

# Timely surveillance with chest imaging may benefit colorectal cancer patients

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**Early chest imaging may benefit colorectal cancer patients**

**High-risk colorectal cancer patients should receive surveillance with chest imaging after resection**

Colorectal cancer may spread to the lung in up to 18% of patients

Many patients have risk factors (e.g., elevated lymph node ratio; KRAS\* mutation) for developing lung metastases after surgery

Waiting too long to screen for lung metastases after surgery may result in missing out on early diagnosis of metastases

**Chest imaging every 3 months after surgery is recommended for patients with certain risk factors.**

\*KRAS: a prognostic biomarker in cancer

Research from MD Anderson: Deboever N, et al. Do Resected Colorectal Cancer Patients Need Early Chest Imaging? Impact of Clinicopathologic Characteristics on Time to Development of Pulmonary Metastases, Scientific Forum, American College of Surgeons Clinical Congress 2022

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Early chest imaging may benefit colorectal cancer patients. Credit: American College of Surgeons

Colorectal cancer patients with certain clinical characteristics may benefit from more frequent chest imaging to help identify and target cancer that has spread to the lungs, according to new research presented at the Scientific Forum of the American College of Surgeons (ACS) Clinical Congress 2022. These findings have the potential to improve long-term outcomes of patients with metastatic colorectal cancer.

Despite improved [survival rates](#), colorectal cancer is the third leading cause of cancer-related deaths in the United States. Though rates of colorectal cancer have declined among people 65 and older, largely thanks to increased screening efforts, rates among younger adults are rising.<sup>2</sup> When the cancer is caught early, many patients can remain disease-free for the rest of their lives after surgical treatment, but colorectal cancer can spread (metastasize) in up to 50% of patients. One of the most common areas colorectal cancer spreads to is the lungs, affecting up to 18% of patients with colorectal cancer. Detecting cancerous nodules in the [lung](#) early provides patients with the best outcomes, but there are no evidence-based standards for when and how often to screen

colorectal cancer patients with chest CT or PET scans.

"After patients are diagnosed with colorectal cancer, many of them want to better understand what their [cancer diagnosis](#) entails in terms of their surveillance and survivorship for the rest of their life, but we currently lack data and uniform guidelines to support how often these patients should be screened with chest imaging," said co-author Mara Antonoff, MD, FACS, associate professor, thoracic and cardiovascular surgery, UT MD Anderson Cancer Center, Houston, where she also serves as program director of education. "With this study, we sought to develop a strategy that is evidence-based to determine how frequently, at what intervals, and for how long patients at risk of developing lung metastases should undergo imaging of their chest."

Dr. Antonoff specializes in thoracic surgical oncology and has a clinical interest in colorectal cancer that has spread to the lungs. She is leading a multi-institutional study, under the umbrella of the American Association for Thoracic Surgery (AATS) Thoracic Surgery Oncology Group (TSOG) (TSOG 103), on developing optimal treatment strategies for colorectal cancer patients whose cancer spread is limited to the lungs.

To identify which colorectal cancer patients may benefit from early chest imaging and at what time intervals, Dr. Antonoff and an interdisciplinary team of researchers at MD Anderson—including cardiothoracic surgeons, colorectal cancer surgeons, and gastrointestinal oncologists—collaborated on this research project to investigate evidence-based surveillance guidelines for colorectal patients who are at risk of developing lung metastases.

## Study details

Using two MD Anderson cancer databases that

included both colorectal cancer patients and thoracic cancer patients, the study team retrospectively reviewed data from patients with colorectal cancer who did and did not develop lung metastases. Patients were grouped according to the development of lung metastases and the timing of their diagnosis. The team used [statistical methods](#) to investigate which clinical characteristics, such as age or [genetic factors](#), correlated most with the risk of developing lung metastases.

### Key findings

- Of 1,600 patients with colorectal cancer, 233 (14.6%) developed pulmonary (lung) metastases, with a median time of 15.4 months following colorectal surgery.
- The team identified age, neoadjuvant or adjuvant systemic therapy (such as chemotherapy or immunotherapy), lymph node ratio, lymphovascular and perineural invasion (high-risk tumor characteristics observed under a microscope), and presence of KRAS genetic mutations as risk factors for developing lung metastases.
- Further data analysis revealed that patients who required systemic therapy around the time of their surgical operation for colorectal cancer, who had an elevated lymph node ratio, and a KRAS mutation, were at risk of developing lung metastases within three months of surgery.
- The authors concluded that these patients may benefit from more frequent surveillance with chest CT or PET scans.

Nathaniel Deboever, MD, general surgery resident, UTHealth Houston McGovern Medical School, and the lead author of the study, noted that while these risk factors are not necessarily surprising from a clinical perspective, they highlight the need to adequately screen certain colorectal cancer patients after [surgical treatment](#). In some cases, removing cancerous lung nodules surgically early on can significantly improve outcomes.

"A concrete clinical application of this research, following validation, is to build evidence-based guidelines affecting chest surveillance in patients

with resected colorectal cancer," said Dr. Deboever, who completed this research as part of his research fellowship with the department of thoracic and cardiovascular surgery at MD Anderson. "These guidelines will hopefully allow high-risk patients to undergo radiographic screening in a timely manner, permitting the early diagnosis of pulmonary disease."

### Next steps

In future research, the team plans to validate findings in a separate group of patients, with the hope of formalizing chest surveillance protocols for widespread clinical adoption. Dr. Antonoff and Dr. Deboever noted that as [colorectal cancer](#) research evolves, sensitive blood tests to detect cancer or advanced radiographic screening methods using artificial intelligence may also play an important role in monitoring patients.

"There are many patients who receive [cancer care](#) outside of [cancer](#) hospitals, so having algorithms, pathways, and recommended protocols can be very helpful for providers who care for a lot of different diseases with rapidly changing recommendations," Dr. Antonoff said. "I think this research is really just the tip of the iceberg."

**More information:** Deboever N, et al. Do Resected Colorectal Cancer Patients Need Early Chest Imaging? Impact of Clinicopathologic Characteristics on Time to Development of Pulmonary Metastases, *Scientific Forum*, American College of Surgeons Clinical Congress 2022.

Provided by American College of Surgeons

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