CT Colonography – notes

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Objectives

As stated in course flyer:

At the end if this session attendees should:

- ✓ Be aware of what is involved in having a CT colonogram
- ✓ Understand the relative merits of CT and optical colonoscopy and the limits of the CT technique
- ✓ Know the indications and contraindications for the test and how to access the service locally.

Informal objectives of talk:

What I think you might want to get out of it

- What's it like
- What it's good for
- What it's not good for
- How do I get one?

What I am going to tell you anyway

- Some stats and stuff.

What it's like:

Not full bowel prep!

Prep for CTC:

- Low residue diet for 2 days, no solids from midnight
- Dilute Gastrografin twice daily for 2 days and on morning of appointment

Constipated Patients:

- Same with addition of 2x CitraFleet sachets day before test.

Optimally only small amounts of tagged fluid remain in a well-distended colon. Solid residue is not a problem if it is effectively tagged.

The insufflation tube is small, similar to a urethral catheter and a retention balloon is usually used.

It's quick

Pickhardt et al 2003
CT colon:- Average 14 min on table, 17 min read
Colonoscopy:- 31 min on table, 62 min recovery

Rockey et al 2005
CT colon:- 17 min on table, 17 min read
Ba enema:- 39 min on table, 9 min read

It's safe:

No deaths (yet!)
1 in 4000 perforation rate
The vast majority of perforations are asymptomatic.

Compared with colonoscopy:

Perforation and bleeding rate with and without polypectomy 2.38% and 0.35%, respectively

Arguably many unnecessary polypectomies are performed. In a *New England Journal* study in 2007 comparing two groups of >3,000 screening patients each, having either CTC or colonoscopy, the same number of advanced neoplasms were found but 2434 polypectomies occurred in the colonoscopy group compared with 561 in the CTC group (comprising patients referred on for endoscopy).
NEJM, October 4, 2007, Vol. 357:14, pp. 1403-1412

Full bowel prep is associated with significant morbidity:
Picolax can cause incontinence, cramps / pain, nausea & vomiting, sleep disturbance, up to 2kg wt loss, postural hypotension and hyponatraemia.
In one study there were >250 incidents and 12 deaths attributable to bowel prep.

Radiation dose

Significant dose, similar to Barium Enema
This limits its use in younger individuals
Low dose techniques used to minimise dose result in noisier images [of solid organs]
Intravenous contrast not routinely used

Patients prefer CT (mostly)

In a large UK study:
41-72% preferred CT Colonoscopy
11-24% preferred Optical Colonoscopy
Remainder no opinion

Buscopan and driving:

Buscopan (Hyoscine Butylbromide) acts on cholinergic receptors producing smooth muscle relaxation, dry mouth and transient mydriosis. It can provoke angina in patients with severe coronary artery disease.
Near field vision and depth of focus are transiently impaired (20-30 mins) and patients in theory may experience more glare.
In practice, it is fine to drive after a cup of tea.

CTC is good for:

A test for cancer
Detection of polyps
Incomplete colonoscopy
Assessment of diverticular disease (surgeons)
Extrinsic disease
Extracolonic pathology

Equivalent sensitivity for polyps has been demonstrated in large-scale screening studies:
Pickhardt et al NEJM 349;23 December 4, 2003
A total of 1233 asymptomatic adults (mean age, 57.8 years) underwent same-day virtual and optical colonoscopy:
The sensitivity of virtual colonoscopy for adenomatous polyps was 93.8 percent for polyps at least 10 mm in diameter, 93.9 percent for polyps at least 8 mm in diameter, and 88.7 percent for polyps at least 6 mm in diameter.
The sensitivity of optical colonoscopy for adenomatous polyps was 87.5 percent, 91.5 percent, and 92.3 percent for the three sizes of polyps, respectively.
The specificity of virtual colonoscopy for adenomatous polyps was 96.0 percent for polyps at least 10 mm in diameter, 92.2 percent for polyps at least 8 mm in diameter, and 79.6 percent for polyps at least 6 mm in diameter.
Two polyps were malignant; both were detected on virtual colonoscopy, and one of them was missed on optical colonoscopy before the results on virtual colonoscopy were revealed.

CTC is not good for:

Inflammatory bowel disease
Acute diverticulitis
Obstruction (the prep may provoke an exacerbation; CT with i.v. contrast is preferred)
Angiodysplasia
Functional bowel disorders
Evacuatory problems
Acute bleeding
Anorectal disease, SRUS

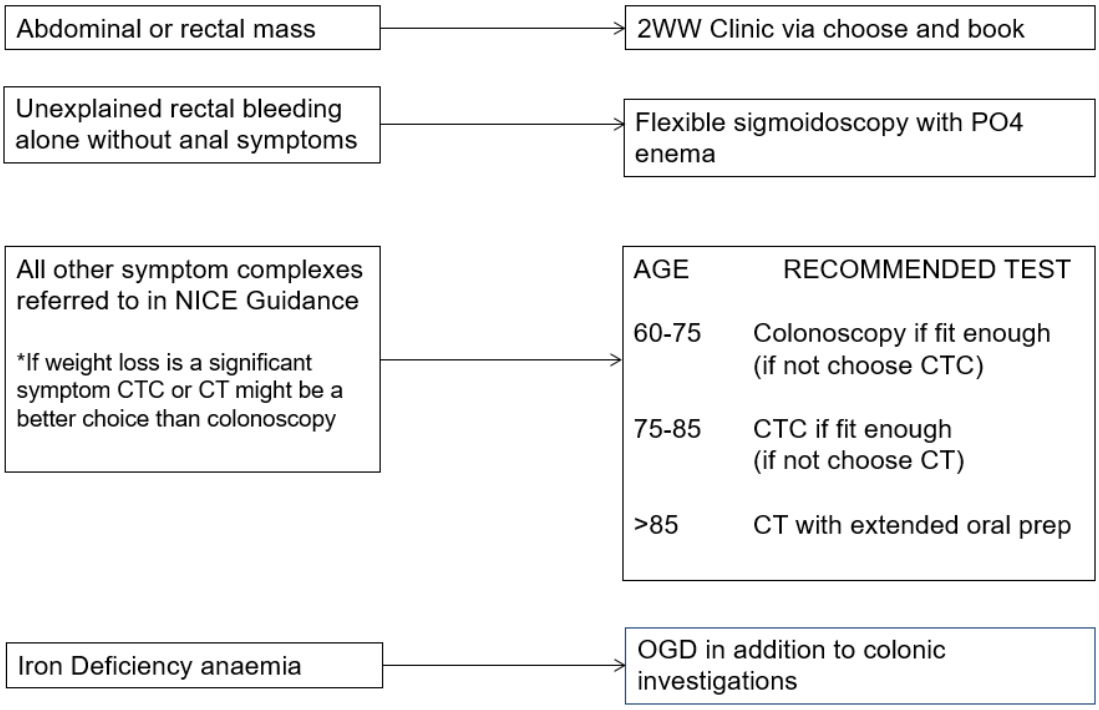
How do I get one? The NBT Pathway:

There are now only 2 ways to refer a patient to the colorectal service under the 2 week wait (2WW)
Straight to test via ICE
For practices who do not have access to ICE we are happy to fund and install the system
To a 2WW clinic via choose and book

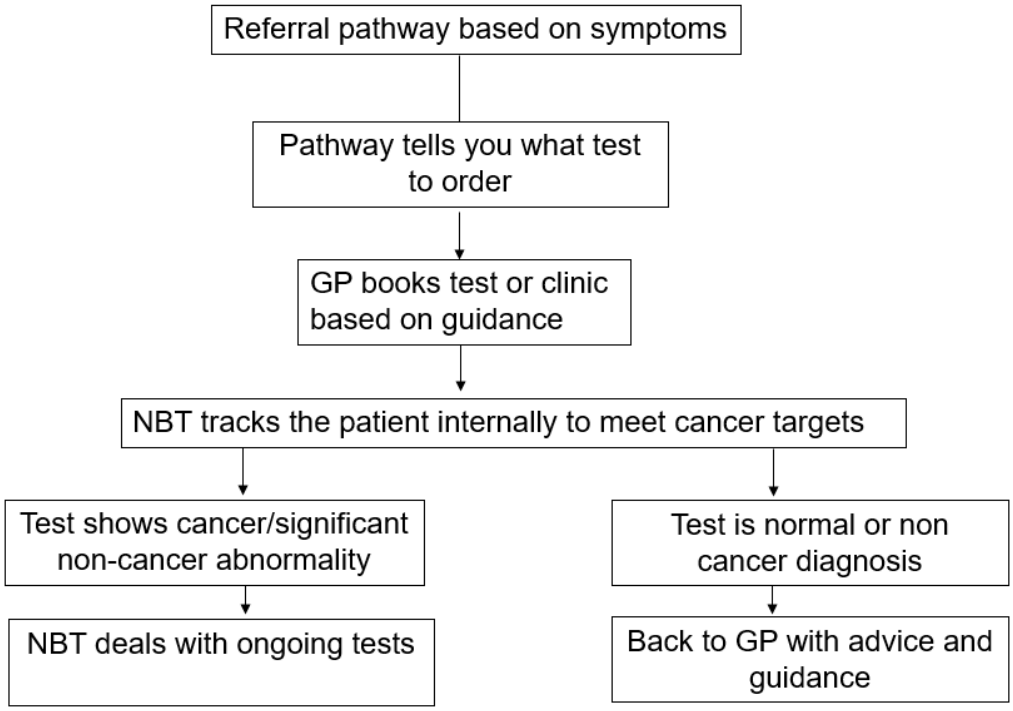
How to determine fitness for each test

<u>For a colonoscopy</u> patients need to be:
fit enough for full bowel preparation at home ie tolerate a restricted diet and severe diarrhoea/dehydration
Be able to lay on their left side and move position during the test
Tolerate iv sedation and analgesia
Colonoscopy is not recommended in the over 80s and it is not possible to book this test in this age group
<u>For a CT colonoscopy</u> patients need be
able to tolerate oral gastrograffin
Able to lie prone and tolerate rectal insufflation
A CTC is not non invasive.
No iv contrast is given so it does not exclude metastatic disease
It does exclude significant problems in most other organs so particularly useful if it is not clear that the symptoms are colonic and especially useful in women where ovarian cancer could be a possibility or in people with weight loss
If a patient is unable to tolerate this we suggest a CT with extended prep
This means the patient has a plain CT which is non-invasive but they have to drink oral gastrograffin for 2 days before. This gives better images of the bowel

Which test for which symptoms?



What happens after the test?



Low risk polyp pathway:

If Patient Has a Polyp
If the polyp is ≥1cm and high risk for cancer, NBT will deal with ongoing management
If polyp is <1cm then the patient would usually have a flexible sigmoidoscopy (descending colon, sigmoid or rectum) or colonoscopy (ascending or transverse colon) to remove polyp
If the patient is fit enough, you can book this test. Tab marked 2WW polyp pathway. This test will be done within 6 weeks
If you are unsure whether the patient is fit enough then refer to clinic via choose and book non urgently and we will assess

Feedback on the NBT referral pathway

We are auditing this to ensure the change is an improvement
If you have any concerns or suggestions for improvement please contact niall.prosser@nbt.nhs.uk or anne.pullyblank@nbt.nhs.uk

Small polyps and CT Colonography

In the radiological literature based on screening populations, where there are 1-3 polyps of 6-9mm it is safe to repeat the test after 3 years (compared with the normal screening interval of 5 years).
If there are more than 3 then endoscopy is mandated.
Polyps less than 6mm are generally ignored (and often undetected). Extensive studies indicate this is not associated with a poor outcome.

Considerations and learning points

Consider the following statements:

CT colonography is superior to Barium Enema in detecting colonic lesions

- Unquestionably true but CT must be performed by appropriately trained personnel in a unit subject to appropriate quality control. Where these conditions do not pertain Barium Enema may still be performed.

Patients prefer CT colonography to Barium Enema

- Definitely, this has been proven in large UK studies

Patients prefer CT colonography to Optical Colonoscopy

- There is good evidence for this. CT is clearly quicker, less uncomfortable and the prep and procedure cause less inconvenience. Some patients however prefer colonoscopy because they perceive it to be a more thorough investigation, or they are worried about radiation exposure.

Patients can drive home or go to work after CT colonography.

- Yes. Sedation is not used and any cramping or discomfort settles very quickly as the CO2 is absorbed

CT colonography reliably detects incidental abdominal pathology

- Up to a point.
    - Regarding the lungs only the lung bases are included in the scan
    - Low radiation doses are used resulting in “noisier” images
    - Iv contrast is not routinely used
- It will however reliably detect solid abdominal masses and a variety of pathology.

CT colonography reliably delineates the whole colon

- True, failures are rare.

CT is more likely to demonstrate the caecum than colonoscopy

- Yes, and may be used as a supplementary test following incomplete colonoscopy. CT overcomes problems due to long tortuous colons, complex diverticular disease, and patient distress/discomfort.

CT colonography is good for all bowel disease

- No, it is primarily a test for cancer and should not be used in the assessment or follow up of suspected inflammatory bowel disease

CT colonography has a high radiation dose

- The radiation dose is significant limiting its use in younger patients.

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