Introduction

Advanced bowel cancer means that the cancer has spread from your bowel (colon or rectum) to other parts of the body.

These areas of spread are called ‘metastases’ or ‘secondary cancers’. They are still made up of bowel cancer cells and behave in the same way as the original, primary cancer in your bowel, even if this has been removed.

Your cancer may be advanced when you are first diagnosed, or it may come back some time after your initial treatment. This is known as recurrent cancer or recurrence.

Advanced disease will need the experience and skills of a number of specialist doctors and nurses to help you manage the symptoms and find the best treatment pathway for your own individual circumstances.

We are grateful to our ‘Bowel Cancer Voices’ for sharing their stories in this booklet. These are people who have experienced advanced bowel cancer.

The aim of this booklet is to give you some understanding of what is possible, so that you can begin to think about what you want for yourself (or your family member) from the treatments currently available.

Contents

| p3   | Understanding advanced disease |
| p4   | Your treatment pathway         |
| p7   | Patient story – Barbara        |
| p8   | Limitations of treatment       |
| p9   | Patient story – Bob            |
| p10  | Treatment options: bowel surgery |
| p11  | Treatment options: chemotherapy |
| p12  | Treatment options: targeted therapies |
| p14  | Liver metastases               |
| p16  | Treatment options: liver surgery |
| p18  | Patient story – Hazel          |
| p19  | Specialised surgical liver treatments |
| p23  | Patient story – Jane           |
| p24  | Lung metastases                |
| p26  | Treatment options: lung surgery |
| p28  | Other lung treatment options    |
| p29  | Patient story – Bill           |
| p30  | Peritoneal metastases          |
| p31  | Treatment options: peritoneum  |
| p32  | Patient story – Chris          |
| p33  | Other sites of metastases      |
| p34  | Further support                |
| p35  | Support our work               |
Understanding advanced disease

Bowel cancer can spread through the body in a number of different ways. When cancer cells break away from the primary tumour in the bowel, they can travel around in the blood stream or in lymph fluid. They can move into other organs such as the liver or lungs, into lymph nodes or on the lining of the abdominal cavity, called the peritoneum.

We know that there is a common pattern in the way that bowel cancer spreads in the body.

Advanced bowel cancer most commonly spreads to the liver and the next most common site is the lungs. Sometimes, it can also spread locally into the abdomen. Less commonly, it may spread to the bones or brain.

Stages of bowel cancer

As tumours grow in the bowel, the chances of them spreading in the blood and lymph fluid are increased.

Bowel cancer can spread to other organs in the body.
Your treatment pathway

The multi-disciplinary team (MDT) is a group of doctors, nurses and other healthcare professionals who work together to investigate, treat and support you on your bowel cancer journey. You will normally start off under the care of the colorectal team, but if your cancer has spread to another part of your body, your case will also be referred to other specialist multi-disciplinary teams for an expert opinion, so that all the possible treatment options can be considered. This might be a liver (hepato-biliary) specialist team, a lung (thoracic) specialist team, or other specialist surgeons or doctors. These different MDTs will link up and discuss your case if necessary. If your case has not been referred to another specialist team for an opinion on your metastatic disease, then it is important to ask about this.

Your colorectal nurse specialist is likely to be your keyworker, the person who will coordinate this process on your behalf, so he or she would be a good point of contact for you for any concerns or questions.

Everyone diagnosed with a cancer will go on to have a series of tests which are used to work out if the cancer has or is likely to spread. These might include a series of blood tests to check your liver function (LFTs) and your CEA level (a tumour marker), and a CT scan of your chest, abdomen and pelvis. If you have suspected liver metastases, then you will also need to have an MRI liver scan that looks specifically at the detail of your liver, and the blood vessels that supply it. If the results of these tests suggest that there may be active disease hidden elsewhere in the body, then you may also have a PET scan.

These scans are then looked at carefully by the specialist team(s) within the MDT, to see if you would be a good candidate for surgery. This might be possible straight away, or perhaps could be considered later, after some initial treatment, for example chemotherapy, to shrink the tumours and make them easier to remove.

For more information on multidisciplinary team members, please refer to our ‘Bowel Cancer Treatment – Your Pathway’ booklet.
There should also be a request made to test a sample of tissue from your bowel cancer to find out if it has a particular genetic signature. This test, known as a RAS test, is important because it helps your doctors decide which treatment options are most likely to work for you. Please see page 12 for more information.

Following a multi-disciplinary team meeting, your oncologist will offer you a treatment plan that is most likely to provide a balance between having the greatest benefits and the fewest risks or side-effects. This is usually based on what worked best in clinical trials for patients with the same type and stage of cancer. You will be closely monitored during your treatment.

If your first-line treatment does not work, stops working, or causes serious side-effects, your oncologist may adjust the dose of treatment or recommend a second-line treatment. This is a different treatment that is hoped will be effective. In some cases, you may be a candidate for third-line therapy; this will depend on your fitness, what treatment has been given previously and how you feel about this.

---

**Scans**

**CT** – **gives a series of cross-sectional images of the body which shows the size of the tumour and its location.** You lie on a bed which slides slowly backwards and forwards through a doughnut shaped machine.

**MRI** – **the best type of scan for detecting liver lesions and to establish whether they are cancerous.** You lie on a bed which then slides into a tunnel about 1.5 metres long. The procedure is painless but the scanner is quite noisy so some departments will provide earplugs.

**PET** – **uses low-dose radioactive glucose solution which is injected into a vein, usually in your arm.** You then rest on a bed which slides into a doughnut-shaped scanner. The scan shows cancerous cells as bright spots where the glucose is taken up more rapidly than normal cells. A PET scan can show the difference between scar tissue and active cancer tissue.
Your treatment pathway

You will continue to have regular follow-up appointments and tests to monitor your condition and see how you are feeling generally. These appointments give you the chance to discuss how you are coping, or any concerns that you might have. At any time in your treatment pathway, you can talk to your team about stopping treatment or having a break from treatment. You will still be monitored regularly by your specialist team who will work together with you, and your family, to support your wishes, making sure that any new symptoms are investigated and treated as they arise.

Clinical trials
Your surgeon or oncologist may invite you to join a clinical trial at certain points during your treatment. A clinical trial is a research study that tests a new treatment to prove it is safe, effective, and possibly better than the standard treatment you may already have had. Your healthcare team can help you review all clinical trial options that are open to you. For further information please see our ‘Clinical Trials’ factsheet.

Second opinions
If you feel you would like further reassurance that you have been offered the best possible treatment plan and all potential alternatives have been considered, you have the right to ask for a second opinion from another specialist at a different hospital. This can be done through your GP.

A second opinion may not necessarily change the outcome in terms of which treatment you have. It may also delay the start of your treatment, while you wait for an appointment with the new consultant. However, it might help to clarify things for you.
Barbara, aged 57

“I was diagnosed with advanced bowel cancer following a routine visit to donate blood in September 2014, where I was found to be severely anaemic. From my first visit to the GP to having a right hemicolectomy took less than six weeks. The CT scan had revealed ‘something’ on my liver, which an MRI scan confirmed as a metastasis, so I wasn’t eligible for the clinical trial I had been scheduled to take part in. A considerable number of lymph nodes were affected, so I had four cycles of xelox chemotherapy before my liver resection, and another four rounds afterwards. My status is ‘disease free’, although I am aware that there is a 50% chance of recurrence. I am doing all I can to mitigate this by lifestyle changes. I weigh 3 stone less than I did a year ago, am aiming to walk 10,000 steps a day, have virtually given up alcohol and have a more plant-based diet. One of the reasons I think I have recovered so well from surgery has been the Enhanced Recovery After Surgery (ERAS) programme, which I followed in both hospitals, and which gave me a chance to take some control over my treatment and recovery. Overall I feel I have had ‘gold standard’ treatment from my three consultants and two hospitals, and am starting to allow myself to feel a little bit optimistic about the future.”

“One of the reasons I think I have recovered so well from surgery has been the Enhanced Recovery After Surgery (ERAS) programme, which I followed in both hospitals, and which gave me a chance to take some control over my treatment and recovery.”
Limitations of treatment

When bowel cancer moves to other tissues and organs in the body it is less likely to be curable, however there are various treatment options that can be explored either through known conventional treatment or through clinical trials. There have been major advances in liver surgery and treatment over the last few years.

For people with metastatic disease that is confined to just a small area in the body, it is now possible to talk about ‘curative’ treatment plans and to give hope for a life free from bowel cancer. However, for some people the most likely scenario is that treatment will be described as ‘palliative’ – a treatment plan which provides relief from symptoms and aims to enhance quality of life for as long as possible.

This does not necessarily mean that time is short. In fact, it is becoming increasingly possible to continue to actively treat bowel cancer patients with metastases, for as long as they remain well enough to cope with the treatments available, and want to do so.

Generally your treatment options depend upon the number of secondary cancers and which organs are affected, what treatment you have already had and your individual health and fitness. Central to all of this is your view on having and continuing with treatment. One option is to have no treatment, and this is down to patient choice once all options have been fully discussed with you. You may want to talk this through with your partner, a relative or friend and maybe bring them to your appointments, however some people find it easier to have this discussion on their own. It is important you can say how you feel.

There are always going to be some risks associated with any cancer treatment. Your consultant and your specialist nurse will be able to explain what each treatment might involve, and help you understand what short and long term side-effects to expect.

For more information please refer to our ‘Palliative Care’ factsheet.
Patient story

Bob, aged 69
“My original diagnosis was of quite an advanced bowel cancer between the rectum and sigmoid colon, and I had my first round of surgery more than 13 years ago now. I remained clear of cancer for three years until one of my blood tests showed a cancer marker (CEA) to be raised. After further blood tests and a CT scan, I was diagnosed with secondary bowel cancer in the liver.

I was treated via a Hickman line with chemotherapy (5FU and oxaliplatin) with a view to shrinking the two tumours to allow for surgery. The surgery took place at a specialist centre with the intention of removing the remaining cancer. This, however, was unsuccessful because follow-up scans showed that the re-grown liver contained signs of another tumour. I had further scans (CT, PET and colonoscopy) to check the cancer hadn’t spread further in my body, and had surgery seven months later. This was followed by more chemotherapy (5FU and irinotecan) for a further three months, and since then I have remained in remission as confirmed by regular blood tests and scans.

The most important source of support through living with cancer has been my wife. My biggest fear and worry was leaving her unprovided for so one of the first things I did after diagnosis was to put all my financial affairs in order. I had tremendous support from friends and acquaintances which was a real boost to my own positive attitude.

My surgeon and his registrar were supportive too, and were able to answer my incessant questions in a satisfactory and timely fashion.”
When cancer comes back in the bowel, you may be offered surgery to remove it. This recurrence may mean that there are cancer cells somewhere else in the body, although it may be some time before they become large enough to show up on a scan, or cause symptoms. You are likely to be offered a PET scan to highlight any active disease (see page 5).

Your surgeon may discuss the option to remove the new tumour in your bowel. He/she will either join up the cut ends of the bowel or may bring the opening out on to your abdomen to form a stoma. There are more details of bowel surgery in our ‘Bowel Surgery – ‘Your Operation’ booklet.

If the PET scan shows the cancer has spread elsewhere, your multidisciplinary team may discuss the option of chemotherapy treatment before any surgery is considered.

If there is a risk that it will block your bowel completely (which would make you feel bloated, sick, constipated and/or in pain) the surgeon may unblock your bowel by putting in a tube called a stent. This may be considered if major bowel surgery is not an option. This stent is inserted through your anus (back passage) and remains in place to hold your bowel open.

There are more details in our ‘Colonic Stenting’ factsheet.
Treatment options: chemotherapy

Sometimes your multi-disciplinary team will decide that surgery is unlikely to be an option for you now, but could be an option at a later date. Combinations of chemotherapy and targeted therapies are increasingly successful ways of treating a greater number of patients with metastases in the liver and elsewhere, before and/or after surgery.

The chemotherapy drugs for metastases are the same as the ones used to treat cancer in the bowel (colon or rectum). They can be given on their own, in different combinations at the same time, or one after the other. This will depend on current national guidelines and any clinical trials that your Hospital Trust may be involved in. You may recognise some of the names of the individual drugs: oxaliplatin, irinotecan, 5FU and capecitabine.

These are some of combinations currently being used:

- **FOLFOX** – 5FU and leucovorin with oxaliplatin
- **FOLFIRI** – 5FU and leucovorin with irinotecan
- **FOLFOXIRI** – 5FU and leucovorin with both oxaliplatin and irinotecan
- **CAPOX** or **XELOX** – capecitabine with oxaliplatin
- **CAPIRI** or **XELIRI** – capecitabine with irinotecan
- **DeGramont** – 5FU and folinic acid

**Raltitrexed** may be prescribed instead for people who cannot tolerate 5FU or who have a previous history of coronary heart disease.

**Leucovorin** (folinic acid) is not a chemotherapy drug, but when used in combination with 5FU it has been shown to increase its effectiveness.

Please refer to our ‘Bowel Cancer Treatment – ‘Your Pathway’’ booklet for more information about these drugs.
Targeted therapies, also known as personalised or biological therapies, are an exciting development in the treatment of advanced cancer, as it may be possible to destroy cancer cells without damaging other, healthy cells thereby helping to reduce possible side-effects. These therapies may stop cancer cells from dividing and growing; seek out cancer cells and kill them; encourage the immune system to attack cancer cells; or alter the growth of blood vessels into the tumour.

Some of these drugs are grouped according to the effect they have, for example, drugs that block cancer cell growth (anti-EGFR) or drugs that block the growth of new blood vessels to the tumour (anti-VEGF-A). Some of these drugs can also be called ‘monoclonal antibodies’ because they target specific proteins on cancer cells. Targeted therapies are usually given in combination with other, standard chemotherapy treatments.

RAS and other biomarkers
Scientists now understand that bowel cancer starts when the genes, or ‘blueprint’, of individual cells in the bowel are damaged or changed in some way. Gene testing gives your oncologist the information he/she needs to decide if adding a targeted therapy to your chemotherapy drugs may work for you. It does not affect the way your chemotherapy is prescribed. Gene testing may also avoid giving you treatments which are unlikely to work.

Currently the most common test looks at the RAS family of genes (KRAS and NRAS). This will confirm whether your tumour has either a normal RAS gene, known as ‘wild type’, or a ‘mutated’ RAS gene. If your bowel cancer has spread to other parts of your body, then you should have a RAS test done.

The biomarker tests are done on cancer cells from the tumour or biopsy that was removed during your operation or endoscopy. Even if the test is not done immediately, samples of the cancer will have been preserved and stored in the hospital laboratory, so can be done at a later stage.

Your medical team will arrange for the tissue sample to be tested. The results typically take 5-14 working days to come back to your oncologist.
Up to 50% of bowel cancer tumours tested have normal, ‘wild type’ genes which may respond to the targeted therapies cetuximab (Erbitux) or panitumumab (Vectibix).

The other 50% of bowel cancers have one of the genes mutated and patients with these gene mutations are unlikely to benefit from these drugs. If this is the case, you may still benefit from drugs which work in a different way, such as bevacizumab (Avastin).

Treatment options

Unfortunately, most of the targeted therapies licensed to treat advanced bowel cancer are not approved by NICE (National Institute for Health and Care Excellence) for routine use on the NHS, as they are deemed not to meet the cost effectiveness threshold.

The consequence of this is that access to these therapies will depend on where you live in the UK. Different rules apply to patients in England, Scotland, Wales and N. Ireland. Your oncologist will discuss this with you.

For the current status of the availability of targeted therapies in the UK, please refer to our website: beatingbowelcancer.org/access-targeted-therapies or call our Nurse Helpline for more information.
Liver metastases

When bowel cancer spreads to the liver, you should automatically be referred to a specialist liver consultant. His/her opinion will provide important input into your multidisciplinary team discussion when they consider your treatment options.

Where is the liver?
If you place your right hand over the area under your ribs on the right side of your body it will just about cover the area of your liver. The liver is connected to the first part of the small bowel (duodenum) by a tube called the bile duct. This duct takes the bile produced by the liver to the intestine.

What does the liver do?
The liver is the largest gland in the body and has many functions, which include processing digested food and producing bile which is an important digestive juice. The liver breaks down the body’s waste products, which would otherwise build up to toxic levels. Many medicines are modified in the liver or, having had their desired effect, are broken down and removed.

Additionally, the liver has an amazing ability to repair itself in a way that most organs (the heart, lungs and kidneys for example) do not. Following surgery your liver will re-grow to its original size in about three months.
When bowel cancer spreads to the liver

The liver is made up of the larger right lobe and a smaller left lobe. It can also be thought about as eight different segments, based on its internal blood supply.

Liver metastases are very common in people with advanced bowel cancer, but they are also becoming increasingly easier to treat. This is done using a combination of treatment options which can in some cases provide a real chance of long term survival from bowel cancer. The outcomes of treatment will depend on the pattern of spread of the disease, the number of metastases found and their location in the liver.

Conditions that can make liver metastases more difficult to operate on include:

• tumours that sit close to major blood vessels
• lots of small metastases scattered across both lobes of the liver
• underlying problems with the general condition of the liver, including changes as a result of previous treatment.

If this is the case you may be considered for other specialised treatments (please see page 19).

The liver multi-disciplinary team
In addition to your colorectal team, the members of your liver multi-disciplinary team are likely to include:

• **hepato-biliary surgeons**: surgeons who specialise in operations on the liver.
• **hepatologists**: doctors who specialise in diagnosing and treating liver disease.
• **hepato-biliary nurse specialists**: nurses who have specialised skills in caring for patients with liver cancer and/or liver disease.
The liver is an amazing organ and has the ability to re-grow, even if a large part of it is removed. The surgery (known as liver resection) is usually done in specialist hospitals where the hepato-biliary teams have a lot of experience and skill at performing these operations, and in caring for patients after the operation.

This might mean that it is not available in your local area, and you have to travel some distance to have the surgery. If this is the case, then it may also affect how you feel about having the operation. It may help to discuss this fully with your family and maybe with other patients that may have been through a similar experience. This is something that can be arranged through the Bowel Cancer Voices network by contacting the charity.

For some people, the operation is straightforward and can be done immediately. Other people may need to have some chemotherapy or other treatments first, to try and shrink the tumours, making them easier to remove.

Alternatively, it may be that you need to have another procedure, called portal vein embolisation, done first, to encourage a new healthy segment of liver to grow before you have the main surgery; this avoids the risk of having to take away too much of the liver in one operation.

In some cases, it may be possible to have surgery which will remove both sides of a diseased liver, one lobe at a time. This can be done in two separate operations scheduled several weeks apart, provided you are well enough to have the surgery and that there are no other signs of active disease in your body.

Surgery is scheduled in this way because your doctors want to be sure that there is a good chance of a successful outcome in terms of your quality of life after the surgery, and your long-term survival. It is also possible to have repeat surgery if your liver metastases recur. This and other treatment options will be discussed at the MDT meeting.
The operation
Liver resections are usually performed during ‘open’ surgery through an incision in your abdomen, and can take between three and seven hours. It may sometimes be possible to remove liver metastases by keyhole (laparoscopic) surgery, although this may not be an option if the size and/or number of tumours would make the operation too complex to be carried out safely in this way. There may also be times when laparoscopic surgery is started, but the surgeons find that they need to convert to open surgery to ensure they remove all the visible cancer cells.

This is a major operation and you will normally be admitted to a high dependency unit or liver intensive therapy unit for a day or so following surgery. This allows you to be monitored closely immediately after the operation. You would normally expect to stay in hospital for five to seven days following liver surgery.

In some cases you may be advised to have further chemotherapy after liver surgery.
Patient story

Hazel, aged 63
“Bowel cancer – I had never heard about it, let alone considered I could get it at the age of 48! I had a few bouts of diarrhoea which I put down to food intolerance, but after six weeks I visited my GP. He thought it was nothing to worry about, but told me to come back if necessary. After three visits I had to insist that I wanted a proper check-up with a consultant and this resulted in a colonoscopy.

I had bowel cancer. An operation revealed an advanced Dukes C (Stage 3) tumour. Needless to say I and my poor family were devastated. I put on a brave face, but knew the statistics for survival were not particularly good and secretly thought I was going to die.

Six months of 5FU chemotherapy saw me through to a full body MRI scan, by which time I was super positive and really thought I would be told that all was well, but … really bad news … metastases were found in my liver. I had surgery to remove half my liver, which left me feeling very weak, and in fact it took me three months to feel really well again. I had regular scans to check that no more lesions had appeared. I did have intermittent cramps in my bowel for a few years after the surgery, but no cause was found and these eventually went away.

15 years later I am very well and have been able to watch my family blossom! I have a fabulous granddaughter and a grandson due in three weeks (I once thought this was something I would miss!). I just want to say, stay positive, don't let it get you - I had superb treatment from my consultants, but I can't be the only one to be lucky!”

“15 years later I am very well and have been able to watch my family blossom!”
Specialised surgical treatments for liver metastases

Your surgical team will take several factors into account before considering you for these types of treatment, including your general health, how quickly your cancer came back after previous treatment, and whether you have metastases elsewhere.

The treatments may be done under sedation, local anaesthetic or general anaesthetic. You may have some pain, a high temperature or sickness after the treatments.

The treatments below are only available in specialist centres and you may be offered them as part of a clinical trial.

Radiofrequency ablation (RFA)

RFA treatment to the liver is given under general anaesthetic. The surgeon/radiologist uses specialist scanning equipment (ultrasound /CT) to guide a probe (1-2mm across) into the tumour, where high frequency electrical currents are passed. This creates heat that destroys the cancer cells. The heat can be varied depending on the size of the tumour, and the time taken to treat each tumour is usually about 10-15 minutes.

RFA is most often considered:

- if you have more than one tumour in your liver
- if the position of a tumour makes it difficult to operate (for example near a major blood vessel)
- if you have other conditions that make surgery difficult.

Research shows that RFA works best on tumours less than 3cm across, but it can be used on larger tumours. You can have RFA treatment more than once.

Some patients experience side-effects after treatment, which can include:

- discomfort/pain where you’ve been treated (for up to two weeks)
- feeling generally unwell for a few days, perhaps with a raised temperature
- infection, bleeding or organ damage (this is rare).

Most people go into hospital the night before the treatment, and go home the day after. You will be given painkillers to take home and you will usually have another CT scan six to eight weeks later to see how effective it was.
Selective internal radiation therapy (SIRT)
This is a relatively new treatment which involves millions of very tiny ‘beads’ (microspheres) being injected into the major blood vessel that supplies the liver. Each bead is small enough to reach the tiny blood vessels in and around the active tumours, where they give out concentrated doses of radiation specifically to these tumour cells. The treatment is then active within the liver for about two weeks of effective, continuous treatment.

SIRT is suitable for patients where either the liver is the only site or major site of disease. There are a number of other factors that have to be considered before it can be offered as a treatment option. Most importantly, your liver needs to be otherwise in good condition and working properly. This is usually determined by simple blood tests.

Selective internal radiation therapy is done in two stages. The first step is to prepare the liver for the treatment and having a fine tube (catheter) inserted into a blood vessel in your groin and passed up to the blood vessel which carries blood to the liver. You will also receive a small amount of radioactive dye to check the blood flow between your liver and lungs. The vessels in your liver will be blocked to stop the microspheres travelling elsewhere in your body.

• The tiny beads are infused into a major blood vessel in your groin and travel to the liver.
The second step involves receiving the microspheres, also done via the tube in your groin - usually one to two weeks later. This treatment involves staying in hospital for one to four days. Side-effects of treatment include abdominal pain and/or nausea which will normally ease after a short time with or without medication. You may also develop a mild fever for up to a week, and feel tired for several weeks after having the infusion. You may need to take painkillers or other medicines to prevent or reduce these side-effects.

SIRT is not used routinely in the initial treatment of advanced bowel cancer: chemotherapy and biological (targeted) therapy are the current mainstay treatments of choice.

The results from the SIRFLOX Study (which studied more than 500 patients) indicate that when SIRT is given to advanced bowel cancer patients in combination with chemotherapy, it can halt the growth of tumours in the liver for an additional 8 months when compared to the current standard treatment.

Currently only limited numbers of patients in the UK who have exhausted all other treatment options, are eligible for SIRT. The results from the SIRFLOX Study could open the door for use earlier in a patient’s treatment.

SIRT is now available at ten NHS hospitals in England and the Royal Infirmary in Edinburgh. Details are on our website.

Patients in South Wales can be treated at the University Hospital Wales in Cardiff and patients from North Wales can be treated at The Christie in Manchester.

- Tiny beads block the blood vessels supplying the tumour.
Specialised surgical treatments for liver metastases

**Microwave ablation**
This is a newer ablative technique that uses microwave radiation to heat and destroy cancer cells. The indications for its use are similar to radiofrequency ablation described on page 18. The advantages are that the technique is quicker than RFA: it only takes three minutes on average to treat a small tumour. This technique allows multiple lesions (tumours) to be treated in the same session. This technology is currently only available at a small number of centres in the UK.

**Hepatic artery chemoembolisation**
For this treatment, a thin plastic tube is inserted into a blood vessel in your groin and pushed gently upwards until the tip is in the artery that feeds your liver. A chemotherapy drug mixed with an oily liquid is injected into the liver and the tube is then removed. The chemotherapy stays in contact with the tumour for several hours. The treatment can take up to a couple of hours.

**Cryotherapy**
Also known as cryosurgery, this treatment destroys cancer cells by freezing them. It is suitable for tumours up to 4 cm. It may be carried out as part of open or keyhole surgery. The surgeon inserts a probe through a small cut in the skin and into the tumour. The probe creates an ice ball which aims to destroy the cancer cells. Sometimes the frozen area is thawed for up to 15 minutes, then re-frozen. You may have a short stay in an intensive care unit and then two days in a specialist liver ward after this treatment.

**Laser therapy**
This is also known as laser ablation. A very high powered beam of light is used to destroy cancer cells by heating them to high temperatures. A flexible tube which carries the laser light is inserted through the skin over the liver and into the centre of each tumour, guided by a CT scan or ultrasound scan. Laser therapy is used on tumours of up to 5cm in size. The treatment takes up to 15 minutes and you can usually go home a few hours later. The treatment can be repeated if the tumours grow back.

**Alcohol treatment**
This is another treatment to destroy small liver tumours whereby sterile alcohol is injected directly into the tumours, guided by a CT scanner or ultrasound scanner. You may feel intoxicated after the treatment and you will have to stay in hospital for a few hours. This treatment can be repeated if the tumours grow back.
Patient story

Jane, aged 50

“I made numerous visits to my GP with the classic symptoms of bowel cancer over a 10 month period. I was eventually referred for a sigmoidoscopy which revealed a large tumour. I had bowel surgery and 45 lymph nodes removed in 2011 followed by six months of oxaliplatin and capecitabine. During a follow up scan a small lesion on my liver was found to be cancerous and I was scheduled for a liver resection in 2012. Whilst I struggled tremendously with my bowel resection, I felt surprisingly well when coming around from my liver surgery.

In 2014, after a series of raised CEA blood results and another hot spot on my CT scan, I was referred back to my specialist Hepatobiliary Centre for a second liver resection. My consultant surgeon came to see me and told me he’d been able to remove the whole of the tumour from my liver but he’d also had to remove my gallbladder and performed a partial resection of my duodenum. I started another six months of chemotherapy, this time I was given irinotecan and 5FU. I’m now back into the regular routine of three monthly scans and blood tests.

I admit I did not have the healthiest of lifestyles in the twenty years prior to diagnosis. I was a good few stones heavier four years ago and I realised when recovering from my first surgery that I needed to encompass a different attitude to both food and exercise.

I have found that since my treatment there are a number of food groups that I can't tolerate at all, and nausea and fatigue are a daily occurrence. I have an appointment with a specialist dietician coming up soon.

Exercise has played an important role – I’ve managed to get myself to a level of fitness which aids both me and the medical professionals supporting me. That feeling of being physically stronger has also benefitted me mentally and emotionally – I feel far more confident in my ability to tackle whatever life throws at me now”.
Lung metastases

The lungs are the organs which allow us to breathe. As blood passes through the lungs oxygen is replenished and carbon dioxide is cleared. All the blood in the body (about five litres) passes through the lungs in about a minute and bowel cancer cells in the blood stream are likely to lodge in the lungs.

It is unusual to have lung metastases from bowel cancer in isolation and it is more usual that liver metastases will grow first before lung metastases develop.

Lung metastases generally cause no symptoms. Metastases from bowel cancer can grow as one or two isolated tumours or scattered across both lungs. The options for treatment for lung metastases will depend on the size and position of these tumours, especially in relation to how close they are to the large blood vessels that supply the lungs.

Lung metastases are most often detected during routine scans. At this point they are not confirmed as cancerous and may be referred to as deposits, nodules, lesions, growths or spots. They cannot be confirmed as metastases until a biopsy of the area has been taken or they are seen to reduce in size after treatment.

1 Windpipe (trachea)
2 Lungs (divided into lobes)
3 Heart
4 Major blood vessels
When bowel cancer spreads to the lungs

Specialists and tests
Metastases in the lungs are usually diagnosed using a combination of CT and PET scans (see page 5). This combination of specialist imaging techniques can identify where the cancer is active, and which parts of the lung are involved.

Lung metastases do not usually give you any symptoms. However, your specialist team will want to know if you experience any unexplained symptoms that do not respond quickly to treatment.

Patients with lung metastases from bowel cancer may be offered surgical removal if spread is limited to the lungs, or if there is also spread to the liver and it has been, or can be treated.

The treatment is likely to involve a range of different techniques, and will depend on your general health and your personal view on undergoing this treatment.

If you are diagnosed with lung metastases.
Your case should be referred to a specialist multidisciplinary team for thoracic conditions as part of your treatment plan. This should be done to ensure that you are offered the best possible treatment options as part of your overall bowel cancer pathway.

This specialist team might include:
- thoracic surgeon
- clinical oncologist
- interventional radiologist
- lung clinical nurse specialist
- respiratory physician.
Treatment options: lung surgery

Thoracic surgeons are now able to use advances in keyhole (thoracoscopic) surgery techniques, as well as more traditional ‘open’ surgery procedures to remove lung metastases successfully. They are also becoming increasingly skilled in using specialist new equipment that can improve the safety and precision of the surgery, minimise bleeding and post-operative complications, and speed up recovery time for patients.

Surgery may be an option for you, if the size, position and grouping of the tumours are in a part of the lung that is easily accessible, and where the surgeon can reach them safely without damaging any major blood vessels or the main airways into the lung.

For example, it may be possible to take a small section of lung tissue – called a ‘wedge’ – from the affected lung to remove one or two isolated metastases without losing too much of the function of the remaining lung.

If your metastases have affected a larger area of the lower parts of the lung, it may be that your surgeon recommends removing a larger part of the lung – this is known as a partial lobectomy.
When metastases affect both lungs
If you have metastases in both lungs, it may also be possible to treat them, one lung at a time. If necessary, a combination of treatments may be used to ensure that the disease is treated as effectively as possible. You may be given the choice to explore chemotherapy options – with or without targeted (biological) therapies (see page 12) or you may be offered a combination of chemotherapy and specialist radiotherapy or heat treatments (see page 20). The aim of these treatments is to reduce the size and/or number of active tumours in the lungs, prior to surgery, to make them easier to remove.

What to expect after surgery
After surgery, you will have one or more drains in your chest to drain away any blood or fluid collecting around the lung and to help the lung to re-inflate again after the surgery. You may have a cough or some shortness of breath initially after your operation, but this should settle as your wounds heal. It is likely that you will have some pain initially, but keyhole surgery techniques help to reduce the severity of post-operative discomfort and pain, which can be managed effectively with a combination of painkillers, regular deep breathing and gentle exercise with physiotherapy.

If you are having keyhole surgery to remove the metastases in your lung, you are likely to be in hospital for two to four days. Open surgery tends to be a bigger operation and you are likely to be in hospital for up to seven days, with at least another few weeks at home to recover. You will be advised to avoid any strenuous exercise or heavy lifting for at least six weeks.
Other lung treatment options

There are some new treatments becoming more widely available on the NHS as well as in private healthcare clinics. So far, there is limited evidence of their long-term benefits to patients; however, it might be useful to discuss them with your medical team.

**Stereotactic radiotherapy**
*(cyberknife/gammaknife)*
This treatment works by delivering many individual beams of low dose radiation, directly into the tumour. These are aimed very precisely, to deliver the treatment from all sides at the same time.

The treatment can be delivered in just a few, longer treatment sessions, or in one single treatment – sometimes called radiosurgery. This technique spares the surrounding healthy tissue, reducing the risk of long-term damage or complications. It can also be used for liver and brain metastases.

**Microwave ablation**
Microwave ablation of lung metastases uses heat to destroy cancer cells. A needle called a probe is inserted into each tumour, using imaging to guide it. The treatment can be repeated if there is more than one tumour, or for large tumours.

Clinical trials suggest it works on about 50% of lung metastases with no sign of them coming back within 9 months. There are potential risks associated with this procedure including air or blood in the chest cavity and fistula formation.

**Irreversible electroporation (IRE)**
IRE aims to destroy cancer cells using short, repetitive, non-thermal high energy pulses of electricity, with less damage to nearby healthy tissue, such as major blood vessels, than other types of treatment.

Special needles are then inserted through the skin in and around the tumour. Short pulses of electricity fire between the needles for several minutes. The needles may then be moved and the process repeated until the whole tumour and a small area of surrounding tissue is treated.
Patient story

Bill, aged 50

“After my initial keyhole bowel surgery seven years ago I was feeling very optimistic, but when diagnosed with rapidly spreading secondary liver cancer and the prognosis from my oncologist I was in a state of shock. The medical team explained they were offering the best course of treatment available and this did provide some reassurance. I was put on a course of oxaliplatin and capecitabine, which I found to be physically and mentally taxing.

I tried various ways of coping with this treatment, eating simple foods to try and combat the nausea. I also tried acupuncture and yoga classes, which did help me cope to a point. Having friends I could reach out to – and rant off to every once in a while – also provided a cathartic release.

Before my operation I tried to get as fit as possible, setting myself daily physical targets (long walks and cycling), to help distract me from the impending surgery. After my operation, I found it took at least a month to get back to a level of reasonable activity. But even when I was incapacitated I still tried to set myself mental challenges (reading/small tasks on my computer) and simple physical goals.

18 months later, some lesions were found on my lungs and I had surgery to remove these. For some reason I was more annoyed than stressed about these lesions. The recovery was a lot quicker from this surgery - a few weeks for the lung to fully reinflate and then I was back to walking 3 or 4 miles a day.

Initially I had six monthly scans, but this is now annual and should move to biennial, I try to eat healthily, minimum processed foods, avoid sugar and zero dairy/alcohol. This is probably one of the most stressful and daunting experiences I have ever lived through, but I’ve found it has made me mentally stronger, giving me a new perspective on life. If your medical team are offering you this course of treatment I would say hang in there; it’s tough but they are providing you with the highest probability for survival.”
All the organs in your abdomen are covered with a membrane called the peritoneum, which coats the organs like cling film. When bowel cancer grows through the bowel wall it can spread through the lymph glands and on to other organs such as the liver or it can spread in the peritoneum.

Cancer cells can break off from the main tumour and escape into the abdomen, implanting in the peritoneum on the surface of the organs and tissues that are contained there. Any organ in the abdomen and pelvis can be affected, but some tissues are particularly sensitive to this process. These are the omentum (fatty tissue between the stomach and the colon), the ovaries, the surface of the liver and the gutters beside the bowel above the pelvis.

Sometimes the spread involves tiny seedlings, widely distributed on the surface of the organs and bowel wall.

The presence of peritoneal metastases does not always cause symptoms and it is more likely to be picked up during your routine tumour marker blood tests and CT scans. The symptoms can be vague, but are likely to include unexplained pain, change in appetite or unexpected weight loss. On the other hand, weight gain can be caused by fluid collecting in the abdomen as a result of cancer cells that have spread there.

Investigations may include an ultrasound scan of the area, an abdominal CT scan or a PET scan. If a mass is identified in the pelvis, an MRI scan may also be useful (see page 5).

When bowel cancer spreads to the peritoneum, it can be more difficult to treat with standard chemotherapies. The treatment options available will depend on many factors, but in particular which organs are involved and whether those organs can be removed safely without affecting your quality of life.
Treatment options: peritoneum

Cytoreductive Surgery
If there are just one or two isolated metastases in an easily accessible position, your oncology team is likely to ask a specialist peritoneal team to review your case and give an opinion on whether an operation to remove them might be successful. The team may recruit additional specialists if the metastases are affecting the bladder, ureters or kidneys for example, or the reproductive system in women (ovaries or uterus).

The specialist team will evaluate the case as part of a multidisciplinary team (MDT) and identify the extent of the disease, whether all the tumours can be removed or if there is disease that would lead to a poor outcome from surgery. Involvement of the small bowel is particularly difficult to treat.

Sometimes the MDT will be unable to decide whether major surgery is possible or sensible and will undertake a keyhole inspection of the abdomen (laparoscopy) as this can sometimes identify disease that has not been picked up on the scans.

Hyperthermic Intraperitoneal Chemotherapy (HIPEC)
When you have cytoreductive surgery, if the surgeons were able to remove all the disease they will introduce heated chemotherapy fluid (HIPEC) into the abdomen while you are still under the anaesthetic. Different drugs are used depending on whether you had chemotherapy before the surgery. The fluid bathes the affected organs for up to two hours and is then drained out.

This procedure is currently only available at The Christie Hospital, Manchester and North Hampshire Hospital, Basingstoke. There may be further centres in the future, so please check with our Nurse Helpline.

The average length of the treatment for complete tumour removal and HIPEC is ten to twelve hours. The majority of patients recover quickly and are out of hospital within two to three weeks. There are very few side-effects from this chemotherapy as it works on local tissues and not via the blood stream.
Patient story

Chris, aged 32

“I was diagnosed with bowel cancer nearly a year ago. I had experienced some abdominal pain and had been sent away by my GP several times before being offered a colonoscopy. The primary tumour was large and the cancer had already spread to my liver and peritoneum. I was devastated to be told that I was incurable and that the average life expectancy for someone with this diagnosis is just two or three years.

I underwent six months of chemotherapy. It was tough, but I got through it and even managed to continue working part time. The treatment was highly successful, with the primary tumour and liver metastases shrinking significantly and the deposits on my peritoneum becoming difficult to identify on the scans.

My oncologist had mentioned the possibility of cytoreduction surgery and HIPEC early on in my treatment, but cautioned that very few patients were accepted for this procedure. In fact, I was his first to make it all the way to the operating theatre. He made a referral to a specialist surgeon who reviewed my scans then performed a laparoscopy to assess my peritoneum.

HIPEC is unlikely to be offered where cancer has spread to areas other than the peritoneum. However, in my case the operation was combined with a resection of the small remaining tumour in my liver. This wouldn't have been possible if the liver metastases were inoperable.

The operation is a major procedure with an expected stay of 3 weeks in hospital. The specialist colorectal nurse was fantastic at answering my questions. I was operated on for about 8 hours by four surgeons (including the liver surgeon) and kept sedated until the next day. As well as removing the affected part of my bowel and liver, the operation also involved removal of the omentum, stripping affected surfaces of the peritoneum, followed by the chemotherapy bath.

My recovery was challenging at times, but faster than expected. In the end I spent just under two weeks in hospital, including a few (pre-planned) nights in intensive care. As I write this, I am five weeks post op and feeling much better, though not quite back at work. The truth is that the future for me remains uncertain. But that in itself is a big improvement from where I started. As my oncologist put it, this treatment is designed to give me the best possible chance of long-term survival.”
While it is much less common, it is possible for bowel cancer to spread from the bowel via the blood stream or lymphatic system to other parts of the body such as the brain or bones. In the same way as in other areas of the body, the cancer cells embed themselves into the surrounding tissue and can start to grow there, causing swelling which then starts to press on other sensitive areas. This can lead to unexplained symptoms, including pain, restricted movement and/or changes in levels of energy and how well you feel generally.

Brain metastases are rare in bowel cancer patients. They develop later in the course of the disease, and usually after the cancer has spread to other organs. Due to improved treatment, more and more people are living with spread of bowel cancer to the more common areas, such as liver and lungs. This may explain why there appears to be an increasing incidence of brain metastases from bowel cancer.

Current chemotherapy drugs are not particularly effective for treating tumours in the brain, and so other treatments are usually considered first. Surgery to remove the tumour/s (neurosurgery) or radiotherapy to shrink them may be a possibility, depending on their number and position.

If you are diagnosed with brain metastases, your case should be forwarded on to the neurology multi-disciplinary team so that the best treatment options can be considered before further discussion with you.
Further support

Nurse advisors at Beating Bowel Cancer
Whilst you will receive all your medical support and help from your healthcare professionals, you may also like to contact the charity to talk to a nurse advisor, or receive further information about any aspect of your disease.

Patients, and their families, contact us at every stage of their bowel cancer journey, but many find us of particular help and comfort when they are having a break from treatment, or have finished treatment and are no longer receiving that day-to-day support from the hospital. Our contact details are on the back cover.

Patient to patient support
The charity also has a unique patient to patient network for people with bowel cancer and their relatives. We can put people in touch with each other, by phone or email, matching them by bowel cancer stage or treatment received. Talking to someone else who has been through a similar experience can be hugely reassuring. You can also receive support through our patient forum beatingbowelcancer.org/forum

Other useful contacts

NICE Guidelines
The latest guidance from the National Institute for Health and Care Excellence on the management of colorectal cancer can be read at:
W: www.nice.org.uk/guidance/CG131/informationforpublic

Information on clinical trials:

CRUK
W: www.cancerresearchuk.org/about-cancer/find-a-clinical-trial

UK Clinical Trials Gateway
W: www.ukctg.nihr.ac.uk

Gary Logue Colorectal Nurse Awards
These awards were set up in memory of our nurse advisor, Gary Logue, who passed away in 2014. Bowel cancer patients are warmly invited to show recognition of the fantastic work that nurses do by nominating their colorectal cancer nurse specialist for an award. Each year, two nurses will receive £500 each towards their personal development.

Please visit beatingbowelcancer.org/nurse-awards and tell us why your nurse deserves this special recognition.
Support our work

We provide practical and emotional support
• We provide specialist support and information to anyone affected by bowel cancer.
• We run the UK’s only nurse-led specialist helpline for bowel cancer. Patients call it a ‘lifeline’ and often build up long term relationships with our nurses over many years.

We campaign for the highest quality treatment and care
• Everyone affected by bowel cancer, no matter who they are or where they live, should get the best possible support, care and information. We campaign nationally and locally to make sure Governments and health services do better by providing the highest quality care and treatments, and by making beating bowel cancer a priority.

We bring people with bowel cancer together
• Bowel cancer affects people physically and emotionally and a problem shared can make a world of difference.
• We connect people through the power of our website, social media and major events such as our Patient Days.

We raise money to fund our vital work
• We need you to help us continue our work that provides such vital support for people with bowel cancer.
• We are a charity that relies entirely on voluntary donations and gifts in Wills and by giving a donation you will help fund a range of vital services that give people with bowel cancer help, hope and reassurance.

We promote early diagnosis
• 9 in 10 people with bowel cancer will survive if they’re treated early. That’s why we work tirelessly through innovative campaigns to promote greater awareness of symptoms, and the key message that bowel cancer can be beaten.

Please join us and together we can beat bowel cancer.

To make a donation please visit beatingbowelcancer.org/donate or call 020 8973 0000.
Beating Bowel Cancer is the support and campaigning charity for everyone affected by bowel cancer.

We provide vital practical and emotional help – on the phone, digitally and face to face. We’re proud to run the UK’s only nurse-led specialist helpline for bowel cancer which patients call a ‘lifeline’.

We bring patients together to share invaluable experience and support, through our website, social media and major events.

Our high impact campaigns have led to the introduction of the bowel cancer screening programme, which is helping save lives, as well as new funding and greater patient access to life-changing cancer treatments.

If you have any questions or comments about this publication, or would like information on the evidence used to produce it, please write to us, or email info@beatingbowelcancer.org

Contact our nurse advisors
T: 08450 719 301 or
T: 020 8973 0011
nurse@beatingbowelcancer.org