Obtaining the local *Helicobacter pylori* resistance rate is easier said than done

I read with interest the guidance provided by Korownyk and Kolber in the January 2012 issue of *Canadian Family Physician*[1] and by Fallone and colleagues in *Gastroenterology*[2] that suggested the use of a local clarithromycin resistance rate of *Helicobacter pylori* isolates to determine the choice of antibiotic therapy. Working in a regional microbiology laboratory in Canada, I received questions from clinicians on where they would find these local data. The best data I could find were based on 20 *H pylori* isolates from gastric biopsies processed in Sudbury, Ont.[3] Their antimicrobial minimum inhibitory concentration breakpoints and antimicrobial susceptibility testing (AST) methods were based on European guidance and other published literature. These breakpoints and testing methods were not yet fully established by the Clinical and Laboratory Standards Institute, whose guidance is followed by most of the clinical diagnostic laboratories in North America. Currently, for *H pylori,* the Clinical and Laboratory Standards Institute has only the clarithromycin minimum inhibitory concentration breakpoint and its AST method.[4]

The regional microbiology laboratory, operating with the 18 acute care hospitals in eastern Ontario, also conducted an audit of all the requests for isolation of *H pylori* in patients' specimens from June 1, 2016, to May 31, 2021. The laboratory typically attempts to grow and isolate *H pylori* in both chocolate and Mueller-Hinton agar with 5% sheep blood plates, incubated in microaerophilic jars at 35°C for 10 days. The laboratory received a total of 13 requests with the following outcomes:

- 4 gastric biopsy specimens were found to have *H pylori*, but 3 of them failed to grow properly for AST;
- 5 gastric biopsy specimens failed to show growth of *H pylori;*
- 1 gastric biopsy specimen failed to show growth of *H pylori,* but the specimen was tested and found to be positive for urease, suggestive of *H pylori*; and
- 3 requests were rejected because stool or antral brushing instead of gastric biopsy specimens were submitted.

Despite the 5-year effort, the local microbiology data are obviously disappointing because they do not answer the question of what the local *H pylori* resistance rate is. Even if we had the data, we should be cognizant that the local susceptibility data would likely be based on refractory *H pylori* cases rather than being true surveillance data. With other diagnostic methods such as *H pylori* serology, stool antigens, and urea breath testing available,[5] clinicians can make a diagnosis without ordering an invasive gastric biopsy procedure. Often, our laboratory received requests for isolation of *H pylori* mainly because these patients with working diagnoses of refractory episodes of *H pylori* infection required AST to further guide antimicrobial selection. Making an empiric decision based on these selected retrospective data would probably overestimate the true local resistance rate. Furthermore, clinicians and patients are often understandably disappointed by the invasive biopsy procedure and waiting for weeks for culture incubation and AST, only to receive uninterpretable results at the end.

As of now, I believe it makes more practical sense to follow the recommendation of using proton pump inhibitor triple therapy only in areas with proven high local clinical eradication rates (>85%),[2] rather than relying on local *H pylori* clarithromycin resistance rates, which are not easily obtainable. However, like many physicians, I am very confused about where to obtain these data.

—Eugene Y.H. Yeung MD MSc FCCM FRCPC
Vancouver, BC

Competing interests

Dr Eugene Y.H. Yeung has been paid for working as a pharmacist, physician, and microbiologist but was not paid to write this letter. Opinions expressed are solely his own and do not express the views or opinions of his employers.

References

1. Korownyk C, Kolber MR. Is quadruple therapy the new triple therapy for *H pylori? Can Fam Physician* 2012;58:58.
2. Fallone CA, Chiba N, van Zanten SV, Fischbach L, Gisbert JP, Hunt RH, et al. The Toronto consensus for the treatment of *Helicobacter pylori* infection in adults. *Gastroenterology* 2016;151(1):51-69.e14.
3. Eng NF, Ybazeta G, Chapman K, Fraleigh NL, Letto R, Altman E, et al. Antimicrobial susceptibility of Canadian isolates of *Helicobacter pylori* in northeastern Ontario. *Can J Infect Dis Med Microbiol* 2015;26(3):137-44.
4. *CLSI M45: test infrequently isolated/fastidious bacteria.* Malvern, PA: Clinical and Laboratory Standards Institute; 2015. Available from: **https://clsi.org/standards/products/microbiology/documents/m45/**. Accessed 2023 Dec 21.
5. Miller JM, Binnicker MJ, Campbell S, Carroll KC, Chapin KC, Gilligan PH, et al. A guide to utilization of the microbiology laboratory for diagnosis of infectious diseases: 2018 update by the Infectious Diseases Society of America and the American Society for Microbiology. *Clin Infect Dis* 2018;67(6):e1-94.

Can Fam Physician 2024;70:81. DOI: 10.46747/cfp.700281