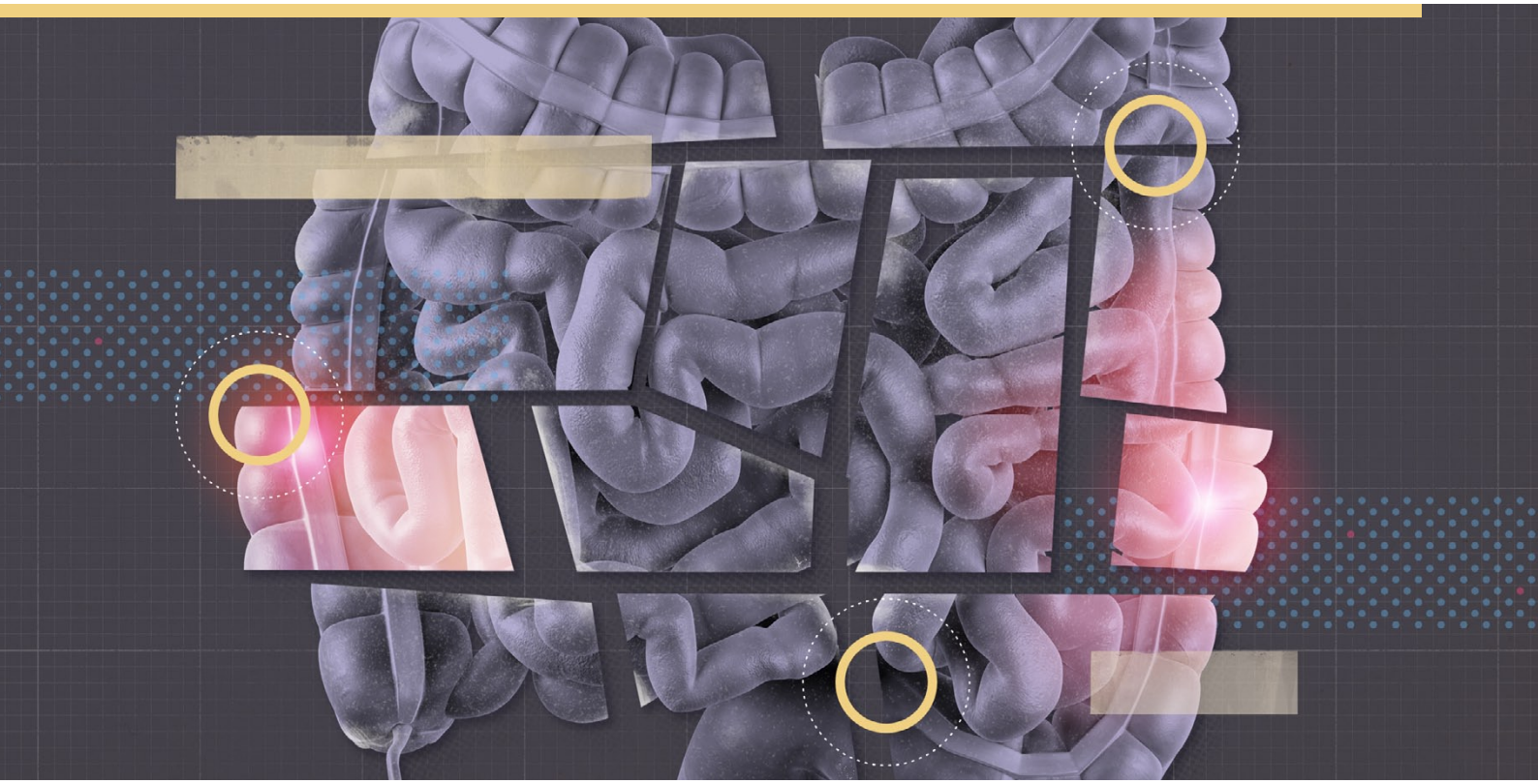


Referral of patients with features suggestive of bowel cancer: Ministry of Health guidance

Bowel cancer is one of the most common causes of cancer death in New Zealand. Approximately one-quarter of diagnoses are made when patients present to an emergency department, highlighting that many diagnoses are made late in the course of disease. The Ministry of Health and National Bowel Cancer Working Group have recently updated guidance and criteria that allow general practitioners to refer patients directly for outpatient bowel investigation.

KEY PRACTICE POINTS:

- Bowel cancer incidence and mortality in New Zealand is high compared to other countries, and people of Māori and Pacific ethnicities have worse outcomes
- Clinicians in primary care can refer patients directly for colonoscopy or Computed Tomography (CT) colonography if they have symptoms and signs suggestive of bowel cancer and meet the referral criteria (i.e. referral for investigation without first seeing a gastroenterologist or general surgeon)
- For patients with characteristics which do not meet the direct referral criteria, including atypical presentations, referral to a gastroenterologist or general surgeon may remain an appropriate action
- Key symptoms and signs that may suggest a diagnosis of bowel cancer include rectal bleeding, changes in bowel habit, weight loss and iron deficiency anaemia
- Age and family history also have an impact on the likelihood of cancer, and whether patients will meet the referral criteria
- Asymptomatic patients who have a family history of bowel cancer indicating a moderate to high increase in risk can also be offered direct access surveillance colonoscopy

Part one: The updated referral criteria for direct access investigations

New Zealand has high rates of bowel cancer

New Zealand has one of the highest rates of bowel cancer incidence in the world, and bowel cancer is one of the leading causes of cancer mortality. There are approximately 40 new cases of bowel cancer registered per 100,000 population per year in New Zealand, compared with 94 for breast cancer in women and 103 for prostate cancer in men.[1] However, the rate of death from each of these cancers is similar with approximately 16 deaths per year per 100,000 population.[2, 3]

New Zealand also has a high proportion of people (26%) who are diagnosed with bowel cancer after presentation with bowel-related symptoms at an emergency department and there is evidence that this is associated with poorer outcomes.[4]

Māori and Pacific peoples have worse outcomes

The reported incidence of bowel cancer in Māori is currently lower than for people of other ethnicities. However, the incidence rate in Māori is increasing more rapidly than in other ethnicities, therefore this difference in incidence is unlikely to remain. In addition, it is possible that bowel cancer is under-diagnosed in Māori.[1, 5]

People of Māori or Pacific ethnicity have worse outcomes than people of other ethnicities following a diagnosis of bowel cancer. A recent study documented a five-year risk of death from bowel cancer of 59% for people of Pacific ethnicity, 47% for people of Māori ethnicity, and 39% for people of other ethnicities.[6]

People of Māori or Pacific ethnicity:

- Tend to have more advanced disease at diagnosis
- Are more likely to be diagnosed after presenting to an emergency department
- Are more likely to live in socioeconomically deprived neighbourhoods
- Have higher rates of co-morbidity

These factors all contribute to worse survival statistics but do not fully explain the differences in bowel cancer outcomes.[4–6] A lack of access to healthcare at all levels and reduced quality of care may also be contributing factors.[5]

Regional differences exist for diagnosis and treatment

There have been reports of wide variation between district health boards (DHBs) in New Zealand in the diagnosis and treatment of bowel cancer.[4] Data from 2013–2016 shows:[4]

- The highest percentage of people diagnosed with bowel cancer at an emergency department was approximately 35% with the lowest percentage being approximately 18%
- The percentage of people with bowel cancer requiring emergency surgery varied from 12.6% to 31.1%
- There is a wide variation between DHBs for mortality within three months of surgery, ranging from 0% to 7.6%, with figures affected by a range of factors including in some cases small sample size

Updated direct access referral criteria aim to ensure consistency of care

The Ministry of Health and National Bowel Cancer Working Group have developed a number of initiatives which aim to reduce the impact of bowel cancer in New Zealand and to address the associated disparities in diagnosis and treatment for people of Māori or Pacific ethnicity.

One of the initiatives is updating the referral criteria (see box below) that provide guidance for clinicians in primary care to enable them to refer patients for a colonoscopy or CT colonography, without first seeing a gastroenterologist or general surgeon, in order to expedite assessment and diagnosis.[7] Access to either colonoscopy or CT colonography is provided by DHBs for patients who meet the criteria. For patients who do not meet the criteria but there is still clinical concern, clinicians should consider referring for a first specialist assessment (FSA).[7] Referrals for colonoscopy or CT colonography after a positive screening test through the National Bowel Screening Programme are not covered by these criteria.[7] (see "Bowel cancer screening")

The updated guidance and full criteria are available on the Ministry of Health website (**https://www.health.govt.nz/publication/referral-criteria-direct-access-outpatient-colonoscopy-or-computed-tomography-colonography**) and are also outlined on the regional Health Pathways websites.

Other initiatives which are also underway include:[8]

- A national bowel screening programme to detect cancer early in asymptomatic patients (see: "Bowel cancer screening")
- Guidance on imaging and diagnosis techniques
- Efforts to improve the quality and consistency of bowel cancer diagnosis and care across DHBs

How will the updated referral criteria work in primary care?

The majority of symptoms that could indicate bowel cancer that patients are likely to present with to primary care have a low positive predictive value, of approximately 5% or less, for

detecting colorectal cancer.[9] Therefore, to establish whether symptomatic patients meet the criteria for direct access, in most cases, a combination of symptoms and signs along with laboratory investigations are required. Patients with unexplained rectal bleeding, a change in bowel habit where the motions are looser and/or more frequent lasting more than six weeks, iron deficiency anaemia and risk factors such as the patient's age and family history are prioritised.

Some people who have either a family history of colorectal cancer can also be offered direct access surveillance colonoscopy. [7] (see "Colonoscopy for active surveillance")

What if the patient is acutely unwell?

The updated referral criteria make no changes to the way acutely unwell patients should be managed. Patients who are unwell, e.g. with significant bleeding, suspected perforation or acute large bowel obstruction should be referred directly to secondary care for acute assessment or admission.[10] Large bowel obstruction often indicates more advanced bowel cancer with a poorer prognosis. However, the location of the tumour can influence the likelihood of obstruction, e.g. tumours that are more distal where the lumen is smaller or those situated at the splenic flexure are more likely to obstruct. N.B. Mechanical bowel obstruction can also occur due to other malignant tumours causing extrinsic compression or a number of non-malignant conditions such as adhesions or strictures due to diverticular disease or inflammatory bowel disease.

What if the patient does not meet the referral criteria?

There are several clinical situations outlined where a referral will not be accepted, e.g. patients with constipation as a single symptom, acute diarrhoea < six weeks duration or rectal bleeding in a patient aged < 50 years with a normal haemoglobin. In some cases, referral for direct access will not be accepted because other clinical approaches to further

Safety netting in primary care

Safety netting is a strategy used to improve patient safety which can be applied in many clinical situations in primary care. It is useful if there is diagnostic uncertainty, if there is potential for a serious underlying diagnosis, such as cancer, and also in a broader sense to improve system functions, e.g. ensuring results of investigations are followed up and referrals completed.[11]

There is, however, variation in how well the strategy is understood and applied in primary care and where the responsibility lies. The effectiveness of safety netting is influenced by many factors and involves the system, the patient and the clinician.[11]

These factors include:

- The capabilities of practice management systems (PMS)
- Workload and time pressure
- An individual's way of working
- The patient's ability to take responsibility for follow-up
- The patient's understanding of the situation, and how well this has been communicated to them
- How likely it is that the patient will come back
- Aspects that may increase vulnerability, e.g. cognitive or mental health issues, social isolation
- The clinician's level of concern about the diagnosis, i.e. could this person have cancer?
- Previous experiences (both for patient and clinician), particularly if it was a negative experience
- The level of documentation; a clear plan is important
- Continuity of care, e.g. with part-time clinicians or locums

Ideally, safety netting strategies should be clear, consistent and well-structured with the robustness of the "safety net" generally reflecting the level of risk.[11] There is, however, a lack of good evidence to determine the most effective and efficient way in which safety netting should be applied in practice.[11] An example of how varying levels of safety netting could be used is:

- Low level safety netting – asking the patient to report any ongoing symptoms (the informed patient takes responsibility)
- Moderate level safety netting – asking the patient to keep a diary of symptoms and to report back after an agreed period of time
- High level safety netting – generating a task in the PMS to ensure that the patient is seen or contacted at a set time in the future

In practice, various aspects of all these levels may be put in place at the same time particularly to ensure that a cancer diagnosis is not delayed or missed, or the patient does not "fall through the cracks". The challenge is to do this without intolerably increasing the workload of the primary care team.[11]

assessment or investigation are more appropriate, e.g. alternative forms of imaging if an abdominal mass is found. It is thought that in the majority of cases, patients who do not meet the criteria for direct access will not have bowel cancer, however, these patients should continue to be monitored regularly, e.g. two- to three-month intervals, with assessment of symptoms, repeat clinical examination, a check of weight and investigation of haemoglobin and ferritin levels. In some patients, symptoms may persist (and therefore meet the six-week criteria) or worsen (e.g. they become anaemic due to ongoing blood loss) and they may then become eligible for direct access referral at a subsequent appointment. "Safety netting" in the form of active follow-up or placement of a recall to prompt reassessment is recommended, particularly for young patients and patients who may not book a further appointment or do not report changes in symptoms. (see "Safety netting in primary care")

In some cases where the referral criteria for direct access are not met, a referral to a gastroenterologist or general surgeon may be the most appropriate action. This is known as a first specialist assessment (FSA) in the document and may, for example, include a patient with irritable bowel syndrome or rectal bleeding in a patient < 50 years who is not anaemic and benign causes have been treated or excluded. FSA may also be appropriate for patients who present in an atypical way but yet with clinical suspicion that further assessment or investigations are required.[7]

If a colonoscopy or CT colonography in the previous five years has not identified a cancer this diagnosis is very unlikely as these tests have a 94% sensitivity for detecting bowel cancer.[7] For some patients a repeat investigation may be appropriate, e.g. if there are new onset symptoms; consider discussing these situations with a gastroenterologist or general surgeon.[7]

The updated referral criteria for direct access colonoscopy or CT colonography for symptomatic patients[7]

Two-week category

Patients who have:

- Known or suspected colorectal cancer (CRC) (on imaging, or palpable or visible on rectal examination), for pre-operative procedure to rule out synchronous pathology
- Unexplained rectal bleeding* **with** iron deficiency anaemia†
- Altered bowel habit where the motions are looser and/or more frequent > six weeks duration **plus** unexplained rectal bleeding* **and** age ≥ 50 years

Six-week category

Patients who have:

- Altered bowel habit where the motions are looser and/or more frequent > six weeks duration **and** age ≥ 50 years
- Unexplained rectal bleeding* **and** ≥ 50 years age
- Altered bowel habit where the motions are looser and/or more frequent > six weeks duration **plus** unexplained rectal bleeding* **and** age 40–50 years
- Unexplained iron deficiency anaemia†
- New Zealand Guidelines Group (NZGG) Category 2 family history **plus either** altered bowel habit where the motions are looser and/or more frequent > six weeks' duration or unexplained rectal bleeding*, aged ≥40 years
- NZGG Category 3 family history **plus either** altered bowel habit where the motions are looser and/or more frequent > six weeks' duration **or** unexplained rectal bleeding*, aged ≥25 years
- Inflammatory bowel disease (either suspected or for an assessment)‡
- Imaging reveals polyp > 5mm

* Benign anal causes treated or excluded

† Haemoglobin below the local reference range in association with a low ferritin level

‡ Consider whether FSA is more appropriate

Exclusions

Patients will not be accepted for direct access investigations if they have:

- Acute diarrhoea < six weeks duration (as this may be of infectious aetiology and self-limiting)
- Rectal bleeding (normal haemoglobin) **and** age < 50 years (consider FSA or flexible sigmoidoscopy if there is no anal cause determined)
- Irritable bowel syndrome (consider FSA if specialist assessment is required)
- Constipation as a single symptom
- Uncomplicated CT-proven diverticulitis **without** suspicious radiological features
- Abdominal pain alone **without** any 'six-week category' features
- Low ferritin with a normal haemoglobin **and** age < 50 years
- Abdominal mass (referral for appropriate imaging is indicated)
- Metastatic adenocarcinoma with an unknown primary (6% is due to CRC and colonoscopy is not indicated in the absence of clinical, radiological or tumour marker evidence of CRC)

How to refer patients for direct access outpatient bowel investigations

Once it has been determined that the patient meets the criteria for referral:[7]

- Inform the patient about the procedure – make sure they understand what the procedure involves, i.e. both the bowel preparation and the endoscopic examination
- Check that they are willing to undergo the procedure
- Consider if the patient will be able to tolerate the bowel preparation (see "Bowel preparation") and the procedure itself. Factors to be considered when making this decision include the patient's co-morbidities, level of frailty and prescribed medicines, e.g. anticoagulants, insulin.
- Consider the expected benefit of the referral. If the patient is frail, with multiple co-morbidities or evidence of advanced malignancy they may not be able to tolerate further treatment and direct access referral is generally not appropriate [7, 12]
- If using an electronic referral system, select "Colorectal/ Colonoscopy" (wording may vary with your referral system) and complete the form. Some DHBs have additional forms to complete (available on local Health Pathways websites) which will be used to assist with the decision as to which investigation will be most appropriate (see "Colonoscopy or CT colonography").

Colonoscopy or CT colonography?

Colonoscopy is the endoscopic examination of the large bowel usually performed under intravenous sedation. When sedation is used, a recovery period is required and patients must not drive for 24 hours. Colonoscopy is associated with a small risk of perforation of the bowel. If polyps or other lesions are identified, they can be biopsied or removed during the same procedure. A colonoscopy is the most appropriate investigation if the predominant indication for referral is rectal bleeding or a persistent altered bowel habit where the motions are looser and/or more frequent. It is also preferred if the patient has a Category 2 or 3 family history of bowel cancer.[7]

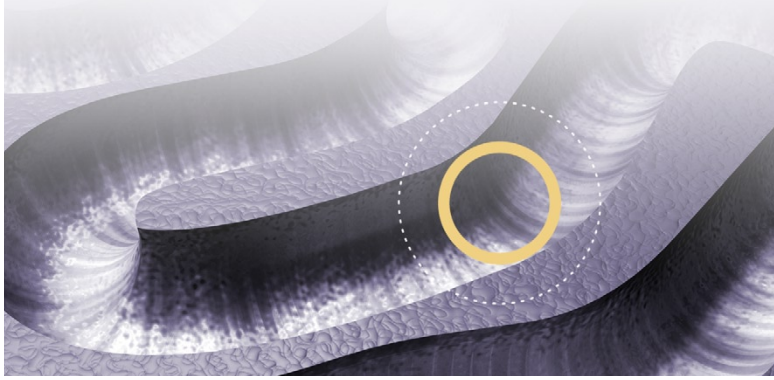
Computed tomography (CT) colonography is an alternative imaging procedure which is less invasive than a colonoscopy, but the major limitation is that if polyps are detected they are unable to be biopsied or removed at the time, meaning that a second procedure (i.e. colonoscopy) may be required. The bowel is inflated with gas, e.g. carbon dioxide, via a tube inserted in the anus, which allows the wall of the bowel to be visualised on the CT images. The images are taken with the patient in different positions and using a low dose of radiation. Sedation is not required, recovery time is therefore faster and there is a very low risk of perforation of the bowel.

Bowel Preparation

The aim of the bowel preparation required for **colonoscopy** is for the bowel to be clean and free of faecal material that can make diagnosis difficult; inadequate preparation for a colonoscopy can result in an incomplete examination. Inform patients that the preparation will require changes to their usual intake of food and fluids and medicines to empty the bowel. They be sent detailed instructions as well as medicines, e.g. bisacodyl tablets and sachets of a bowel cleansing medicine, prior to the colonoscopy; ensure an up to date postal address and contact details are included in the referral. A variety of bowel cleansing preparations are used, containing laxatives such as macrogols, sodium and potassium salts and citric or ascorbic acid.[16]

Instructions to patients typically include avoiding foods containing seeds or other indigestible substances for several days (often one week) prior to the procedure.[14] Two days prior to the procedure, patients are recommended to follow a low residue diet, which includes a limited range of foods such as white bread, white rice, pasta or noodles, a small amount of lean grilled meat, plain biscuits or water crackers, some fruits and vegetables without seeds which are easily digested, such as potato, kumara, pumpkin, bananas or stewed apples. Red or purple foods or liquids, which could appear to be fresh or coagulated blood, should be avoided for a few days prior to colonoscopy. Approximately 24 hours prior to their appointment, the patient will be instructed to only have clear fluids to drink. This usually includes clear soups, hot drinks without milk, clear fruit juices without pulp, soft drinks and jelly. A rule of thumb is that if the fluid cannot be "seen through" then it is not to be taken. Patients are usually nil by mouth for two hours prior to the procedure.

Protocols for patient preparation for **CT colonography** vary and may involve less dietary restriction than for colonoscopy, however, some degree of bowel preparation is still required. Patients adjust their diet and take laxatives on the day preceding the test and then drink an oral solution prior to the procedure which also acts as a laxative and tags faecal matter or food residue in the bowel.



CT colonography may be the more appropriate investigation in symptomatic patients who do not have an altered bowel habit with looser or more frequent motions or rectal bleeding as the predominant indication or patients who have a Category 1 family history or no family history.[7] CT colonography may also be appropriate for patients who are aged > 80 years who may have significant co-morbidities which can complicate the procedure or the preparation required.[7] Some patients, e.g. those with limited mobility may also have difficulty tolerating the preparation required for a colonoscopy.[13]

The adverse effects associated with the type of bowel preparation required for colonoscopy include dehydration, electrolyte disturbances and hypotension. The use of intravenous sedation with colonoscopy can also be associated with cardiovascular and respiratory adverse effects.

N.B. Colonoscopy is avoided in women in the first trimester of pregnancy and is rarely undertaken during subsequent stages of pregnancy unless there is a strong indication based on an assessment of possible benefits compared to risks.[14] CT colonography is contraindicated in patients during the active phase of inflammatory bowel diseases, or with acute bowel conditions such as diverticulitis.[15]

Colonoscopy for active surveillance

People with a significant **family history** of colorectal cancer are currently offered direct access to surveillance colonoscopy under the updated referral criteria. To qualify, people are required to have a Category 2 or 3 family history (see – "NZGG family history categories"). Surveillance colonoscopy may also be recommended for some individuals by a bowel cancer specialist or by the New Zealand Familial Gastrointestinal Cancer Service which provides genetic testing and counselling for patients and their family/whānau.

For further information on the New Zealand Familial Gastrointestinal Cancer Service, see: **www.nzfgcs.co.nz**

NZGG Family History categories[12]

Category 1 – individuals with a slight increase in risk of colorectal cancer (CRC)

- One first -degree relative diagnosed at age 55 years or over

Category 2 – individuals with a moderate increase in risk of CRC

Who have one of more of the following:

- One first-degree relative diagnosed at age 54 years or under

OR

- Two first-degree relatives on the same side of the family diagnosed at any age

Category 3 – individuals with a potentially high risk of CRC

Who have one or more of the following:

- A family history of familial adenomatous polyposis (FAP), hereditary non-polyposis CRC or other familial CRC syndromes
- One first-degree relative plus two or more first- or second-degree relatives all on the same side of the family with a diagnosis of CRC at any age
- Two first-degree relatives, or one first-degree relative plus one or more second degree relatives, all on the same side of the family with a diagnosis of CRC and one such relative:
  - was diagnosed with colorectal cancer aged 54 years or under, OR
  - developed multiple bowel cancers, OR
  - developed an extracolonic tumour suggestive of hereditary non-polyposis CRC (i.e., endometrial, ovarian, stomach, small bowel, renal pelvis, pancreas or brain)
- At least one first– or second-degree family member diagnosed with CRC in association with multiple bowel polyps
- A personal history or one first-degree relative with CRC diagnosed under the age of 50, particularly where colorectal tumour immunohistochemistry has revealed loss of protein expression for one of the mismatch repair genes (MLH1, MSH2, MSH6 and PMS2)
- A personal history or one first-degree relative with multiple colonic polyps

Part two: Detecting bowel cancer in primary care

Assessing patients with symptoms suggestive of bowel cancer

Symptoms suggestive of bowel cancer are often non-specific and include:

- Blood in the stool and/or rectal bleeding
- Changes in bowel habit where the motions are looser and/or more frequent
- Unexplained weight loss
- Tiredness and lethargy secondary to iron deficiency anaemia

Symptoms and signs associated with more advanced disease can include:

- Abdominal discomfort or pain with tenderness on examination
- Palpable abdominal mass
- Hepatomegaly
- Ascites

Clinical assessment should include:

- A comprehensive history of the symptoms that are of concern
- Personal history of previous bowel problems and a family history with particular emphasis on bowel cancer
- Physical examination that includes a digital rectal examination
- Laboratory investigations

Bowel cancer incidence increases with age with approximately two-thirds of new registrations in people aged 65 years and over.[1] However, bowel cancer can occur across the lifespan and there is some recent evidence showing small but significant increases in the incidence of bowel cancer in younger people in several developed countries including New Zealand.[1, 17] Clinicians therefore should not discount suggestive symptoms in individuals aged even as young as 18 years especially if the symptoms are persistent. The age of the patient, however, is one of the factors which influences whether they may qualify for direct access to investigations or referral for specialist assessment.

Determine type and duration of symptoms

Altered bowel habit – assess how this is different than usual for the patient and the duration of the changes. To meet the criteria for direct access referral, the change in bowel habit is where the motions are looser and/or more frequent, and symptoms need to have been present for a minimum of six weeks. This requirement aims to exclude patients with changes due to a self-limiting infectious cause. Intermittent symptoms may suggest an alternative diagnosis such as inflammatory bowel disease (see: "Conditions that may have similar symptoms or signs to bowel cancer"), as cancer is typically associated with a progressive worsening of symptoms.

Rectal bleeding or blood in the stool – Bright red blood on wiping or blood streaks on the outside of faeces is commonly associated with haemorrhoids or anal fissures,[18] rather than bowel cancer and these benign anal causes of bleeding should be identified and treated or excluded. However, bright red blood

Taking a family history

A person's risk of bowel cancer is increased depending on the number of relatives who have developed bowel cancer, how closely related these relatives are to the patient and the age of each relative at the time of diagnosis (with a diagnosis at age 54 years or under being more significant).

First-degree relatives are parents, siblings and children while second-degree relatives are grandparents, aunts, uncles, nieces and nephews. A history of bowel cancer in more distant relatives does not usually increase the risk for most people except for those who have a history of one of the rare types of inherited bowel cancer syndromes where any affected family member is likely to be of significance. People in this category should be referred to the New Zealand Familial Gastrointestinal Cancer Service.

- Ask about any family history of bowel cancer, polyps or inflammatory bowel disease. People with Lynch syndrome, where a mutation in one of the mismatch repair genes has been identified, are also at increased risk of other cancers such as uterine, urinary tract, ovary, stomach and small bowel
- Determine the age at which each affected family member was diagnosed
- Record the family history on your practice management system (PMS) stating who the relative is, their relevant history and age at diagnosis, generally under the "history" tab although this may vary with each PMS
- It is useful to date the entry and to update this as family history evolves, e.g. "Family history as of December, 2019"

can in some cases be present with bowel cancer, especially if patients have cancer affecting the rectum, highlighting the importance of rectal examination. Bowel cancer affecting more proximal portions of the colon is typically associated with darker blood mixed in with faeces.[19]

Determine personal and family history

A **personal history** of bowel problems may help determine if an alternative diagnosis is suspected, e.g. irritable bowel syndrome or a long history of constipation as a single symptom. In most cases, the patient is likely to not be accepted for direct access investigations and if required, a specialist referral may be more appropriate.

Enquire about **family history** of bowel cancer; a fairly extensive history is required including information on both first- and second-degree relatives and the age at which the cancer occurred. It is good practice to update a patient's family history of bowel cancer on a regular basis on your practice management system. (See "Taking a family history" and "NZGG Family History categories")

Conduct an examination

Physical examination should include palpation of the abdomen, examination of the anus and a digital rectal examination to identify benign anal causes such as haemorrhoids or anal fissures and to ensure that a rectal mass is not present.

Bowel cancer screening

A national bowel screening programme is being initiated around the country and as of November, 2019, half of DHBs are in the programme. The programme which began in July, 2017, has screened 189,000 people and detected 420 cancers to date.[26]

DHBs which are currently offering bowel screening are:[26]

- Waitemata
- Hutt Valley
- Wairarapa
- Counties Manukau
- Southern
- Nelson Marlborough
- Hawke's Bay
- Lakes
- Mid Central
- Whanganui

It is projected that the bowel screening programme will be available nationwide by the end of June 2021.[26]

People aged 60–74 years are eligible

People aged 60–74 years in each DHB region will be contacted and sent a screening test kit. The test can be done by patients at home and involves collecting a sample of faeces and posting the sample to a testing laboratory. This does not involve a cost to patients.

The screening procedure involves testing for faecal occult blood, followed by further investigation if necessary

Collected samples will undergo testing for faecal occult blood using a faecal immunochemical test (FIT). Studies have found that the sensitivity for this test for detecting bowel cancer ranges from 64% to 100%, and specificity from 84% to 97%.[27]

Primary care is involved in contacting and referring patients with positive FIT tests

If patients test positive on a FIT test, their registered general practice will be informed and the practice is responsible for contacting patients with test results and arranging for them to undergo further investigation, typically via colonoscopy.[28] Referrals for colonoscopy or CT colonography after a positive FIT should be made through the National Bowel Screening Programme and are not covered by the updated referral criteria for symptomatic patients.[7] Patients with FIT test results which are negative will be invited for a repeat screen in two years. However, it is important that patients are not falsely reassured by a negative screening test and should be advised to seek medical advice if they develop bowel symptoms over this time. A negative FIT result should not delay referral for further investigation if there is clinical concern.

It is estimated that in the New Zealand programme, approximately seven out of ten patients who undergo colonoscopy will have polyps identified, some of which may be removed during the procedure, and approximately seven out of every 100 patients who have a positive FIT test will be diagnosed with bowel cancer.[29]

Patient information on the bowel screening programme is available at: **www.timetoscreen.nz/bowel-screening/**

Haemorrhoids and anal fissures may be visualised or palpable during a rectal examination, however, proctoscopy is often required, e.g. if internal haemorrhoids are suspected or the history suggests a fissure and one is not able to be identified with a standard rectal examination. Acute fissures may be so tender that a digital rectal examination is not possible but careful parting of the anal verge may demonstrate the fissure. If there is severe anal pain that prevents examination the patient should be reviewed after two to three weeks of treatment for anal fissure. Some practices may also have the equipment and experience to be able to perform sigmoidoscopy to examine the rectum and distal sigmoid colon, however, this usually requires some bowel preparation.

Request laboratory investigations

A full blood count and ferritin levels should be requested for all patients with symptoms suggestive of bowel cancer. The referral criteria define iron deficiency anaemia as a haemoglobin level below the local reference range and a low ferritin. When considering the cause of iron deficiency anaemia also consider other causes such as malabsorption due to coeliac disease, haematuria and menstruation.[7] A menstrual history should be taken for all women age ≤ 55 years as the most frequent cause of iron deficiency anaemia in this age range is menstruation.[7]

In some situations, other investigations may be required, e.g.:

- Creatinine and electrolytes
- Liver function tests, particularly if advanced malignancy is suspected
- C-reactive protein (CRP), if inflammatory bowel disease or diverticulitis is suspected
- IgA tissue transglutaminase antibodies (tTG), to exclude coeliac disease
- Faecal calprotectin, if inflammatory bowel disease (IBD) is suspected

N.B. **Faecal occult blood (FOB) tests** are not specific or sensitive enough for use in diagnosis in patients with symptoms and signs suggestive of bowel cancer. In many areas, the tests have been withdrawn from use. The only role for FOB testing at present, using the faecal immunochemical test (FIT), is in asymptomatic people eligible for the National Bowel Cancer Screening programme (see "Bowel cancer screening"). Pilot studies have been undertaken in the United Kingdom to investigate the utility of a low threshold for positivity FIT as a rule-out test for bowel cancer in symptomatic patients.[20] The outcomes of this research will be reviewed by the National Bowel Cancer Working Group prior to future updates of the direct access criteria.

For further information on investigating causes of anaemia, see: **www.bpac.org.nz/BT/2013/September/investigating-anaemia.aspx**

Conditions that may have similar symptoms or signs to bowel cancer

Patients with haemorrhoids or anal fissures are likely to report bright red rectal bleeding and discomfort or pain on, and following, defecation.[18, 21] The amount of blood lost is not usually enough to affect haemoglobin or ferritin levels unlike people with bowel cancer. The history and a rectal examination are usually sufficient to make a clinical diagnosis.

For further information on diagnosing and managing anal fissures, see: **https://bpac.org.nz/BPJ/2013/April/anal-fissures.aspx**

Patients with Inflammatory bowel diseases such as ulcerative colitis and Crohn's disease may report bloody stools and abdominal pain, which can lead to weight loss and reduced haemoglobin and ferritin levels, similar to bowel cancer, however, the age of onset is typically younger than bowel cancer.[22] People with IBD often have an elevated CRP, platelet count or faecal calprotectin. Referral to a gastroenterologist is appropriate if IBD is suspected.

Patients with irritable bowel syndrome may report abdominal pain or discomfort, altered bowel habits and bloating, but without other symptoms consistent with bowel cancer such as rectal bleeding causing iron deficiency anaemia.[23] Symptoms associated with irritable bowel syndrome can go into remission and recur at a later time, often associated with stress or certain foods. A patient history of variable symptoms and severity that first occurred some time ago may help differentiate people with irritable bowel syndrome from patients with symptoms that are more recent in onset and that are worsening, which could suggest bowel cancer.

For further information on irritable bowel syndrome, see: **https://bpac.org.nz/BPJ/2014/February/ibs.aspx**

Patients with diverticulitis typically have pain localised to the lower left abdominal quadrant without vomiting, and with elevated CRP levels, and may report rectal bleeding.[24, 25] Acute diverticulitis is typically rapid in onset and patients may have a history of previous episodes.

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