separately)? Do they have any idea why they have not been able to conceive?
Contraception	When it was ceased, and the likely speed of its reversibility
Fertile times	Whether the couple engage in regular intercourse during fertile times
Female risk factors	Aged 35+, irregular menstrual cycles, obesity, painful menses, or concomitant medical conditions
Female health	Screening for rubella and chicken pox immunity, Cervical Screening Test (25 years or older)
Lifestyle: female	Diet, exercise, alcohol, smoking cessation and folate supplementation
Lifestyle: male	Diet, exercise, alcohol, smoking cessation

Reproductive history

Assess the male for:	Why?
Prior paternity	Previous fertility
Psychosexual issues (erectile, ejaculatory)	Interference with conception
Pubertal development	Poor progression suggests underlying reproductive issue
A history of undescended testes	Risk factor for infertility and testis cancer
Past genital infection (STI), mumps infection or trauma	Risk for testis damage or obstructive azoospermia
Symptoms of androgen deficiency (AD)	Indicative of hypogonadism
Previous inguinal, genital or pelvic surgery	Testicular vascular impairments, damage to vasa, ejaculatory ducts, ejaculation mechanisms
Medications, drug use	Transient or permanent damage to spermatogenesis
General health (diet, exercise, smoking).	Epigenetic damage to sperm affecting offspring health

Physical examination

General examination	Acute/chronic illness, nutritional status
Genital examination	Refer to Clinical Summary Guide 1: Step-by-Step Male Genital Examination
Degree of virilisation	Androgen deficiency / Klinefelter syndrome
Prostate examination	If history suggests prostatitis/STI

Investigations

Semen analysis is the primary investigation for male infertility.

Key points

- Men should abstain from sexual activity for 2–5 days before sample collection
- Two semen analyses should be performed at 6 week intervals. In men whose initial test is poor, the second test should ideally be performed in a specialised laboratory
- Semen analysis provides guidance to fertility; it is not a direct test of fertility. Fertility remains possible even in those with severe deficits

Normal ranges for semen analysis (modified WHO, 2010)

Volume	≥1.5 mL
pH	≥7.2
Sperm concentration	≥15 million spermatozoa/mL
Motility	≥40% motile within 60 minutes of ejaculation
Vitality	58% or more live, i.e. excluding dye
White blood cells	<1 million/mL
Sperm antibodies	50% motile sperm with binding

Serum total testosterone

- Testosterone is often normal 8–27nmol/L*, even in men with significant spermatogenic defects
- Some men with severe testicular problems display a fall in testosterone levels and rise in serum LH, these men should undergo evaluation for AD
- The finding of low serum testosterone and low LH suggests a hypothalamic-pituitary problem e.g. prolactinoma (serum prolactin levels required)

* Testosterone reference range may vary between laboratories

Serum FSH levels

- Elevated levels are seen when spermatogenesis is poor (primary testicular failure)
- In normal men, the upper reference value is approximately 8IU/L
- In an azoospermic man:
 - 14 IU/L strongly suggests spermatogenic failure
 - 5 IU/L suggests obstructive azoospermia but a testis biopsy may be required to confirm that diagnosis.

Management

Treatment options

Protecting and preserving fertility

Mumps vaccination, sperm cryopreservation (prior to chemotherapy, vasectomy or androgen replacement), safe sex practices, and early surgical correction of undescended testes.

Options for improving natural fertility

Exist for a minority of infertile men, including those with pituitary hormonal deficiency or hyperprolactinemia, genitourinary infection, erectile and psychosexual problems, and through the withdrawal of drugs. Evidence for varicocele removal to improve fertility is limited but may have a place in selected cases: seek specialist input.

Assisted reproductive technology (ART)

ART options range in cost and invasiveness:

- Artificial insemination with men's sperm at midcycle
- Conventional IVF
- Intracytoplasmic sperm injection (ICSI) for severe male factor problems. Sperm can be readily obtained by testicular needle aspiration in the setting of obstructive azoospermia. Some azoospermic men with spermatogenic failure may have sperm recovered for ICSI from a testicular biopsy.

Donor insemination

For men with complete failure of sperm production.

Specialist referral and long-term management

Warning: Never institute testosterone replacement therapy in a newly recognised androgen deficient man who is seeking fertility. The fertility issue must be addressed first as testosterone therapy has a potent contraceptive action via suppression of pituitary gonadotrophins and sperm output.

When should I refer a patient to a specialist?

GPs can refer couples immediately or after a few months during which baseline tests are performed.

Referral to specialists will depend on the associated problem

- Endocrinologist (endocrine associated problems)
- Urologist (undescended testes, surgery)
- Fertility specialist/ART clinic that offers full assessment, including examination of the male partner

Long-term management

- Includes assessment for late-onset androgen deficiency, testis cancer

Fertility Clinics

A list of Australian ART Clinics, accredited by the Reproductive Technology Accreditation Committee are available via the Fertility Society of Australia website fertilitysociety.com.au.

Supporting the couple

- Acknowledge both partners' experience of infertility, and encourage couple communication
- Provide empathy and normalise feelings of grief and loss
- Refer on to a psychologist or counsellor if the couple require further support



Testicular Cancer

Diagnosis and management

- Testicular cancer is the second most common cancer in men aged 20-39 years. It accounts for about 20% of cancers in men aged 20-39 years and between 1% and 2% of cancers in men of all ages
- The majority of tumours are derived from germ cells (seminoma and non-seminoma germ cell testicular cancer)
- More than 70% of patients are diagnosed with stage I disease (pT1)
- Testicular tumours show excellent cure rates of >95%, mainly due to their extreme chemo- and radio-sensitivity
- A multidisciplinary approach offers acceptable survival rates for metastatic disease

The GP's role

GPs are typically the first point of contact for men who have noticed a testicular lump, swelling or pain. The GP's primary role is assessment, referral and follow-up.

- All suspected cases must be thoroughly investigated and referred to a urologist
- Treatment frequently requires multidisciplinary therapy that may include the GP
- Most patients will survive, hence the importance of long-term regular follow-up

Note on screening: there is little evidence to support routine screening. However, GPs may screen men at higher risk, including those with a history of previous testicular cancer, undescended testes, infertility or a family history of testicular cancer.

Benign cysts

Epididymal cysts, spermatocele, hydatid of Morgagni and hydrocele are all non-cancerous lumps that can be found in the scrotum. Diagnosis can be confirmed via an ultrasound.

Epididymal cysts	Common fluid-filled cysts which feel slightly separate from the testis and are often detected when pea-sized. Should be left alone when small, but can be surgically removed if they become symptomatic.
Spermatocele	Fluid-filled cysts containing sperm and sperm-like cells. These cysts are similar to epididymal cysts except they are typically connected to the testis.
Hydatid of Morgagni	Small common cysts located at the top of the testis. They are moveable and can cause pain if they twist. These cysts should be left alone unless causing pain.
Hydrocele	A hydrocele is a swelling in the scrotum caused by a buildup of fluid around the testes. Hydroceles are usually painless but gradually increase in size and can become very large. Hydroceles in younger men may be a warning of an underlying testis cancer, albeit rarely. In older men, hydroceles are almost always a benign condition, but a scrotal ultrasound will exclude testicular pathology.

Diagnosis and management

Medical history

- Scrotal lump
- Genital trauma
- Pain
- History of subfertility or undescended testis
- Sexual activity/history of urine or sexually transmitted infection

Physical examination

- Perform a clinical examination of the testes and general examination to rule out enlarged nodes or abdominal masses

Clinical notes: On clinical examination it can be difficult to distinguish between testicular and epididymal cysts. Lumps in the epididymis are rarely cancer. Lumps in the testis are nearly always cancer.

Refer to [Clinical Summary Guide 1: Step-by-Step Male Genital Examination](#)

Ultrasound

- Organise ultrasound of the scrotum to confirm testicular mass (urgent, organise within 1-2 days)
 - Always perform in young men with retroperitoneal mass

Investigation and specialist referral

- Advice on next steps for investigation and treatment
- Referral to urologist (seen within 2 weeks)
- CT scan of chest, abdomen and pelvis
- Serum tumour markers (AFP, hCG, LDH) before orchidectomy: may be ordered by GP prior to urologist consultation
- Semen analysis and hormone profile (testosterone, FSH, LH)
- Discuss sperm banking with all men prior to treatment
- Fine needle aspiration: scrotal biopsy or aspiration of testis tumour is not appropriate or advised

Clinical notes: The urologist will form a diagnosis based on inguinal exploration, orchidectomy and en bloc removal of testis, tunica albuginea, and spermatic cord. Organ-sparing surgery can be attempted in specific cases (solitary testis or bilateral tumours) in specialist referral centres.

Follow-up

Patient follow-up (in consultation with treating specialist) for:

- Recurrence
- Monitoring the contralateral testis by physical examination
- Management of complications, including fertility.

Classification and risk factors

There are three categories of testicular epithelial cancer (#1 below). Germ cell tumours account for 90-95% of cases of testicular cancer according to the World Health Organisation (WHO) classification system. Risk factors (#2 below) are well established.

1. The recommended pathological classification (modified WHO, 2004)

1. Germ cell tumours

- a. Seminoma
- b. Non-seminoma (NSGCT)
- Embryonal carcinoma
 - Yolk sac tumour
 - Choriocarcinoma
 - Teratoma

2. Sex cord stromal tumours

3. Non-specific stromal tumours

2. Prognostic risk factors

Pathological (pT1-pT4)

- Histopathological type
- For seminoma
 - Tumour size (>4 cm)
 - Invasion of the rete testis
- For non-seminoma
 - Vascular/lymphatic invasion or peri-tumoural invasion
 - Percentage embryonal carcinoma >50%
 - Proliferation rate (MIB-1) >70%

Clinical (for metastatic disease)

- Primary location
- Elevation of tumour marker levels (AFP, hCG, LDH)
- Presence of non-pulmonary visceral metastasis*

Clinical notes: Only clinical predictive factor for metastatic disease in seminoma.

Staging of testicular tumours

The TNM (Tumour, Node, Metastasis) system (UICC, 2009) is recommended for classification and staging purposes. The IGCCCG staging system is recommended for metastatic disease.

Refer to Clinical Summary Guide 6.1: Testicular Cancer Supplement

Treatment of testicular cancer

- The first stage of treatment is usually an orchidectomy: removal of the diseased testicle via an incision in the groin, performed under general anaesthetic. Men can be offered a testicular prosthesis implant during or following orchidectomy
- Further treatment depends on the pathological diagnosis (seminoma vs non-seminoma and the stage of disease) and may include surveillance, chemotherapy or radiotherapy
 - Men with early stage seminoma have treatment options of surveillance, chemotherapy or radiotherapy. The treatment is based on patient and tumour factors
 - Men with early stage non-seminoma have treatment options of surveillance, chemotherapy or further surgery. The treatment is again based on patient and tumour factors
 - Men with early stage disease who relapse and men with advanced disease are generally referred for chemotherapy. If chemotherapy leaves residual masses, these may contain cancer and usually will need surgical removal
- If a man has a bilateral orchidectomy (rare) he will require ongoing testosterone replacement therapy

Refer to Clinical Summary Guide 6.1: Testicular Cancer Supplement

Date reviewed: March 2018
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Patient support

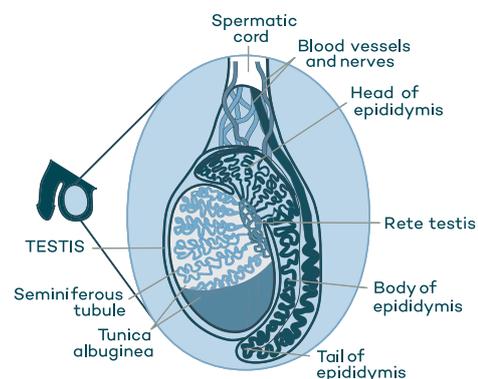
Diagnosis and treatment can be extremely traumatic for the patient and family. Regular GP consultations can offer patients a familiar and constant person with whom to discuss concerns (e.g. about treatment, cancer recurrence, and the effects of testis removal on sexual relationships and fertility). Referral to a psychologist may be required.

Patient follow-up

- **Regular follow-up is vital**, and patients with testicular cancer should be watched closely for several years. The aim is to detect relapse as early as possible, to avoid unnecessary treatment and to detect asynchronous tumour in the contralateral testis (incidence 5%)
- **Plan follow-ups in conjunction with the specialist.** Follow-up schedules are tailored to initial staging and treatment, and can involve regular physical examination, tumour markers and scans to detect recurrence. The timing and type of follow-ups need to be determined for each patient in conjunction with the treating specialist(s)

Semen storage

- **Men with testicular cancer** often have low or even absent sperm production even before treatment begins. Chemotherapy or radiotherapy can lower fertility further. All men should be offered pre-treatment semen analysis and storage as semen can be stored long-term for future use in fertility treatments. Men who have poor sperm counts may need to visit the sperm-banking unit on 2 or 3 occasions or, in severe cases, an Andrology referral may be required. Surgical removal of one testis does not affect the sperm-producing ability of the remaining testis
- **Provide prompt fertility advice** to all men considering chemotherapy or radiotherapy, to avoid delaying treatment. It is highly recommended that men produce semen samples for sperm storage prior to treatment
- **Sperm storage for teenagers can be a difficult issue** requiring careful and delicate handling. Coping with the diagnosis of cancer at a young age and the subsequent body image problems following surgery can be extremely difficult. Fatherhood is therefore not likely to be a priority concern. Producing a semen sample by masturbation can also be stressful for young men in these circumstances
- **Refer the patient to a fertility specialist** or a local infertility clinic. These clinics usually offer long-term sperm storage facilities



Schematic diagram of the testis

Diagram courtesy Of Dr C Borg, Monash Institute Of Medical Research



Australian Government
Department of Health





Testicular Cancer Supplement

Classification and treatment

TNM staging classification for testicular cancer (UICC, 2017 8th Edition)

pT - Primary Tumour*

pTX	Primary tumour cannot be assessed
pT0	No evidence of primary tumour (e.g. histologic scar in testis)
pTis	Intratubular germ cell neoplasia or ITGCN (sometimes loosely referred to as carcinoma in situ)
pT1	Tumour limited to testis and epididymis without vascular/lymphatic invasion: tumour may invade tunica albuginea but not tunica vaginalis
pT2	Tumour limited to testis and epididymis with vascular/lymphatic invasion, or tumour extending through tunica albuginea with involvement of tunica vaginalis
pT3	Tumour invades spermatic cord with or without vascular/lymphatic invasion
pT4	Tumour invades scrotum with or without vascular/lymphatic invasion

Regional Lymph Nodes Clinical

NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis with a lymph node mass 2 cm or less in greatest dimension, or multiple lymph nodes, none more than 2 cm in greatest dimension
N2	Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension or multiple lymph nodes, any one mass more than 2 cm but not more than 5 cm in greatest dimension
N3	Metastasis with a lymph node mass more than 5 cm in greatest dimension

Regional Lymph Nodes Pathological

pNX	Regional lymph nodes cannot be assessed
pN0	No regional lymph node metastasis
pN1	Metastasis with a lymph node mass 2 cm or less in greatest dimension and 5 or fewer positive nodes, none more than 2 cm in greatest dimension
pN2	Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or more than 5 nodes positive, none more than 5 cm; or evidence of extranodal extension of tumour
pN3	Metastasis with a lymph node mass more than 5 cm in greatest dimension

Distant Metastasis

MX	Distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis
- M1a	Non-regional lymph node(s) or lung
- M1b	Other sites

Serum Markers[†]

Sx	Serum markers not available or cannot be assessed
S0	Serum marker study levels within normal limits
S1	LDH < 1.5 x ULN; hCG < 5000 mIU/mL; AFP < 1000 ng/mL
S2	LDH 1.5-10 x ULN; hCG 5000-50,000 mIU/mL; AFP 1000-10,000 ng/mL
S3	LDH > 10 x ULN; hCG > 50,000 mIU/mL; AFP > 10,000 ng/mL

[†] LDH, lactate dehydrogenase; hCG, human chorionic gonadotrophin; AFP, alpha fetoprotein; ULN, upper limit of normal

* Except for pTis and pT4, where radical orchidectomy is not always necessary for classification purposes, the extent of the primary tumour is classified after radical orchidectomy; see pT. In other circumstances, TX is used if no radical orchidectomy has been performed.

Treatment options for localised testicular cancer

Following orchidectomy for stage I (localised) disease, metastases can occur in 15-20% of seminoma and 20-30% of NSGCT patients. Adjuvant treatments can decrease this risk, but come at the cost of adverse effects. Surveillance is another management option often used as many patients will not have a recurrence. A risk-adapted approach is now used to determine subsequent management.

pT1 Seminoma

- Surveillance is recommended (if facilities are available and the patient willing and able to comply)
- Carboplatin-based chemotherapy can be recommended (decreases recurrence rates from 15-20% to 1-3%)
- Adjuvant treatment not recommended for patients at very low risk (<4 cm size, absence of rete testis invasion)
- Radiotherapy is not recommended as adjuvant treatment, although it is a treatment option

pT1 Non-Seminomatous Germ Cell Tumour (NSGCT)

Low risk

(No Lymphovascular invasion, Embryonal component <50%, Proliferative index <70%)

- If the patient is able and willing to comply with a surveillance policy, long-term (at least 5 years) close follow-up should be recommended
- In patients not willing (or unsuitable) to undergo surveillance, adjuvant chemotherapy or nerve-sparing retroperitoneal lymph node dissection (RPLND) are options

High risk

(Lymphovascular invasion, pT2-pT4)

- Adjuvant chemotherapy with one or two courses of BEP is recommended
- If the patient is not willing to undergo chemotherapy or if chemotherapy is not feasible, nerve-sparing RPLND or surveillance with treatment at relapse (in about 50% of patients) are options

Treatment of metastatic disease (pt2-t4)

The treatment of metastatic germ cell tumours depends on:

- The histology of the primary tumour and
- Prognostic groups as defined by the IGCCCG (International Germ Cell Cancer Collaborative Group)

Seminoma

- Radiotherapy (30Gy), or chemotherapy (BEP) can be used with the same schedule as for the corresponding prognostic groups for NSGCT
- Any pT, N3 seminoma is treated as "good prognosis" metastatic tumour with three cycles of BEP or four cycles of EP
- PET scan plays a role in evaluation of post-chemotherapy masses larger than 3 cm

NSGCT

B=Bleomycin, E=Etoposide, P=Platinum for BEP or EP combination chemotherapy

- Low volume NSGCT with elevated markers (good or intermediate prognosis), three of four cycles of BEP; if no marker elevation, repeat staging at 6 weeks surveillance to make final decision on treatment
- Metastatic NSGCT with a good prognosis, primary treatment three courses of BEP
- Metastatic NSGCT with intermediate or poor prognosis, four courses of BEP and inclusion in clinical trial recommended
- Surgical resection of residual masses after chemotherapy in NSGCT is indicated in case of visible residual mass and when tumour marker levels are normal or normalising

IGCCCG Prognostic - based staging system for metastatic germ cell cancer

Prognosis	Seminoma	Non-Seminoma
Good (If ALL criteria are met)	<ul style="list-style-type: none"> • Any primary site • No non-pulmonary metastases • Normal AFP/normal LDH, low hCG 	If all criteria are met: <ul style="list-style-type: none"> • Testis/retroperitoneal primary • No non-pulmonary metastases e.g. liver, brain • Lower levels of tumour markers
Intermediate (If ALL criteria are met)	If all criteria are met: <ul style="list-style-type: none"> • Any primary site • No non-pulmonary metastases • Normal AFP/normal LDH, medium hCG 	If all criteria are met: <ul style="list-style-type: none"> • Testis/retroperitoneal primary • No non-pulmonary metastases e.g. liver, brain • Medium levels of tumour markers
Poor (If ANY criteria are met)	No seminoma carries poor prognosis	If any criteria are met: <ul style="list-style-type: none"> • Non-pulmonary metastases e.g. liver, brain • Higher level of tumour markers • Mediastinal primary for NSGCT

Additional investigations

Serum tumour markers

Post-orchidectomy half-life kinetics of serum tumour markers

- The persistence of elevated serum tumour markers 3 weeks after orchidectomy may indicate the presence of metastases, while its normalisation does not necessarily mean an absence of tumour
- Tumour markers should be assessed until they are normal, as long as they follow their half-life kinetics and no metastases are revealed on scans

Other examinations

Assessment of abdominal and mediastinal nodes and viscera (CT scan) and supraclavicular nodes (physical examination)

- Other examinations such as brain or spinal CT, bone scan or liver ultrasound should be performed if metastases are suspected
- Patients diagnosed with testicular seminoma who have a positive abdominal CT scan are recommended to have a chest CT scan
- A chest CT scan should be routinely performed in patients diagnosed with NSGCT because in 10% of cases small subpleural nodes are present that are not visible radiologically



Prostate Disease

BPH and Prostatitis - Diagnosis and management

1. Benign Prostatic Hyperplasia (BPH)

- BPH is the non-cancerous enlargement of the prostate gland
- Whilst not normally life threatening, BPH can impact considerably on quality of life

The GP's role

- GPs are typically the first point of contact for men with BPH
- The GP's role in the management of BPH includes clinical assessment, treatment, referral and follow-up

Diagnosis

Medical History

- Lower urinary tract symptoms (LUTS)

Urinary symptoms of BPH

- Hesitancy
- Weak and poorly directed stream
- Straining
- Post-urination dribble or irregular stream
- Urinary retention
- Overflow or paradoxical incontinence
- Urgency
- Frequency
- Nocturia

Clinical note: Some men with BPH may not present with many or any symptoms of the disease.

Symptom Score

- Evaluation of symptoms contributes to treatment allocation and response monitoring
- The International Prostate Symptom Score (IPSS) questionnaire is recommended

Physical examination

- Digital rectal examination (DRE): can estimate prostate size and identify other prostate pathologies
- Basic neurological examination
- Perianal sensation and sphincter tone
- Bladder palpation
- Calibre of the urethral meatus

Investigations

- Urine analysis: midstream urine: microscopy, culture and sensitivity (MC&S)
- Prostate specific antigen (PSA) levels: while PSA levels are mostly used as a marker of prostate cancer, PSA levels can be elevated as a result of non cancerous prostate disease (BPH and prostatitis) - benefits & risks of PSA testing should be discussed

PSA levels for different age groups of Western men

Age range years	Serum PSA (ng/mL) median	Serum PSA (ng/mL) upper limit of normal
40-49	0.65	2.0
50-59	0.85	3.0
60-69	1.39	4.0
70-79	1.64	5.5

Other PSA Tests

- PSA velocity or doubling time: if the PSA level doubles in 12 months it may indicate prostate cancer or prostatitis. An elevated PSA and a stable velocity suggests BPH
 - Free-to-total PSA ratio: high ratio (>25%) suggests BPH; low ratio (<10%) suggests prostate cancer
 - Prostate Health Index (PHI): not covered by the MBS, PHI thought to be more specific for diagnosing prostate cancer than PSA level alone; good quality evidence lacking & not recommended in Australian prostate cancer testing guidelines
- Creatinine levels
- Post-void residual urine (ultrasound)

Optional investigations (usually by the urologist)

- Uroflowmetry (specialist only)
- Pressure-flow study
- Endoscopy
- Urinary tract imaging
- Voiding chart

Management

Treatment

Observation and review: for mild or low impact symptoms

- Optimise through reassurance, education, periodic monitoring and lifestyle modifications

Medical therapy: for moderate to severe symptoms

α -blockers

- Suited to patients with moderate/severe LUTS
- All α 1-blockers (Alfuzosin, Tamsulosin, Terazosin, Prazosin) have a similar clinical efficacy (side-effect profile favour Tamsulosin)

5 α -reductase-inhibitors

- Suited to patients with moderate/severe LUTS and enlarged prostates (>30-40 mL)
- Including Dutasteride and Finasteride
- Finasteride and Dutasteride both reduce prostate volume by 20-30% and seem to have similar clinical efficacy

Combination therapy

- Combination of α -blocker (tamsulosin) with 5 α -reductase-inhibitor (dutasteride), available in Australia as Duodart®
- Shown to be more beneficial and durable than monotherapy

Beta 3-adrenoceptor agonists & antimuscarinics:

- Used for overactive bladder or storage symptoms

Day procedure (Urolift® system):

- Involves placement of several retractors into the prostatic lobes to increase the urethral opening
- Not suitable for all men (urologist assessment)
- Short-term side-effects profile better than surgery but longer term outcomes unknown

Surgical therapy: for severe or high impact symptoms

- Transurethral resection of the prostate (TURP) for prostates 30–80 mL
- Transurethral incision of the prostate (TUIP) for prostates <30 mL and without middle lobe
- Open prostatectomy or TURP for those >80 mL
- Laser ablation or resection of BPH available in specific surgical centres
- Laser surgery regarded as equivalent efficacy to TURP
- Other options also available

Specialist referral

- Indicators for referral to a urologist
- The patient's symptoms become more serious: their symptom score moves into the 'severely symptomatic' category
- The patient's symptoms significantly interfere with their quality of life – score of 5 'unhappy' or 6 'terrible' on the IPSS
- After an episode of urinary retention, urinary infection, haematuria
- No response to medical treatment
- A risk of prostate cancer exists
- Post void residual urine on ultrasound assessment >100 mL

Follow-up

- It is appropriate for the GP to monitor and follow-up a patient with respect to all the treatment modalities. However, if the patient is not responding to medical treatment, refer to the urologist
- Clinical notes: Men who have had TURP remain at risk for prostate cancer and need routine prostate cancer checks, as per guidelines

Recommended follow-up timeline after BPH treatment

Treatment modality	First year after treatment			Annually thereafter
	6 weeks	12 weeks	6 months	
Observation & review	X	X	✓	✓
5 α -reductase inhibitors	X	✓	✓	✓
α -blockers	✓	X	✓	✓
Surgery or minimal invasive treatment	✓	✓	✓	✓

2. Prostatitis

- Prostatitis is an inflammation of the prostate gland
- It can be a result of bacterial or non-bacterial infection
- Acute bacterial prostatitis, the least common form, can be life threatening if the infection is left untreated
- Whilst not normally life threatening, prostatitis can impact considerably on a man's quality of life

The GP's role

- GPs are typically the first point of contact for men with prostatitis
- The GP's role in the management of prostatitis includes clinical assessment, treatment, referral and follow-up

Diagnosis

Medical History

- Urinary symptoms
- Pain

Symptoms of prostatitis

- Dysuria – painful urination
- Urgent need to urinate
- Frequent urination
- Painful ejaculation
- Lower back pain
- Perineal pain
- Chills and/or fever
- Muscular pain
- General lack of energy

Investigations

- Digital rectal examination (DRE): prostate tenderness or swelling
- Prostate specific antigen (PSA) levels: elevated PSA levels
 - PSA velocity: if the PSA level doubles in 12 months it may indicate prostate cancer or prostatitis
- Urine analysis:
 - First pass urine: Chlamydia urine PCR test
 - Midstream urine: MC&S
 - Urine PCR for STIs should be done if Chlamydia or other STI a likely cause

Management

Treatment

- There are several therapeutic options available. Evidence for benefits of these treatment options is limited; however, they may be trialled with the patient
- With respect to management by the specialist, use of the following forms of treatment will vary according to the individual, their condition and the stage of their treatment
- Most patients at some stage in their treatment however will have antibiotic therapy

Bacterial prostatitis (acute and chronic) can be treated using antibiotics. Once diagnosed, rapid treatment is essential to avoid further complications.

Chronic nonbacterial prostatitis (chronic prostate pain syndrome); causal treatment is difficult and cure is often not an option. Treatment focus is on symptom management, to improve quality of life.

Medication options

- α -blockers
 - Suited to patients with moderate/severe LUTS
 - All α 1-blockers (Alfuzosin, Tamsulosin, Terazosin, Prazosin, Silodosin) have similar clinical efficacy and side-effects
- Antibiotics (not all antibiotics penetrate the prostate gland)
 - Recommend: Norfloxacin, Ciprofloxacin, Trimethoprim, Sulphamethoxazole/Trimethoprim, Erythromycin, Gentamicin
 - Young men with confirmed Chlamydia prostatitis: Doxycycline (Vibramycin®)
- Muscle relaxants: Diazepam, Baclofen
- Analgesics
- Non-steroidal anti-inflammatory drugs
- 5 α -reductase-inhibitors: Finasteride

Surgical options*

- Transurethral incision of the bladder neck
- Transurethral resection of the prostate

*Surgery has a very limited role and requires an additional, specific indication e.g. prostate obstruction, prostate calcification

Other options

- Lifestyle changes: avoid activity that involves vibration or trauma to the perineum e.g. bike riding, tractor driving, long-distance driving, cut out caffeine, spicy foods, alcohol, avoid constipation
- Pelvic floor relaxation techniques
- Prostate massage
- Supportive therapy: biofeedback, relaxation exercises, acupuncture, massage therapy, chiropractic therapy and meditation
- Heat therapy

Specialist referral

Indicators for referral to a urologist:

- When the GP is not confident in managing the condition
- If the GP is concerned there are other potential diagnoses, particularly prostate or bladder cancer
- Those who do not respond to initial first-line therapy such as antibiotics and/or α -blockers. For these patients, more invasive investigations, such as cystoscopy and transrectal prostate ultrasound scan, are commonly done

Follow-up

- The need for specialist follow-up depends on the patient's progress
- Most specialists will refer back to the GP to monitor the progress of the patient
- The specialist will seek re-referral if the patient's progress is not satisfactory
- A GP can re-refer if they do not feel comfortable in managing a relapse



Ejaculatory Disorders

1. Premature Ejaculation (PE)

- The most common ejaculatory disorder
- Ejaculation that occurs sooner than desired
- Primary (lifelong) PE
 - patient has never had control of ejaculation
 - disorder of lower set point for ejaculatory control
 - unlikely to diagnose an underlying disease
- Secondary (acquired) PE
 - patient was previously able to control ejaculation
 - most commonly associated with erectile dysfunction (ED)
- Definition (ISSM, 2014):
 - an intravaginal ejaculatory latency time (IELT) of less than about 1 minute (lifelong) or about 3 minutes (acquired), and
 - an inability to delay ejaculation on nearly all occasions, and
 - negative personal consequences such as distress.
- Primary (lifelong) PE tends to present in men in their 20s and 30s; secondary (acquired) PE tends to present in older age groups

Clinical notes: PE is a self reported diagnosis, and can be based on sexual history alone.

The GP's role

- GPs are typically the first point of contact for men with a disorder of ejaculation
- The GP's role in management of PE includes diagnosis, treatment and referral
- Offer brief counselling and education as part of routine management

How do I approach the topic?

- "Many men experience sexual difficulties. If you have any difficulties, I am happy to discuss them."

Diagnosis

Medical history

Sexual history

- Establish presenting complaint (i.e. linked with ED)
- Intravaginal ejaculatory latency time
- Onset and duration of PE
- Previous sexual function
- History of sexual relationships
- Perceived degree of ejaculatory control
- Degree of patient/partner distress
- Determine if fertility is an issue

Medical

- General medical history
- Medications (prescription and non prescription)
- Trauma (urogenital, neurological, surgical)
- Prostatitis or hyperthyroidism (uncommonly associated)

Psychological

- Depression
- Anxiety
- Stressors
- Taboos or beliefs about sex (religious, cultural)

Physical examination

- General examination
- Genito-urinary: penile and testicular
 - rectal examination (if PE occurs with painful ejaculation)
- Neurological assessment of genital area and lower limb

Refer to Clinical Summary Guide 1: Step-by-Step Male Genital Examination

Management

Treatment

Treatment decision-making should consider:

- Aetiology
- Patient needs and preferences
- The impact of the disorder on the patient and his partner
- Whether fertility is an issue.

Management of PE is guided by the underlying cause.

Primary PE:

- 1st line: SSRI, reducing penile sensation, e.g. using topical penile anaesthetic sprays (only use with a condom)
- 2nd line: Behavioural techniques, counselling
- Most men require ongoing treatment to maintain normal function.

Secondary PE

- Secondary to ED: Manage the primary cause or
- 1st line: Behavioural techniques, counselling
- 2nd line: SSRI, reducing penile sensation, PDE5 inhibitors
- Many men return to normal function following treatment

Treatment options

Erectile dysfunction (ED) treatment

- If PE is associated with ED, treat the primary cause (e.g. PDE5 inhibitors)

Behavioural techniques

- 'Stop-start' and 'squeeze' techniques, extended foreplay, pre-intercourse masturbation, cognitive distractions, alternate sexual positions, interval sex and increased frequency of sex
- Techniques are difficult to maintain long-term

Psychosexual counselling

- Address the issue that has created the anxiety or psychogenic cause
- Address methods to improve ejaculatory control. Therapy options include meditation/relaxation, hypnotherapy and neuro-biofeedback

Oral pharmacotherapy

A common side-effect of some selective serotonin reuptake inhibitors (SSRI) and tricyclic antidepressants is delayed ejaculation. SSRIs are commonly prescribed for PE; except for Priligy®, all other SSRIs are used off-label for treating PE. Common dosing regimens are:

- **Dapoxetine hydrochloride (Priligy®):** a short-acting on-demand SSRI, the only SSRI approved for treatment of PE in Australia; 30 mg taken 1-3 hours before intercourse
- **Fluoxetine hydrochloride:** 20 mg/day
- **Paroxetine hydrochloride:** 20 mg/day. Some patients find 10mg effective; 40 mg is rarely required. Pre-intercourse dosing regime is generally not effective
- **Sertraline hydrochloride:** 50 mg/day or 100 mg/day is usually effective. 200 mg/day is rarely required. Pre-intercourse dosing regime is generally not effective
- **Clomipramine hydrochloride*:** 25-50 mg/day or 25 mg 4-24 hrs pre-intercourse

* Suggest 25 mg on a Friday night for a weekend of benefit (long acting)

PDE-5 Inhibitors: e.g. Sildenafil (Viagra®: 50-100 mg), 30-60 minutes pre-intercourse if PE is related to ED.

'Start low and titrate slow'. Trial for 3-6 months and then slowly titrate down to cessation. If PE reoccurs, trial drug again. If one drug is not effective, trial another.

Reducing penile sensation

- **Topical applications:** Local anesthetic gels/creams can diminish sensitivity and delay ejaculation. Excess use can be associated with a loss of pleasure, orgasm and erection. Apply 30 minutes prior to intercourse to prevent trans-vaginal absorption. Use a condom if intercourse occurs sooner
- **Lignocaine spray:** 10% ('Stud' 100 Desensitising spray for men; this should be used with a condom to prevent numbing of partner's genitalia)
- **Condoms:** Using condoms can diminish sensitivity and delay ejaculation, especially condoms containing anaesthetic

Clinical notes: combination treatment can be used.

Specialist referral

For general assessment refer to a specialist (GP, endocrinologist or urologist) who has an interest in sexual medicine.

Refer to a urologist: If suspicion of lower urinary tract disease

Refer to an endocrinologist: If a hormonal problem is diagnosed

Refer to counsellor, psychologist, psychiatrist or sexual therapist: For issues of a psychosexual nature

Refer to fertility specialist: If fertility is an issue

2. Other ejaculatory disorders

- Spectrum of disorders including delayed ejaculation, anorgasmia, retrograde ejaculation, anejaculation and painful ejaculation
- Can result from a disrupted mechanism of ejaculation (emission, ejaculation and orgasm)
- Disorders of ejaculation are uncommon, but are important to manage when fertility is an issue
- Etiology of ejaculatory dysfunction are numerous and multifactorial, and include psychogenic, congenital, anatomic causes, neurogenic causes, infectious, endocrinological and secondary to medications (antihypertensive, psychiatric (SSRIs), α -blocker)

Delayed ejaculation / no orgasm

Delayed ejaculation

- Delayed ejaculation occurs when an 'abnormal' or 'excessive' amount of stimulation is required to achieve orgasm with ejaculation
- Often occurs with concomitant illness
- Associated with ageing
- Can be associated with idiosyncratic masturbatory style (psychosexual)

Investigation	Treatment
Testosterone levels	Aetiological treatment: Management of underlying condition or concomitant illness e.g. androgen deficiency Medication modification: consider alternative agent or 'drug holiday' from causal agent Psychosexual counselling

Anorgasmia

- Anorgasmia is the inability to reach orgasm
- Some men experience nocturnal or spontaneous ejaculation
- Aetiology is usually psychological

Investigation	Treatment
Testosterone levels	Psychosexual counselling Medication modification: consider alternative agent or 'drug holiday' from causal agent Pharmacotherapy: Pheniramine maleate, decongestant medication such as Sudafed® or antihistamines such as Periactin® may help but have a low success rate.

Orgasm with no ejaculation

Retrograde "dry" ejaculation

- Retrograde ejaculation occurs when semen passes backwards through the bladder neck into the bladder. Little or no semen is discharged from the penis during ejaculation
- Causes include prostate surgery, diabetes
- Patients experience a normal or decreased orgasmic sensation
- The first urination after sex looks cloudy as semen mixes into urine

Investigation	Treatment
Post-ejaculatory urinalysis - presence of sperm and fructose	<p>Counselling: to normalise the condition</p> <p>Pharmacotherapy: possible restoration of antegrade ejaculation and natural conception; note that pharmacotherapy may not be successful</p> <ul style="list-style-type: none"> - Imipramine hydrochloride (10 mg, 25 mg tablets) 25-75 mg three times daily - Pheniramine maleate (50 mg tablet) 50 mg every second day - Decongestant medication such as Sudafed®; antihistamines such as Periactin® <p>Medication modification: consider alternative agent or 'drug holiday' from causal agent</p> <p>Behavioural techniques: The patient may also be encouraged to ejaculate when his bladder is full, to increase bladder neck closure</p> <p>Vibrostimulation, electroejaculation, or sperm recovery from post-ejaculatory urine: Can be used when other treatments are not effective, to retrieve sperm for assisted reproductive techniques (ART)</p>

Anejaculation

- Anejaculation is the complete absence of ejaculation, due to a failure of semen emission from the prostate and seminal ducts into the urethra
- Anejaculation is usually associated with normal orgasmic sensation

Investigation	Treatment
Testosterone levels	Counselling: to normalise the condition
Post-ejaculatory urinalysis - absence of sperm and fructose	Medication modification: consider alternative agent or 'drug holiday' from causal agent
Ultrasound of seminal vesicles and post ejaculatory ducts (usually via the rectum)	<p>Vibrostimulation or electroejaculation: Used when other treatments are not effective, to retrieve sperm for ART</p> <p>Pharmacotherapy: Pheniramine maleate, decongestant medication such as Sudafed® or antihistamines such as Periactin® may help but have a low success rate</p>

Painful ejaculation

- Painful ejaculation is an acquired condition where painful sensations are felt in the perineum or urethra and urethral meatus
- Multiple causes e.g. ejaculatory duct obstruction, post-prostatitis, urethritis, autonomic nerve dysfunction

Investigation	Treatment
Urine analysis (first pass urine - chlamydia & gonorrhoea urine PCR test; midstream urine MC&S)	Aetiological treatment (e.g. infections-prostatitis, urethritis): Implement disease specific treatment
Cultures of semen (MC&S)	Behavioural techniques: If no physiological process identified. Use of relaxation techniques (i.e. ejaculation in conditions when muscles can be relaxed), use of fantasy for distraction
Cystoscopy	Psychosexual counselling



Erectile Dysfunction

Diagnosis and management

- Is a persistent or recurrent inability to attain and/or maintain a penile erection sufficient for satisfactory sexual activity and intercourse
- Is a common condition affecting 1 in 5 men over the age of 40 years
- Is associated with chronic disease including cardiovascular disease and diabetes. Furthermore, ED may be an early warning sign of these chronic diseases
- Is a treatable condition that can impact strongly on the well-being of men and their partners
- The sexual health of older patients is often overlooked.
- Understanding female partners' sexual needs as part of management should be considered

The GP's role

- GPs are typically the first point of contact for men with erectile dysfunction
- The GP's role in the management of erectile dysfunction includes clinical assessment, treatment including counselling, referral and follow-up

How do I approach the topic?

- "Many men (of your age/with your condition) experience sexual difficulties. If you have any difficulties, I am happy to discuss them"
- "It is common for men with diabetes/heart disease/high blood pressure to have erectile problems. Also, erectile problems can indicate you are at higher risk for future health problems such as heart disease. So it's an important issue for us to discuss if it is a problem for you."

Diagnosis

History

Medical	Sexual	Psychosocial
Lifestyle	Define the nature of the sexual dysfunction	Depression
General health	ED onset	Anxiety
Chronic disease	Spontaneous morning erections	Relationship difficulties
Genital disease	Penetration possible	Sexual abuse
Medications	Maintenance of erection	

Physical examination

- Genito-urinary: penis, testes
- Cardiovascular: BP, HR, waist circumference, cardiac examination, carotid bruits, foot pulses
- Neurological: focused neurological examination

Refer to [Clinical Summary Guide 1: Step-by-Step Male Genital Examination](#)

Investigations

- Diabetes mellitus
- Hyperlipidemia
- Hypogonadism
- Cardiovascular disease
- Others as indicated

Management

Treatment decision-making

- Cause: organic, psychosocial or combined
- Patient and partner preferences
- Benefits, risks and costs of treatment options

Treatment summary

1st line

- Alter modifiable risk factors and causes
- Facilitate sexual health

2nd line

- Oral agents (PDE5 inhibitors)
- Counselling and education
- Vacuum devices/rings

3rd line

- Consider specialist referral
- Intracavernous vasoactive drug injection

4th line

- Specialist referral
- Surgical treatment (penile implants)

For full details of treatment, refer over page.

Specialist referral

Indicators for specialist referral

- Level of GP training/experience
- Patient request

Refer to endocrinologist

- Complex endocrine disorders

Refer to urologist

- Pelvic or perineal trauma
- Penile deformities
- Patients for penile implants

Refer to ED specialist (either endocrinologist or urologist)

- Complex problems including vascular, neurological and treatment failures

Refer to counsellor, psychologist, psychiatrist or sexual therapist

- Relationship problems
- Complex psychiatric or psychological disorder

Follow-up

Follow-up is essential to ensure the best patient outcomes.

Assess:

- Effectiveness of treatment, patient/partner satisfaction
- Any adverse effects of treatment
- Overall physical and mental health
- Partner's sexual function (e.g. libido), couple's adaptation to changes to sex life.

Treatment of erectile dysfunction (ED)

1st line treatment

Alter modifiable risk factors and causes

- Modify medication regime: Change current medications linked to ED (e.g. antidepressants, antihypertensives) when possible
- Manage androgen deficiency: When diagnosed and a cause is established, androgen replacement therapy
- Address psychosocial issues: Includes relationship difficulties, anxiety, lifestyle changes or stress

Facilitating sexual health

- Lifestyle changes: Smoking cessation, reduced alcohol, improved diet and exercise, weight loss, stress reduction, illicit drug cessation, compliance with diabetes and cardiovascular medications
- Discuss sexual misinformation: Includes importance of sufficient arousal and lubrication, and realistic expectations, such as normal age-related changes

2nd line treatment

Oral agents: PDE5 inhibitors

- Adapt dose as necessary, according to the response and side-effects
- Treatment is not considered a failure until full dose is trialled 7-8 times
- Ensure patient knows that sexual stimulation is required for drug to work
- Common side-effects: headaches, flushing, dyspepsia, nasal congestion, backache and myalgia
- Contraindicated in patients who take long and short-acting nitrates, nitrate-containing medications, or recreational nitrates (amyl nitrate)
- Exercise caution when considering PDE5 inhibitors for patients with: active coronary ischaemia, congestive heart failure and borderline low blood pressure, borderline low cardiac volume status, a complicated multi-drug antihypertensive program, and drug therapy that can prolong the half-life of PDE5 inhibitors

On demand dosing

Sildenafil (Viagra® & generics): 25, 50 and 100 mg; recommended starting dose 50 mg (usually need 100 mg)

Tadalafil (Cialis®): 10 and 20 mg; recommended starting dose 20 mg

Vardenafil (Levitra®): 5, 10 and 20 mg; recommended starting dose 10 mg (usually need 20 mg)

Daily dosing

Tadalafil (Cialis®): 5 mg at the same time every day. The dose may be decreased to 2.5 mg but not exceed 5 mg daily

Counselling and education

- Offer brief counselling and education to address psychological issues linked with ED, such as relationship difficulties, sexual performance concerns, anxiety and depression
- Consider concurrent patient/couple counselling with a psychologist, to address more complex issues, and/or to provide support during other treatment trials

Vacuum devices and rings

- Suitable for men who are not interested in, or have contraindications for pharmacologic therapies
- Not suitable for men with severe ED
- Typically suitable for patients in long-term relationships
- Adverse effects include penile discomfort, numbness and delayed ejaculation

3rd line treatment

- Consider referral or specialist training

Intracavernous vasoactive drug injection

- Alprostadil (Caverject Impulse®): 10 and 20 mcg is the first choice for its high rate of effectiveness and low risk of priapism and cavernosal fibrosis. If erection is not adequate with alprostadil alone, it may be combined with other vasoactive drugs (bimix/trimix) to increase efficacy or reduce side-effects
- Commence with minimum effective dose and titrate upwards if necessary
- Initial trial dose should be administered under supervision of an experienced GP or specialist
- Erection usually appears after 5 to 15 minutes and lasts according to dose injected. Aim for hard erection not to last longer than 60 minutes
- Recommended maximum usage is 3 times a week, with at least 24 hours between uses
- Contraindicated in men with history of hypersensitivity to drug or risk of priapism
- Patient comfort and education are essential. Inform patient of side-effects (priapism, pain, fibrosis and bruising, particularly if on Aspirin or Warfarin). Provide a plan for urgent treatment of priapism if necessary

4th line treatment

- Refer to urologist (surgical treatments)
- Penile prosthesis: A highly successful option for patients who prefer a permanent solution or have not had success with pharmacologic therapy. Surgery is irreversible and eliminates the normal function of the corpus cavernosa. Cost may be a limiting factor for some patients
- Vascular surgery: Microvascular arterial bypass and venous ligation surgery can increase arterial inflow and decrease venous outflow but restoration of normal function is uncommon

Possible emerging treatments

- Low dose shock wave therapy, topical nitrates and new oral agents are being evaluated and may play a role in treatment of ED in the future



Klinefelter Syndrome

Diagnosis and management

Klinefelter syndrome

- A genetic condition affecting 1 in 550 men
- Due to the presence of an extra X chromosome (47,XXY)
- Chromosomal mosaicism (both 47,XXY and 46,XY cells) occurs in 10%
 - Usually have milder signs and symptoms, depending upon the level of mosaicism
- The most common cause of androgen deficiency
- Characterised by:
 - Impaired testosterone production (androgen deficiency)
 - Impaired spermatogenesis (azoospermia).
- Up to 70% of cases remain undiagnosed
- Classical features may be present (Image 1), however, there is a wide spectrum of signs and symptoms
- Small testes < 4 mL is the only consistent feature
- Men will benefit from life-long testosterone treatment

Clinical notes: penile development may be normal or at the lower end of the normal range.

The GP's role

- The clinical presentation may be subtle and its diagnosis overlooked unless actively considered
- Most males are diagnosed prenatally, during puberty or in association with infertility, or androgen deficiency
- The GP's role includes clinical assessment, laboratory investigation, treatment, referral and follow-up

Clinical notes: the low detection rate (~30%) of Klinefelter syndrome would be improved if testicular examination became a regular part of a male physical examination.

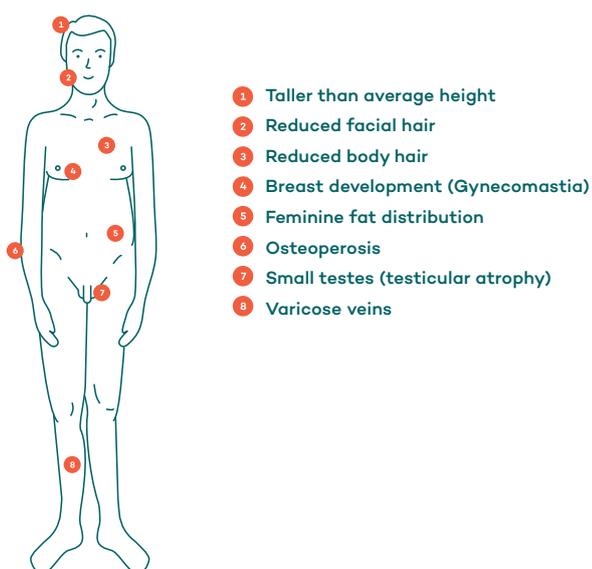


Image 1 – Clinical features of Klinefelter syndrome
Features present may be few, some or all.



30 mL normal



4 mL Klinefelter syndrome

Image 2 – Example of 30 ml and 4 ml adult testis

Diagnosis

Medical history

- Pubertal development (poor progression)
- Sexual function (low libido)
- Degree of virilisation
- Psychosocial (learning, schooling, behaviour)
- Infertility

Examination

Infancy

- No hormonal features prior to puberty
- Undescended testes
- Rarely ambiguous genitalia
- Occasional finding of small firm testes in childhood

Adolescence

- Small testes (< 4mL) characteristic from mid puberty
- Poor pubertal progression and facial, body and pubic hair relative to age
- Gynecomastia
- Feminine fat distribution
- Taller than average height
- Poor muscle development

Adult

- Small testes (< 4mL)
- Reduced facial, body and pubic hair
- Gynecomastia
- Feminine fat distribution (& weight gain)
- Taller than average height
- Poor muscle development

Refer to Clinical Summary Guides 1-3

Testicular Volume

Assessment of testicular volume is essential

- Testicular volume is assessed using an orchidometer
- Normal testicular volume range:
 - childhood 3 mL or smaller
 - puberty 4–14 mL
 - adulthood 15–35 mL
- Small testes < 4 mL is the only consistent feature of Klinefelter syndrome (Image 2)

Clinical notes: the testes may start to develop in early puberty, but soon regress to < 4mL by mid puberty.

Investigations

- Two morning fasting samples of serum total testosterone, taken on different mornings
- Total serum testosterone, low or low normal from mid puberty (normal range 8–27 nmol/L)
- Serum LH, elevated from mid puberty (normal range 1–8 IU/L)
- Serum FSH, elevated from mid puberty (normal range 1–8 IU/L)
- Karyotype (47,XXY)
 - 10% mosaic 46,XY/47,XXY

Other investigations:

- Bone density study, DEXA (osteoporosis)
- Semen analysis if fertility is an issue (usually azoospermic)
- TFT (hypothyroidism)
- Fasting blood glucose (diabetes)

Management

Testosterone replacement therapy (TRT)

- TRT is life-long and may be started from mid puberty although many boys initially virilise normally
- Gynecomastia is an indication to start TRT
- Teenage boys usually start on a low dose and build to full adult dose as puberty progresses
- Even if measured T levels are normal, there is evidence that bone density is reduced in the presence of chronically raised LH levels, suggesting that TRT is indicated

Clinical notes: In adults, consult with a fertility specialist (if appropriate) to develop a plan for fertility prior to TRT, as TRT will suppress spermatogenesis.

Other treatments

- Gynecomastia may be transient, lasting one to three years.
- Adequate testosterone replacement often results in complete resolution over 12 months
 - Surgical removal, mastectomy (do not refer for early surgery as it may resolve naturally or following TRT)

Follow-up

Monitoring TRT is essential

Prostate

- Men with Klinefelter syndrome are less likely to die from prostate cancer, and restoring testosterone levels to the normal range is likely only to return their risks to those of their eugonadal peers
- Subject to the same advice about testing for prostate cancer as their peers (PSA)

Clinical notes: Exclusion of significant prostate pathology is essential for those aged >40 years at the commencement of therapy.

Raising clinical awareness

Aside from cognitive and behavioural features, it is important to note that despite the following recognised disease associations with Klinefelter syndrome the absolute risk is low.

- Tumours: leukaemia, mediastinal germ cell tumours, lymphoma, teratoma, breast cancer
- Endocrine: hypothyroidism, diabetes mellitus (Type 1 and 2, rare)
- Cardiovascular: venous ulcers, venous thromboembolic disease
- Auto-immune: systemic lupus erythematosus (SLE), coeliac disease

T formulation	Usual (starting) dosage	Dosage range
Injections (IM)		
Sustanon®, Primoteston®	250 mg every 2 weeks	10 to 21-day intervals
Reandron®	1000 mg every 12 weeks following loading dose at 6 weeks (i.e., 0, 6, 18, 30 weeks)	Longer term: 8 to 16-week intervals
Transdermal patch		
Androderm®	2.5 mg and 5.0 mg preps:	
5 mg applied nightly	2.5 to 5 mg daily	
Transdermal gel		
Testogel®	1%: 50 mg in 5 g sachet or pump pack dispenser; applied daily	2.5 to 10 g gel (25 mg to 100 mg T) daily
Transdermal cream		
AndroForte®5	5% (50 mg/mL): 2 mL (100 mg) applied to the torso once daily	Review levels in 1 month, up to 4 mL daily
Oral undecanoate		
Andriol Testocaps®	40 mg capsule: 160 to 240 mg in 2 to 3 doses daily	80 to 240 mg daily

* Sustanon® is not available on the Australian Pharmaceutical Benefits Scheme (PBS)

Some features of Klinefelter syndrome are specific to the syndrome (e.g. behavioural and cognitive) and some features relate to the androgen deficiency (e.g. osteoporosis).

Specialist referral

Children and adolescents

- Refer to a paediatric endocrinologist
- Refer for educational and allied health assistance if needed

Adults

- Develop a plan in consultation with an endocrinologist for:
 - Hormone deficiency
 - Infertility
 - Osteoporosis
- Refer to a fertility specialist, as appropriate, for sperm recovery from testis (occasionally) or donor sperm.

Infertility

Infertility is a major implication of Klinefelter syndrome

- Most men are azoospermic
- Sperm are rarely found in the ejaculate but in 30-50% of cases sperm can be found in testicular biopsy tissue
- Treatment options
 - Intracytoplasmic Sperm Injection (ICSI) - the risk of 47,XXY offspring is low
 - Donor insemination
- Counselling may be necessary

Refer to [Clinical Summary Guide 5: Male Infertility](#)

Learning and behaviour difficulties

The general intellectual ability of boys with Klinefelter syndrome is within the normal range. However, boys with Klinefelter syndrome may have:

- Difficulties with speech and reading
- Delayed motor development
- Reduced attention span
- Behavioural problems (particularly in adolescence)
- Educational and allied health assistance may be required



Engaging Men

In primary care settings

- There is a myth that men don't visit their doctor. In fact, most men 40+ years have visited a doctor in the last 12 months. But compared to women, men visit the doctor less often, have shorter consultations and tend to see their GP later in the course of their illness
- A range of barriers appear to exist for men seeking help, particularly if the topic is of a sensitive nature
- Discussing sensitive issues such as mental health, sexual dysfunction or reproductive health is a shared responsibility between patient and doctor
- It is important for GPs to maximise opportunities to engage men effectively

The GP's role

- The GP is often the first point of contact for men when they decide to seek help for their health concerns
- The GP is ideally placed to effectively engage men in discussions about their health
- GPs can play a leading role in identifying, assessing and managing major physical and mental health concerns faced by men
- GPs are the primary source of help for sexual difficulties in men and women of all ages, particularly for older couples

What influences men's interaction with GPs^{1,2}

- Men are often influenced by their partners and friends when thinking about seeking help
- Metaphors comparing men's bodies to cars have been used in health promotion to enhance men's understanding of preventable risk factors, although it may not appeal to all men
- Displaying and disseminating health information in the local community may improve men's health awareness and encourage men to visit their GP regularly
- Creating more 'male friendly' environments by i) using men's health displays ii) acknowledging the challenges men face in making and waiting for appointments iii) providing a broad range of services and iv) providing evening appointments. However, the effectiveness of 'male friendly' environments should be tested at a local clinic level
- The perception of mental health conditions such as depression and anxiety as weaknesses as opposed to physical illnesses can act as a barrier to seeking help. It's important that GPs reinforce the message that depression and anxiety are illnesses that can be managed in most cases like any other illness
- The gender of the GP does not matter, except when dealing with issues related to sexual or reproductive health where a male may be preferred by some men, particularly for older men
- In older men and/or couples, barriers to sexual health help seeking include the GP's personal attitudes towards sexuality, the perceived relationship with the GP and a preference for the GP to be the same age

1 Harris MF et al., Med J Aust 2006; 185:440-4

2 Gott M et al., Fam Pract 2003; 20:690-5

What influences GPs interaction with men?³

- The amount (or lack) of time a GP has for a consultation
- The nature of the relationship with the patient, e.g. a new/ established patient; appreciation of the individual's background
- Religious, cultural and communication barriers of the GP
- The perceived patient reluctance or embarrassment to discuss sensitive issues
- GP embarrassment or attitude to discussing sexual or mental health
- The GP's level of knowledge in sensitive areas such as sexual or mental health
- Stereotyping men with respect to their health concerns and needs, e.g. older men are less likely to have sexual issues; men don't have depression
- The gender and age of the GP, i) a male GP may be preferred and ii) the younger the GP and the greater the age difference can influence the discussion of sexual issues

3 Andrews CN et al., Aust Fam Physician 2007; 36:867-9

Strategies for GPs to engage men in discussion about their health⁴

- Stating facts clearly during consultations
- Using terminology that is easily understood
- Providing written information for patients to read after consultations
- Listening to and responding to patient needs to facilitate an empathetic style of communication based on respect and trust
- Aiming to deal with a man's health issues quickly and comprehensively
- Referring patients onto specialists when required, particularly if the problem remains unresolved
- Keeping abreast of the latest developments and conveying these during consultations
- Applying and explaining the role of 'new' knowledge to patients when making diagnoses
- Alleviating the perceived seriousness of health concerns by using humour thoughtfully to facilitate the building of rapport
- Being proactive and sensitive in managing patients' sexual and mental health concerns via:
 - Routine sexual and mental health history taking, within medical histories
 - Asking about sexual and mental health when risk factors are evident.

4 Smith JA et al., Med J Aust 2008; 189:618-21

How do I approach sensitive issues?

- GPs need to be comfortable to talk to their patients about sensitive issues. A lead-in sentence to engage men should be a common and comfortable question
- *“Are there any other issues you want to talk about... your relationship, family/work stress, feeling down?”*
- *“Many men experience periods of feeling down, but find it difficult to talk to anyone about it. I can help you, if you are having problems.”*
- *“Many men [of your age/with your condition] experience sexual difficulties. If you have any difficulties, I am happy to discuss them.”*
- *“It is common for men with [diabetes/high blood pressure/heart disease] to experience erectile problems. I can help you, if you are having problems.”*
- *“How are things going with your sex life?”*

What qualities do men value when communicating with GPs?⁴

Adopting a frank approach

Being concise, direct and matter-of-fact when communicating with men in primary care settings.

- *“I prefer him [GP] because... he doesn't beat around the bush. He tells you what is what.”*
- *“I like straightforwardness... my doctor's very straightforward.”*

Demonstrating professional competence

The perceived confidence and knowledge conveyed by the GP and dexterity with physical tasks.

- *“She ah, impresses me, as knowing what she's talking about.”*
- *“As long as they can do the job properly... As long as they're competent I couldn't care less.”*

Using humour thoughtfully

More than just sharing a joke – it is about facilitating a ‘laid back’ and ‘friendly’ environment in which men feel comfortable to speak openly about their health concerns.

- *“A good laugh a day never hurt anyone, you know.”*
- *“A sense of humour wouldn't go astray you know, because quite often it can sort of alleviate the seriousness.”*

Showing empathy

The ability to communicate easily, at the same level as the patient, and listen and understand from the patient's perspective.

- *“You want to find someone who you can approach and talk to – and talk in terms that you can understand what is going on.”*
- *“With doctors, like with anybody, if you don't get on the same wave length, if you don't feel comfortable with them, then you find someone else.”*

Resolving health issues promptly

Men value GPs who resolve health issues promptly.

- *“I just want someone who can do their job, someone who I feel confident in, someone who doesn't mess me around. If he doesn't know, he sends you to a specialist straight away.”*
- *“I don't want someone who shrugs me off, because I only go when I am really bad.”*

⁴ Smith JA et al., Med J Aust 2008; 189:618-21

Debunking myths about men's engagement in health services

Myth	Reality	Implications for health service provision
Men 'behave badly' and don't seek help	Men do seek help... often after a period of self-monitoring to see if the problem resolves	<p>Appreciating some men actively monitor their health prior to seeking help</p> <p>Taking time to understand men's previous illness experiences</p> <p>Recognising men may seek help to maintain regular activities, e.g. for sporting activity rather than improving health</p> <p>Understanding that perceived illness severity may influence the decision to seek help</p>
Men don't talk about their health	Men do talk about their health... if provided with the right environment in which to do so, particularly when using health services	<p>Adopting a frank approach</p> <p>Demonstrating professional competence</p> <p>Using humour thoughtfully</p> <p>Showing empathy</p> <p>Resolving health issues promptly</p> <p>Ensuring sufficient time for discussion by offering a long consultation</p>
Men don't care about their health	Men do care about their health... if we take time to understand how they conceptualise health and health care	<p>Listening to the way men speak about their health and understanding what is important to them (improving their health may be important to family/relationships)</p>
Traditional concepts of masculinity explain why men don't seek help	Traditional masculine traits intersect with other physiological, sociological and cultural aspects of men's lives when they are deciding to seek help	<p>Recognising traditional masculine traits (independence) can be used to promote self care</p> <p>Appreciating age, sexual orientation, cultural background and occupation shape the way masculine traits are perpetuated by men in daily life</p> <p>Appreciating the importance of cultural background so information is not missed</p> <p>Acknowledging older men may see the GP as the 'expert' and allow them to make decisions on their behalf, whereas young men may be more informed (e.g. via the internet) of alternative option</p>
'Real men don't cry' and therefore don't use mental health services	Men do use mental health services if they are tailored to men's needs, e.g. Mensline Australia 1300 789 978	<p>Recognising men are at risk of depression and anxiety</p> <p>Informing men that depression is an illness, not a weakness and effective treatments are available</p> <p>Acknowledging men are more likely to describe the physical symptoms of depression (feeling tired, losing weight), rather than saying they feel low</p>
Older men are not sexually active or sexually capable	Men aged over 70 years are still having sex (37% of this age group). The most common reason for not having sex is the lack of a partner	<p>Being proactive in managing sexual health in older patients</p> <p>Not dismissing questions about sexual health</p> <p>Discussing sexual problems when other chronic conditions (e.g. diabetes) may exist</p>
Health services meet the needs of men	It cannot be assumed that current health services and providers are able to engage men effectively to support their health care needs	<p>Reassessing your clinic's services, e.g. clinic times</p> <p>Developing strategies to promote services specifically for men</p> <p>Understanding the qualities men value when visiting their GP</p>

Engaging Aboriginal and Torres Strait Islander men

In primary care settings



HEALTHY MALE
ANDROLOGY AUSTRALIA

Aboriginal and Torres Strait Islander men have higher death rates, and are more likely to die at much younger ages from circulatory disease than the general population, and often have poor access to effective health services.

What are the barriers for Aboriginal and Torres Strait Islander men to access health services?

Some significant issues affect the way Aboriginal and Torres Strait Islander men engage with the health system and access health services. In particular, when seeking health care for multiple issues the pathway from one service to another can be difficult due to any or all of the following factors:

Societal	Illness related stigma Gender differences in health
Cultural	Traditional gender-related lores, masculinity and gender roles Language and gender barriers Beliefs around causation
Logistical	Lack of transport Appointment times conflict with other family and community priorities (e.g. ceremonies)
Health system	Limited access to specialist service and/or treatment Complicated referral process Too few (male) health professionals (leading to patients seeing many different doctors) Medical terminology/jargon
Financial	Difficulties in meeting health service costs
Individual	Knowledge/perception of the nature of the illness Previous illness experience Low prioritisation of preventative healthcare Lack of understanding and embarrassment Self-esteem and confidence

Strategies for health services to engage men from remote communities

Cultural diversity means that what may work in one setting may not work in another. The need for a male-specific place may not be as strong in urban settings as there may be greater integration and interaction with non-Indigenous people compared to a remote area. Seeking feedback from the community is important.

Where English is often the second language and men may not be familiar with a clinic environment it is important to:

- Identify, acknowledge and consult with “cultural bosses” and community male elders
- Gain local knowledge from men’s groups through consultation and documentation of their needs and issues
- Plan services with input from local men: for men who are employed and cannot regularly attend the clinic during normal (daytime) operating hours, consider having an after-hours clinic or mobile/outreach service to visit men in their workplaces and/or at men’s places
- Check patient register for the proportion of adult and young males attending

- Involve male Indigenous Health Practitioners (IHPs)/IHWs and traditional healers in outreach services in communities, such as 715 Health Checks with the footy team, providing confidentiality is not compromised.

Where remote clinics are available it is important to:

- Get male IHP/IHW to help organise outreach services in the community as needed, or in appropriate spaces such as men’s areas
- Have male-orientated clinics to help men feel comfortable. If the environment feels ‘foreign’ then men may be less likely to engage with doctors or be upfront in providing information
- Where appropriate, plan and involve family members in the consultations so that the family understands the medical treatment and can provide support if needed
- Provide flexible delivery, such as telemedicine, home visits or after hours services
- Engage the local community by holding a clinic meet-and-greet or open day so that men can meet the current/new staff. If feasible, arrange a tour of the clinic and its functions, led by the IHP/IHW
- Develop men’s health promotion resources (such as posters/ brochures) that include artwork or imagery of local men; if specific to men’s business, posters can be placed in public/ council male restrooms
- Respect Aboriginal and Torres Strait Islander men and their cultural values. For example, it is important for men (and women) to be able to enter and leave a clinic without passing through a shared reception, particularly when they present for more sensitive health concerns.

To ensure health services are engaging men appropriately by identifying and valuing culture, it is important to:

- Undertake an informal community consultation process to better understand the health care service needs of the local men, if not already documented by local men/service
- Learn local protocols from local health workers on how to access/ engage men or men’s groups
- Set up a male-specific clinic in a dedicated men’s space
- Where possible, have more male health staff (doctors, nurses and Indigenous Health Workers (IHWs)) and men’s counselling programs to help support men, and go out into the community to encourage access to health services
- Encourage doctors to stay for the long haul to help men feel comfortable and develop trust
- Minimise waiting times where possible and encourage men to bring a male IHW, a family member or friend to an appointment to help translate
- Advise the patient in advance of additional costs when being referred onto other health services/clinics
- Integrate Follow-up Care Plans as part of ongoing care to ensure the patient has followed treatment and understands when they need to come back for results/re-testing
- Promote Aboriginal and Torres Strait Islander men and women who work in the health service to build empowerment and encourage community members to return to the health service

Strategies for GPs and other healthcare professionals to engage Aboriginal and Torres Strait Islander men

Most health professionals intuitively communicate well with patients but when speaking with men from different cultural backgrounds, additional strategies may be helpful. For many men, attending a health service can be a negative experience, for example when blood/urine collection is needed. Trying to make the visit a pleasant experience with positive interaction will help ensure that men return and feel sufficiently comfortable to open up about health concerns, particularly those more sensitive and personal issues. Men will often talk to their family and friends when they have had a positive health experience: word-of-mouth is one of the best ways to encourage Aboriginal and Torres Strait Islander men to attend health services.

- Work on developing trust in the relationship: lifestyle behaviour change may only come after a long, trusting relationship has developed between the patient and doctor
- Involve a male IHW that may help to identify issues before the appointment
- Check when the man had his last annual health assessment and take the opportunity while he is at the clinic to repeat it if it has been longer than 12-months
- Reinforce confidentiality and ensure all health discussions are private and not in open spaces such as reception areas
- Provide simple, clear and accurate explanations of common medical terms and procedures to help reduce a patient's fears and anxieties about his health care: this may include locally developed material using imagery that men can relate to

Supporting cultural respect with regard to men's health

Adopting a holistic approach to Aboriginal and Torres Strait Islander health is important. This includes not just the physical well-being of an individual but also the social, emotional and cultural well-being of the whole community.

Working in the Aboriginal and Torres Strait Islander health sector can be challenging for doctors/healthcare professionals who have been educated in a Western approach to health service provision.

It is important that non-Indigenous health professionals delivering services to Aboriginal and Torres Strait Islander people undergo cultural competency training.

This provides the basic tools to avoid cultural pitfalls while providing valuable insight into Aboriginal and Torres Strait Islander perceptions. Cultural respect is shown and real progress can be made.

To support cultural competency training, health professionals can also:

- Practice in a service that allows longer consultation times (e.g. half hour consultations) to build relationships and provide useful knowledge
- Stay in the community for the long-haul to develop a cumulative knowledge of people and backgrounds
- Take opportunities when in remote settings to visit the community and learn some of the local language
- Seek advice and learn from the experience of other health professionals and local IHWs.

Issues of cultural respect are particularly important for older Aboriginal men so a considered approach to some subjects (such as sexual health) is needed.

Strategies to talk about sexual health issues with Aboriginal and Torres Strait Islander men

Aboriginal and Torres Strait Islander men can find it hard to open up and discuss personal and sensitive health issues, particularly if they see someone other than their usual doctor. If a man is seen regularly and feels comfortable with the doctor he is more likely to initiate discussion.

For sexual health matters, it is particularly important for health professionals to be aware of cultural protocols around service providers engaging with Aboriginal and Torres Strait Islander men:

- Provide a safe, private, and comfortable environment that supports open and free dialogue
- Confidentiality is a major concern of Aboriginal and Torres Strait Islander men, particularly when family and community members are working for the health service they may present to. Hence, seek approval from the client facilitated by other allied health service providers including traditional healers and IHPs/IHWs
- Men may not open up in the first consultation—it may take time to build trust—but balance is also needed to take advantage of opportunistic discussions
- For the older man, more care should be taken in approaching sensitive issues. However, often when the conversation has started, men are interested in their sexual health
- Ask about erectile function for men with cardiovascular risk factors. Use simple analogy and resources (such as brochures, flip-charts, DVDs, visual aids) to help explain the links between erectile dysfunction and chronic disease
- Incorporate questioning into annual health checks such as: "Have you got any sexual difficulties?" or "About half of men with diabetes will have difficulty getting an erection—is that a problem for you?"
- Sometimes men have erectile problems when taking prescribed medication for other health issues: it is important to explain to men why this may happen and think about other treatment options if erectile problems are a concern
- Raise the awareness about lifestyles that may impact on erectile dysfunction like smoking and heavy drinking
- Think about making the consulting room more inclusive for talking about sensitive issues, for example a model or pictures of the male pelvis might help initiate discussion
- Consider the sensitivity of physical examinations, such as DRE, for men with a past history of being sexually abused.

For the purposes of this guide, IHPs/IHWs provide clinical and primary health care for individuals, families, and community groups.

Healthy Male would like to thank the Aboriginal and Torres Strait Islander Male Health Reference Group for guidance and input into the development of this guide.