



Male Infertility

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 (healthymale.org.au).

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 and smoking cessation

Reproductive history

Assess	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	Indicative of hypogonadism
Previous inguinal, genital or pelvic surgery	Testicular vascular impairments, damage to vasa, ejaculatory ducts, ejaculation mechanisms
Medications, alcohol, tobacco, illicit drugs and androgens	Transient or permanent damage to spermatogenesis
General health (diet, exercise and 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
Lack of virilisation	Androgen deficiency/Klinefelter syndrome
Prostate examination	If history suggests prostatitis/STI

Investigations

Semen analysis is the primary investigation for male infertility¹.

Key points

- Men should abstain from sexual activity for between 2-7 days before sample collection.
- Semen analysis provides guidance to fertility; it is not a direct test of fertility. Fertility remains possible even in those with severe deficits.

Reference limits for semen analysis²

Volume	≥ 1.5 mL
pH	≥ 7.2
Sperm concentration	≥ 15 million spermatozoa/mL
Motility	≥ 40% motile within 60 minutes of ejaculation
Vitality	≥ 58% live
White blood cells	< 1 million/mL
Sperm antibodies	< 50% bound motile sperm

Serum total testosterone

- Testosterone is often normal 8-27 nmol/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 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

It may be possible to improve fertility 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 by microdissection testicular sperm extraction (micro-TESE).

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?

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

Referral 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.

References

1. National Pathology Accreditation Advisory Council. Requirements for semen analysis. First edition, 2017. Australian Government Department of Health
2. WHO laboratory manual for the examination and processing of human semen - 5th ed.
3. Kirby et al., 2016. Undergoing varicocele repair before assisted reproduction improves pregnancy rate and live birth rate in azoospermic and oligospermic men with a varicocele: a systematic review and meta-analysis. *Fertility and Sterility*