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

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:

- Prior paternity
- Psychosexual issues (erectile, ejaculatory)
- Pubertal development
- A history of undescended testes
- Past genital infection (STI), mumps infection or trauma
- Symptoms of androgen deficiency (AD)
- Previous inguinal, genital or pelvic surgery
- Medications, drug use
- General health (diet, exercise, smoking)

Why?

- Previous fertility
- Interference with conception
- Poor progression suggests underlying reproductive issue
- Risk factor for infertility and testis cancer
- Risk for testis damage or obstructive azoospermia
- Indicative of hypogonadism
- Testicular vascular impairments, damage to vasa, ejaculatory ducts, ejaculation mechanisms
- Transient or permanent damage to spermatogenesis
- Epigenetic damage to sperm affecting offspring health

Physical examination

| GENERAL EXAMINATION | Acute/chronic illness, nutritional status |
| GENITAL EXAMINATION | Refer to Clinical Summary Guide 1 |
| DEGREE OF VIRILISATION | Androgen Deficiency / Klinefelter’s Syndrome |
| PROSTATE EXAMINATION | If history suggests prostatitis/STI |

Testes

- Small testes suggest spermatogenic failure
- Presence of vas deferens
- May be congenitally absent

Epididymides

- Thickening or cysts may suggest previous infection and resultant obstructive problems

Varicoceles

- Detected when standing, coughing or performing Valsalva maneuver

Penis

- For abnormalities (e.g. Peyronie’s) that may interfere with intercourse
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.

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)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>≥1.5 mL</td>
</tr>
<tr>
<td>pH</td>
<td>≥7.2</td>
</tr>
<tr>
<td>Sperm concentration</td>
<td>≥15 million spermatozoa/mL</td>
</tr>
<tr>
<td>Motility</td>
<td>≥40% motile within 60 minutes of ejaculation</td>
</tr>
<tr>
<td>Vitality</td>
<td>≥58% or more live, i.e. excluding dye</td>
</tr>
<tr>
<td>White blood cells</td>
<td>&lt;1 million/mL</td>
</tr>
<tr>
<td>Sperm antibodies</td>
<td>&lt;50% motile sperm with binding</td>
</tr>
</tbody>
</table>

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

When should I refer a patient to a specialist?

GP's 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 www.fertilitysociety.com.au/rtac/accredited-units/

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

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