

“How can we use a technique called whole genome sequencing to help people who are diagnosed with gonorrhoea?”

Findings from: [Feasibility, acceptability and ethics of using near real-time whole genome sequencing \(WGS\) to guide clinical decision-making](#)

What was the study about?

We wanted to find out if a new technique used when individuals are diagnosed with gonorrhoea could help doctors and nurses make decisions about gonorrhoea clinical care. This technique is called Whole Genome Sequencing, or WGS for short.

Every organism, including the bacteria that cause gonorrhoea, has a “genome,” which is all the genetic information of an organism. WGS reads this information in detail. When we compare the genetic information from different people’s gonorrhoea infections, we can see how similar their infections are. People with very similar infections are more likely to have been in close contact with each other and part of the same sexual network. People with very different infections likely belong to different sexual networks.

We think this might help us understand someone’s risk of other infections: by looking at this genetic information, WGS may help us understand whether someone belongs to a *higher-risk* or *lower-risk* network. If someone is linked to a higher-risk network, where sexually transmitted infections (STIs) like HIV or hepatitis are more common, healthcare providers could offer extra advice or treatments, such as hepatitis vaccines or HIV prevention medication.

Why is this important?

To use WGS in clinics, we need to know:

- Whether heterosexual men diagnosed with gonorrhoea feel comfortable with this approach.
- Whether sexual health nurses and doctors think it would help them manage gonorrhoea cases effectively.
- Whether WGS information would lead to better treatment decisions.

What did we do?

We carried out several pieces of work:

- We reviewed how WGS has been used in other areas of healthcare to support patient care.
- We interviewed sexual health doctors, nurses, and heterosexual men who had been diagnosed with gonorrhoea, to understand their views.
- We analysed WGS data to see whether heterosexual men linked to higher-risk sexual networks were more likely to get STIs.
- We compared how clinicians had actually managed gonorrhoea cases with how they *might* have managed them if they had access to WGS information.

Key findings

- WGS has already been used in healthcare to help choose the best antibiotics for treatment, to detect cross-contamination (where a sample has been accidentally mixed with other material), and to track how infections spread.
- Most people thought using WGS for gonorrhoea could be helpful for both patients and public health. However, some worried about privacy and whether it might affect trust with healthcare staff.
- Some heterosexual men were part of sexual networks that included gay and bisexual men. This might be due to incorrect recording of sexual orientation, undisclosed sexual behaviour, or through partners who also have sex with men.
- Some heterosexual men had a higher risk of STIs than expected based on traditional classifications.
- In many cases, the treatment decisions made by clinicians were different from the decisions they *might* have made if WGS results had been available.

What do these findings mean?

- WGS could help identify people who are at higher risk of future STIs who may benefit from the offer of additional resources to prevent harm and spread of STIs.
- WGS offers extra information that could help guide how gonorrhoea cases are managed, but more research is needed to understand how well this actually works in sexual health clinics and whether this approach is affordable.
- Any WGS results shared with patients or staff must be explained clearly, simply, and in a way that protects people's privacy.