

# Endoscope with an oxygen sensor detects pancreatic cancer

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An optical blood oxygen sensor attached to an endoscope is able to identify pancreatic cancer in patients via a simple endoscopic procedure, according to researchers at Mayo Clinic in Florida.

The study, published in *GIE: Gastrointestinal Endoscopy*, shows that the device, which acts like the well-known clothespin-type finger clip used to measure [blood](#) oxygen in [patients](#), has a sensitivity of 92 percent and a specificity of 86 percent.

That means, of 100 patients with [pancreatic cancer](#), this sensor would detect 92 of them, based on the findings. And of 100 patients who don't have pancreatic cancer, the test would correctly identify them 86 percent of the time.

The device measures changes in [blood flow](#) in the tissues that are in proximity to the pancreas, under the theory that tumors change the flow of blood flow in surrounding tissues because the tumors need oxygen to grow. The endoscope is passed into the stomach and the duodenum, where the measurements are taken. The pancreas lies just outside the duodenum.

"Although this is a small pilot study, the outcome is very promising. There is no test now available that can accurately identify pancreatic cancer at an early stage, short of removing some of the organ," says the study's senior investigator and gastroenterologist Michael Wallace, M.D., M.P.H. "We need new ways to detect pancreatic cancer effectively, and

simply, as early as possible."

Now, more than 90 percent of pancreatic cancers are discovered at an advanced or metastatic stage with no effective therapy available. That explains why pancreatic cancer is the fourth most common cause of cancer deaths in the U.S., although it ranks 10th in occurrence.

"We are now confirming our findings in a much larger study, involving institutions in the U.S. and in Europe," Dr. Wallace says.

The technique is a very different way of looking at cancer detection, he says.

"What is quite unusual is that we were trying to sense changes that are not in the tumor itself but are in the nearby, normal-appearing tissues," he says. "It relies on a principle, now being increasingly acknowledged, called a cancer field effect. Instead of looking for the needle in the haystack, we now look at the haystack to see how it is different when there's a needle inside.

"The general concept is that cancers cause surrounding tissue to undergo changes in the flow of oxygen that are detectable, not visually or even under the microscope, but by this kind of sensor," Dr. Wallace says.

To test the ability of the sensor to recognize pancreatic cancer, researchers studied two groups—one in which 14 patients were already diagnosed with the cancer, and another in 10 [cancer](#)-free patients.

Dr. Wallace says the blood sensor endoscope is also being tested in colon and esophageal cancers.

Provided by Mayo Clinic

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