



Healthcare  
Improvement  
Scotland

**SHTG**  
Advice on health  
technologies

# Plain Language Summary

## Colon Capsule Endoscopy

SHTG Recommendation 01-20 | August 2020

### What are colorectal polyps and colorectal cancer?

Colorectal polyps are abnormal tissue growths on the inner lining of the large intestine (colon/bowel) or the rectum. Colorectal polyps affect one in four people but most are harmless. However, colorectal/bowel cancer often begins as a bowel polyp. Finding and removing polyps before they become cancerous is very effective for preventing bowel cancer.

### What is colon capsule endoscopy?

Colon capsule endoscopy (CCE-2) is a procedure used to look for colorectal polyps by taking pictures of the inside of the bowel. Patients swallow a capsule which contains miniature cameras. Images from these cameras are transmitted to a recording device worn by the patient. After the procedure a specialist examines the images and decides if any polyps need to be removed. If polyps need removed the patient will require a colonoscopy to remove them.

CCE-2 is not routinely used in Scotland, instead patients are referred for a colonoscopy. During a colonoscopy a flexible tube with a camera at one end is inserted through the anus (back passage) and along the colon. Images from the camera are displayed on a TV screen and examined by a specialist during the procedure. Patients who cannot have a colonoscopy are offered another test called CT colonography which creates a 3D image of the inside of the bowel using a CT-scanner.

All the procedures described in this summary require patients to undergo a period of bowel cleansing. This normally involves swallowing clear liquids and laxative solutions in order to empty the bowel. The bowel cleansing needed for CCE-2 is more intensive than for the other tests to ensure that clear images are captured and the capsule is excreted from the body.

## Why is this important?

Long waiting times for colonoscopy are a problem in NHSScotland. CCE-2 may be an alternative test that could ease pressure on colonoscopy services and reduce waiting times, by determining which patients really need a colonoscopy.

## What we did

We looked for information which helped to answer the following questions:

- How accurate is CCE-2 in detecting colorectal polyps in people with signs or symptoms of, or at risk of, colorectal cancer?
- Is using CCE-2 good value for money for NHSScotland?

## What we found

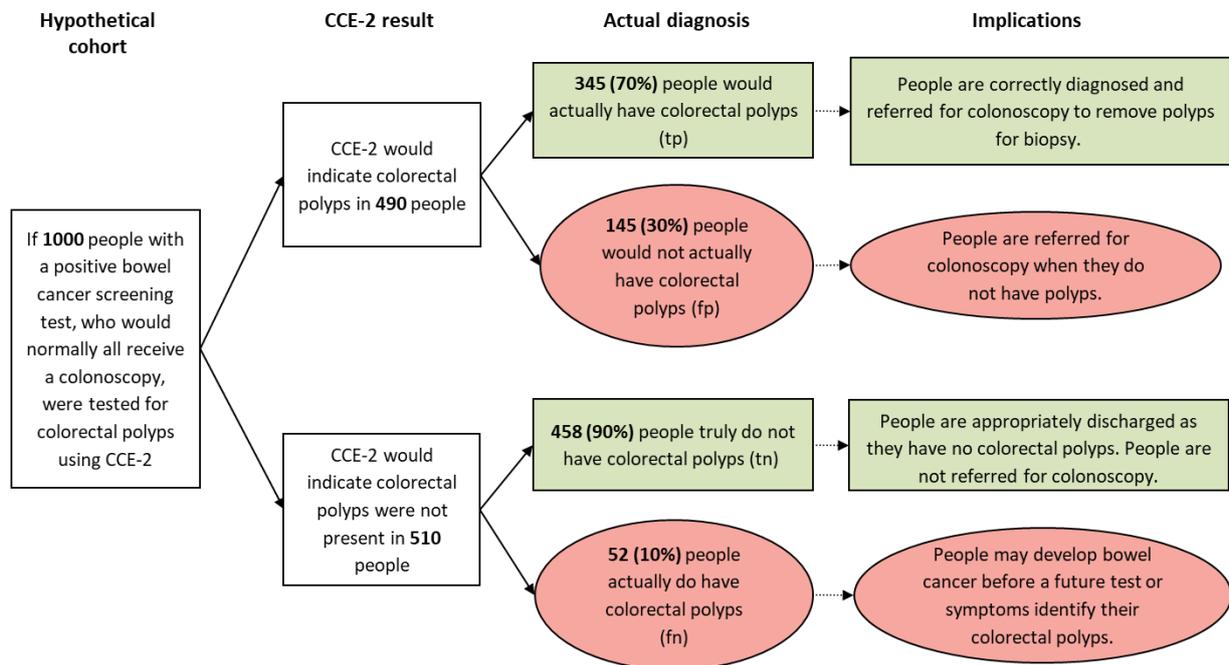
We found studies that looked at the accuracy of CCE-2 for detecting polyps. Also, using information supplied to us from a study that was being carried out in Scotland we calculated if CCE-2 would cost more or less than colonoscopy services if used in NHSScotland.

We applied the evidence we found about the accuracy of CCE-2 for detecting colorectal polyps to a hypothetical group of 1000 people from Scotland with a positive bowel cancer screening test result. In this imaginary group, 397 (39.7%) people have polyps that may become cancerous. In this scenario CCE-2:

- correctly identifies 345 (out of 1000) people with colorectal polyps who then have a colonoscopy to remove them.
- incorrectly identifies 145 (out of 1000) people as having colorectal polyps. These people actually do not have colorectal polyps but end up having an unnecessary colonoscopy.
- correctly identifies 458 (out of 1000) people as not having colorectal polyps. These people are sent home and are not followed up further.
- incorrectly identifies 52 (out of 1000) people as not having colorectal polyps, when actually they do have colorectal polyps. These people are not followed up and are at risk of developing cancer before their next test.

Every time CCE-2 identifies someone as having colorectal polyps, the chance of this result being correct is 70%. Every time CCE-2 identifies someone as not having polyps, the chance of this result being correct is 90%.

These results, which are based on the best evidence available on the accuracy of CCE-2 for diagnosing colorectal polyps, are illustrated in the following diagram:



tp: true positive – test is positive (indicates colorectal polyps) and patient has colorectal polyps  
 fp: false positive – test is positive (indicates colorectal polyps) but patient does not have colorectal polyps  
 tn: true negative – test is negative (indicates colorectal polyps not present) and patient does not have colorectal polyps  
 fn: false negative – test is negative (indicates colorectal polyps not present) but patient has colorectal polyps

The accuracy of CCE-2 is based on an estimate within a range. The above diagram is based on the middle of that range. In the best case scenario, the number of cases of colorectal polyps missed by CCE-2 decreases to 28 per 1,000 people tested. In the worst case scenario the number of cases of colorectal polyps missed by CCE-2 increases to 91 people per 1,000 people tested.

It was not possible to determine the accuracy of CCE-2 in people unable or unwilling to have a colonoscopy, or who have previously had an incomplete colonoscopy, because of a lack of suitable studies.

There were no studies which examined if CCE-2 was good value for money. Our own analysis found that it would generally cost more to use CCE-2.

There are some risks associated with having a CCE-2 procedure. In published studies, the CCE-2 capsule became stuck in the bowel in 0.8% of people tested. In 0.1% of people tested the capsule was accidentally inhaled into the lungs. Some patients may experience mild/moderate symptoms during the bowel cleansing period, for example nausea. CCE-2 may not be suitable for some patients, for example people with narrow bowels or swallowing disorders.

Patient and public preferences relating to tests for colorectal polyps varied which suggests the choice of test may be a personal decision. The process of having CCE-2 was more comfortable than a colonoscopy but the bowel cleansing process was more intense for CCE-2.

## What SHTG considered when developing advice for NHSScotland

- The accuracy of CCE-2 compared with optical colonoscopy (the test currently used in most patients).
- The potential need for patients to have a colonoscopy after they have CCE-2, particularly if any polyps are found.
- The differences in bowel cleansing for CCE-2 compared with colonoscopy – bowel preparation for CCE-2 is considerably more intensive and difficult for patients and is not suitable for people who are frail.
- The pressure on colonoscopy services and the need to meet patient demand for this service both during and after the COVID-19 pandemic.
- The cost implications of implementing CCE-2 in NHSScotland.

## What is our advice to NHSScotland?

CCE-2 should not replace colonoscopy, but should be an additional option for patients who have signs and symptoms of colorectal cancer. The most suitable use for CCE-2 is in people who have a lower risk of colorectal cancer.

Patients need to be well informed about the CCE-2 procedure and how the accuracy and potential for an incorrect diagnosis compares to colonoscopy.

Support should be given to patients undergoing bowel cleansing for CCE-2.

CCE-2 will cost more to use in NHSScotland but it costs less than asking the private sector to increase colonoscopy services for NHSScotland.

The Covid-19 pandemic has had made it more difficult for people to use existing optical colonoscopy services. CCE-2 offers an additional (extra) option to conduct more procedures.

## Future work

A registry will be set up to record details about the use of CCE-2 in Scotland, including the outcome for patients and the costs to the NHS. This will help to ensure that the right service is delivered in the future.

This plain language summary has been produced based on SHTG Recommendation 01-20 August 2020