

## Anti Mullerian Hormone (AMH)\* and "Egg Timer" testing

Following the recent publication in the lay press about Anti-Mullerian Hormone (AMH) and the public interest it has received I would like to highlight its potential role in the management of infertility.

### Basics

- First described in 1946 (not a misprint) and identified in 1986 it is a dimeric glycoprotein and member of the transforming growth factor-beta superfamily. (TGF-beta superfamily members play fundamental roles in the regulation of various biological processes such as growth, development, tissue homeostasis and regulation of the immune system).
- AMH was initially shown to be responsible for the regression of the Mullerian ducts allowing Male sex differentiation.
- In females it is produced by granulosa cells of pre-antral and antral follicles and appears to stop the early stages of follicular development. These follicles are not responsive to FSH or LH and mature over a period of  $\pm$  250 days. The total follicular pool decreases from intrauterine development of the female foetus until menopause.

### Points to ponder

AMH levels thus reflect the remaining number of preantral and antral follicles in the ovary and will decrease with ageing of the ovary as a result of the normal loss of these follicles. AMH can be tested at any time of the menstrual cycle using a blood test available from routine pathology service providers.

### "Egg timer" testing

Currently there is no test to determine which egg or embryo will generate a live pregnancy and lay publications often incorrectly report an egg timer test as a predictor of successful ART outcome.

Egg timer tests include combinations of female chronological age, basal FSH, antral follicle count on transvaginal ultrasound and AMH levels. AMH testing has been available in Australia for a number of years.

### So what can be learned from AMH testing?

- Low levels indicate poor ovarian reserve and lower chances of conception
- Very high levels may help to determine which patient is at risk from the hyperstimulation syndrome
- AMH may help in planning dosage of stimulation in an IVF cycle

### Summary

- Infertility as a result of advancing female age is one of the most important and common problems facing both patients and clinicians today.
- Educating your patients not to delay fertility for social or other reasons is the best option.
- Egg timer tests are not accurate enough to plan for deferring conception.

Establishing a patient's fertility is complex and best done using our well described protocol overleaf.

\*Human Reproduction Update, Vol.16, No.2 pp. 113130, 2010



Dr Joel Bernstein

## Perfection in Pre-conception Planning & Preparation (Chart overleaf)

### Female Health Check

#### Do you:

- Suffer with any chronic medical problems?
- Have any family history of birth defects?
- Currently take any form of medication?
- Smoke?
- Regularly drink more than 4-5 drinks per week?
- Take any form of 'recreational drugs'?

#### Have you:

- Had your 35th birthday?
- Had problems with having children?
- Been trying to conceive for more than one year?

#### Do you have:

- Irregular menstrual cycles and/or <25 or >35 days?
- Bleeding in the middle of a cycle?
- Spot bleeding for more than 1 day before your period?
- Very painful periods?
- Pain with intercourse?
- Bleeding with intercourse?
- Polycystic Ovaries?

#### Have you had:

- Any sexually transmitted disease?
- Pelvic inflammatory disease?
- Operations on your reproductive organs?
- Fibroids or endometriosis or those problems in the family?
- Irregular periods?
- More than 2 miscarriages?
- Problems with sexual intercourse?
- Any form of cancer or tumor?

### Male Health Check

#### Do you:

- Suffer with any chronic medical problems?
- Have any family history of birth defects?
- Currently take any form of medication?
- Smoke?
- Regularly drink more than 4-5 drinks per week?
- Take any form of 'recreational drugs'?
- Do you suffer any problems with sexual intercourse?

#### Have you:

- Had your 45th birthday?
- Been trying to conceive for more than one year?
- Had problems with having children before?
- Noticed any lumps in your scrotum or testis?
- Ever had a sperm count that was NOT normal?
- Ever had any form of cancer or tumor?
- Had any form of sexually transmitted disease?

#### Do you have:

- A varicocele?
- Any brothers that suffer with infertility?
- Problems with an erection or ejaculation?
- Pain in the testis or penis
- Discharge from the penis
- Burning when you pass urine?

Chart overleaf 

## For your patients planning to have a baby

- It is common for couples to assume that when they decide to have a baby, it happens naturally and within one or two cycles.
- It is a fact that one in six couples will experience symptoms of infertility when trying to have a baby.
- We recommend a couple's first step in seeking any form of 'assisted conception' is to consult with their General Practitioner who should refer the couple to a Fertility Specialist if further investigations are necessary.
- This chart can assist in assessing what course of action a couple will most likely take to achieve their goal ...a healthy baby.

### Pre-conception Planning Questionnaire (Health Checks overleaf)

Once the questions overleaf are answered a pre-conception preparation path can be determined. If a couple's answer to any of the questions in the female or male health check is 'yes' we advise that they see a fertility specialist, if 'no' they should proceed under the direction of their GP.



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