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Rapid Increase in Gonorrhea Cases With Reduced Susceptibility to Azithromycin in Columbus, Ohio

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Body of Letter:

National data show an increasing trend of reduced azithromycin susceptibility (AZM-RS) among *Neisseria gonorrhoeae* (Ng) isolates, especially in the Midwest.¹ Sentinel surveillance data from the Gonococcal Isolate Surveillance Project, which examines isolates from men with urethritis from 27 sites across the United States, indicates that the proportion of AZM-RS Ng isolates (minimum inhibitory concentration [MIC] ≥ 2 $\mu\text{g/mL}$) increased 4-fold between 2013 (0.6%) and 2014 (2.5%).¹ Most AZM-RS Ng infections occur in men who have sex with men.^{1,2}

The Columbus Public Health STD clinic in Columbus, Ohio, has participated in the Gonococcal Isolate Surveillance Project since 2012. We detected zero cases of AZM-RS Ng in 2015 and 5 cases in 2016 (April, June, July, August, and December). However, we identified 30 cases between January and July 2017; 25 isolates had an AZM MIC of 2 µg/mL and 5 had an MIC of 8 µg/mL. To improve local detection of AZM-RS Ng, we compared characteristics of men with AZM-susceptible Ng urethritis (n = 224) and those with AZM-RS Ng urethritis (n = 30) detected between January and July 2017 (Table 1). Most men with AZM-RS Ng urethritis were identified in the months of June (n = 8) and July 2017 (n = 10), suggesting an accelerating trend. Compared with men with AZM-susceptible Ng urethritis, men with AZM-RS Ng urethritis were more likely to be white ($P = 0.02$), to report intravenous drug use in the previous year ($P = 0.008$), and to be HIV-positive ($P = 0.04$). Although more than half (53%) of men with AZM-RS Ng were heterosexual, the proportion identifying as homosexual (47%) was much higher than the proportion of AZM-susceptible men identifying as homosexual (17%; $P = 0.003$). We observed no significant differences by age, lifetime or recent Ng history, symptoms, recent international travel, recent sex work exposure, recent non-injection drug use, or recent antibiotic use. Although there was one Ng isolate with an increased MIC value to cefixime (MIC, 0.250 µg/mL) and one to both cefixime (MIC, 0.250 µg/mL) and ceftriaxone (MIC, 0.125 µg/mL), neither of these had concomitant reduced susceptibility to AZM. Ninety-seven percent (n = 29) of men with AZM-RS Ng urethritis received single-dose ceftriaxone (250 mg) plus AZM (1 g), and 3% (n = 1) received single-dose ceftriaxone (250 mg) plus 7 days of doxycycline (100 mg twice per day).

We report a rapid and alarming increase in cases of AZM-RS Ng urethritis in 2017 in Columbus, Ohio (12% of Ng isolates examined). In contrast to recent reports from King County, WA,² more than half of our AZM-RS Ng infections occurred in heterosexual patients. The Centers for Disease Control and Prevention recommends dual therapy (ceftriaxone plus AZM) to treat Ng³; the importance of this approach is confirmed by our data, because none of our AZM-RS Ng isolates showed increased MICs to ceftriaxone. However, a genetically linked cluster of 8 Ng isolates with high-level AZM resistance by agar dilution (MIC, >16 µg/mL) was reported in Hawaii. Five of these isolates had simultaneous increased MICs to ceftriaxone (MIC, 0.125 µg/mL),⁴ further heightening public health concerns about the lack of alternative effective antibiotic options for the treatment of Ng. Expanded surveillance, rapid resistance testing, and new antibiotics are urgently needed in the face of rising Ng antibiotic resistance.

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TABLE 1.

Characteristics of Men With Ng Urethritis, Comparing Those With Azithromycin-Susceptible Ng (n = 224) to Those With Reduced Azithromycin-Susceptibility (n = 30), January to July 2017

Characteristic	All (N = 254)		Reduced AZM Susceptibility (n = 30)		AZM Susceptible (n = 224)		P ^a
	n	(%)	n	(%)	n	(%)	
Race and ethnicity ^b							
Hispanic	9	(4)	1	(3)	8	(4)	1.00
Black	174	(69)	16	(53)	158	(71)	0.06
White	69	(27)	14	(47)	55	(25)	0.02
Asian	4	(2)	0	(0)	4	(2)	1.00
American Indian/Alaska Native	1	(<1)	0	(0)	1	(<1)	1.00
Native Hawaiian/Pacific Islander	0	(0)	0	(0)	0	(0)	—
Other	5	(2)	0	(0)	5	(2)	1.00
History of Ng (lifetime)	133	(52)	18	(60)	115	(51)	0.29
Previous episodes of Ng in the last 12 mo							0.39
0	176	(71)	18	(60)	158	(71)	
1	54	(21)	9	(30)	45	(20)	
2	23	(9)	2	(7)	21	(9)	
Unknown	1	(<1)	1	(3)	0	(0)	
Discharge or dysuria	245	(96)	30	(100)	215	(96)	0.65
Travel outside the US in the prior 60 d	1	(<1)	0	(0)	1	(<1)	0.53
Gave or received drugs/money for sex in the prior 12 mo	30	(12)	4	(13)	26	(12)	0.79
Antibiotic use in the prior 60 d	20	(8)	3	(10)	17	(8)	0.67
Injection drug use in the prior 12 mo	6	(2)	3	(10)	3	(1)	0.008
Non-injection recreational drug use in the previous 12 mo	127	(50)	11	(37)	116	(52)	0.09
Sexual orientation							0.003
Heterosexual	191	(75)	16	(53)	175	(78)	
Homosexual	52	(20)	14	(47)	38	(17)	
Bisexual	10	(4)	0	(0)	10	(4)	
Unknown	1	(<1)	0	(0)	1	(<1)	
HIV status							0.04

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Characteristic	All (N = 254)		Reduced AZM Susceptibility (n = 30)		AZM Susceptible (n = 224)		P*
	n	(%)	n	(%)	n	(%)	
Positive	19	(7)	6	(20)	13	(6)	
Negative	233	(92)	24	(80)	209	(93)	
Unknown	2	(1)	0	(0)	2	(1)	

* P values calculated using χ^2 tests or Fisher's exact test (when cell counts were <5).

† Percentages total more than 100% because respondents can select more than one race and ethnicity category.