

Abstract

Eradication tests are a critical component of *H. pylori* treatment but inconsistently completed. We used logistic regression to identify barriers to test completion among 481 patients treated for *H. pylori* at our institution. Multiple factors were associated with reduced test completion, including notification of the diagnosis *via* letter and encounters to discuss antibiotic prescription. Patients who had tests ordered simultaneously with antibiotics were more likely to complete them prematurely. Our population may benefit from a standardized protocol to guide diagnosis notification, follow-up, and eradication testing.

Introduction

- H. pylori* is a common gastric pathogen infecting nearly half of the world's population. Global trends in antibiotic resistance have hindered progress in eradication¹.
- Routine urea breath or stool antigen tests are recommended to confirm eradication following treatment².
- Eradication tests offer critical information reflecting local antibiotic resistance and cure rates but may be inconsistently completed.
- As the first phase of a quality improvement (QI) initiative, we studied 481 patients treated for *H. pylori* to identify barriers to eradication test completion.

Methods

- Patients > 18 years and treated for *H. pylori* during the 25-month study period at Cooper University Hospital were identified *via* ICD-10 code query.
- Demographic data were collected along with data pertinent to the *H. pylori* diagnosis notification, provider characteristics, antibiotic prescription, and eradication test.

Methods cont.

- Chi-squared testing was used to compare eradication test completion and cure rates between different groups.
- Multivariable logistic regression models were used to identify factors associated with incompleteness of eradication tests.

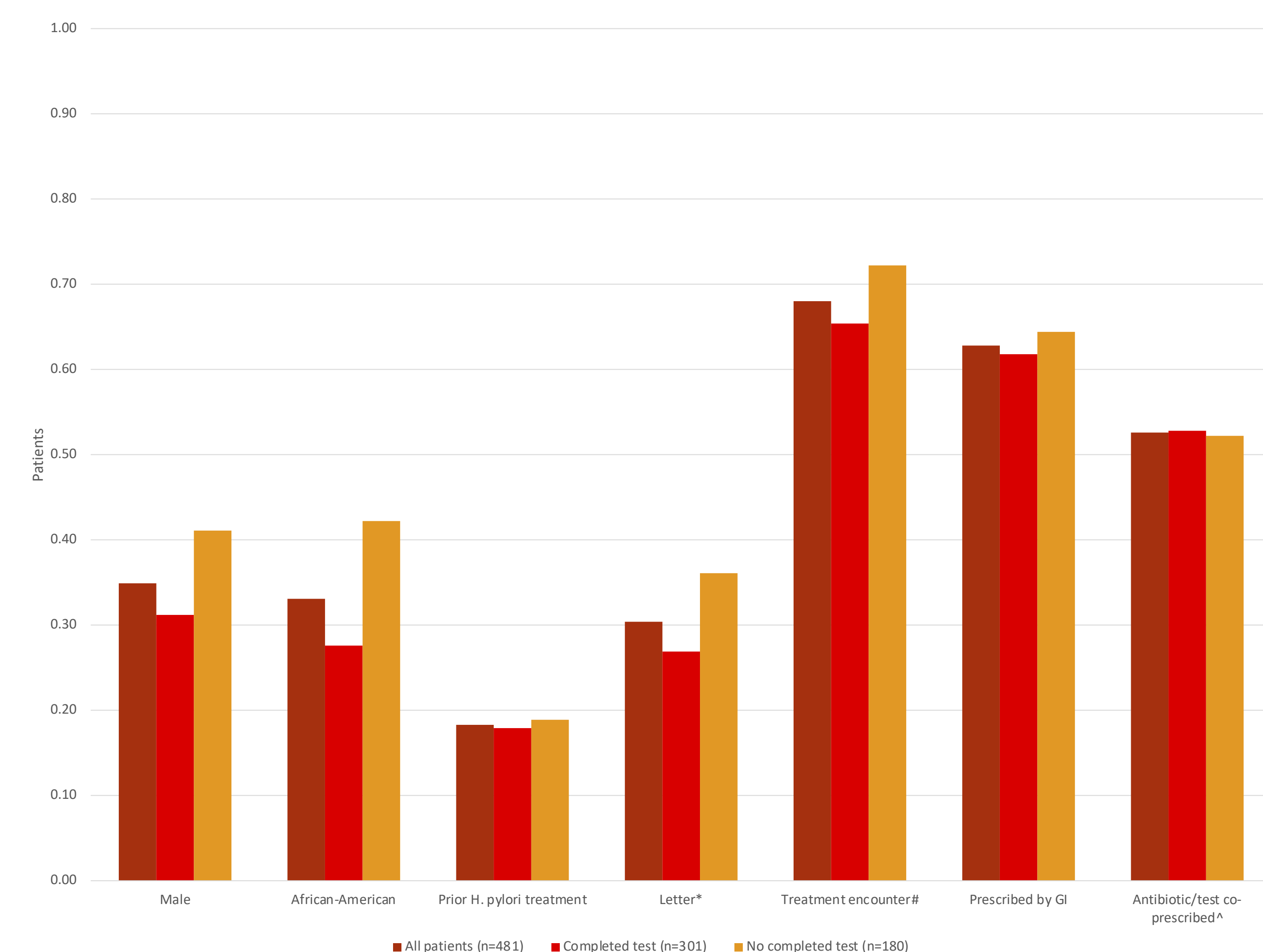


Figure 1. Test completion by demographic and clinical characteristics. Values are expressed as the proportion of patients in each group. *patients who were notified of their diagnosis *via* letter; #in-person or telehealth visit to discuss treatment; #eradication test ordered simultaneously with antibiotics

Results

- Mean age of the population was 51 years, and mean BMI was 33.2. These values did not differ significantly between those who completed eradication tests and those who did not.
- 301 patients (63%) completed eradication tests (minimum follow-up 8 months). 71% of these ($n = 214$) had confirmed cure.
- 352 patients reported treatment completion; 83% of these ($n = 292$) completed eradication tests.

Table 1. Adjusted odds ratios for eradication test completion

Exposure	Adjusted OR	95% CI	P-value
Age	1.009	(0.978 - 1.041)	0.575
BMI	0.984	(0.935 - 1.035)	0.529
Male	0.616	(0.278 - 1.361)	0.231
Race/ethnicity ^a			
African-American	0.357	(0.105 - 1.213)	0.099
Hispanic	0.794	(0.215 - 2.928)	0.729
Other	42.89	(2.203 - 835.1)*	0.013
<i>H. pylori</i> history			
Prior treatment	1.284	(0.465 - 3.551)	0.630
Notification of diagnosis ^b			
Letter	0.288	(0.099 - 0.836)*	0.022
Treatment encounter ^c	0.203	(0.060 - 0.684)*	0.010
Antibiotic regimen ^d			
Clarithromycin	1.061	(0.411 - 2.736)	0.903
Other	1.375	(0.463 - 4.089)	0.567
GI prescriber	1.538	(0.452 - 5.226)	0.491
Antibiotic/test co-prescribed ^e	0.990	(0.429 - 2.287)	0.981

^aCompared to white patients; ^bcompared to notification of *H. pylori* diagnosis via telephone; ^cin-person or telehealth visit to discuss treatment compared to e-prescription only; ^dcompared to bismuth-based regimen; ^eeradication test ordered simultaneously with antibiotics compared to sequentially

Results cont.

- Univariate analysis identified multiple factors associated with failure to complete eradication tests, including male sex, African-American race, and letters to communicate the diagnosis (Figure 1).
- Notification *via* letter was associated with lower odds of eradication test completion compared to telephone call (OR = 0.29, CI: 0.10 - 0.84) via multivariate analysis (Table 1). In-person or telehealth encounters to discuss antibiotic prescription were associated with lower odds of eradication test completion (OR = 0.20, CI: 0.06 - 0.68).
- Patients who had eradication tests ordered on the same day as antibiotic prescription were not more likely to complete tests but were more likely to complete them early (21.4% vs 9.2%, $p = 0.004$.)

Discussion

- Notification of the diagnosis *via* letter was associated with lower odds of test completion compared to those who received a telephone call. Unstable housing, inaccurate addresses in the patient record, and visual or literacy barriers may inhibit the effectiveness of letters as a single method of notification.
- Surprisingly, in-person or telehealth encounters to discuss treatment were associated with lower odds of test completion. The mechanism for this association is unclear but may be related to the adverse effects of "treatment burden," which refers to a patient's workload to engage with medical care, including attending appointments, taking medications, and making lifestyle changes³. Nonadherence may result from treatment burden exceeding a patient's capacity, which is influenced by factors such as health literacy, finances, and access to transportation and care.
- Simultaneous eradication test order with antibiotics was not associated with greater odds of test completion but increased the risk of premature test completion (*i.e.* <4 weeks after treatment). Early completion may limit the reliability of eradication test results².
- Our patients may benefit from an institutional protocol to guide diagnosis notification, follow-up, and eradication testing. The protocol will include i) both telephone and letter notification of the *H. pylori* diagnosis, (ii) deferral of follow-up visit and (iii) eradication testing order until after antibiotic completion

Conclusions

- We identified multiple opportunities for improvement in *H. pylori* eradication test completion in our community.
- Notification of the *H. pylori* diagnosis via letter and follow-up visits to discuss treatment were associated with lower rates of eradication test completion.
- An institutional protocol to guide care of patients with *H. pylori* utilizing two methods of diagnosis notification and deferring follow-up visits may improve eradication test completion and will be evaluated prospectively.

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References

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