The Journal welcomes Letters to the Editor, if found suitable, they will be published as space allows. Letters should be typed double-spaced, should not exceed 400 words, and are subject to abridgment and other editorial changes in accordance with journal style.

RAPID DIAGNOSTIC TEST AND THROAT CULTURES FOR STREPTOCOCCAL PHARYNGITIS

To the Editor:

I read with great interest the article "Effect of a Rapid Diagnostic Method on Prescribing Patterns and Ordering of Throat Cultures for Streptoccoccal Pharyngitis".[1] I would like to comment on the authors' presentation and interpretation of their data.

The authors imply in their abstract that there was a reduction in antibiotic prescribing between the control and the experimental groups.

Analyzing their data for a n = 236 and n = 265 for year 1 and year 2, respectively, based upon exclusions for diagnosis and treatment dropouts and treatment for secondary infection, I developed a 2 by 2 table, comparing asymptomatic treatment (58 percent, 63 percent, respectively) vs antibiotic treatment; these are shown in Tables 1 and 2.

Using the above data, I calculated $\chi^2 = 1.29$ with a $P > .10$. Therefore, there seems to be no statistically significant difference in antibiotic prescription between groups.

We can calculate a theoretical percentage of patients with inappropriate antibiotic prescription by subtracting those with streptococcal pharyngitis (prevalence) from those treated; this is done in Tables 3 and 4.

These data show a statistically significant reduction with $\chi^2 = 4.4$, $P < .05$ in prescription of inappropriate antibiotics between the control and experimental groups.

Thus, although there was no overall difference in antibiotic prescription, there was a statistically significant reduction in inappropriate antibiotic prescription between groups.

TABLE 1. EXCLUSIONS FROM TOTAL FOR DIAGNOSIS, TREATMENT DROPOUTS, AND TREATMENT FOR SECONDARY INFECTIONS

	Year 1	Year 2
Total study number	263	283
Less		
No throat culture	−5	−3
No treatment data	−6	−2
Secondary infection	−16	−13
Total	236	265

However tempting it is to attribute this decrease in inappropriate antibiotic prescription to the introduction of the rapid test in year 2, we must be cautious because of the quasi-experimental design of this study. Other confounders such as changes in physician behavior to act more "scientifically" when a new diagnostic test is being evaluated or other physician education, such as lectures or increased reading of the streptococcal literature when a new technology is being evaluated, may explain part or all of this effect.

TABLE 2. TWO-BY-TWO TABLE COMPARING ASYMPTOMATIC TREATMENT WITH ANTIBIOTIC TREATMENT

Treatment	Control No. (%)	Experimental No. (%)	Total
No antibiotics	137 (58)	167 (63)	304
Antibiotics	99 (42)	98 (37)	197
Total	236	265	501

TABLE 3. PERCENTAGES OF PATIENTS TREATED WITH ANTIBIOTICS OR INAPPROPRIATELY

Patients Treated	Control	Experimental
Prevalence	17.8	20.4
With antibiotic	42	37
Inappropriately	24.2	16.6

Last, that the study does show a significant benefit in the experimental group must be balanced by the 16.6 percent of the patients who were treated inappropriately; in other words, 1.81 patients were treated for each patient who had a culture positive for streptococcus. Perhaps other interventions, such as physicians' education on how to counsel patients

TABLE 4. NUMBERS OF PATIENTS TREATED APPROPRIATELY OR INAPPROPRIATELY

Treatment	Control	Experimental	Total
Appropriate	179	221	400
Inappropriate	57	44	101
Total	236	265	501

Continued on page 344

Continued from page 342

for symptomatic treatment only, or using clinical criteria such as Breese screening[2] to increase the predictive value of a positive test by increasing the pre-test likelihood, would alter antibiotic prescription more.

Charles B. Eaton, MD
Department of Family Practice
The Albany Medical College of Union University
Albany, New York

References

1. True BL, Carter BL, Driscoll CE, House JD: Effect of a rapid diagnostic method on prescribing patterns and ordering of throat cultures for streptococcal pharyngitis. J Fam Pract 1986; 23:215–219
2. Beese BB: A single scorecard for the tentative diagnosis of streptococcal pharyngitis. Am J Dis Child 1977; 131:514–517

The preceding letter was referred to Drs. True, Carter, and Driscoll, who respond as follows:

We would like to thank Dr. Eaton for his comments on the reduction of inappropriate antibiotic prescribing observed in our study. We had originally developed this point in our manuscript; however, strong reviewer criticism of our judgment of what constituted "inappropriate" prescribing led us to remove portions of our discussion related to this point.

It is our opinion that the prescribing of antibiotics empirically for streptococcal pharyngitis while simultaneously ordering a laboratory test that will have little impact on the management of the patient (because results are not available for 48 hours) is a form of inappropriate prescribing and inefficient use of a laboratory test. We do, however, practice in "the real world" in a primary care office and realize that there are times when this approach can be justified.

We would also like to thank Dr. Eaton for noting that the major point of our study was to evaluate physician prescribing habits, not to compare the accuracy of a rapid test with the standard test. We have received criticism directed at our recommendation that the rapid test is an acceptable alternative to the standard test when our results showed a relatively large false-negative rate for the rapid test. Unfortunately, the numerical results in research do not always tell the entire story. When analyzing the data, it was noted that nearly all of the rapid test interpretations that were false-negative results were performed by one individual who had the least experience with the interpretation of this type of laboratory test. Because of this, it is our feeling that those readings represent the "worst case situation." In actual practice, such as in our office where one laboratory technician performs and interprets all the rapid tests, we would expect to see much better correlation with the standard culture technique, as has been observed in those studies with the primary purpose to evaluate the rapid test.

We believe the availability of test results during a patient's office visit does have a significant impact on patient care. Those who have disagreed with us on this point may have had little or no primary care experience. Perhaps they do not realize that when a child is suspected of having streptococcal pharyngitis, a working parent must take time away from his or her job (lost sick days or pay) for the physician visit and to care for the child. In our community, a child who attends preschool or daycare with a suspected streptococcal pharyngitis is sent home and cannot return until a culture is negative or the child has been on antibiotics for at least 24 hours. Thus, a simple "strep throat" in a child can be a significant financial burden for parents if they must wait 48 hours before beginning treatment and an additional 24 hours after initiating antibiotics before returning to work and daycare. These reasons may be partly responsible for the high rates of empiric antibiotic treatment observed before the availability of the rapid test.

Bev L. True, PharmD
Barry L. Carter, PharmD
Charles E. Driscoll MD
Department of Family Practice
University of Iowa
Iowa City