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Paper Poster Session III

Clostridium difficile on the move

Evolution in the type of diagnostic tests used in Quebec, Canada, for the diagnosis of *C. difficile* infection, 2010-2014

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Objectives:
Various tests are available to diagnose Clostridium difficile infections (CDI). The province of Quebec, Canada (population, 8 million) implemented a mandatory CDI surveillance program in 2004. In accordance with international recommendations, the Institut National de Santé Publique du Québec (INSPQ) has not made recommendations as to which diagnostic tests should be used, and this decision has been left to the discretion of each individual hospital. This study evaluates the temporal evolution in testing strategies used across the province.

Methods: This study is a cross-sectional study that evaluated all 95 hospitals participating in the Quebec Surveillance Program. A survey was conducted during 2013 to 2014 to determine which diagnostic tests were used in each institution, along with the year of implementation of the current diagnostic test. A previous similar survey completed in 2010 was used as a comparator. Chi-square and Fisher's Exact Test were used to test the difference in the proportion of hospitals using each type of assay in 2010 vs. 2014.

Results:
The proportion of hospitals using nucleic-acid amplification tests (NAAT) as a single diagnostic test increased 7-fold from 3% to 22% between 2010 and 2014, respectively (p<0.001). Between 2010 and 2014, the use of NAAT has become less frequently followed by a confirmatory test (from 7 to 1 institutions, p<0.03) and more frequently used as the confirmatory test to an initial screening with an enzyme immunoassay (EIA) (from 1 to 13 institutions, p<0.001). There was a significant decrease in the overall use of EIAs as single-step tests (from 47 to 30 institutions, p=0.02). There was also a sizable decrease in the use of cell culture cytotoxin analysis (CCA), but this difference was not statistically significant (from 12 to 4 institutions, p=0.06).

Conclusion:
Between 2010 and 2014, there have been significant changes regarding the type of assays used for the diagnosis of CDI across Quebec. NAAT, used as both single-step tests and within multi-step algorithms, is becoming increasingly utilized. The impact that such variation may pose on the mandatory surveillance system in Quebec is not yet understood.

Table. Diagnostic tests used to detect CDI in Québec, Canada, 2010-2014

Type of diagnostic test	2010 N (%) n=94	2014 N (%) n=95	p-value
Single-step NAAT	3 (3.2%)	21 (22.1%)	<0.001
GDH (+/- EIA) followed by NAAT	1(1.1%)	13(13.7%)	<0.001
NAAT followed by EIA or CCA	7 (7.4%)	1 (1.0%)	0.03
Single-step EIA	47(50%)	30(31.6%)	0.02
Single-step toxigenic culture (TC)	0 (0%)	1 (1.0%)	0.99
Single-step CCA	12(12.8%)	4(4.2%)	0.06
GDH +/- EIA step followed by TC	0 (0%)	7 (7.4%)	0.01
GDH +/- EIA step followed by CCA	22(23.4%)	17(17.9%)	0.45
Multiple GDH and EIA steps	2 (2.1%)	1 (1.0%)	0.62