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Event: *Neisseria gonorrhoeae* diagnostic escape mutant(s) [Cepheid: Xpert® CT/NG assay] detected in England

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IRP Level Not Applicable

Incident Lead Not Applicable

Instructions for Cascade

This briefing note should be cascaded as follows:

- UKHSA Private Office Groups who cascade onwards within Groups
- UKHSA Health Protection in Regions:
 - UKHSA Field Services
 - UKHSA Health Protection Teams including UKHSA Regional Deputy Directors
 - Deputy Directors in Regions Directorate
- UKHSA Lab Management Teams
- UKHSA Regional Communications
- DHSC CMO (*excluding internal UKHSA briefing notes*)
- OHID Regional Directors of Public Health
- National NHSE EPRR
- NHSE National Operations Centre

Devolved Administrations

- **Regional Deputy Directors** to cascade to Directors of Public Health

UKHSA CPHIs / microbiologists to cascade to non-UKHSA labs (NHS labs and private) and NHS Trust infection leads

- **NHS Trust infection leads** to cascade to relevant local services (General medicine, Emergency medicine and Sexual Health Services)

- **NHS labs/NHS infection leads/NHS microbiologists/NHS infectious disease specialists** to cascade to their teams
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Summary:

The UKHSA national STI Reference Laboratory (STIRL) has confirmed that a referred *Neisseria gonorrhoeae* isolate in England has the complete absence of the two target sites for the Cepheid Xpert® CT/NG diagnostic assay. Genomic analysis indicated that a recombination event between *N. gonorrhoeae* and *N. meningitidis* was responsible for the absence of the gene targets, producing false negative results. A retrospective *in silico* review of >30,000 gonococcal genomic datasets (both UK and global) revealed an additional 7 genomes which were also likely to give false negative results on this assay. There is currently no evidence that these strains are widely circulating in England, but laboratories and clinics should remain vigilant to the possibility of false negative results. Further case finding is ongoing.

Background:

In June 2025 an isolate of *N. gonorrhoeae* (NG), that produced a false negative result on the Cepheid Xpert® CT/NG assay was referred to STIRL from an NHS laboratory within the South-West of England. The isolate was obtained from an asymptomatic female who reported recent travel to the Asia-Pacific region where she had two male sexual contacts; one from Germany and one from the Netherlands. The isolate was fully susceptible to the 6 antimicrobials tested (azithromycin, cefixime, ceftriaxone, ciprofloxacin, benzyl-penicillin and tetracycline) and the patient was successfully treated. A detailed clinical review identified no risk of onward transmission of this strain within England.

Whole genome sequence analysis of the isolate revealed it was missing both of the target sites (NG2 and NG4) required for a positive Cepheid Xpert® CT/NG result due to a recombination event with *Neisseria meningitidis*. Screening of two NG genomic datasets containing >30,000 genomes (global and UK) revealed an additional 7 genomes which were also likely to give false negative results on this assay due to the absence of target gene(s). In total 3 of these were of UK origin, one of which was isolated in England in 2016 and was indistinguishable from the 2025 strain; one from 2020 which lacked the NG2 target; and the other, also from 2020, lacked the NG4 target (both targets are required for a positive NG result). Concerningly, the 2020 isolates were significantly genomically different from each other and the 2025 strain, providing evidence that this region of the gonococcal genome (the target site for the Cepheid Xpert® assay) has undergone a genetic recombination event with *N. meningitidis* on at least three independent occasions.

The prevalence of Cepheid Xpert® CT/NG escape mutant(s) within England is currently unknown. However, the Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP) is a robust surveillance tool that monitors approximately 2% of the gonococcal strains circulating in England annually. It can be predicted that at the present time it is unlikely that these diagnostic escape mutant(s) are present in English gonococcal populations at a level to compromise the routine performance of the Cepheid Xpert® test. A prospective case finding exercise, to determine an estimate of the prevalence of these mutant(s) will be undertaken. In the interim, laboratories should remain vigilant for any unusual diagnostic scenarios when using the Cepheid Assay.

Implications & Recommendations for UKHSA sites, UKHSA Regions & NHS services and local microbiology laboratories

1. Laboratories and clinics using the Cepheid platform (Xpert® CT/NG assay) as their molecular method for the detection of *N. gonorrhoeae* should continue with this approach, however they should:
 - (i) Remain vigilant for decreases in the number of positive cases. If laboratories have concerns, please contact STIRL for further discussion by emailing stilab@ukhsa.gov.uk.
 - (ii) Ensure that patients with discordant laboratory results e.g. testing negative on the Xpert® CT/NG assay but positive for NG by culture/microscopy are managed in accordance with BASHH guidelines and please ensure isolates are referred to STIRL.
2. Laboratories that have access to two different NG NAAT platforms and are using the Cepheid platform (Xpert® CT/NG assay) for confirmation rather than primary testing should remain vigilant for any changes in NG confirmation rates. Results reported as equivocal/indeterminate where the screening NAAT is strongly NG positive (cycle threshold <30) i.e. screening NAAT strongly NG positive but negative on Xpert® CT/NG assay (where Xpert® CT/NG assay is used as a confirmatory assay). Clinicians may wish to consider treating patients with an equivocal result whilst awaiting results of further investigation. If laboratories have any concerns, please contact STIRL.
3. Please refer any *N. gonorrhoeae* isolates from patients with negative Xpert® CT/NG assay results to the STI Reference Laboratory [STIRL, UKHSA Colindale (stilab@ukhsa.gov.uk)].

Communications

All media enquiries should be directed to UKHSA press office: UKHSA-Pressoffice@ukhsa.gov.uk.

Further information:

- [Gonorrhoea 2025: Updated Guideline | BASHH](#)
 - [Bacteriology Reference Department \(BRD\) - GOV.UK](#)
 - [STIRL Referral form: B2: Neisseria gonorrhoeae isolate and Mycoplasma genitalium referral form](#)
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