Shigellosis: high rates of antibiotic resistance necessitate new treatment recommendations

"it is time for Therapeutic Guidelines to review its guidelines for the treatment of shigellosis in light of changing resistance patterns"

Shigella species cause a potentially severe diarrhoeal illness that is frequently travel-associated and is both foodborne and sexually acquired. There is evidence of increasing antibiotic resistance in *Shigella* isolates from international studies.[1,2] However, there is limited published research on this issue in an Australian context. The current Australian Therapeutic Guidelines recommend either co-trimoxazole or quinolone therapy for suspected or proven shigellosis, but do comment that quinolone resistance is increasing in developing countries and recommend azithromycin as an alternative option, if required.[3] Successful treatment of shigellosis reduces the duration of illness and infectivity.

We conducted a study to describe antimicrobial resistance patterns among *Shigella* isolates in New South Wales during 2013 and 2014, and to identify predictors of resistance using laboratory and epidemiological data from the NSW Notifiable Conditions Information Management System (NCIMS).

A cross-sectional analysis was conducted using cases of shigellosis notified to public health authorities in NSW through NCIMS, with specimens received by the enteric pathogen reference laboratory for NSW — the Institute for Clinical Pathology and Medical Research (ICPMR) at Westmead Hospital — collected from 1 May 2013 to 30 April 2014. During the study period, a notified case was classified as confirmed if there was laboratory definitive evidence (isolation or detection of *Shigella* species). The study used routinely collected surveillance data from NCIMS collected by NSW Health for the purposes of analysis and reporting, for which ethics committee approval was not required. Susceptibility to azithromycin was measured via Etest (Biomérieux) using a breakpoint of $\leq 16\,\mu g/mL$, in line with the method of previous investigators.[4] Susceptibility of isolates to all other drugs was tested using the BD Phoenix (BD Diagnostics) automated broth microdilution instrument and interpreted using Clinical and Laboratory Standards Institute criteria.[5]

Among the 160 *Shigella* isolates tested, 98% were susceptible to ceftriaxone, 87% to azithromycin, 73% to ampicillin, 65% to ciprofloxacin, and only 24% to co-trimoxazole (Box). Rates of resistance varied with both place of acquisition (overseas or Australia) and method of acquisition (sexual or other). Of note, ciprofloxacin resistance was more common in locally acquired than in overseas acquired infection.

We recommend the use of azithromycin, rather than ciprofloxacin or co-trimoxazole, as the first-line agent in suspected or proven shigellosis, regardless of place or method of acquisition. Our findings indicate that it is time for Therapeutic Guidelines to review its guidelines for the treatment of shigellosis in light of changing resistance patterns. Ceftriaxone remains a suitable option for seriously unwell or hospitalised patients before the availability of susceptibility testing. We strongly recommend culture and susceptibility testing for suspected and proven shigellosis, particularly among men who have sex with men, who have a higher risk of both being infected with a resistant strain and transmitting infection.

Antimicrobial resistance of *Shigella* isolates, by antibiotic and place and method of acquisition, 1 May 2013 to 30 April 2014*

		Resistance			
	No.	Azithromycin	Ciprofloxacin	Co-trimoxazole	Ampicillin
Total isolates	160	21 (13.1%)	56 (35.0%)	122 (76.3%)	59 (36.9%)
Overseas acquired†					
Yes	55	2 (3.6%)	13 (23.6%)	39 (70.9%)	19 (34.5%)
No	91	13 (14.3%)	37 (40.7%)	72 (79.1%)	32 (35.2%)
Reported sex with faecal exposure					
Yes	58‡	11 (19.0%)	27 (46.6%)	45 (77.6%)	21 (36.2%)
No	102	10 (9.8%)	29 (28.4%)	77 (75.5%)	38 (37.3%)

* *Shigella* isolates obtained from the New South Wales reference laboratory (Institute for Clinical Pathology and Medical Research, Westmead Hospital). The first isolate for each illness event was used; subsequent isolates were excluded where patients had multiple specimens collected for one illness event. 98% of isolates were susceptible to ceftriaxone. † 14 unknown. ‡ All men, 57 of whom also reported that they were men who have sex with men. ◆

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doi: 10.5694/mja15.01176

Acknowledgements: We acknowledge the contribution of surveillance officers in NSW public health units, and Nectarios Rose from Health Protection NSW for his assistance in extracting data from NCIMS. We also thank Peter Howard from the Enteric Reference Laboratory at the ICPMR. This work was completed while Simon Willcox was employed as trainee on the NSW Public Health Training Program funded by the NSW Ministry of Health.

Competing interests: No relevant disclosures. ■

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References are available online at www.mja.com.au.

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