

# After a first diagnosis of unprovoked venous thrombosis, adding a CT scan of the abdomen and pelvis to standard cancer screening did not improve cancer detection

## Question

In people who have a first unprovoked (no prior risk factors) venous thromboembolism, does adding a comprehensive CT scan of the abdomen and pelvis to usual, sex-appropriate cancer screening decrease the number of missed cancers compared with standard screening alone?

## The study

**Who?** The study included 854 people who had a new diagnosis of unprovoked symptomatic venous thromboembolism (leg deep vein thrombosis [DVT], pulmonary embolism [PE], or both).

**What?** The study compared adding a CT of the abdomen and pelvis with virtual colonoscopy to standard cancer screening with standard cancer screening alone.

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|---------------------------------------|-----------|----------------------------------|
| <b>CT + standard cancer screening</b> | <b>vs</b> | <b>Standard cancer screening</b> |
|---------------------------------------|-----------|----------------------------------|

| CT + standard cancer screening  | vs | Standard cancer screening   |
|---|----|---|
| <p>Comprehensive CT of the abdomen and pelvis, which included:</p> <ul style="list-style-type: none"> <li>• bowel preparation with Pico-Salax before CT;</li> <li>• virtual colonoscopy and gastroscopy;</li> <li>• biphasic enhanced CT of the liver;</li> <li>• pancreatic parenchymal scan; and</li> <li>• enhanced scan of a distended bladder.</li> </ul> <p>The above was added to standard cancer screening (outlined in the next column).</p> |    | <p>Complete history and physical examination, measurement of complete blood counts and serum electrolytes, creatinine, liver function test and chest x-ray.</p> <p>If not done within the past year, "sex specific screening":</p> <ul style="list-style-type: none"> <li>• breast examination and/or mammogram (women over 50 years of age);</li> <li>• PAP testing and pelvic examination (women 18 to 70 years of age who had ever been sexually active);</li> <li>• prostate examination and PSA (men over 40 years of age).</li> </ul> |

## What the researchers found

**Adding a comprehensive CT of the abdomen and pelvis to the standard cancer screening protocol did not detect more cancers and did not reduce the number of cancer diagnoses in the following year or overall or cancer-related mortality.**

**33 patients (3.9%) were diagnosed with cancer at the time of screening, 14 (3.2%) in the standard screening group and 19 (4.5%) in the CT scan group. After a negative screening result, the rates of cancer diagnosis in the following 12 months were low: 1.18% for CT plus standard screening versus 0.93% for standard screening alone.**

## The bottom line

About 5% of patients with a first unprovoked venous thromboembolism (DVT/PE) are diagnosed with cancer in the first year after the clot. Adding a comprehensive CT of the abdomen and pelvis to a standard cancer screening strategy (a history, physical examination, bloodwork, and targeted sex-specific screening and examination) did not lead to fewer missed cancers than a standard screening strategy alone.

## Summary of findings

**CT + standard cancer screening vs standard screening only after a first unprovoked venous thromboembolism**

| <b>Outcomes at 12 months</b>                               | <b>Rate of events with comprehensive CT + standard cancer screening</b> | <b>Rate of events with standard screening only</b> | <b>Absolute effect of adding comprehensive CT of the abdomen and pelvis to standard cancer screening</b> |
|--|---|--|--|
| Absolute rate of cancer diagnosis after negative screening | 12 people out of 1000 or 1.18%  | 9 people out of 1000 or 0.93%                      | No effect*   |

\*Although the rates for the 2 groups look different, the differences were not statistically significant—this means that the difference could simply be due to chance rather than due to the different treatments.

*This Evidence Summary is based on the following study:*

Carrier M, Lazo-Langner A, Shivakumar S, et al. **Screening for occult cancer in unprovoked venous thromboembolism.** *N Engl J Med.* 2015;373:697-704. PubMed (<https://www.ncbi.nlm.nih.gov/pubmed/26095467?dopt=Abstract>)

### **After a first unprovoked venous thromboembolism (clot), what type of cancer testing is needed?**

#### **Doctor, do I need to worry about having cancer because I have this new unprovoked clot?**

Cancer is a risk factor for developing venous thrombosis. Unprovoked venous thromboembolism can be the presenting symptom of cancer, and therefore medical screening has been recommended after diagnosis to rule out an occult or 'hidden' cancer. About 4 patients in 100 have a cancer found with cancer screening.

The trial by Carrier and colleagues shows that the risk of developing cancer after having standard cancer screening is similar to the risk in people without venous thromboembolism (about 9 people out of 1000). This should reassure people newly diagnosed with an unprovoked venous thromboembolism that while screening for occult malignant cancer is important, the overall risk of cancer is low.

#### **Doctor, can I have a CT scan to find out if I have cancer associated with my clot?**

It has been widely discussed among scientists and in the media how to best search for occult cancers after a first unprovoked venous thromboembolism. The clinical trial by Carrier showed that adding a CT of the abdomen and pelvis to standard cancer screening does not help find more cancers or reduce cancer-related mortality. Also, CT scanning is associated with radiation exposure and significant cost to the medical system. Therefore, cancer screening with CT of the abdomen and pelvis should not be recommended for patients diagnosed with a first unprovoked venous thromboembolism.

Patients can talk with their doctor about completing standard cancer screening (if not done already in the previous year), including a history, physical examination, bloodwork, and chest x-ray as well as targeted screening based on their age and sex (that is, screening for breast, cervical, and prostate cancer).

Published: Wednesday, April 19, 2017