

# Tests can help assess ovarian health and fertility

August 6 2018

---



Credit: CC0 Public Domain

Just like a carton of store-bought eggs carries an expiration date, the eggs in a woman's ovaries have a limited "shelf life" when it comes to fertility. This isn't news to most women, but what many might not realize

is that a simple blood test offers a snapshot of their egg supply (or "ovarian reserve").

The test, which looks for something called the anti-mullerian hormone (AMH), is one of a host of diagnostic tools and procedures that, along with lifestyle and personal history, can give a glimpse of a woman's fertility—in particular, how well in vitro fertilization (IVF) or other assisted reproductive technologies may work for her.

Despite the many advances in reproductive endocrinology and infertility (REI) treatments in recent years, getting pregnant, even with IVF and other methods, is not a guarantee for every woman who hopes to do so. But with the right information—in part derived from tests like AMH—specialists can tailor treatment and increase the odds of pregnancy.

We checked in with some Yale Fertility Center experts to explain these tests—and what exactly happens to a woman's egg supply as the biological clock keeps ticking.

## **The AMH Test**

Each egg in a woman's ovaries lives inside a follicle, a fluid-filled sac that contains cells that support egg maturation and produce hormones. AMH is one of those hormones. The level of AMH in a woman's blood helps doctors estimate the number of follicles in her ovaries; the more follicles a woman has, the more [eggs](#) she can release, and the better her chances of pregnancy.

The AMH test isn't 100 percent predictive of pregnancy, but it provides physicians with a rough estimate to work with, says David B. Seifer, MD, an REI specialist who discovered AMH in women's follicular fluid in 1993 and co-developed AMH as a serum test to assess [ovarian reserve](#)

in 2002.

"It's most useful in terms of having an idea of what treatment to use, how to use that treatment, and even perhaps the time course in which it might be applied," he says.

A higher level of AMH isn't necessarily the goal, Dr. Seifer explains. "There's a normal range, and then there's what is considered too high. That often indicates something like polycystic ovarian syndrome (PCOS; a hormonal disorder often linked to fertility problems)," he says. "Or too low could mean a woman is going through a premature or accelerated aging process."

The AMH blood test has become more common in the past 15 years, but another way to determine a woman's ovarian reserve is to conduct an antral follicle count during a transvaginal ultrasound.

This method, which entails counting the follicles seen on the screen, is also useful, along with AMH, explains Amanda N. Kallen, MD, an REI specialist. "Ultrasound is somewhat subjective, so you're still relying on someone's eyes to see and count, and it can vary somewhat between person to person," she says.

## **The FSH Test**

Another routine test looks at FSH (follicle-stimulating hormone), a hormone released by the pituitary gland in the brain. FSH drives the growth of ovarian follicles, which, in turn, produce hormones including AMH, estrogen and progesterone. FSH supports ovulation and helps the ovaries mature eggs for each cycle.

A woman's FSH levels fluctuate daily throughout her monthly menstrual cycle, spiking immediately before ovulation. But if her levels are

generally above or below what is expected for her age, that often indicates one of several problems that might end up affecting not only her fertility, but also the chances that IVF will be successful.

For example, very low levels may mean a woman has irregular cycles, as seen in PCOS, which can make getting pregnant difficult. High levels may signal that a woman's body is making up for a diminished ovarian reserve by producing more FSH to stimulate ovarian function. Understanding FSH levels and what they mean is complicated, but the information can help doctors decide on treatment options.

"Because it's produced by the pituitary gland, FSH is an indirect assessment of what the ovaries are doing. It's variable within the cycle and between cycles," Dr. Seifer explains. "AMH, however, is produced by the ovary itself, so it's a direct signal. It tends to be much less variable compared to FSH."

Plus, AMH levels decline well (usually years) before FSH levels rise. "So AMH is the earliest and most sensitive indicator we currently have signaling ovarian aging, and it has age-specific ranges," says Dr. Seifer, who developed those age ranges in 2011.

## **Counting Eggs**

Women are born with all the eggs they will ever have; their number begins to decline at birth. A typical fetus has about 20 million eggs, says Dr. Seifer. A newborn has about 2 million, and 11,000 die every month prior to puberty.

At puberty, she probably has a couple hundred thousand eggs, he says. An accelerated decline begins at around age 37 or 38, with roughly a thousand left by menopause, Dr. Seifer notes.

When it comes to a woman's fertility, the quality and quantity of eggs matter. "They're both important, but for different reasons," says Dr. Kallen. She explains that a woman's odds of achieving a successful pregnancy and giving birth to a healthy baby are higher if she has a plentiful supply of healthy eggs.

While quantity can be gauged, there aren't great ways to assess quality other than age (egg quality declines with age). "The Holy Grail would be to have a test of quality, but we're just not there yet," she says.

And no matter the number of follicles a woman has, she will still only typically release one egg each month during her menstrual cycle (or occasionally, two or three, which can increase the chance of having twins or triplets).

"Most women ovulate just one egg each month, and in a couple who has just started trying to get pregnant, the majority of pregnancies that are going to happen will occur in the first three to six months," Dr. Kallen says. "But some of our fertility treatments might try to alter that balance by getting someone to ovulate two eggs each month or by getting her to develop more eggs, then taking them out and fertilizing them, which is what IVF does."

## **How it All Adds Up**

When it comes to the various tests available to determine fertility and the odds of IVF success, there is no crystal ball. However, the combined information can give doctors a good estimate of success.

"It's not that one is more concrete than another, but it's all additional information," Dr. Kallen says. "You put it all together and if you see a nice, normal range AMH with a good follicle count, and a normal FSH in someone who is in her early 30s, you can say, 'Well, this person

probably has a good ovarian reserve.' We add it into the bigger picture."

So, while there's no easy way to completely and accurately assess a woman's fertility, all of these details matter in the grand scheme. And for the lucky woman, there are no bad eggs.

Provided by Yale University

Citation: Tests can help assess ovarian health and fertility (2018, August 6) retrieved 25 April 2024 from <https://medicalxpress.com/news/2018-08-ovarian-health-fertility.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.