

Azithromycin-Resistant *Neisseria gonorrhoeae* in Men who have Sex with Men (MSM) in Seattle, Washington: 2014-2015

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Background

- Since 2010, the US CDC has recommended two drugs to treat *N. gonorrhoeae*
- At present, all recommended gonococcal treatment regimens contain Azithromycin
- Emergence of azithromycin-resistant gonorrhea threatens the efficacy of recommended regimens

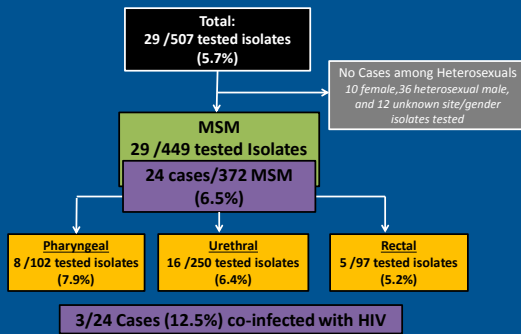
Methods

- Data collected as part of routine surveillance in Public Health – Seattle & King County STD Clinic
- Patient population tested for *N. gonorrhoeae* by culture
 - All men with acute urethritis undergo NG culture
 - MSM with positive pharyngeal or rectal NAAT screening test who return to clinic for treatment
- All positive cultures undergo antimicrobial susceptibility testing

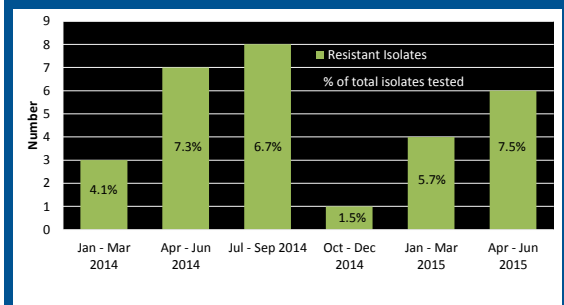
Methods

- Neisseria Reference Laboratory
 - Test all urethral isolates using agar dilution
 - Screen others with Kirby-Bauer disk diffusion
 - Small zones are further tested with agar dilution
 - Antimicrobial Susceptibility Panel includes:
 - Penicillin (PCN)
 - Tetracycline (TET)
 - Cefixime (CFX)
 - Ceftriaxone (CRO)
 - Ciprofloxacin (CIP)
 - Azithromycin (AZM)
 - Beta-lactamase (LAC)
 - Spectinomycin/Gentamicin
- We used CDC “alert value” breakpoint ≥ 2 mcg/mL to denote AZM resistance.

Results: Jan 2014 – June 2015



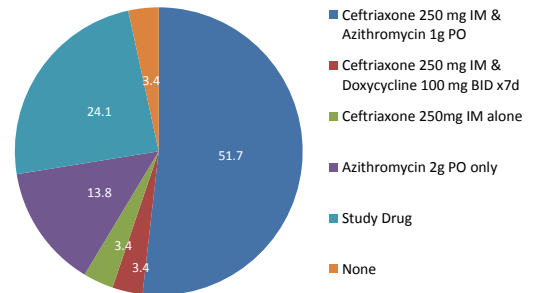
Number & Proportion of Azithromycin-Resistant *N. gonorrhoeae* Isolates in King County, Washington by Quarter: Jan 2014 – Jun 2015



Susceptibility Testing 2014 – June 2015

Antimicrobial (breakpoint)	Non-AZM-R Urethral Isolates (N=277)		AZM-R Isolates (N=29)	
	Number Resistant (%)	Median MIC (range)	Number Resistant (%)	Median MIC (range)
Azithromycin (≥ 2 $\mu\text{g}/\text{mL}$)	0	0.25 (0.03 – 1)	29 (100%)	4 (2 – ≥ 256)
Cefixime (≥ 0.5 $\mu\text{g}/\text{mL}$)	0	0.015 (0.015 – 0.25)	0	≤ 0.15 (≤ 0.15 – .06)
Ceftriaxone (≥ 0.5 $\mu\text{g}/\text{mL}$)	0	≤ 0.08 (≤ 0.08 – 0.25)	0	≤ 0.08 (≤ 0.08 – .03)
Tetracycline (≥ 2 $\mu\text{g}/\text{mL}$)	103 (37.2%)	1 (0.25 - >16)	9 (37.5%)	.25 (.25 - 4)
Spectinomycin(2014) (≥ 128 $\mu\text{g}/\text{mL}$)	0	Susceptible	0	Susceptible
Gentamicin (2015) (≥ 32 $\mu\text{g}/\text{mL}$)	0	8 (4 - 8)	0	6 (4 - 8)
Penicillin (≥ 2 $\mu\text{g}/\text{mL}$)	61 (22.0%)	1 (0.25 - >16)	1 (3.4%)	1 (.25 – 2)
Ciprofloxacin (≥ 0.5 $\mu\text{g}/\text{mL}$)	97 (35.0%)	≤ 0.015 (≤ 0.015 - >16)	1 (3.4%)	≤ 0.015 (≤ 0.015 – >16)

Results: Treatment Regimens



Results: Treatment Failures

9 Men (38%) Returned for Tests of Cure

Cephalosporin Susceptibility

- 7/372 (1.9%) MSM infections during the study period were caused by *N. gonorrhoeae* with a cefixime MIC=0.25
- 4 urethral isolates and 2 rectal isolates

Antimicrobial (breakpoint)	Cefixime non-Susceptible Isolates (N=7)	
	Number Resistant/Non-susceptible (%)	Median MIC (range)
Azithromycin (≥ 2 $\mu\text{g}/\text{mL}$)	0	0.5 (0.5 – 1)
Cefixime (≥ 0.5 $\mu\text{g}/\text{mL}$)	7 (100)	0.25 (0.25 – 0.25)
Ceftriaxone (≥ 0.5 $\mu\text{g}/\text{mL}$)	2 (28)	.06 (.06-.25)
Tetracycline (≥ 2 $\mu\text{g}/\text{mL}$)	7 (100)	4 (2-4)
Gentamicin (2015) (≥ 32 $\mu\text{g}/\text{mL}$)	0	8 (8 - 8)
Penicillin (≥ 2 $\mu\text{g}/\text{mL}$)	7 (100)	2 (2-16)
Ciprofloxacin (≥ 0.5 $\mu\text{g}/\text{mL}$)	7 (100)	16 (16->16)

Summary

- 24 cases of Azithromycin-resistant Gonorrhea among MSM in Seattle, WA, USA between Jan 2014 – July 2015
 - 6.5% of infections in MSM
 - 2 verified treatment failures
 - No treatment failures in persons treated with ceftriaxone
- 1.7% of infections in MSM caused by organisms with cefixime alert values (MIC=0.25)
- 8.3% of infections in MSM caused by *N. gonorrhoeae* with an elevated MIC to azithromycin or cefixime

Conclusion

- Azithromycin resistance is increasing among MSM in Seattle
- Efficacy of two-drug oral regimens is uncertain
 - Need for caution in using these regimens in MSM
 - Supports not routinely using expedited partner therapy in MSM
- Avoid 2g AZM alone

Contact Information



Thank you!

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