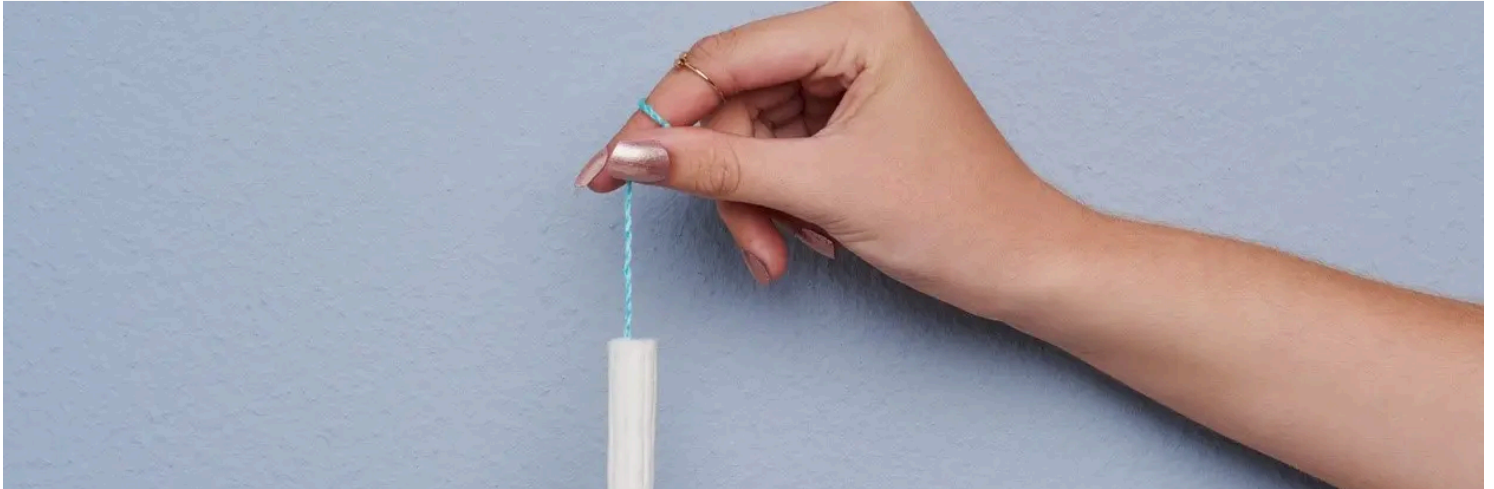




[Health topics](#) > [Signs and symptoms](#) > [Vaginal discharge](#) >  
**Tampon tests – the latest way to check your vaginal health**



# Tampon tests – the latest way to check your vaginal health

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Originally published 25 Oct 2023



For 90 years, women have used the modern tampon to do one job each menstrual cycle. Now, scientists are discovering that it can do so much more in the world of healthcare.

We explore this promising new way to diagnose poor reproductive and sexual health – and ask what else the future might hold for tampons in women's healthcare.

## In this article:

- > **What is a tampon test?**
- > **Types of tampon tests available**

- The potential for vaginal microbiome testing
- The future of tampons
- Further reading

## What is a tampon test?

Although not yet widely available, at-home tampon tests are a diagnostic tool to aid important research in the world of women's gynaecological healthcare – and they may well become more commonplace in the future.

The latest tampon test uses a regular menstrual tampon – the same used by many women during their periods. It's put the same way into your vagina, and this collects a sample – either of your menstrual blood, or of the bacteria in your vagina when you're not on your period (your vaginal microbiome).

## Types of tampon tests available

### Research from period blood

The idea of using tampons to collect health data from women has been around for several years<sup>1</sup>. It is a testing tool that's already familiar to menstruating women, and therefore more comfortable and easy to self-use. In these tests, the data is collected from biomarkers in your menstrual blood. It's also sent one way – to scientists to collect and analyse in long-term research studies.

In 2019, California-based company **NextGen Jane** started collecting blood from tampon samples to learn more about a range of women's health issues and diseases, including endometriosis, menopause, and cervical cancer.

In 2023, a new menstrual hygiene device was invented that can also collect health data. **The Emm** is a smart menstrual cup that comes with an app that can record data from your period blood, as well as other things like reminders to empty, and an ovulation tracker.

This trend for collecting female sexual and reproductive health information through self-tests is growing – and it's helping to address the lack of research and funding in women's healthcare.

### Personal diagnosis from vaginal microbiome

More recently, it's become possible for tampons to draw information not just from menstrual blood, but from the vaginal microbiome – the balance of good bacteria and disruptive bacteria living in your system. A healthy vaginal microbiome is one where the good bacteria keep the bad ones in check, stopping them from growing out of control and causing an infection. As a result, it's linked to a lower risk of **vaginal infections, STIs** (sexually transmitted infections), and reproductive difficulties<sup>2</sup>.

So, a vaginal microbiome tampon test lets experts analyse your reproductive health. For example checking for microbes that can make it more difficult to conceive<sup>3</sup> or if you're undergoing **IVF treatment**, whether your IVF cycle is less likely to be successful<sup>4</sup>. The test can also diagnose your vulnerability to vaginal infections – like **thrush** and **BV** (bacterial vaginosis) – as well as **UTIs (urinary tract infections)** and **STIs (sexually transmitted infections)**.

Your results will explain the microorganisms found in your sample, whether they are at healthy or abnormal levels, and if this means you have a higher risk of the above health issues. This latest test is only available in the UK from gynaecological health company **Daye**, and is the first of its kind. You'll need to pay for this service, as tampon tests are not currently offered on the NHS.

## The potential for vaginal microbiome testing

This emerging area of research has also found links between specific vaginal microbiome patterns and several serious and debilitating female health conditions which are difficult to diagnose using conventional methods. This includes:

Condition	Diagnostic challenges	Microbiome research

<p><b>Endometriosis:</b></p> <p>One of the most common female health conditions, endometriosis affects how your womb lining grows which can cause</p> <p><b>severe pain and affect fertility</b></p> <p>.</p>	<p>Although 1 in 10 UK women have this condition, it takes an average of 7.5 years to diagnose</p> <p>5</p> <p>.</p>	<p>Recent evidence suggests that in people with endometriosis there’s a connection between imbalances in the vaginal and gut microbiota. Future studies could help to develop microbiome-based treatments to improve symptoms and quality of life</p> <p>6</p> <p>.</p>

<p><b>Cervical cancer:</b></p> <p>Cancerous cells develop in the lower part of the womb and can be life threatening if left undetected and untreated.</p>	<p>Regular cervical screening for people between 25 and 64 years old can identify a form of</p> <p><b>HPV (human papillomavirus)</b></p> <p>that makes you high-risk for cervical cancer. But misinformation and embarrassment are causing many to miss screenings.</p>	<p>Emerging research has linked a lack of the good bacteria Lactobacillus spp in the vagina to HPV, which in turn can lead to tumours in the cervix. With more research, scientists believe that treatments to improve the vaginal microbiota - such as probiotics and prebiotics - may help to prevent cervical cancer progression as well as reduce the toxic effects of cervical cancer treatment</p> <p>7</p> <p>.</p>
<p><b>PCOS:</b></p> <p>This very common condition affects around 1 in 10 UK women</p> <p>8</p> <p>. Affecting the ovaries, PCOS can cause painful and disruptive symptoms and may affect fertility.</p>	<p>Despite its prevalence, PCOS remains relatively under-researched and misunderstood. As such, it takes one third of women two years or more to get diagnosed</p> <p>9</p> <p>.</p>	<p>An increasing number of studies identify that the diversity of bacteria in the vagina changes in women with PCOS. Theres a need for more research so that in the future PCOS symptoms may be better managed through microbiome therapies</p> <p>10</p> <p>.</p>

Because the vaginal microbiome shows promising links to many areas in women's health, more research and the development of new diagnostic tools like tampon tests can help drive improvements in women's healthcare and close the gender health gap – a term that describes how being female means you're less likely to get diagnosed and more likely to have your symptoms under-estimated and under-treated<sup>11</sup>.

## The future of tampons

Using tampons to diagnose conditions is a relatively new technique. As such, there's no official guidelines on tampon testing from organisations like NICE (National Institute for Health and Care Excellence) or the CDC (Centers for Disease Prevention and Control). But the research that these tests are contributing to is mounting, and with it so is the evidence that they can shorten diagnosis times – an important factor for conditions like endometriosis, which on average takes seven years and many doctor consultations to diagnose.

### What are the benefits of tampon testing?

- **Familiarity** – For many women, the familiarity with tampons makes them a suitable, accessible, and convenient device for at-home sample collection.
- **Faster diagnosis** – It often takes years and many doctor consultations for conditions like endometriosis and PCOS to get diagnosed. Tampon test data is helping scientists create faster diagnostic tools.
- **Early detection of conditions** – Tampons have the potential to be used as a tool for early detection of certain conditions or infections, so that people can get the treatment they need as early as possible.
- **Research and innovation** – Studying menstrual blood and microorganisms collected from tampons could contribute to a better understanding of many female health conditions, as well as the role of the vaginal microbiome.
- **Cost-effective and accessible** – The use of tampons for vaginal screening may encourage more women to test, because it can be done in the privacy and comfort of their own home.

In the future, the tampon may become an even more versatile and useful tool in female healthcare. In 2022, a group of business school graduates created a smart

tampon prototype to detect cervical cancer<sup>12</sup>. Unlike a regular tampon, it's non-absorbent and instead has a highly sensitive camera on the tip that takes images of the cervix and feeds them into AI software to analyse.

Beyond sample collecting, experts are also looking into how tampons can locally deliver medications that work by altering the vaginal microbiome. While we're not there yet, this evolving area of research is making promising strides to innovate female healthcare and narrow the gender health gap.

## Further reading

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3. Paira et al: Results from a large cross-sectional study assessing Chlamydia trachomatis, Ureaplasma spp. and Mycoplasma hominis urogenital infections in patients with primary infertility.
4. Haahr et al: Abnormal vaginal microbiota may be associated with poor reproductive outcomes: a prospective study in IVF patients.
5. GOV.UK: Government launches call for evidence to improve health and wellbeing of women in England.
6. Ser et al: Current Updates on the Role of Microbiome in Endometriosis: A Narrative Review.
7. Sharifian et al: The interplay between human papillomavirus and vaginal microbiota in cervical cancer development.
8. Verity: What is PCOS?
9. Gibson-Helm et al: Delayed diagnosis and a lack of information associated with dissatisfaction in women with polycystic ovary syndrome.
10. Gu et al: Gut and vaginal microbiomes in PCOS: implications for women's health.
11. UCL: Analysis: Women's pain is routinely underestimated, and gender stereotypes are to blame.

## 12. John Hopkins Carey Business School: Could artificial intelligence in a smart tampon detect cervical cancer?

### Article history

The information on this page is peer reviewed by qualified clinicians.

- **25 Oct 2023 | Originally published**

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