MYCOPLASMA GENITALIUM

What's new:

Strengthened MHRA warnings about fluoroquinolones requires clear documentation of fully informed discussion and decision making prior to prescribing.

Summary

M genitalium is now recognized as a significant cause of male urethritis, and has a probable role in pelvic infection, cervicitis and possibly proctitis. However most people infected will come to no harm, and screening and testing people who have no symptoms is not helpful.

In Sandyford we only test people for particular reasons. Testing is not available in GP or acute settings.

We use molecular resistance tests to guide sequential antibiotic choice. There is a high level of resistance to macrolides so antibiotic selection and careful stewardship is critical. Moxifloxacin has a risk of serious side-effects, with strengthened warnings about fluoroquinolone use published by MHRA in January 2024 . Recent guideline updates in USA, Europe and Australia have reduced course length to 7 days.

We only test ongoing sexual partners (no look-backs) and prefer to await their own results before considering treatment

Diagnosis

Test for *M.genitalium* only in the following situations.

- **Proven** non-gonococcal urethritis *(tests organized by the Sandyford lab staff)*
- First return for microscopy proven, **persistent or recurrent NGU** where testing for *M.genitalium* has not been done
- **Pelvic inflammatory disease**, **epididymo-orchitis** and **mucopurulent cervicitis** requiring immediate antibiotic treatment
- **Current ongoing contacts** of *M. genitalium* (NB NOT past contacts)
- **Non-resolving proctitis** where no other cause has been identified
- **Test of cure**

How to Test:

Male anatomy

- First void urine (pipette into Abbott sample tube)
  - If urethritis suspected DO NOT request on NaSH. Leave sample in the '**Box C: Samples for M. gen. testing'** and the biomedical scientist will add the test on if urethritis confirmed – see flow chart

Female anatomy

- Vulvo-vaginal swab (self-taken or clinician-taken) into Abbott sample tube

Other anatomical sites

- Rectal testing indicated if
  (i) site is likely risk of reinfection to a known index case.
  (ii) Second-line investigation of proctitis where no other cause can be found.

No throat testing is required

Transgender men, non binary (AFAB) post gender reassignment surgery (GRS):

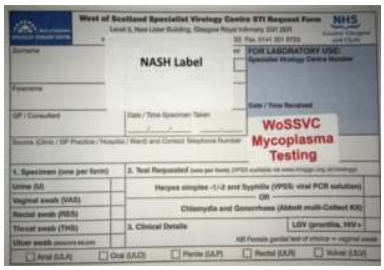
- Little data means no firm recommendations. Specimen type should be guided by sexual history and symptoms

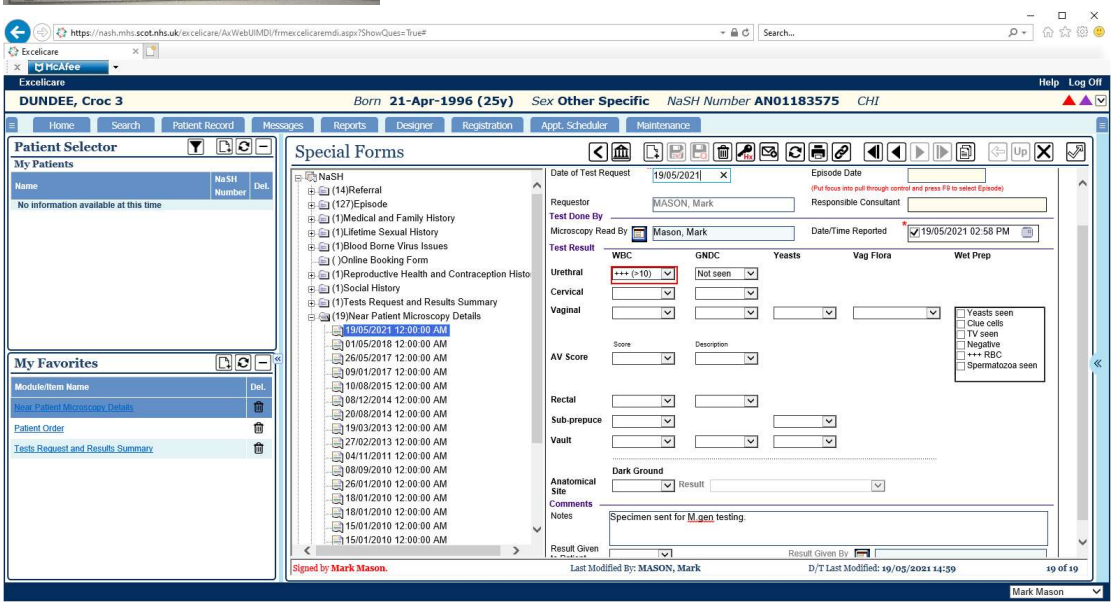
Window period:

Unfortunately there are no data on the incubation period for *M genitalium*, nor on the likely window period before a laboratory test becomes reliably positive. Two weeks seems clinically reasonable.

Laboratory Issues:

- From Jun 2021 *M. genitalium* testing happens at the West of Scotland virus lab on residual sample from the Abbott Ct/NG NAAT test where this has been taken.
- You do **not** need to send two samples if testing for Ct/GC is required as well
- In the case of **urethritis** *M. genitalium* testing will be added on from the Sandyford lab **after microscopy confirmation** both Central and the hubs. It helps if urines for where this may be required are placed in the separate collection box. The biomedical scientist will add a note in the microscopy form to show they have done this.





Microscopy form showing NGU and that M gen testing has been ordered.

- For **other indications** send Abbott tube (orange top) with Ct/GC request form if indicated and an additional WoSSVC MG PCR request form . MG request forms are kept in clinic base and the lab.
- Please add the relevant *M.genitalium* NAAT test on NaSH if you complete a request form personally.
- Sample runs are twice weekly on Tuesday and Friday so turnround times can be up to 7 days
- All *M genitalium* samples are tested locally for macrolide resistance sequence as part of the diagnostic test Positive samples are automatically sent on to the Edinburgh reference laboratory for sequencing.

Please request using Patient Order on NaSH – the *M. genitalium* tests are in the 'STI: Ct GC TV NAAT' folder

Flow Chart (i) (for Sandyford Central)

MALE ANATOMY PATIENTS

Patient with suspected NGU/GC, recurrent NGU or epididymo-orchitis

↓

Collect FVU using CT/GC **NAAT REQUEST FORM ONLY** (one form)
(Obtain urethral microscopy slide also)

↓

Specimen taken to BOX C (**samples for M.gen testing**)
(Ground floor specimen collection room)

↓

BOX C specimens are transferred to Sandyford laboratory M.gen tray

↓

Sandyford Laboratory BMS :
BMS performs microscopy and if NGU/GC confirmed, locate specimen from M.gen tray and add red sticker (WoSSVC Mycolpasma Testing) to the NAAT request form (see appendix 2)

→

Sandyford Clinician :
Clinician checks microscopy result and informs patient M.gen test being taken.

↓

BMS requests the M.gen test on NASH and
adds comment "specimen sent for M.gen testing"
in microscopy comments box on NASH (see appendix 3)

↓

BMS ALSO add red sticker (WoSSVC Mycolpasma Testing) to any forms where epididymo-orchitis is written in clinical details (**regardless of microscopy result**).

↓

BMS must check that patient NASH labels on form and specimen match.

↓

Specimens for M.gen can then be added to Virus Laboratory specimen bag for onward transport to the Virus Laboratory, GRI using routine NHS driver uplifts.

↓

Any M.gen requests that are inadvertently overlooked, details can be emailed to the Virus Laboratory on a daily basis to ***west.ssvc2@nhs.scot***.

Flow Chart (ii) (for Sandyford Central)

FEMALE ANATOMY PATIENTS

Patients with PID requiring treatment

Collect vulvovaginal swab using GC/ CT NAAT REQUEST FORM ONLY (one form)

⇩

Record clinical information on form: PID requiring treatment

⇩

Clinician informs patient M.gen test being taken

⇩

Clinician requests M.gen on NASH

⇩

Specimen taken to BOX C (**samples for M.gen testing**)
(Ground floor specimen collection room)

⇩

BOX C specimens are transferred to Sandyford laboratory M.gen tray

⇩

BMS checks that patient NASH labels on form and specimen match and adds red sticker (WoSSVC Mycoplasma Testing) to the NAAT request form

⇩

Specimens for M.gen can then be added to Virus Laboratory specimen bag for onward transport to the Virus Laboratory using routine NHS driver uplifts.

⇩

Any M.gen requests that are inadvertently overlooked, details can be emailed to the Virus Laboratory on a daily basis to ***west.ssvc2@nhs.scot***.

Flow Chart (iii)

Female/ Male patients attending for:

M.gen TOC
M.gen contact

Patient may attend for a GRAB kit or may attend routine clinic

⇩

Collect vaginal swab, FVU or rectal swab and transfer to Abbott vial (orange top)
(may be self-taken)

⇩

Clinician informs patient M.gen test being taken

⇩

Use M.gen form (A4 size form) see appendix 4
(use NASH label on form)

⇩

Clinician requests the M.gen test on NASH (see appendix 1)

⇩

Specimen taken to BOX A for checking

⇩

Specimens for M.gen can then be added to Virus Laboratory specimen bag for onward transport to the Virus Laboratory using routine NHS driver uplifts.

Seeing the Results:

Results including resistance are returned to the NaSH Results Reporting area from both the WoSSVC (primary result, SpeeDx ResistancePlus® MG) and the Scottish STI Bacterial Reference lab (sequencing data). The primary NAAT test will map into NaSH Test Special Forms and is communicated via Netcall results phone line.

You **must check Results Reporting** in the patient summary for the resistance information as this does not map into the NaSH test Special Form. **Please do not rely on the comments in the Test Result form which just describe the test**.

Please take care to read and interpret the resistance test result carefully. Seek help if unsure.

This example shows a positive result for *M. genitalium* which is susceptible to azithromycin.

Results Reporting

Department
NASH

Test Name	May 18, 2021 00:00	May 18, 2021 00:00
M. gen resistance [NaSH] ( )	Azithromycin resist. NOT predicted	
M. genitalium [NaSH] ( )	DETECTED by PCR	
C. trachomatis : [NaSH] ( )		Not detected by PCR
N. gonorrhoeae : [NaSH] ( )		Not detected by PCR
HIV antibody/antigen [NaSH] ( )		
TP-syphilis antibody [NaSH] ( )		
Ct Polymerase Chain Reaction [RVD] ( )		
GC Polymerase Chain Reaction [RVD] ( )		

This example is a result where doxycycline should be followed by moxifloxacin, after careful informed discussion.

Results Reporting | Patient Order | Clinical Notes

Department
NASH

Test Name	Jan 14, 2022 09:40	Jan 14, 2022 00:00
M. gen resistance [NaSH] ( )	Azithromycin RESISTANCE predicted	
M. genitalium [NaSH] ( )	DETECTED by PCR	
HIV antibody/antigen [NaSH] ( )		Not detected
TP-syphilis antibody [NaSH] ( )		Not detected
Routine Culture [MSGN] ( )		

NaSH Prescribed Medications

Management:

Treatment – index case – *M genitalium*

Macrolide (e.g azithromycin) resistance in UK is estimated at around 40%. All positive *M genitalium* samples are tested for macrolide resistance-associated mutations (MRAM) using the SpeeDx ResistancePlus® MG as part of the diagnostic test.

Doxycycline is used to lower bacterial load in suspected *M genitalium* (ie non-resolved non-gonococcal urethritis) pending final treatment choice, which is either multiday azithromycin or moxifloxacin (where there is confirmed macrolide resistance).

Patients found to have *M. genitalium* need **same-day clinical notes review,** a **prescription** and **recall** to collect the appropriate second antibiotic from the dispensing clinic. The sexual health adviser team will lead this process using the SC GUM Results Virtual list to request senior medical input if needed.

Patients who have fully clinically recovered after doxycycline can be offered the option to **defer further antibiotics** if they are willing to abstain from sex for three further weeks and attend for a test of cure (*European 2021 guidance*)

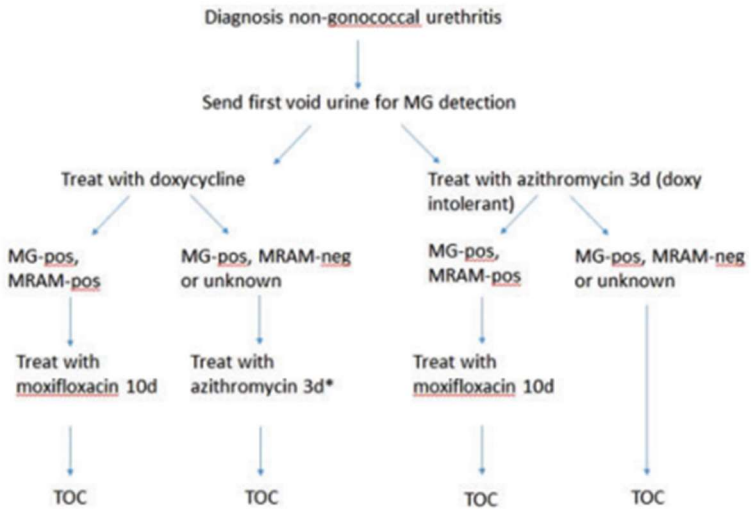


Figure 1. Suggested treatment pathway for men presenting with non-gonococcal urethritis who subsequently test positive for *M. genitalium*. *Azithromycin 3 d should be started within two weeks of finishing doxycycline. MG: *Mycoplasma genitalium*; Doxycycline: doxycycline 100 mg bd for seven days; Azith romycin 3 d: azithromycin 1 g, then 500 mg od for two days; Moxifloxacin 10 d: moxifloxacin 400 mg od for ten days; MRAM: macrolide resistance-associated mutation; TOC: test of cure.

Taken from BASHH 2018 Guideline. BASHH Interim Update May 2023 now recommends a shorter, 7-day course of moxifloxacin
The reference laboratory undertakes further sequencing to confirm the SpeeDx result and report on possible quinolone-associated resistance mutations. This is for information only and may be of use to consultants in constructing salvage regimens for those who do not improve with the standard treatment approach.

Treatment – Regimens:

***M. genitalium* positive – no macrolide resistance**

Doxycycline 100mg two times daily for 7 days
followed by
Azithromycin 1g orally as a single dose then 500mg orally once daily for 2 days

***M genitalium* positive – macrolide resistance predicted**

Doxycycline 100mg two times daily for 7 days
followed by
Moxifloxacin 400mg orally once daily for **SEVEN (7**) days (NB not in pregnancy)

Complicated infection (eg severe epididymo-orchitis or PID in M.gen contact or proven case)

Moxifloxacin 400mg orally once daily for 14 days (NB not in pregnancy)

Clinical failure of initial resistance-guided treatment :

A GUM consultant must decide on appropriate treatment regimen in all cases where this approach has failed. Example regimens may include

Doxycycline 100mg two times daily for 14 days
or
Pristinamycin 1g orally four times daily for 10 days** (ULM)
or
Minocycline 100mg orally twice daily for 14 days

** see protocol at end for pristinamycin prescribing in this exceptional situation

Rectal infection:
Should be managed in the same way as urethral infection. For severe proctitis in someone known to be in contact with *M genitalium*, a longer course of moxifloxacin (14 days) may be considered.

Pregnancy & Breast Feeding:
Please discuss with senior clinician. Patients may choose to delay treatment until after delivery.

- Azithromycin use during pregnancy is unlikely to increase the risk of birth defects or adverse pregnancy outcomes: 3 day azithromycin course can be used.
- Moxifloxacin is **contraindicated**.
- Doxycycline is considered safe for the use in the first trimester by FDA but BNF recommends against.

Breast feeding

- Low levels of azithromycin, and risk is considered low. Infant should be monitored for possible side effects due to effects on gastrointestinal flora, including diarrhoea and candidiasis. Doxycycline is excreted in milk and is contraindicated in breast feeding mothers.

HIV:
Treatment in people living with HIV is the same as above.

Adverse events:
Azithromycin, doxycycline, moxifloxacin, and pristinamcyin can all cause gastro-intestinal intolerance such as nausea.

MHRA issued strengthened guidance in January 2024 that fluroquinolones should only be used where other commonly used antibiotics are inappropriate due to serious, sometimes irreversible, musculoskeletal, neurological and psychiatric adverse effects including completed suicide. The BASHH response states: . *Clinicians are advised to prescribe fluoroquinolones only when judged to be the most appropriate treatment for the patient's infection after considering factors such as likely causative organisms, antimicrobial resistance factors, the availability of alternative agents, and pharmacological considerations such as tissue penetration.*

We recommend discussion about this is fully documented and decision making justified. In the case of *M. genitalium* there are no alternative licensed agents for macrolide-resistant infection and the MHRA guidance specifically mentions resistance to first-line antibiotics as a valid reason for use. .

We recommend discussing side effects using the MHRA patient information leaflet at
https://assets.publishing.service.gov.uk/media/65aa9125c69eea0010883840/

FQ_Patient_Information_Sheet_-_TO_PUBLISH.pdf and then sending the link by SMS to evidence the discussion

QT Prolongation: Certain medications including fluconazole, macrolide and fluoroquinolone antibiotics cause QT prolongation and should not be prescribed with interacting medications. This is unlikely to be of clinical significance for stat doses but is important for longer courses. Please use BNF Interaction Checker to ensure these medications are safe to prescribe for your patient and discuss with a senior colleague if necessary.

Partner notification and testing of sexual contacts

Test only **ongoing sexual partners,** including non-regular partners where there is likely to be further sexual contact. This is primarily to reduce the risk of re-infection to the index patient. There is no clear merit in 'look-backs'.

If the partner's test is positive, treat based on **their** resistance markers. If the partner's results are negative and infection risk was within last two weeks offer re-testing after a two-week window. This interval is not evidence-based but pragmatic. If they remain negative no further action is needed.

Epidemiological treatment, without results, has a high risk of treatment failure, and further antibiotic resistance. On rare occasions it may be necessary to treat ongoing partners prior to their own results being available. In this situation treat based on the index case's resistance prediction where available.

As a last resort where immediate treatment is needed (eg travel away, no resistance data available) ongoing partners should be tested and then treated with the same antibiotics as the index patient.

You must be able to justify your treatment choice and decisions especially using moxifloxacin.

General advice:

M. genitalium can cause considerable anxiety. A patient information leaflet about *Mycoplasma genitalium* can be found on the guidelines page of the IUSTI Europe website. (NB. This resource recommends TOC at 3 weeks, and partner look back of 6 months).
https://iusti.org/wp-content/uploads/2019/11/MycoplasmaLeaflet2017.pdf

Patients should be advised to abstain from sexual intercourse until they and their partner(s) have completed treatment or, in patients with PID, until 14 days after the start of treatment, and until symptoms have resolved.

Follow up:

All patients should attend for a TOC ideally at 5 weeks after start of treatment, and no sooner than three weeks after the start of treatment to ensure microbiological cure.

People who do not respond to treatment should be managed by a consultant GUM physician, and reported.

References

BASHH May 2023 *Mycoplasma genitalium* guideline > Management > Interim Update - see https://bashh.org/guidelines [accessed 18 May 2023]

BASHH Clinical Effectiveness Group. Response to MHRA statement on the use quinolone antimicrobials.Published 11/03/2024 . Available at Response to MHRA statement on the use quinolone antimicrobials | BASHH [accessed 25/03/2024]

Soni S, Horner P, Rayment M et al. 2018 BASHH UK National guideline for the management of infection with mycoplasma genitalium. https://www.bashhguidelines.org/media/1228/mg-ijstdaids.pdf [accessed 27 Mar 2023]

Jensen J.S, Cusini M, Gomberg M, Moi H, Wilson J, Unemo M et al. European guideline on the management of *Mycoplasma genitalium* infections. First published: 19 February 2022 https://doi.org/10.1111/jdv.17972 [accessed 27 March 2023]

Medicines and Healthcare products Regulatory Agency. Fluoroquinolone antibiotics: must now only be prescribed when other commonly recommended antibiotics are inappropriate. Available at https://www.gov.uk/drug-safety-update/fluoroquinolone-antibiotics-must-now-only-be-prescribed-when-other-commonly-recommended-antibiotics-are-inappropriate [accessed 25/03/2024]

Pinto-Sander N, Soni S. Mycoplasma genitalium infection (Practice Pointer). BMJ 2019; 367:l5820 https://www.bmj.com/content/367/bmj.l5820 [accessed 09 Mar 2021, requires Athens]

Preparation date: 02/10/2020
Review date: 02/10/2023

NHS Greater Glasgow and Clyde

Oral Pristinamycin use in the treatment of *Mycoplasma genitalium* infection in adults

Mycoplasma genitalium **sample positive**
NB Refer to GUM consultant for advice before prescribing

Macrolide and quinolone resistance known or predicted and/or macrolides and quinolones contraindicated/unsuitable?

YES

NO → **Treat as per Sandyford *Mycoplasma genitalium* protocol**

Treat with:

Doxycycline 100mg orally twice daily for seven days THEN Pristinamycin 1g orally four times daily for 10 days

OR

Pristinamycin 1g orally four times daily for 10 days alone if doxycycline contraindicated

Pristinamycin prescribing information:

- An oral streptogramin antibiotic, sometimes used in osteoarticular infections and respiratory tract infections
- Recommended as an alternative treatment for *Mycoplasma genitalium* in the National BASHH guidelines
- Not licensed in the UK. Imported against a prescription. Patients should be made aware of this and informed consent should be documented according to the GGC ULM policy: http://www.ggcprescribing.org.uk/media/uploads/policies/section_9/9.1_unlicensed_medicines_policy_-_final_1910.pdf
- To be taken with/after food

Interactions/contraindications

- Pristinamycin is metabolised by the cytochrome P450-3A4 enzyme system and therefore interacts with drugs that share that system, e.g. anticoagulants, ciclosporin, tacrolimus and methotrexate
- Use with colchicine is contraindicated
- Contraindicated if allergic to Pristinamycin, other streptogramins or any of the excipients

Pregnancy

- No evidence for its use in pregnancy, if unavoidable have an informed discussion with patient in regards to the risk

Breastfeeding

- Contraindicated due to its side effect profile

Side effects

- GI disturbance: nausea
- Rash including exfoliative dermatitis
- There are reports of liver function and haematological adverse effects

Pharmacy can be contacted for additional prescribing information

References and resources

1. Soni, et al 2019, 'British Association for Sexual Health and HIV national guideline for the management of infection with Mycoplasma genitalium (2018)', International Journal of STD & AIDS, vol. 30, no.10, pp. 938-950.
2. Pristinamycin prescribing guidance. N Rae, 2013. Accessed at: https://www.nhsayrshireandarran.scot.nhs.uk/Antibiotic%20site/pdf%20docs/Pristinamycin%20guidance.pdf
3. Pristinamycin: old drug, new tricks? . Cooper, Eden C et al; J Antimicrob Chemother 2014; 69: 2319-2325. Accessed at: http://jac.oxfordjournals.org/content/69/9/2319.full.pdf
4. http://www.ggcmedicines.org.uk/media/uploads/patient_information/unlicensed_medicines_policy-_adult_pil_-_1910.pdf

Mycoplasma genitalium PCR Request Form

FROM (Referring clinic)

Tel:

REQUEST

Date taken:

Surname: Forename:

Clinic number/NaSH number:

DOB/CHI:

Sex: M / F

SPECIMEN

Sample type: (please circle)

Urine (U) / Endocervical swab (ENS) / Rectal swab (RES)/ Vulvo-vaginal swab (VUS)

REASON FOR REQUEST

- Patient with persistent/recurrent urethritis, *C. trachomatis* and *N. gonorrhoeae* negative
- Patient with persistent/ recurrent cervicitis, *C. trachomatis* and *N. gonorrhoeae* negative
- Ongoing sexual contact of known case
- Test of cure / suspected treatment failure
- Other (please specify)

Further information please email: west.ssvc2@nhs.scot or Tel: 0141 201 8722