Susceptibility Reporting Outside of GISP

During 2006-2007, Association of Public Health Laboratories (APHL) were informally surveyed to identify state or city public health laboratories which routinely performed antimicrobial susceptibility testing of *N. gonorrhoeae*. The survey was distributed to 94 APHL labs, of which 24 stated they perform antimicrobial susceptibility testing and the results are presented in **Table 1**.

Table 1. Non-GISP antimicrobial susceptibility testing of *N. gonorrhoeae* during 2006

STD Project Area	Total # Isolates Tested	FQ S	FQ I	FQ R	Spc S	Spc R	Cfx S	Cfx DS	Cpd S	Cpd DS	Cro S	Cro DS	Azi S	Azi DS [a]
AZ	35 (m)	35	0	0	-	-	-	-	-	-	35	0	-	-
	47 (f)	46	0	1	-	-	-	-	-	-	47	-	-	-
CA (San Diego)[b]	10 (m)	5	0	5	-	-	-	-	-	-	8	0	-	-
	17(f)	14	0	3	-	-	-	-	-	-	17	0	-	-
FL	11 (u)	11	0	0	-	-	-	-	-	-	11	0	-	-
HI	88 (m)	59	6	23	-	-	-	-	88	0	88	0	88	0
	111 (f)	93	2	16	-	-	-	-	111	0	111	0	111	0
IN	1,248 (m)	1,188	5	55	-	-	-	-	-	-	1,248	0	-	-
	628 (f)	626	0	2	-	-	-	-	-	-	628	0	-	-
MA[c]	162 (m)	98	0	64	162	0	162	0	162	0	162	0	132	29
	34 (f)	29	0	5	34	0	34	0	34	0	34	0	30	5
MD	57 (m)	56	0	1	-	-	57	0	-	-	57	0	-	-
	74 (f)	73	1	0	-	-	74	0	-	-	74	0	-	-
	2 (u)	2	0	0	-	-	2	-	-	-	2	0	-	-
MI	349 (m)	327	0	22	349	0	-	-	349	0	349	0	-	-
	209 (f)	206	0	3	209	0	-	-	209	0	209	0	-	-
	7 (u)	5	0	2	7	0	-	-	7	0	7	0	-	-
MN	85 (m)	76	6	3	85	0	85	0	-	-	85	0	85	0
	3 (f)	3	0	0	3	0	3	0	-	-	3	0	3	0
MS	245 (m)	244	0	1	-	-	-	-	-	-	245	0	-	-
	15 (f)	13	0	2	-	-	-	-	-	-	15	0	-	-
	2 (u)	2	0	0	-	-	-	-	-	-	2	-	-	-
MT	7 (m)	3	0	4	7	0	7	0	-	-	7	0	4	3
	5 (f)	4	0	1	5	0	5	0	-	-	5	0	5	0
NH	20 (m)	5	1	14	20	0	14	0	-	-	20	0	10	2
	4 (f)	4	0	0	4	0	3	0	-	-	4	0	3	0
NJ	80 (m)	75	0	5	80	0	80	0	-	-	80	0	-	-
	20 (f)	19	0	1	20	0	20	0	-	-	20	0	-	-
NYC	298 (m)	242	3	53	262	0	259	0	-	-	298	0	293	0
	59 (f)	59	0	0	55	0	53	0	-	-	59	0	59	0
NY (Erie County)	104 (m)	101	0	3	104	0	104	0	-	-	104	0	103	1
	73 (f)	72	0	1	73	0	73	0	-	-	73	0	73	0

STD Project Area	Total # Isolates Tested	FQ S	FQ I	FQ R	Spc S	Spc R	Cfx S	Cfx DS	Cpd S	Cpd DS	Cro S	Cro DS	Azi S	Azi DS [a]
NY State (Wadsworth)	94 (m)	89	0	5	94	0	-	-	-	-	94	0	-	-
	32 (f)	31	0	1	32	0	-	-	-	-	32	0	-	-
OR[d]	91 (m)	52	5	34	-	-	-	-	-	-	-	-	-	-
	56 (f)	50	1	5	-	-	-	-	-	-	-	-	-	-
PA	5 (m)	1	0	4	5	0	5	0	-	-	5	0	5	0
	1 (f)	1	0	0	1	0	1	0	-	-	1	0	1	0
PR	1	1	0	0	1	0	-	-	-	-	-	-	-	-
TX	1	1	0	0	-	-	-	-	-	-	1	0	-	-
UT	101 (m)	92	0	9	-	-	-	-	-	-	101	0	-	-
	34 (f)	34	0	0	-	-	-	-	-	-	34	0	-	-
	1 (u)	-	-	-	-	-	-	-	-	-	1	0	-	-
VA	3 (m)	1	0	2	3	0	3	0	-	-	3	0	1	2
	1 (f)	0	0	1	1	0	1	0	-	-	1	0	0	1
WA[d] (Seattle)	315(m)	175	27	113	-	-	-	-	-	-	-	-	-	-
	134(f)	74	35	25	-	-	-	-	-	-	-	-	-	-
	18 (u)	10	2	6										
WI (Milwaukee)	674 (m)	644	0	30	674	0	-	-	-	-	674	0	668	6
	64 (f)	61	2	1	64	0	-	-	-	-	64	0	63	1
	1 (u)	1	0	0	1	0	-	-	-	-	1	0	1	0
Total[e]	**5,736**	**5,113**	**96**	**526**	**2,355**	**0**	**1,045**	**0**	**960**	**0**	**5,119**	**0**	**1,738**	**50**

Key:

- m = male; f = female; u = unknown gender
- FQ=fluoroquinolone; Spc=spectinomycin; Cfx=cefixime; Cpd=cefpodoxime; Cro=ceftriaxone; Azi=azithromycin
- S=susceptible; DS=decreased susceptibility; I=intermediate resistant; R=resistant.
- Cells containing only "-" indicate that the antibiotic for that column was not tested.

[a] For this table, AziDS is defined as an isolate with azithromycin disk inhibition zone size < 30mm or minimum inhibitory concentration (MIC) ≥ 1.0 µg/ml.

[b] San Diego tested all isolates against ofloxacin, rather than against ciprofloxacin.

[c] Massachusetts used zone size of < 31 mm as marker for decreased susceptibility to azithromycin, < 29 as a marker for resistance to cefpodoxime, and < 35 as a marker for resistance to ceftriaxone.

[d] Oregon and Washington state public health labs do not perform antimicrobial susceptibility testing for GC, this data was received from tests performed at the University of Washington in Seattle, Washington.

[e] Some laboratories did not always test the same number of isolates for each antibiotic. For example, New Hampshire and New York City only performed susceptibility testing on a subset of isolates. Utah had one isolate that was tested for ceftriaxone susceptibility only.

Observation

In 2006-2007, Association of Public Health Laboratories (APHL) and other public health laboratories were informally surveyed to determine the number of state and city public health laboratories that routinely performed antimicrobial susceptibility testing of *N. gonorrhoeae*. These isolates are not representative of the gonorrhea patient population but rather a convenience sample of patients who happen to undergo culture rather than non-culture testing.

Testing methodology used by most of the labs for susceptibility testing was either by disk diffusion or E-test. The survey was distributed to 94 labs, of which 86.2% (81/94) responded and revealed that 29.6% (24/81) labs performed GC susceptibility testing. Data from 5,736 isolates were collected from these 24 labs (**Table 1**). In addition, in contrast to GISP, multiple non-GISP isolates from various anatomic sites may be submitted from a single patient, so the 5,736 non-GISP isolates are likely to represent fewer than 5,736 patients with gonorrhea. Furthermore, the public health laboratories did not always test for resistance with the same antibiotics used in GISP.

The survey revealed that 9.2% (526/5,736) of non-GISP isolates were resistant to ciprofloxacin or ofloxacin. Gender information was available for 5,692 of the 5,736 (99.2%) isolates. Of those, 71.5% (4,071/5,692) were male and 28.5% (1,621/5,692) female. QRNG was found among 11.1% (450/4,071) of all male isolates and 4.2% (68/1,621) of female isolates. In addition, 2.9% (50/1,738) of isolates had decreased susceptibility to azithromycin (as defined by an MIC $\geq$ 1.0 μg/ml in this survey). No resistance was found in the other antibiotics tested.

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