

A simple guide to 5 of the many functional laboratory tests to assess fertility, methylation, oestrogen metabolism and stress that I regularly use in clinic.

Hormone Test 1: AMH – and AMH/FSH

What it is : This is a simple blood test.



Why do it: All women are born with their eggs. Unlike sperm we don't produce additional eggs throughout our lifetime. So – once you have reached puberty you begin to reduce your egg reserve with each natural monthly cycle. The average age for a woman to become a mother in USA is 26 years of age – and 30 in the UK although it's 40 around where I live.

This test helps you assess how to proceed with your fertility journey –

this can only be a good thing.

- AMH means “anti-Müllerian hormone” which is a hormone secreted by the cells of **developing** antral and pre-antral follicles (or egg sacks) in the ovaries. Once secreted AMH stops too many immature eggs from maturing at the same time.
- AMH is a strong indicator of a woman's ovarian reserve (OR) which is the ovaries' ability to produce good-quality eggs.
- Good AMH levels suggest good quality eggs which indicates a higher chance of a natural conception.
- AMH and FSH levels are sometimes tested together to help assess overall ovarian reserve. Each hormone reflects the follicles in the ovaries at different stages of development. FSH and AMH levels move in the opposite direction as women age, with AMH going down and FSH going up, indicating the age-related natural deterioration of ovarian reserve (DOR). DOR is one of the major causes of infertility.
- Very low AMH levels can signal that the body is preparing to enter into menopause or can be associated with recurrent miscarriage.
- High AMH and high FSH can signal hypoandrogenic polycystic ovary syndrome (PCOS)
- Aside from the normal, age-related decline, almost anything that disrupts the feedback cycle of follicular development and AMH secretion can cause low anti-mullerian hormone levels. This can be due to an autoimmune attack on the ovaries or it may be genetic. Women with a particular type of FMR1 gene are more likely to develop DOR at a younger age.

- Depending on your AMH levels assisted conception clinics develop different treatment approaches to maximize your pregnancy chances. Of course, I do this too – using personalised nutrition programmes and body treatments to support your ovaries and reproductive health.
- An AMH test also helps you to make decisions – such as continue a natural approach towards pregnancy; whether you may wish to consider freezing some of your eggs if you are planning a baby later or whether to look at other assisted fertility techniques. Remember, this test is not negative – it can be a huge boost because your results may be super positive!

When you should do it : Anytime though out your cycle. The centre for human reproduction offers a great [video](#) . Cost : about £110 in the UK



Hormone Test 2: Dutch Test – (dried urine test for comprehensive hormones)

What it is : There are 3 forms of this test which I regularly recommend within my clinic. I shall try to explain:

- **i) The most economic is the DUTCH Complete** . This can help
 - identify the root causes of hormone imbalances in both men and women
 - provide insights into conditions such as the

menopause, some fertility issues including, PCOS, weight gain, fatigue, low libido, premenstrual syndrome, mood swings, sleep issues, mood disorders and prostate issues in men.

- Used to gather baseline measurements. The profile analyzes 35 different hormones; oestrogen, progesterone, testosterone, DHEA-S and cortisol along with their metabolites. It also measures daily free cortisol, the oxidative stress marker 8OHdG, melatonin and six organic acids including markers for vitamin B12 (methylmalonate), vitamin B6 (xanthurenate), glutathione (pyroglutamate), dopamine (homovanillate), norepinephrine/epinephrine (vanilmandelate), and serotonin (5-hydroxy indole acetate).

ii) A slightly more expensive version is the COMBINED PANEL, which includes the DUTCH Complete and the DUTCH CAR (Cortisol Awakening Response). I often recommend this to help

- identify the root causes of hormone imbalances in men and women a little deeper because it additionally measures daily free cortisol, the oxidative stress marker

JUSTINE EVANS ND, HORMONE ALCHEMIST AND FOUNDER OF CREATION FERTILITY
JUSTINEEVANS.CO.UK CREATIONFERTILITY.COM

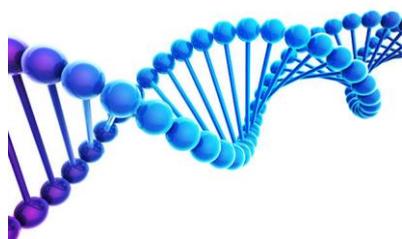
8OHdG, melatonin, six organic acids and the CAR, which is an excellent snapshot of HPA axis function.

- A low CAR can be a result of an underactive HPA axis, psychological burnout, seasonal affective disorder (SAD), sleep issues, PTSD, chronic fatigue, chronic pain, hypertension, gastrointestinal issues, post-natal depression and autoimmune disease. An elevated CAR can be the result of an overactive HPA axis, anticipatory stress, glycaemic dysregulation, pain and depression.
- The form of functional test is easy to use. It only requires a series of urine samples which are taken using filter paper collection strips.

iii) The most comprehensive functional test is the Dutch Complete with Cycle Mapping . This provides a deep analysis throughout the cycle.

- a comprehensive assessment of sex hormones, adrenal function and the entire menstrual cycle.
- DUTCH Cycle Mapping delivers a clear understanding of the overall menstrual cycle by tracking and evaluating hormones throughout the month.
- Nine targeted oestrogen and progesterone measurements provide important details on hormone levels in the follicular, ovulatory and luteal phases of the cycle.
- Includes the The DUTCH Complete profile as above (35 different hormones; oestrogen, progesterone, testosterone, DHEA-S and cortisol along with their metabolites. It also measures daily free cortisol, the oxidative stress marker 8OHdG, melatonin and six organic acids including markers for vitamin B12 (methylmalonate), vitamin B6 (xanthurenate), glutathione (pyroglutamate), dopamine (homovanillate), norepinephrine/epinephrine (vanilmandelate), and serotonin (5-hydroxyindoleacetate))
- This test is suitable for those with irregular cycles, super helpful with fertility issues including unexplained infertility, luteal phase defects, PCOS, irregular cycles, PMS and PMDD, amongst many other hormone related conditions including negative assisted conception response and stress related response disorders.
- Urine collection: 25 urine specimens over your menstrual cycle.

Cost: from 286.00 - £459 which includes cycle mapping or sex hormone metabolism



Hormone Test 3: Genetic Testing –

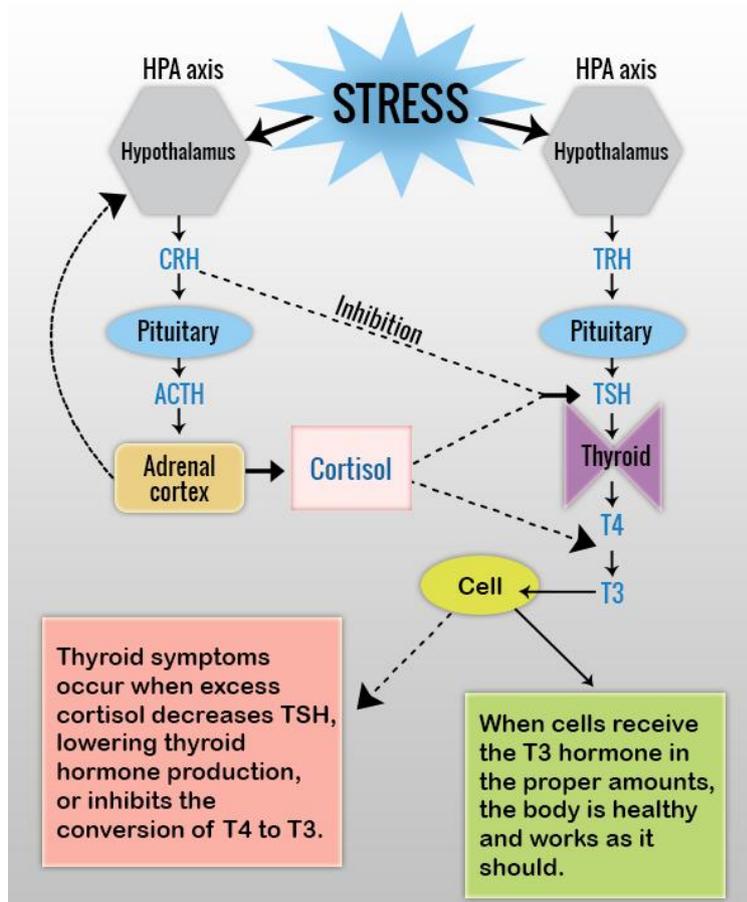
What it is: Genetic tests quite simply are a snap shot of you are DNA level. They are great tests to help us understand your pre-disposition to various health disorders and much more. I tend to use 2-3 different laboratories and forms of genetic testing.

- **I) DNA Methylation Testing:** Methylation is critical for keeping your body and brain biochemistry in balance. Methylation occurs in the liver and can impact hormonal health conditions including fertility, pregnancy and much more. Common genetic variants (SNPs) can impact your natural ability to methylate and this can result in increased susceptibility to systemic imbalances and chronic health conditions including heart disease, depression, diabetes, chronic fatigue, autoimmune disease, poor foetal development and premature ageing. This report focuses on the key genes and variants (SNPs) involved in five interconnected cycles - folate, methionine, neurotransmitter (BH4), transsulphuration and urea. I have found this to be a fabulous test to help me assess unexplained infertility – especially when numerous assisted conception procedures prove negative and for those with methyl folate issues.

ii) Oestrogen Report

Imbalanced hormones can have a number of negative effects on health and well-being and are highly influenced by environmental, dietary and genetic factors. The main role of oestrogen in the body is to increase the growth and production of cells, but it is also involved in the regulation of the female reproductive system, the development of secondary sex characteristics, maintenance of bone density, blood clotting, skin health and mucous membranes. This report details the genes and enzymes responsible for the biosynthesis, activation and elimination of oestrogen in the body. We provide a personalised oestrogen pathway diagram along with genotype results for variants (SNPs) on the genes that influence these major oestrogen pathways. Again – a fantastic report for hormonal health issues including endometriosis, PCOS, sub-fertility, oestrogen risk related cancers and much more. I often combine the 2 tests.

When you should do it : anytime during your cycle



Hormone Test 4: Adrenal/Thyroid Tests

What it is: Again there are various forms of adrenal thyroid tests – some a particularly suitable for hormone issues relating to stress and/or thyroid imbalances.

Why do it: The ovaries, adrenals, and thyroid are intimately co-dependent hormonally on each other for optimal function. If the adrenal glands are weak, there is often concurrent thyroid malfunction and menstrual cycle irregularity. Similarly, an under-active thyroid often makes adrenal fatigue worse off. Lastly, those who suffer from ovarian hormonal imbalance such as oestrogen dominance often exacerbate any pre-existing sub-

clinical hypothyroidism. I see adrenal fatigue, sub clinical thyroid and ovarian/adrenal and thyroid axis disorders on a regular basis within my clinic. Any one of these can impact on hormonal balance – anything from PMS – through to endometriosis menstrual irregularities, ovulation & conception issues, pregnancy/miscarriages and also menopausal symptoms. I can talk about the thyroid and adrenals for days but this is a great laboratory test for adrenals, thyroid and auto immune health.

- I) Adrenal evaluation is commonly considered for patients with a host of complaints resulting from chronic psychological or physiological stress. However adrenal evaluation is also vital for treating patients with hypothyroidism, due to the close interaction of these endocrinal systems. This test includes salivary cortisol, DHEA and SIgA. Many of the symptoms of adrenal fatigue can be equally attributed to thyroid dysfunction, and poor adrenal reserve can also lead to secondary hypothyroid function.
- li) The complete thyroid conversion test is necessary to assess thyroid regulation – from TSH – through to T4, RT4, RT3 and Urinary T3 levels to provide a sensitive measure of the active thyroid hormones to give an accurate reflection of overall thyroid hormone levels. Thyroid conditions can prove difficult to diagnose, especially subclinical thyroid dysfunction, which is a common clinical problem where serum thyroid markers may often be 'normal'

- Symptoms related to thyroid and/or adrenal hypo-function: • Excessive Fatigue • Cold intolerance • Low body temperature • Depression • Anxiety • Irregular bowel function • Low sex drive • Menstrual irregularities • sub and (infertility) • Menopausal problems • recurrent miscarriage • Unexplained weight gain • Difficulty losing weight • Poor immune status • oestrogen dominance

Dependant on the test chosen but generally urine, saliva and blood serum test. Costs vary



Hormone Test 5: Prolactin

A prolactin hormone (PRL) test measures how much prolactin you have in your blood. The hormone is made in your pituitary gland, which is located just below your brain. When women are super stressed, pregnant or lactating their prolactin levels increase so they can make breast milk. However, I see many women with high cortisol and prolactin especially if they suffer with anxiety and/or depression (even when they are

on anti-depressants) which interferes with their ability to conceive and also oestrogen regulation. Creation Fertility can organise a private prolactin test for you but many NHS GP's can also offer this service.

- **Symptoms of prolactin in women**
 - Irregular or no periods
 - Chronic stress
 - infertility
 - breast milk discharge when you're not pregnant or nursing
 - PCOS can also affect the body's ability to remove prolactin
 - Breast tenderness not associated with your cycle
 - Menopausal symptoms such as hot flashes and vaginal dryness.
 - It helps in the metabolism of sub cutaneous fat, carbohydrate metabolism and synthesis of vitamin D
- **For men**
 - Decreased sex drive
 - Difficulty in getting an erection
 - Breast tenderness or enlargement
 - Breast milk production (very rare)

What it is : blood test and can be taken anytime throughout your cycle. Cost: under £100.

Prolactin and Infertility science report

<https://www.intechopen.com/books/prolactin/prolactin-and-infertility>