In-Office Diagnostics Can Improve Clinical Care

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BOSTON — Rapid in-office testing for infectious diseases can help physicians get the right drug on board as quickly as possible, and cut down on unnecessary testing and inappropriate antibiotics.

"I really do believe that having the diagnosis in real time can affect clinical decision making," Dr. Leonard Krilov said at the annual meeting of the American Academy of Pediatrics. "For instance, with rapid influenza testing, it's been shown that doctors who have a confirmed diagnosis from a rapid flu test order less unnecessary tests, fewer radiographs, and give out less antibiotics and more antiviral drugs."

The only diagnostic tests approved for use in the office setting are those that have been waived by the Clinical Laboratory Improvement Amendments of 1988 (CLIA) law.

Waived tests are defined as simple laboratory examinations and procedures that are cleared by the Food and Drug Administration for home use; employ methodologies that are so simple and accurate as to render the likelihood of erroneous results negligible; and pose no reasonable risk of harm to the patient if it's performed incorrectly.

The most common in-office tests for infectious diseases include those for group A streptococcus (GAS), influenza, respiratory syncytial virus (RSV), mononucleosis, and human immunodeficiency virus (HIV), said Dr. Krilov, chief of pediatric infectious diseases at Winthrop University Hospital, Mineola, N.Y.

There are 35 CLIA-waived tests for GAS, with varying ranges of sensitivity and specificity.

One in-office test detects RSV fusion protein; results are available in 15 minutes, and the kit has a sensitivity of up to 88% as well as specificity of up to 100%.

"Overall, the tests are very specific, ranging from 85% to 100%, but the concern is that the sensitivity is quite variable and can be as low as 62%," Dr. Krilov reported.

Because of this, a negative test always requires a backup throat culture for confirmation. On the other hand, "If you get a positive test, you can believe it. There's no need for a culture," he said.

However, even a positive test doesn't mean that the presenting symptoms are because of GAS pharyngitis.

"Recovery of group A strep from the pharynx doesn't necessarily distinguish true infection from carriers who might happen to have a coincidental viral pharyngitis. You can't completely rely on the test—you have to be able to interpret the clinical picture as well," Dr. Krilov explained.

Of the 15 rapid influenza tests available, 3 are waived for office use; they all yield results in about 30 minutes. Although they are highly specific (90%-95%), the sensitivity isn't great (70%-75%), Dr. Krilov said.

Because of this, he continued, "successfully using these is somewhat dependent on the time of year and the likelihood of influenza infection in your community. False positives and true negatives are more likely if prevalence is low, but false negatives and true positives are more likely in the midst of an epidemic. But in the right time of winter, with the right clinical picture, a positive test is both believable and important."

Accuracy also depends on when during the course of illness testing occurs. In children, most of the viral shedding occurs in the first 48 hours.

The quality of the specimen is very important as well, Dr. Krilov noted. "The more secretions you get, the more cell material you get, so a nasal wash or aspirate is probably better than a nasopharyngeal swab."

Especially in light of the continued emergence of antibiotic-resistant bacteria, an early, certain diagnosis of viral illness can significantly decrease inappropriate antibiotic prescribing, Dr. Krilov said. A 2003 study enrolled 391 patients with symptoms of influenza; all had a rapid flu test done in the hospital. Half of the referring physicians were given the results; these doctors ordered significantly fewer lab tests and x-rays and prescribed significantly fewer antibiotics than physicians who didn't know the diagnosis.

Additionally, Dr. Krilov reported, treatment costs and hospital length of stay were significantly lower for patients whose diagnosis was known; the rate of antiviral prescriptions given to these patients also was significantly higher than for those whose diagnosis was not known (Pediatrics 2003;112:363-7).

Most testing for RSV is done in the hospital, but one test is available for office use. It detects RSV fusion protein, and results are available in 15 minutes. The kit has a sensitivity of up to 88% and specificity of up to 100%.

"Again, if it's winter and RSV is in the community, you can believe a positive result," he said. "It might be useful in how you monitor the patient, and it's very helpful in preventing unnecessary antibiotic use. But I'm not sure it helps much with family education or helps you make any decision about admission."

Monospot is the only CLIA-waived test for mononucleosis. Again, accuracy depends on timing, Dr. Krilov said. "A negative test in the first week of illness does not mean they don't have the disease. Typically it isn't until the second week of illness that the heterophile antibodies are made, and they can persist for 6 months or more. So using this test to follow the course of disease, or as a way of determining when the kids can go back to school and sports, is not worthwhile. "

Children younger than 6 years may not even make the heterophile antibodies, so a negative test on a young child shouldn't affect clinical decision-making, Dr. Krilov said. "The antibodies are detected in up to 85% of older kids and adolescents, but [in] 40% or less of those younger than 4 years. If you have a patient of the appropriate age and the appropriate symptoms, and the test is negative, you can treat it as early disease and test again in 1-2 weeks. Or you have the option of sending to the lab for specific serology."

Dr. Krilov also touched on the issue of in-office HIV testing. Two CLIA-waived kits are available and give results in 20 minutes. "I think it's useful in some clinical settings, since it allows more people to be tested. At present, we estimate that up to 280,000 people in the U.S. are unaware that they have an HIV infection. The bad news is they don't give a complete diagnostics, so a positive test always has to be confirmed by the Western blot analysis, and a false positive can create a lot of anxiety. The other part of HIV testing is, if you do the test, it needs to be done in conjunction with counseling and hooking patients into appropriate follow-up." ■

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