



Antimicrobial resistance of *Neisseria gonorrhoeae* in Germany

Results from the **Gonococcal Resistance Network (GORENET)**

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Background & Aim

- *Neisseria gonorrhoeae* (NG) :
 - Not reportable in Germany
 - Limited data on epidemiology and antimicrobial resistance (AMR) available
 - AMR surveillance programs coordinated by WHO, CDC and ECDC are promoted
- Guidelines for first line therapy of uncomplicated NG-infection in Germany
 - ceftriaxone (or cefixime) together with azithromycin

Aim: With GORENET we monitor the NG-AMR and patterns of resistance testing in Germany in order to guide treatment algorithms and targeted prevention strategies

Methods

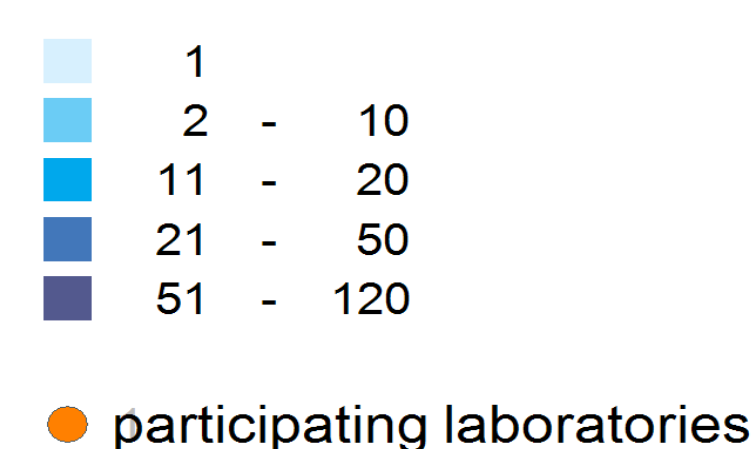
- Recruitment of laboratories nationwide starting 2014
- Data collection in 2014: on all reports of performed NG-AMR tests
 - Patient-related information (sex, age, material, specialist, district code)
 - Interpretation standard
 - European Committee on Antimicrobial Susceptibility Testing (EUCAST)
 - Clinical and Laboratory Standards Institute (CLSI)
- Isolate collection in 2014:
 - Subsequent AMR testing in national reference lab (NRL) by using E-Test
 - Ceftriaxone, cefixime, ciprofloxacin, azithromycin, and penicillin
 - Interpreted according to EUCAST 4.0
- Data analysis:
 - Characteristics of persons tested
 - NG-AMR test-panel in labs
 - Resistance patterns of isolates tested in NRL

Results

Network of laboratories

- 20 Laboratories recruited , Figure 1
- Samples reported:
 - n=708, range 1-147/lab
 - median 24 (IQR 7-41)
 - 54% from 3 labs
- 267 isolates tested in NRL

Figure 1. Distribution of NG-AMR tests by region in Germany, 708 samples from 2014 (585 with district code of the patient, 23 with district code of the laboratory)



Test-panel in labs (n=708*)

*Available for 663 Samples

Table 1.: Proportion of isolates tested for particular antibiotics in labs

Antibiotic	Samples tested , %
Ceftriaxone	98%
Cefixime	92%
Azithromycin	95%
Penicillin	98%
Ciprofloxacin	99%
β-Laktamase	45%

90%
74% interpreted by EUCAST and 26% by CLSI

Isolates tested in NRL (n=267)

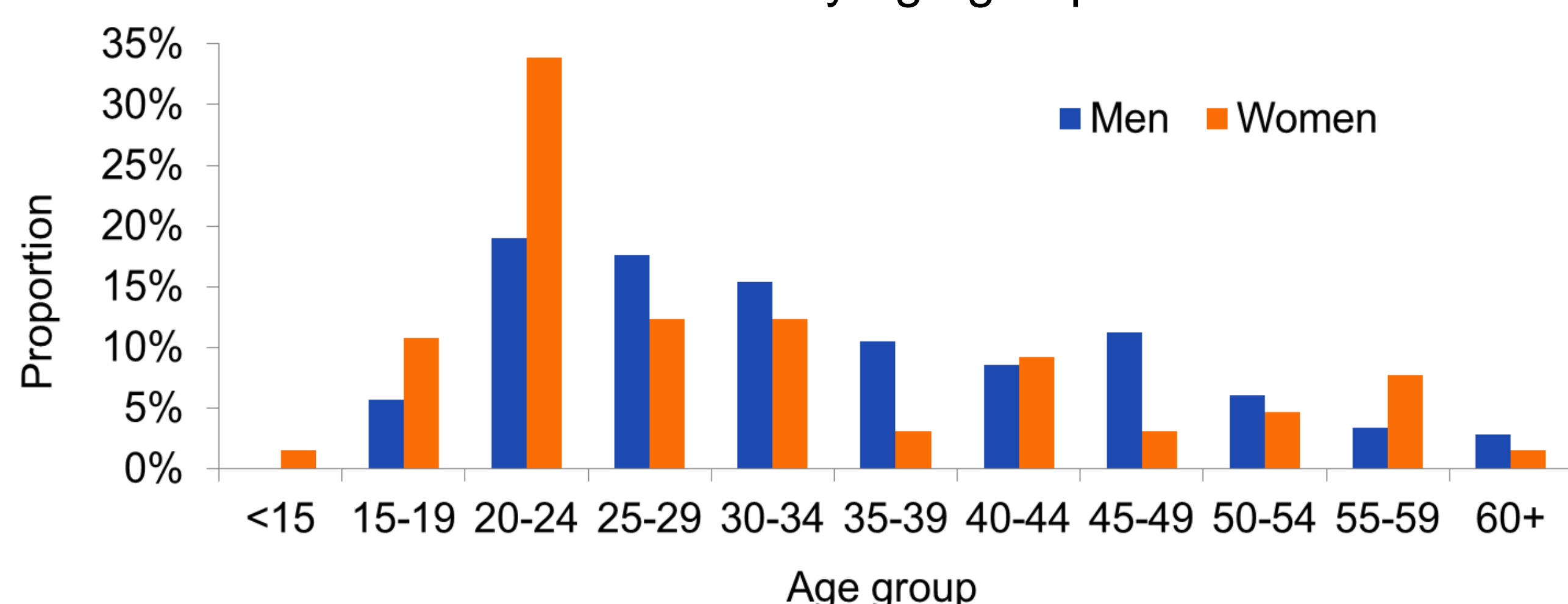
Table 2.: Proportion of isolates by interpretation, EUCAST 4.0

Antibiotic	Sensitive	Intermediate	Resistant
Ceftriaxone	100%	-	0%
Cefixime	98%	-	2%
Azithromycin	55%	33%	12%
Penicillin	9%	62%	29%
Ciprofloxacin	27%	0%	73%

NG-AMR tests (n=708)

- 91% of all samples were from men, 9% from women
- 91% of samples among men were urethral swabs, among women 80% were vaginal swabs
- 74% of samples from men were taken by urologists, 77% of samples from women by gynaecologists
- Tested men were older than women, p-value<0.01 (Mann-Whitney test)

Figure 2. Distribution of NG-AMR tests by age group and sex



Conclusions

- NG-AMR testing mostly among men, mostly urogenital sites tested
 - Large proportion probably attributable to men having sex with men
- Not all NG-AMR tests included recommended antibiotics
- Different standard for the interpretation of AMR are used
- NG-AMR **low** towards ceftriaxone, cefixime
- NG-AMR **high** towards azithromycin, ciprofloxacin, and penicillin

- Unified test-panel of antibiotics and interpretation standard should be used
- Monitoring of NG-AMR should be highly prioritised

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