

An optimal approach for diagnosing dyspepsia caused by *helicobacter pylori*

H*elicobacter pylori* is a micro-aerophilic, slow-growing, gram-negative spiral bacterium that colonizes the mucous lining of the human stomach. Infection with this bacterium has been identified as a cause of gastritis, peptic ulcer disease, and gastric mucosa-associated lymphoid tissue lymphoma.¹ Standard noninvasive tests for the diagnosis of *H. pylori* in dyspeptic patients include serological screening, the urea breath test (UBT), and the fecal antigen test. Previously we assessed trends in the use of these tests in British Columbia from 2001 to 2005 after the introduction of the UBT, and proposed a cost-effective algorithm that builds on the diagnostic strengths and weaknesses of the methods. This algorithm recommends serology as the initial screening test if patients visit their physician for the first time or after 2 years from the first visit.² The BC Medical Association also supported the use of serology as a screening test in their 2009 dyspepsia guideline (www.bcguidelines.ca/pdf/dyspepsiahpylori.pdf).

Recently we requested data for an extended period to see the trend of *H. pylori* diagnostic test usage in BC from 2001 to 2011. De-identified data on serological testing were obtained from the BC Public Health Microbiology and Reference Laboratory and combined with de-identified UBT test data from the BC Ministry of Health.

The data demonstrated that the diagnostic approach taken by physicians in BC changed dramatically during the study period. By 2005 the exclusive use of serological screening

This article is the opinion of BCCDC and has not been peer reviewed by the BCMJ Editorial Board.

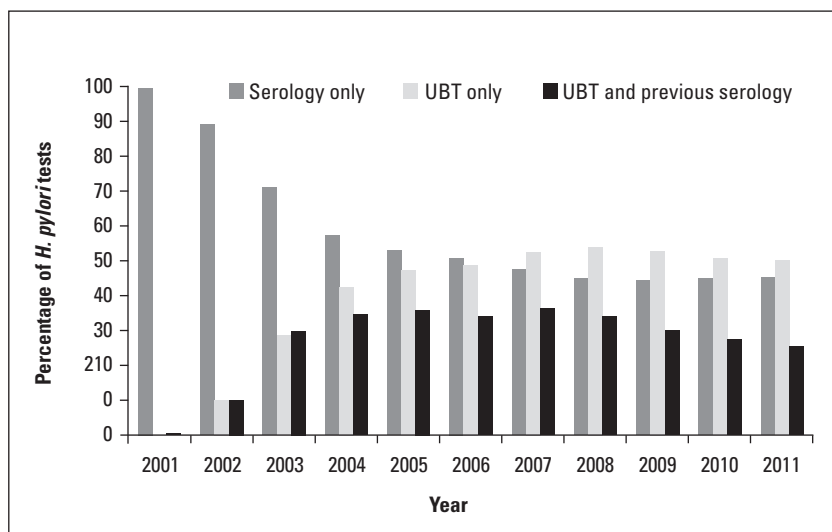


Figure. *H. pylori* serology and UBT testing data, 2001–2011. Data sources: UBT data from the BC Ministry of Health and serology data from the BC Public Health Microbiology & Reference Laboratory.

accounted for approximately 53% of all tests performed in BC for *H. pylori* infections, with UBT usage making up the remainder (Figure). After only 4 years' post-introduction, physicians clearly valued UBT as much as serology in the diagnosis of *H. pylori*; moreover, it has surpassed serology as a diagnostic screening test since 2007. The fecal antigen test is another alternative noninvasive test for *H. pylori* detection and was introduced in BC in 2008. Although less costly than UBT it has not been widely used by physicians during the study period, possibly due to patient sampling constraints.³

With the introduction of the new dyspepsia guideline in 2009, it was predicted that the initial test of choice would change to serology, that the use of UBT as the first screening test would decrease, and that UBT would be used after serology as recommended. The Figure clearly shows that this has not been the case.

The annual cost for screening using serology in BC is estimated to be \$340 000 per year, while screening using UBT costs the province an estimated \$1.2 million per year. An algorithmic approach using serology as an inexpensive, sensitive screening test, followed by the more specific, expensive UBT test is the recommended diagnostic practice, and could have the secondary benefit of resulting in health care cost savings.

Repeat UBT tests performed within a 1-year period suggest treatment failure or reinfection. *H. pylori* is recognized for acquiring drug resistance capability, resulting in treatment failures. In this BC review, approximately 20% of UBT tests were repeat tests from one patient, consistent with the treatment failure rates previously reported in other regions.⁴ An understanding of drug susceptibility patterns is essential to providing guidance for drug therapy for *H. pylori*, but there are limited data for

commonly used antibiotics in BC. Preliminary work from the BC Public Health Microbiology and Reference Laboratory shows that in nearly 50% of DNA samples a point mutation responsible for clarithromycin resistance was detected using polymerase chain reaction (PCR). To continue this surveillance work and to confirm these findings, samples (unpreserved from biopsies) are needed to perform the necessary PCR and susceptibility testing.

This report shows that a change in physician test-ordering practices followed the introduction of the UBT to BC. An algorithmic diagnostic approach using the strengths of both a sensitive serology screening followed by the more specific UBT or fecal antigen test on serology positives was recommended (www.bcguidelines.ca/pdf/dyspepsiahpylori.pdf). Routine monitoring of *H. pylori* drug susceptibility trends from BC may also contribute to better treatment prac-

tices as well, based on susceptibility monitoring information.

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Acknowledgments

Thanks to Yvonne Simpson, Quantine Wong, and Rob MacDougall for assisting in data extracts for this study.

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Standard noninvasive tests for the diagnosis of *H. pylori* in dyspeptic patients include serological screening, the urea breath test (UBT), and the fecal antigen test.



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