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## **Computed tomographic colonography (virtual colonoscopy)**

Understanding NICE guidance –  
information for people considering  
the procedure, and for the public

## Ordering information

You can download the following documents from [www.nice.org.uk/IPG129](http://www.nice.org.uk/IPG129)

- this booklet
- the full guidance on this procedure.

For printed copies of the full guidance or information for the public, phone the NHS Response Line on 0870 1555 455 and quote:

- N0880 (full guidance)
- N0881 (information for the public).

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## About this information

The National Institute for Health and Clinical Excellence (NICE) is the independent organisation responsible for providing national guidance on the promotion of good health and the prevention and treatment of ill health. One of NICE's roles is to produce guidance (recommendations) on whether interventional procedures are safe enough and work well enough to be used routinely within the NHS. This guidance covers England, Wales and Scotland.

This information describes the guidance that NICE has issued on a procedure called computed tomographic colonography (CT colonography, which is also called virtual colonoscopy). It is not a complete description of what is involved in the procedure – the patient's healthcare team should describe it in detail.

NICE has looked at whether CT colonography is safe enough and works well enough for it to be used routinely to examine the large bowel (the colon) and the rectum.

To produce this guidance, NICE has:

- looked at the results of studies on the safety of CT colonography and how well it works
- asked experts for their opinions
- asked the views of the organisations that speak for the healthcare professionals and the patients and carers who will be affected by this guidance.

This guidance is part of NICE's work on 'interventional procedures' (see 'Further information' on page 10).

## About CT colonography

The colon is the medical name for the large intestine or bowel. The rectum is the back passage. If there's a chance that a person has cancer in these areas (colorectal cancer), either because of symptoms or because of other factors that increase their risk, it's likely that their doctor will offer them an internal examination of their colon and rectum. The standard ways of doing this are colonoscopy and barium enema.

In a colonoscopy, a thin tube with a bright light at the end is put into the person's back passage and is moved up into their colon. The doctor can look through this tube and see the inside of the rectum and colon.

A barium enema is a special type of X-ray. The colon is filled with barium fluid through a tube inserted into the person's back passage. Barium shows up on X-ray, so when X-rays are taken, the doctor can see the outline of the lining of the colon and rectum and can spot things that are out of the ordinary.

These tests can also be used to check for polyps, which are growths in the lining of the bowel that can either be completely non-cancerous (benign) or have the potential to develop into cancer (in which case they are said to be pre-cancerous).

The new procedure that NICE has looked at is called computed tomographic colonography (or virtual colonoscopy). It involves using a CT scanner to produce two-dimensional and three-dimensional CT images of the whole of the colon and rectum. In this way, doctors can see signs of cancer and detect polyps. CT stands for computed tomography, which is a way of using X-ray images to produce an image of a 'slice' through a part of the body.

There are different ways of carrying out CT colonography and the person may have to have an empty bowel beforehand. Alternatively, the person may have to swallow what's known as an iodine-based contrast agent with meals around 2 days before having the

procedure. Before the CT scan, the person may have an injection of a medicine to relax the bowel, or they may have a fluid injected that will show up on the X-ray (this is called contrast medium), or they may have both of these. Air or carbon dioxide is used to inflate the colon through a narrow tube placed in the person's bottom. It is not usually necessary for the person to be sedated for the procedure.

## How well the procedure works

### What the studies said

NICE looked at a piece of work that pulled together information from 14 studies looking at a total of 1324 patients. These studies looked at how accurate the new procedure was for detecting polyps. Standard colonoscopy was used as the test to say whether polyps were really there or not. Overall, the CT colonography picked up 'true' polyps that were large (10 mm or bigger) in 88% of people (88% is the same as saying 88 people out of 100). For mid-size polyps (6 to 9 mm), the result was 84%. And for small polyps (5 mm or smaller), the result was 65%.

When the information was looked at for individual polyps, CT colonography correctly identified:

- 81% of large polyps
- 62% of mid-size polyps
- 43% of small polyps.

In patients that didn't have a large polyp, the procedure correctly identified this in 95% of patients overall.

One study compared the results using the new procedure with the results using standard colonoscopy in the same people (1233 adults who didn't have any symptoms). The new procedure correctly identified a large pre-cancerous polyp in 94% of the people.

The result for the standard colonoscopy was slightly lower at 88%. If the size cut-off was changed from 10 mm or larger to 6 mm or

larger, the results were 89% for the new procedure and 92% for standard colonoscopy.

A study involving 615 people showed that the new procedure correctly identified large polyps (10 mm or bigger) in 55% of patients. When the size cut-off was changed to 6 mm or bigger, the test correctly identified polyps in 39% of patients.

In a study of 614 patients, the new procedure was better at detecting abnormalities than a barium enema, but it was not as good as the standard colonoscopy.

In a study of 203 patients who had the iodine-based contrast agent 2 days before the procedure, the new procedure correctly detected polyps in 90% of people.

### **What the experts said**

The experts said that the new procedure may not detect small or flat abnormalities, but this was also the case for other methods of diagnosing abnormalities in the colon and rectum.

## **Risks and possible problems with the procedure**

### **What the studies said**

No serious problems were reported in the studies that looked at patients who had CT colonography. Two studies reported the levels of discomfort felt by people having the new procedure. In one study, nine out of 696 people (1%) had 'extreme' or 'severe' discomfort during the CT colonography compared with 25 out of 696 (4%) during the standard colonoscopy. In the same study, four out of 617 patients (less than 1%) had 'extreme' or 'severe' discomfort during the CT colonography compared with 181 out of 617 (29%) during the barium enema.

In another study, just over half of the people (546 out of 1005) said that the CT colonography was more uncomfortable than the standard colonoscopy. But this may have been affected by the fact that patients

were given sedation for the standard colonoscopy but not for the new procedure (sedation makes you feel more sleepy and relaxed). In this study, around two-thirds of people (686 out of 1005) said that the new procedure was more convenient than the standard one.

Finally, in another study, nearly three-quarters of people (357 out of 494) preferred the new procedure to the standard colonoscopy, and nearly all of them (518 out of 534) preferred it to the barium enema.

### What the experts said

The experts said that the problems that were possible with CT colonography were similar to those that could happen with the other methods of examining the colon and rectum. These include damage to the lining of the colon or rectum, and a reaction to the injected contrast medium.

### What has NICE decided?

NICE has considered the evidence on CT colonography. It has recommended that when doctors use it to examine a person's colon and rectum, they should be sure that:

- the patient understands what is involved and agrees (consents) to this type of examination, and
- the results of the procedure are monitored.

### Other comments from NICE

This is an area in which equipment and knowledge are improving fast. The results of the procedure can depend on the type of equipment used and the training and experience of the doctor who carries out the CT colonography.

The new procedure may be particularly suitable for some people, such as frail or elderly people.

## What the decision means for you

Your doctor may have offered you CT colonography. NICE has considered this procedure because it is relatively new. NICE has decided that the procedure is safe enough and works well enough for use in the NHS. Nonetheless, you should understand the benefits and risks of CT colonography before you agree to it. Your doctor should discuss the benefits and risks with you. Some of these may be described above.

## Further information

You have the right to be fully informed and to share in decision-making about the treatment you receive. You may want to discuss this guidance with the doctors and nurses looking after you.

The NICE website ([www.nice.org.uk](http://www.nice.org.uk)) has further information about NICE, the Interventional Procedures Programme and the full guidance on computed tomographic colonography (virtual colonoscopy) that has been issued to the NHS. The evidence that NICE considered in developing this guidance is also available from the NICE website.

If you have access to the internet, you can find more information on problems affecting the digestive system on the NHS Direct website ([www.nhsdirect.nhs.uk](http://www.nhsdirect.nhs.uk)).

You can also phone NHS Direct on 0845 46 47.



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