What the family doctor can do and what the patient should expect when referred to an infertility specialist.

John McBain
Five important prognostic aspects of the infertility history.

1. Age of the female
2. Real duration of infertility and has either partner had a previous pregnancy
3. Menstrual rhythm, symptoms and molimina
4. Coital frequency and dysfunction
5. Previous investigations and treatments
FEWER EGGS

AGE 20

AGE 42

Reproduced with permission from Debra Gook MIVF
Age related effect on egg quality

Organised chromosomes & spindles

Disorganised chromosomes & spindles
Five important prognostic aspects of the infertility history.

1. Age of the female
2. Real duration of infertility and has either partner had a previous pregnancy
3. Menstrual rhythm, symptoms and molimina
4. Coital frequency and dysfunction
5. Previous investigations and treatments
Initial screening tests

- Blood group and antibodies
- FBE
- Rubella IgG
- Varicella IgG
- Syphilis serology
- Hepatitis B Ag
- Hepatitis C Ab
- HIV I/II
Family doctor therapy

- Educate women about age and fertility
- Listen and reassure where appropriate
- The BMI conversation
- Inform re cervical mucus symptoms
- Folic acid
- Discuss alcohol, tobacco, drugs and coffee
Ovulation testing by family doctor

- If cycle is between 23-35 days, it is ovulatory.
- Commonest cause of "anovulation" is measuring progesterone on day 21 of a 32-35 day cycle…suggest you don’t measure it!
- FSH, LH and Prolactin should only be measured in women with oligo or amenorrhea.
- Urinary LH kits for couples of low coital frequency and poor arithmetic!
Blood tests during the cycle

FSH

LH

Oestradiol

Progesterone
Ovulation testing by family doctor

• If cycle is between 23-35 days, it is ovulatory
• Commonest cause of “anovulation” is measuring progesterone on day 21 of a 32-35 day cycle…suggest you don’t measure it!
• FSH,LH and Prolactin should only be measured in women with oligo or amenorrhoea.
• Urinary LH kits for couples of low coital frequency and poor arithmetic!
Semen analysis.

Standard of semen analysis vastly improved in Victoria over the past 10 years.

- More than 15 mill/ ml
- Better than 40% progressive motility
- At least 5% of the sperm with normal morphology
- Test for sperm auto-antibodies at Monash and Melbourne
If semen analysis result is abnormal?

- Two thirds of abnormal test will be normal or markedly improved when repeated after 2-3 months.
- Remember impact of recent viral illness esp. and unhealthy habits and gym ‘vitamins’
- If sperm count stays under 5mill/ml then check FSH, testosterone and SHBG and refer to an infertility specialist.
Sperm Count Variation In A Healthy Man
ICSI

- Wide use – beyond severe male factor infertility
What are reasonable fertility expectations in our community?

- 3000 women at ANC each of whom had kept a menstrual diary.
- All gave birth to an infant at term.
- 86% conceived within six months of ceasing contraception.
  ! So 14% conceived between months 7-78.
Maximum, average and low fertility chances

- Highest community chance of live birth per month is 320 per thousand women
- Seems to be unchanged over the centuries from data gleaned from Parish records and post-Napoleonic France
- Only way to increase this is multiple ovulation or multiple embryo transfer
Illustrative examples

• A woman aged 25-35 with one year’s infertility has a 40 percent chance of conceiving in the next 12 months in absence of absolute factor.
• Even where severe male factor is present, the chance is up to 15% in the next year.
• A previously fertile 40 year old woman has a fifty percent chance of success within the next year.
• Unfortunately, women are presenting too old, in the main, for this sanguine approach to be popular.
When to refer to a specialist?

- This has become increasingly, patient driven
- If you do get a say, then the older the woman, the earlier the referral should be
- Obvious ovulation disorders need early Rx
- Women with symptoms suggestive of pelvic pathology should be referred early
- Men who have had a vasectomy reversal need early referral
What will the fertility specialist do and recommend…and why?

• Take a thorough history, male and female
• Examination as indicated from the history and available tests
• Assess if there is an indication for endoscopic examination
• Discuss the place for tubal patency testing
• Compute the chance of spontaneous conception from the available data
The place of Specialist Ultrasound.

- Specialist ultrasound for antral follicle count (combined with AMH)
- Ultrasound after bowel prep looking for evidence of endometriosis
- Ultrasound test of tubal patency.
AMH as marker of ovarian reserve

Anderson et al 2012
The place of Specialist Ultrasound.

- Specialist ultrasound for antral follicle count (combined with AMH)
- Ultrasound after bowel prep looking for evidence of endometriosis
- Ultrasound test of tubal patency.
Foam in uterine cavity and tubes
The place of Specialist Ultrasound.

- Specialist ultrasound for antral follicle count (combined with AMH)
- Ultrasound after bowel prep looking for evidence of endometriosis
- Ultrasound test of tubal patency.
Ultrasound: Normal Uterus
Ultrasound: Endometrial Polyps
Pelvic Ultrasound With Colour Doppler: Uterus & Endometrioma
Ultrasound: Submucosal Fibroid
Ultrasound in the diagnosis of endometriosis

Dr Jacqui Oldham MBBS, FRANZCOG, DDU, COGU
Dr Amanda Sampson, MBBS, FRANZCOG, DDU, COGU
Epworth Freemasons O&G Symposium
Diagnosing Ovarian Endometriomas

<table>
<thead>
<tr>
<th>Suspect TVUS</th>
<th>Correct DX</th>
<th>PPV%</th>
<th>FPR %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endometriomas</td>
<td>80/83</td>
<td>96.4</td>
<td>3.8</td>
</tr>
<tr>
<td>Dermoids</td>
<td>66/68</td>
<td>97.1</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Endometriomas vary in appearance

“ground glass” appearance, layering, +/- streaming, minimal blood flow, echogenic “spots”
Adhesions

Uterus - trans
Advanced Ultrasound Assessment

Usual assessment of the uterus and ovaries

History correlation

Assessing endometriosis sites in detail

- Rectovaginal septum
- Rectosigmoid lesions and adhesions
- Retrocervical nodules and adhesions
- Vaginal lesions
- POD obliteration
- Ovarian fossa
- Uterosacral ligaments
- Bladder - mobility and lesions
- Ureteric dilatation and position in relation to the ovary

3mm POD nodule
USL scarring
Obliterated POD and retrocervical nodules

Fibrous adhesions
Hydrosalpinx: Blocked Fallopian Tubes
Other tests which are offered nowadays.

• Cystic fibrosis, Spinal Muscular Atrophy and Fragile X, screen of female…and subsequently male if detected…low take-up rate due to expense.
• Karyotype Mr and Mrs…low pick up rate
• Karyotype and CF testing rebatable in male with oligospermia or obstructive azoospermia.
• Yq microdeletion and scrotal ultrasound in azoospermia or severe oligo
Anovulatory infertility is a joy to treat!

Other than for uncommon cases of low FSH and LH, elevated prolactin and untreatable cases of elevated FSH, Clomid remains the workhorse 50 years after its introduction to clinical practice although it is being challenged by Letrozole, which is not registered for ovulation induction in Australia.
Clomid Treatment

- Start with low dose, follicle scan 10 days after start to count the number of large follicles developed and advise on timing of coitus.
- Many opt to give hCG trigger when follicle reaches a certain size...may be useful but may reduce fertility of the cycle if given too soon.
- Important to measure progesterone 7 days after assumed ovulation.
Treatment of poorly explained infertility

- Background pregnancy rate is ever present
- Higher chance of spontaneous preg in younger
- Increasing data that uterine and tubal lavage with Lipiodol (iodine rich oil) significantly increases rate up to 60% in the next year.
- As treatments may carry risk of multiples, exclude those with comorbidities or history of premature delivery
Pregnancy chances with treatment

1. Cycle tracking with postcoital testing---5%
2. Clomid---8%
3. Intrauterine insemination---10%
4. IUI with FSH injections---15%
5. IVF—0-40%
6. IVF with aneuploidy screening- 0-60%
Embryo biopsy
Reasons why pregnancy may not follow transfer of good embryo

• Aneuploidy---present at all ages but devastating in the forties

• Embryos with low metabolic competence

• Imperfect embryo culture systems

• Endometrial factors in implantation failure
Aneuploidy
Reasons why pregnancy may not follow transfer of good embryo

• Aneuploidy---present at all ages but devastating in the forties

• Embryos with low metabolic competence

• Imperfect embryo culture systems

• Endometrial factors in implantation failure
Speed Dating on fertility matters your patient may ask you.

• What does this AMH result mean?
• Should I see someone about freezing my eggs?
• I’m thinking about surrogacy
• I need IVF but it’s too expensive
• I want a girl!
• How can we minimise the risk of chromosomal or genetic abnormality in our child?
• I want to carry my girlfriend’s baby
Case Study (1)

- 33 year old Australian born woman, married for 2 years, to a 38 year old man, no contraception during the marriage. No previous pregnancy for either. Semen analysis arranged by family doctor showed severe oligospermia, <2million/ml

- She, regular 24-27 day cycles, BMI 24, symptoms of ovulation, no pelvic symptoms nor past history to suggest tubal blockage nor endometriosis.
Case Study (2)

- He, office worker, BMI 33, stopped smoking 6 months ago on advice from GP. Moderate alcohol intake...beer and spirits at weekend especially.

- Examination of him. Normotensive, neither gynaecomastia nor hepatomegaly.

- Testes soft, 12 ml in volume, no varicocele detected.

- Repeat SA confirmed oligospermia, motile sperm seen in centrifuged deposit and the specimen was frozen.
Case Study (3)

- Special investigations. FSH. 13miu/l, Yq microdeletion not detected. Karyotype 46XY, Scrotal ultrasound...no tumour seen.

- Recommended treatment, IVF with single sperm injection (ICSI) and extended culture for single blastocyst transfer.
Case Study (4)

- Further investigation of female...pelvis ultrasound to exclude ovarian and uterine pathology and calculate ovarian volume and antral follicle count (AFC)= 3 Anti Mullerian Hormone AMH 2.1

- Further special investigation...Fragile X as apparently low ovarian response. Mutation not detected.
Case Study (5)

**IVF cycle:**

- Elonva 100 Micg cycle day3, ultrasound scan d8.. 2 X10ml follicle only. Endometrial thickness 5mm.
- Puregon 300IU started d10 together with Gn-RH antagonist, Orgalutran.
- Repeat scan d11, follicles now 18mm, endometrium 8mm, triple pattern.
Case Study (6)

• hCG as ovulation trigger day 11 and oocyte collection under sedation 36h later on day 13.
• 2 mature oocytes collected and injected after removal of cumulus complex.
• Next day, one fertilized oocyte
• Following day, 4-cell grade 2 embryo transferred to uterus...pregnant.