

# Q&A: Blood tests as an alternative to colonoscopy

November 20 2023, by Sharon Tregaskis

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Credit: Karolina Grabowska from Pexels

Colorectal cancer is the second leading cause of cancer death in the United States. It's also one of the most preventable cancers due to the availability of robust screening tools. Yet nearly 40% of Americans opt

out of such screening.

A new analysis, led by Columbia medical student Zainab Aziz evaluates the cost-effectiveness of an appealing alternative to colonoscopy and stool testing: the array of blood tests—known as liquid biopsies—in development and already being marketed to physicians and patients alike.

"Cost-Effectiveness of Liquid Biopsy for Colorectal Cancer Screening in Patients Who Are Unscreened" was [published](#) Nov. 16 in *JAMA Network Open* with an accompanying invited [commentary](#).

In short, don't get your hopes up. "These tests really aren't there yet," says Aziz, a fourth-year student who conducted the analysis while simultaneously earning a master's degree in [biomedical sciences](#) and doing research as a Dean's Research Fellow during a year off from her [medical studies](#) at the Vagelos College of Physician and Surgeons.

"We found that liquid biopsies are not cost-effective at their current cost or performance characteristics as either a first- or second-line method for [colorectal cancer](#) detection."

We recently spoke with Aziz about the study, conducted during her time with the Healthcare Innovation Research and Evaluation (HIRE) group in the Department of Medicine, led by Chin Hur, MD, professor of medicine.

## **Why focus on cost-effectiveness as a means for evaluation?**

If you or I choose to get this blood test for colorectal cancer screening, it might cost us thousands of dollars but give us very little benefit. A cost-

effectiveness analysis lets us weigh the costs and benefits of an intervention and determine whether it's something we should be paying for. In my project, we calculated an incremental cost-effectiveness ratio that lets us compare colorectal cancer screening strategies.

## **What were you hoping to learn?**

There have been studies that show patients would much rather have a blood test over a colonoscopy or even a stool test for colorectal cancer screening. We wanted to see whether the [blood test](#) was actually a viable option, since that would be absolutely amazing for people who don't get screened with other methods.

## **What did your analysis reveal?**

We found that it's better not to get anything at all than to get one of these blood tests. At their current performance, liquid biopsies are not that effective at capturing early-stage cancers, are very expensive, and generally find cancers that would be found in a symptomatic patient. In other words, you might miss a lot of early cancers.

## **How do you hope this paper might affect patients?**

We hope our analysis will help doctors decide whether they should order these tests for their patients, and we hope this paper may even have an impact on the policy level, as many of these liquid biopsy companies are hoping to get FDA approval for their tests.

**You did this work during a year off from medical school while studying for a master's degree in biomedical sciences. What about Columbia's MD-MS**

## **program appealed to you?**

As an undergraduate, I thought for some time about pursuing a Ph.D. and even considered applying to MD/Ph.D. programs. Despite not pursuing that path, I had always hoped to spend a large amount of time dedicated to research. This master's year was the perfect opportunity for me to do that.

## **How did you home in on the HIRE group for your research year?**

I'm interested in studying cancer, but I'm more interested in prevention than treatment. Chin Hur, the HIRE director, focuses on cancer screening research, and the group also includes computer scientists and epidemiologists. I thought working with HIRE would be a good opportunity to use my mathematical background and I loved having so many experts to work with. The research we're able to do becomes more interesting because we have people with different backgrounds.

## **What else did you do during your research year?**

I considered this research year a time for me to focus on the parts of medicine I enjoyed the most. Apart from research, I served as clinic co-leader for the Columbia Student Medical Outreach (CoSMO) Clinic. I spent basically all my free time working in the clinic and tried to improve clinic workflow through quality improvement projects. We worked hard on increasing the amount of specialty care appointments our patients could access. It's not easy navigating the system on behalf of the patients, who are undocumented and uninsured. I think we were able to make some positive change and I know that the students who have taken over the clinic are continuing with these initiatives.

## What comes next?

I'm applying to internal medicine residencies and am continuing work on other cost-effectiveness analyses. I hope that I continue doing research in residency and beyond. Whether or not I continue doing [cost-effectiveness](#) research in gastroenterology and [cancer](#) prevention, the skills I learned in Dr. Hur's group can be used in all aspects of medicine.

**More information:** Zainab Aziz et al, Cost-Effectiveness of Liquid Biopsy for Colorectal Cancer Screening in Patients Who Are Unscreened, *JAMA Network Open* (2023). [DOI: 10.1001/jamanetworkopen.2023.43392](#)

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Provided by Columbia University Irving Medical Center

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