

Colon cancer screening technique shows continued promise in new study

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Recent clinical trials show that a new colon cancer screening technique created by Northwestern University researchers has a high enough sensitivity that it could potentially be as or more successful than a colonoscopy in screening for colon cancer.

The technique uses optical technology, called low-coherence enhanced backscattering (LEBS) spectroscopy, to analyze [tissue](#) samples taken from the base of the rectum. Light shines on the tissue, scatters, and some of that light bounces back to sensors in the probe. A computer analyzes the pattern of light scattering, looking for the "fingerprint" of carcinogenesis in the nanoarchitecture of the cells.

Researchers led by Vadim Backman, professor of biomedical engineering at the McCormick School of Engineering and Applied Science, obtained biopsies from patients undergoing colonoscopies and found that LEBS could detect the presence of growths elsewhere in the colon even though it just analyzed tissue from the base of the rectum.

The results were recently published in the journal *Cancer Research*. Clinical trials have been conducted in collaboration with Hemant Roy, M.D., director of gastroenterology research at NorthShore University HealthSystem.

The study is a step toward clinical application of the technology, since it used tissue samples near the location where doctors may ultimately use a probe to test technology.

"If you have a precancerous lesion in one part of the colon," said Backman, "even tissue that looks normal and is located far from the lesion or polyp will have molecular and other kinds of changes. It's the biological phenomenon called the 'field effect.' No one can detect these changes earlier than we can."

The study examined tissue from 219 patients. Results showed that for advanced polyps, the test had a sensitivity of 100 percent, which means that 100 percent of patients who had polyps were correctly identified as having them.

The larger number of patients in the more recent study allowed researchers to calculate the "area under the receiver operator characteristic" (AUROC), which is an analysis of the accuracy of the test in distinguishing healthy samples from diseased samples. While the sensitivity and specificity of tests may vary based on the threshold set by researchers for diagnosis, the AUROC measures the overall efficacy of the diagnostic technique. The analysis showed an 89.5 percent AUROC for the technique. (Clinically sound tests typically have an AUROC greater than 70 percent.)

The study provides a proof of concept that this sort of analysis could be a minimally intrusive [colon cancer](#) screening technique. Further studies with a compatible fiber optic probe are under way for multicenter clinical validation.

The work builds on previous success in using a suite of optical technologies to detect both colon and pancreatic cancer.

Source: Northwestern University ([news](#) : [web](#))

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