

Diagnostic tests for sinus infections leave much to be desired, study says

October 14 2016, by Leigh Beeson

Many patients who see physicians for sinus infections expect to be prescribed an antibiotic, but for the majority of them, that course of treatment won't be effective because their infections aren't caused by bacteria. Unfortunately, there aren't great tools to determine which patients will or won't benefit from antibiotics, and the University of Georgia's Dr. Mark Ebell is determined to change that.

Ebell, a professor of epidemiology in the College of Public Health, led a team of researchers in analyzing 30 studies of outpatients with a [respiratory tract infection](#) to see which diagnostic criteria, if any, were most accurate for diagnosing sinus infection.

The findings weren't encouraging, he said. The biggest issue was with the studies' reference standards, which are ideally perfectly accurate in identifying [sinusitis](#) and are used to gauge other tests' accuracy. Currently, the best reference standard is called antral lavage, a procedure that involves using a needle to puncture the sinus cavity located under the eye next to the nose. If there is fluid in this cavity, the physician draws it out and can culture it to see if bacteria are present, enabling the doctor to definitively determine whether the patient has a sinus infection.

Understandably, many patients aren't keen on having a needle pierce their faces, Ebell said.

"It's always been a challenge with sinusitis research that the best

reference standard is often impractical, and you end up doing studies that use a tarnished gold standard, as we call it," he said.

These tarnished standards include the use of X-rays and CT scans that do detect fluid fairly accurately but can't confirm that the fluid is indicative of a sinus infection and also can't differentiate between bacterial and viral sinusitis. Only the former responds to [antibiotics](#).

"I think people have the idea that tests are more accurate than they actually are in general," Ebell said. "Sometimes what we learn through studies like ours is that tests we've always thought about using or thought were accurate turn out to not be so helpful and we need different or better tests to guide us."

The studies he analyzed did offer some promising alternatives for detecting [sinus infections](#), such as the use of the C-reactive protein, or CRP, test that measures protein levels in the blood and indicates an infection when those levels are high.

"The use of C-reactive protein is promising as a point of care test to reduce the overuse of antibiotics," Ebell said. "There've been several studies in Europe showing that in the primary care setting, having the CRP results that show a patient is unlikely to have bacterial sinusitis, doctors are more confident about not using antibiotics and they've reduced inappropriate antibiotics use."

While approved for point of care use in primary care offices in Europe, the same devices are not approved by the Food and Drug Administration for use at the point of care in the US, which Ebell finds baffling. Instead physicians have to order the tests to be performed elsewhere, costing both the physician and the patient extra time and more appointments.

Some older studies used antiquated ultrasound machines to detect fluid;

Ebell believes this fairly accurate method of detection has the potential to make a comeback due to today's more user-friendly, high-resolution, portable devices. The benefit to using an ultrasound over an X-ray or CT scan is that it doesn't involve exposing the patient to radiation, something that is a concern with young people because of their increased vulnerability to radiation.

In another notable study, physicians used a method Ebell had never heard of that involved cellophane and urine dipsticks that detect [white blood cells](#) and their byproducts. Patients blew their noses into the plastic wrap and then health care providers dipped the sticks into the nasal product to detect [blood cells](#). Finding evidence of white blood cell was strongly associated with sinusitis. However, this study hasn't been evaluated by any other researchers.

The goal behind this research is to help physicians reduce the prescription of antibiotics for illnesses that don't require, and often don't respond to, them. Reasons for prescribing unnecessary antibiotics include habit, the inability to distinguish viral from bacterial infections and patient expectations.

"An important thing to remember is people tend to go see the doctor when they're feeling worst," Ebell explained. "So they go see the doctor and they prescribe an antibiotic. But in many cases, the patients would've started feeling better soon anyway, but now they associate getting that antibiotic with starting to feel better."

"There's also this imperative for physicians to don't just stand there-do something," he added. "You don't always have to intervene, and sometimes the prudent thing is to wait a little bit and see what's happening with the patient and not just immediately throw antibiotics at them."

The meta-analysis showed that diagnostic testing for sinusitis still has a long way to go, but it did reinforce the idea that X-rays and CT scans shouldn't be used in diagnosing routine sinusitis unless there are complications, Ebell said. Instead, physicians may consider ordering CRP tests to analyze white blood cell counts.

Provided by University of Georgia

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