

Sexually transmitted infections may become untreatable in the near future! Status of antimicrobial resistance of *Neisseria gonorrhoeae* and *Mycoplasma genitalium* in Belgium.



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Documents: *N. gonorrhoeae*: https://nrchm.wiv-isp.be/nl/ref_centra_lab/sti_treponema_pallidum/Rapporten/Neisseria%20gonorrhoeae%202021.pdf
M. genitalium: doi: 10.1177/095646242111070704 and doi: 10.1136/sextrans-2020-054511

BACKGROUND

Both sexually transmitted pathogens are more prevalent among individuals with high sexual risk behaviour

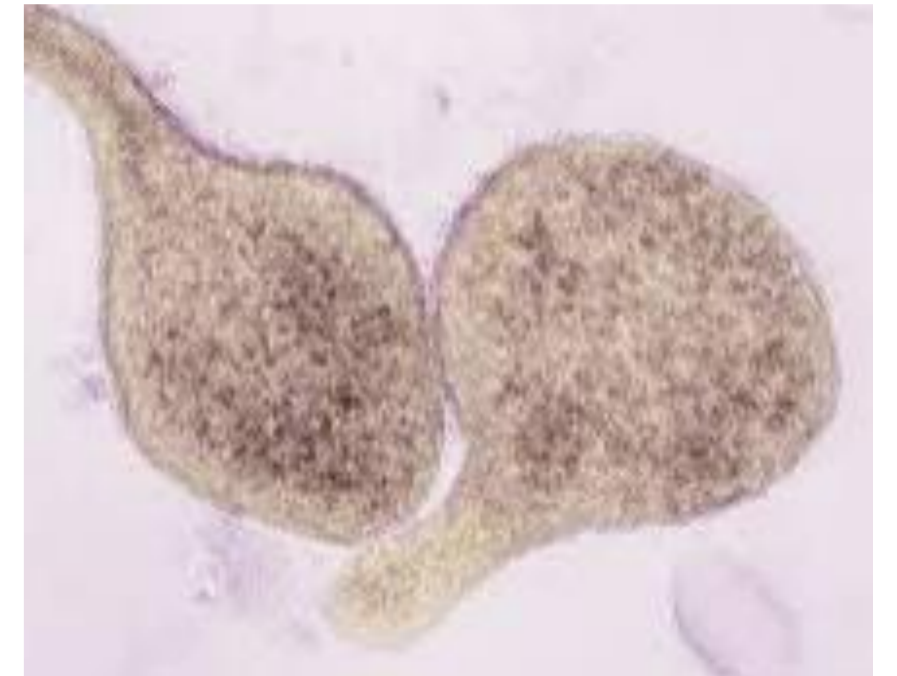
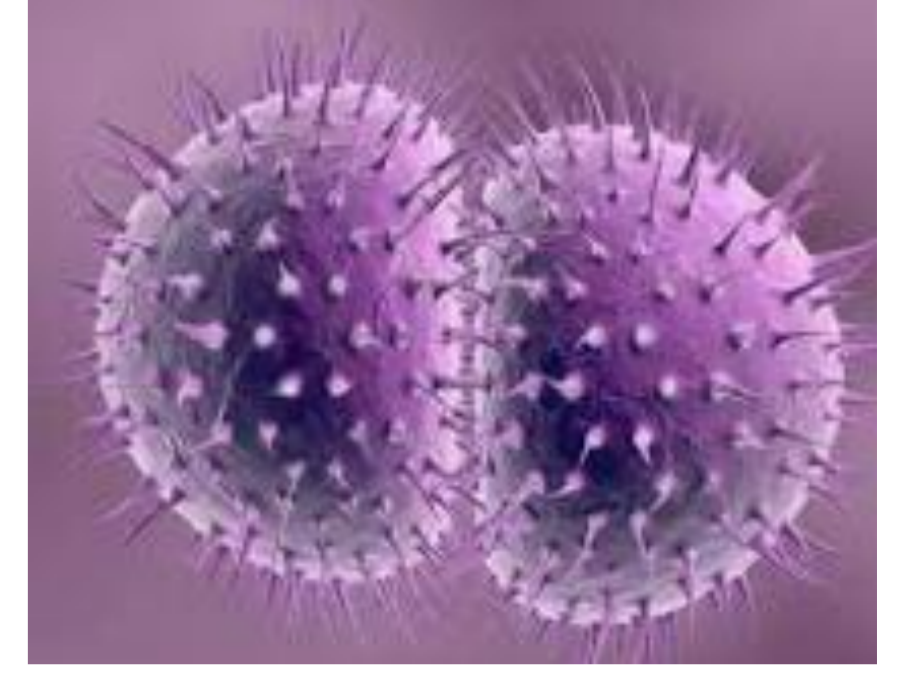
Both can cause symptoms in different anatomical sites

Neisseria gonorrhoeae

- Urethritis, proctitis, pharyngitis, cervicitis, pelvic inflammatory disease and even infertility and ectopic pregnancies
- Disseminated gonococcal disease with arthritis or endocarditis in rare cases
- Can also be asymptomatic: time of clearance depends of site of infections and ranges in between one (pharynx) to twelve months (anorectum)

Mycoplasma genitalium

- Associated with urethritis, cervicitis and may be associated with preterm birth
- Can also be asymptotically present for a long period (>18 months)
- Currently insufficient evidence to screen for asymptomatic *M. genitalium*



Both extra-ordinary capacity to acquire resistance mechanisms very rapidly → SURVEILLANCE MANDATORY!

METHODS

Neisseria gonorrhoeae: NRC-STI receives presumable *N. gonorrhoeae* isolates from every district of Belgium.

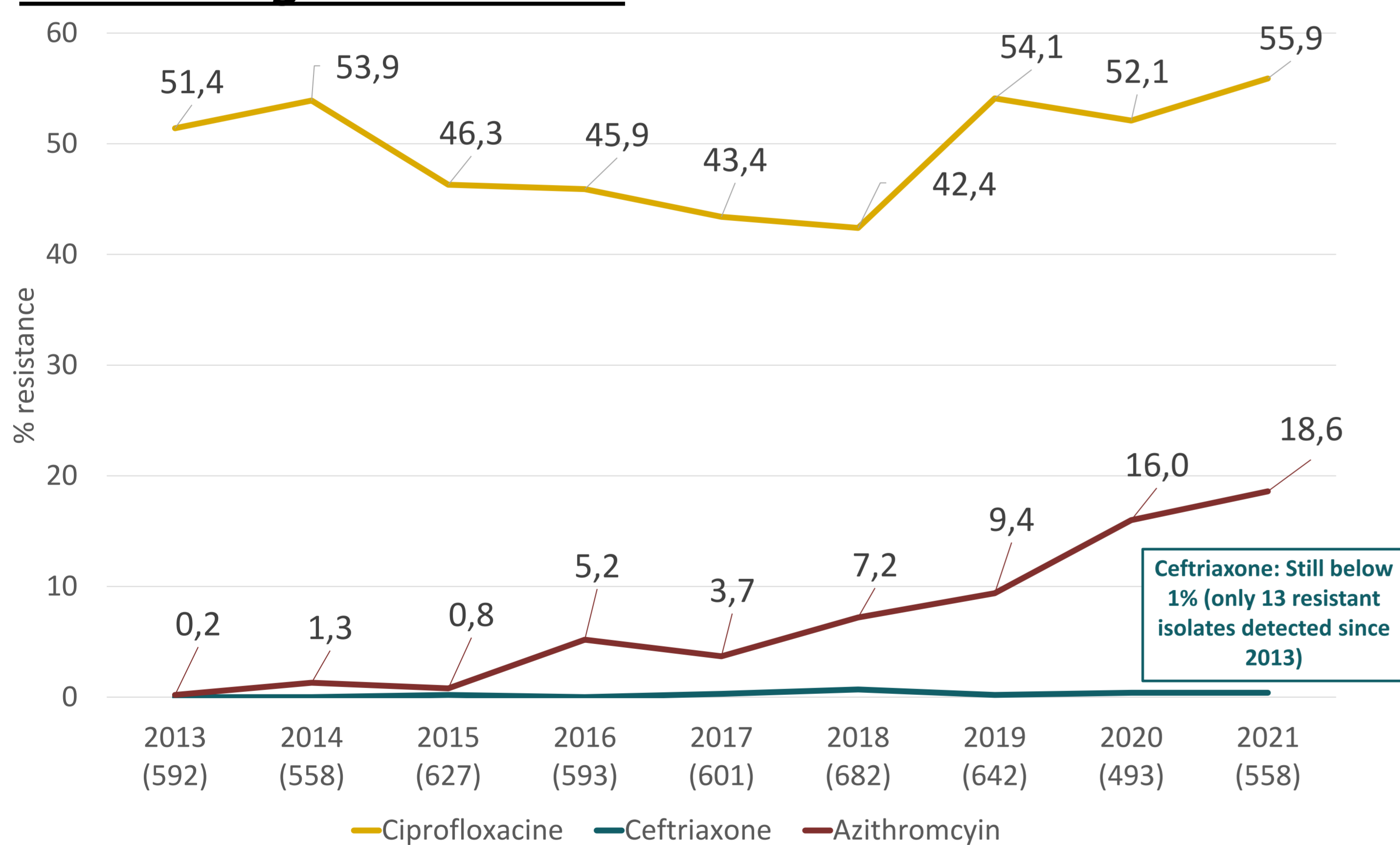
Mycoplasma genitalium: NRC-STI will only test for *M. genitalium* in case of urethritis/cervicitis and when *N. gonorrhoeae* and *C. trachomatis* are excluded.

NRC-STI performs antimicrobial susceptibility testing of *N. gonorrhoeae* & *M. genitalium* for current treatment options

Pathogen	First-line treatment	Second-line treatment	Antimicrobial susceptibility testing method
<i>N. gonorrhoeae</i>	Before 2022 : Combined ceftriaxone 500 mg AND azithromycin 2g Since 2022 : single dose ceftriaxone 1g	Ciprofloxacin 500 mg	Etest (Biomerieux, France) Resistance Breakpoints: - Azithromycin: >1 mg/L - Ceftriaxone: >0,125 mg/L - Ciprofloxacin: >0,06 mg/L
<i>M. genitalium</i>	Azithromycin (macrolide) 500 mg single dose followed by 250 mg once daily for 4 days	Moxifloxacin (fluoroquinolone) 400 mg once daily for 7-10 days	Detection of resistance associated mutations (RAMs) via Sanger sequencing of 23S rRNA (macrolide RAMs) and alterations in ParC position 83/87 (fluoroquinolone RAMs)

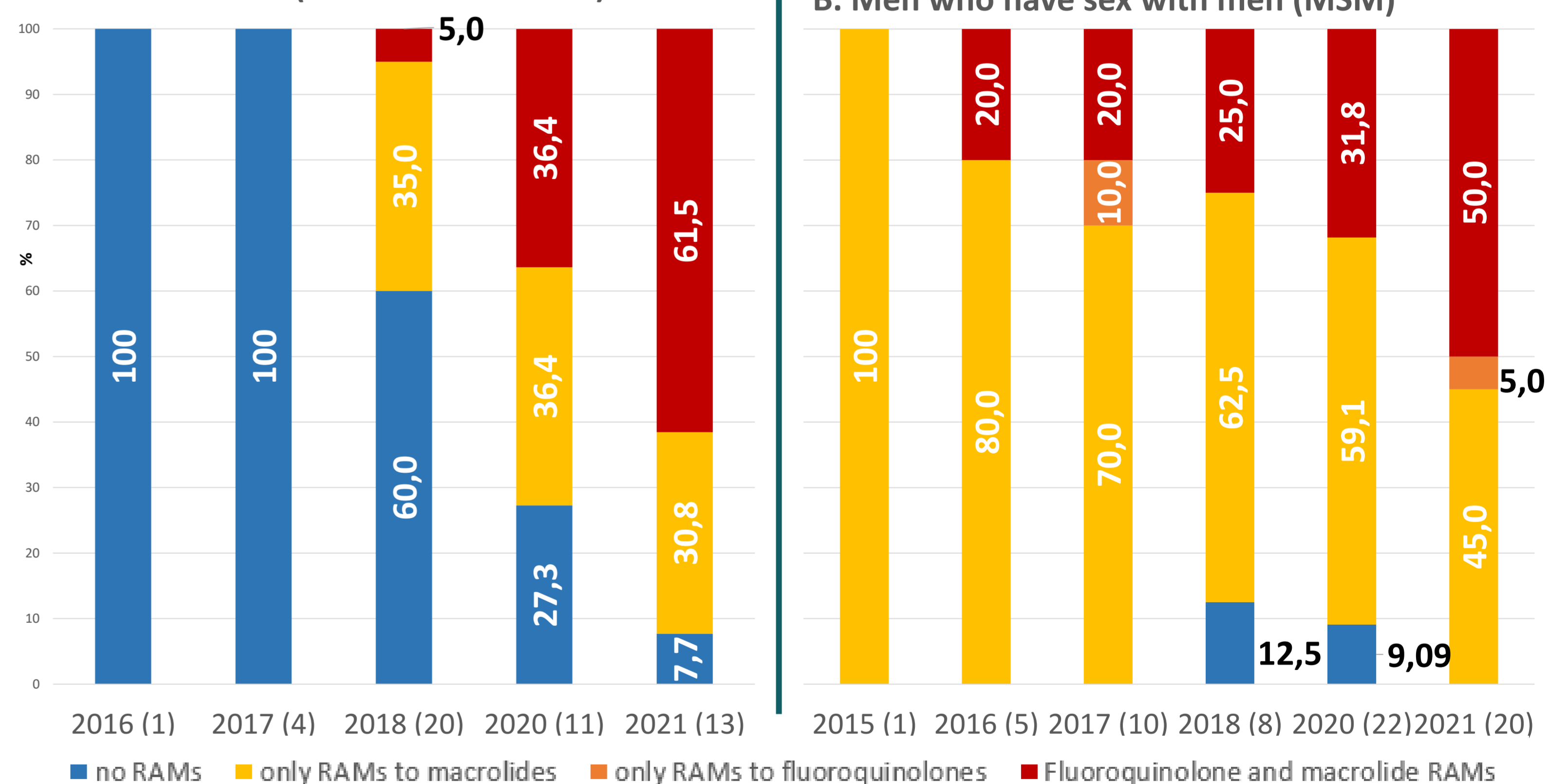
ANTIMICROBIAL SUSCEPTIBILITY RESULTS FROM 2013-2021 (#SAMPLES TESTED BETWEEN BRACKETS)

Neisseria gonorrhoeae:

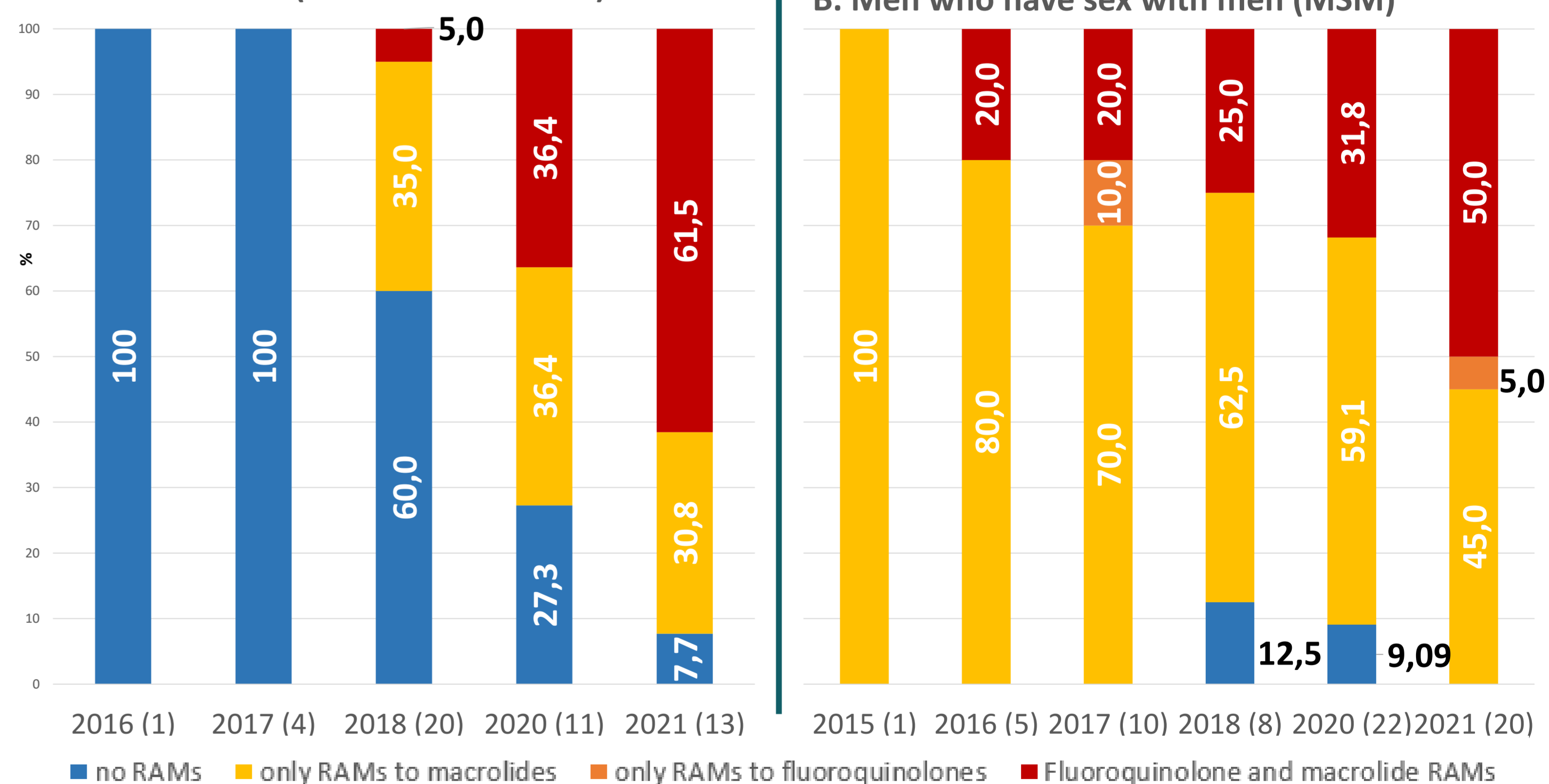


Mycoplasma genitalium:

A. Heterosexuals (includes all women)



B. Men who have sex with men (MSM)



- **Worrying increasing azithromycin resistance!** Almost 20% in 2021.
- Increase in resistance to azithromycin is found to be **higher among MSM compared to heterosexuals.**
- **No multi-resistant *N. gonorrhoeae* strains yet in Belgium.** Two cases were almost multi-resistant to azithromycin and ceftriaxone (both male and urethral infection)

- **Almost all samples of MSM had RAMs to macrolides**
- Increase in proportion of samples with RAMs to macrolides **also visible among heterosexuals**
- **Alarming number of samples harbouring RAMs to both antimicrobials in MSM and heterosexuals! (≥50% in 2021)**
- **Shift towards multidrug resistance clearly visible in both groups**

CONCLUSION

- **An increase in azithromycin resistance is noticeable for both STIs.** Increase is higher among MSM and is probably fuelled by the overuse of azithromycin to treat other STIs such as *C. trachomatis*. Use of azithromycin should be limited.
- *C. trachomatis* can be treated as efficaciously with doxycycline and *N. gonorrhoeae* with single dose ceftriaxone
- *N. gonorrhoeae* already resistant to many antimicrobials, but to date no resistance to ceftriaxone and azithromycin in Belgium.
- *M. genitalium* shows very worrying increase in the presence of RAMs to both antimicrobials. Need to reinforce surveillance of antimicrobial resistance of *M. genitalium* → new Belgian research study will start this year!