# Antimicrobial resistance in Mycoplasma genitalium in Switzerland. A nested project of the STAR Trial

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## BACKGROUND AND AIMS

- *Mycoplasma genitalium* (MG) is recognized as an emerging STI causing urethritis, cervicitis, pelvic inflammatory disease and proctitis.
- It is responsible for 10–35% of non-gonococcal, non-chlamydial urethritis in men.
- MG develops antimicrobial resistance quickly, but the level of resistance is unknown for Switzerland.
- We examined the prevalence and risk factors for asymptomatic MG and the proportion with macrolide and fluoroquinolone (FQ) resistance.

## METHODS

- The STAR trial offered free STI testing to men and women with ≥ 3 sexual partners in the previous year.[1,2]
- Participants reported demographic and sexual behaviour data.
- Swabs from the pharynx, urethra/vagina and anus were pooled for each participant before testing for various STIs including MG.
- Macrolide and FQ resistance in MG-positive samples were evaluated by Sanger sequencing (23S rRNA gene, gyrA, and parC gene).

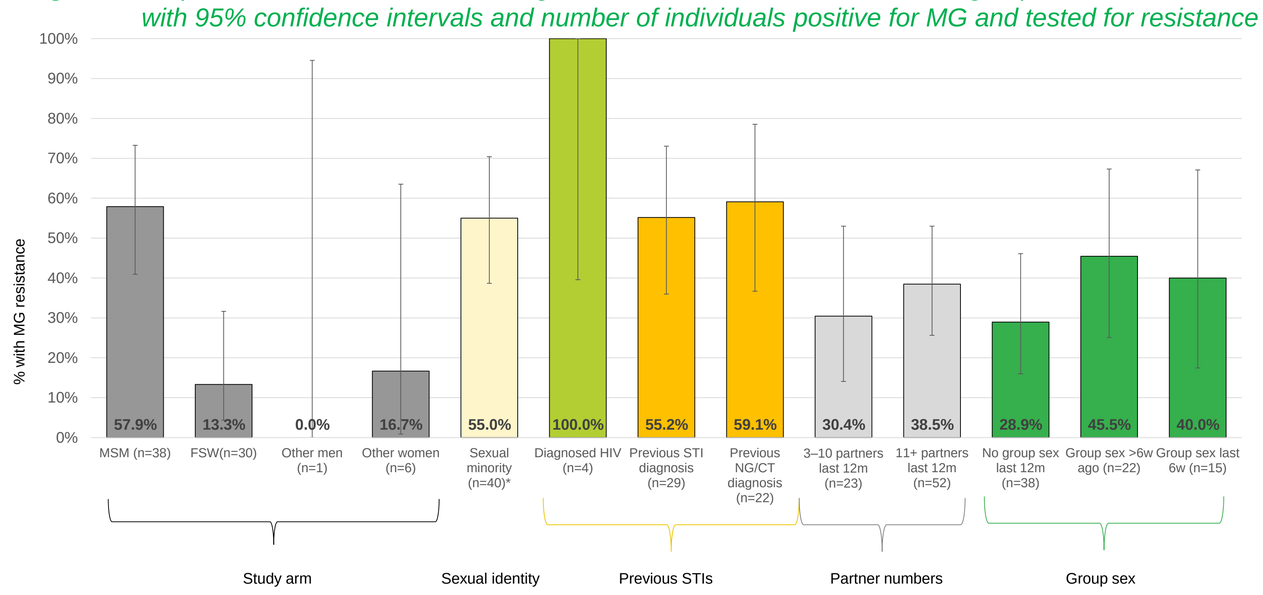
## RESULTS

***Table 1**: Sociodemographic parameters at baseline*

| | MG negative | | MG positive | | Total | | Pearson's Chi square |
|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | p |
| **Persons with baseline visit** | 1372 | 100.0% | 81 | 100.0% | 1453 | 100.0% | |
| **Transmission group** | | | | | | | |
| MSM | 738 | 53.8% | 41 | 50.6% | 779 | 53.6% | |
| FSW | 457 | 33.3% | 33 | 40.7% | 490 | 33.7% | |
| Other men | 91 | 6.6% | 1 | 1.2% | 92 | 6.3% | |
| Other women | 86 | 6.3% | 6 | 7.4% | 92 | 6.3% | 0.167 |
| **Location of VCT centre in Switzerland** | | | | | | | |
| French-speaking part | 375 | 27.3% | 18 | 22.2% | 393 | 27.0% | |
| German-speaking part | 997 | 72.7% | 63 | 77.8% | 1060 | 73.0% | 0.314 |
| **Type of health service provider** | | | | | | | |
| Dedicated MSM health centre | 592 | 43.1% | 30 | 37.0% | 622 | 42.8% | |
| Dedicated FSW health centre | 322 | 23.5% | 18 | 22.2% | 340 | 23.4% | |
| General hospital | 418 | 30.5% | 31 | 38.3% | 449 | 30.9% | |
| Other VCT centre | 40 | 2.9% | 2 | 2.5% | 42 | 2.9% | 0.517 |
| **Age group** | | | | | | | |
| <25 years | 251 | 18.3% | 20 | 24.7% | 271 | 18.7% | |
| 25–39 years | 750 | 54.7% | 44 | 54.3% | 794 | 54.6% | |
| 40+ years | 371 | 27.0% | 17 | 21.0% | 388 | 26.7% | 0.255 |
| **Especially vulnerable groups** | | | | | | | |
| Transgender (FtM, MtF) | 23 | 1.7% | 1 | 1.2% | 24 | 1.7% | 0.762 |
| Sold sex since last HIV test | 483 | 35.2% | 34 | 42.0% | 517 | 35.6% | 0.216 |
| Diagnosed HIV infection | 24 | 1.7% | 5 | 6.2% | 29 | 2.0% | 0.006 |
| **No health insurance in Switzerland** | 384 | 28.4% | 25 | 32.1% | 409 | 28.6% | 0.488 |
| **Single** (no steady partnership) | 566 | 47.0% | 27 | 41.5% | 593 | 46.7% | 0.581 |
| **Sexual minority** (non-heterosexual identity*) | 751 | 54.7% | 43 | 53.1% | 794 | 54.6% | 0.772 |

**Legend**:
**FSW**, female sex worker; **FtM**, female to male transition; **MtF**, male to female transition; **MSM**, men who have sex with men; **VCT**, voluntary counselling and testing.
***Identifying as homosexual, bisexual, or other (but not as heterosexual).

***Figure 1**: Proportion of MG resistance among MG-infected individuals across sub-groups, with 95% confidence intervals and number of individuals positive for MG and tested for resistance*




**Legend**:
**MSM**, men who have sex with men; **FSW**, female sex worker; **CT**, Chlamydia trachomatis; **NG**, Neisseria gonorrhoeae.
***Identifying as homosexual, bisexual, or other (but not as heterosexual).
The two follow-up visits of MSM with persistent infection with macrolide resistant MG infection were excluded from this analysis (N=75)

- Among 2138 specimens overall, 102 samples (4.8%) tested positive for MG.
- 77 samples could be successfully amplified.
- Genotypic resistance to macrolides or FQ was found in 33.8% and 5.2%, respectively (26/77 and 4/77, with an overlap of 1/77).
- At baseline, 81/1453 participants (5.5%) were MG-positive; individuals (*i.e.*, MSM) with previously diagnosed HIV infection were over-represented (p = 0.006; ***Table 1***).
- Incidence among MSM was 4.3% (2.5%–7.1%).
- In MSM 57.9% of all tested specimen (N=38) showed resistance, so did 59.1% of tested specimen from individuals with a previous diagnosis of gonorrhoea/chlamydia (N=22; ***Figure 1***). Among HIV-diagnosed MSM, all 5 tested specimen showed resistance.
- Regarding female sex workers and other multi-partner women the proportions with any MG resistance were 13.3% and 16.7%, respectively.
  In other multi-partner men only one MG infection was found – with no resistance.

## CONCLUSIONS

- This is the first study of MG infections and macrolide and FQ resistance in Switzerland.
- The majority of MSM with MG had macrolide resistance, likely due to previous exposure to macrolides for the treatment of gonorrhoea/chlamydia.
- Given the high level of resistance, testing and treatment of asymptomatic MG infections is not recommended.
- Our results will help the development of guidelines for the clinical and diagnostic management of MG infections.

## REFERENCES

1. Schmidt AJ et al. *Swiss Med Wkly*. 2020;150:w20392; 2. Vernazza P et al. *Swiss Med Wkly*. 2020;150:w20393

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