

## Unit 14: Physiological Disorders and their Care

### Assignment 1: Causes, diagnosis and treatment of disease

#### Introduction:

I am a student nurse at North Manchester General Hospital in the first year of my general adult nursing degree. I have been asked by my Anatomy and Physiology lecturer to produce a report on two different physiological disorders. I have chosen **bowel cancer** and **asthma**. My mother (Margaret, 74) recently recovered from bowel cancer and my father (John, also 74) suffers from asthma.

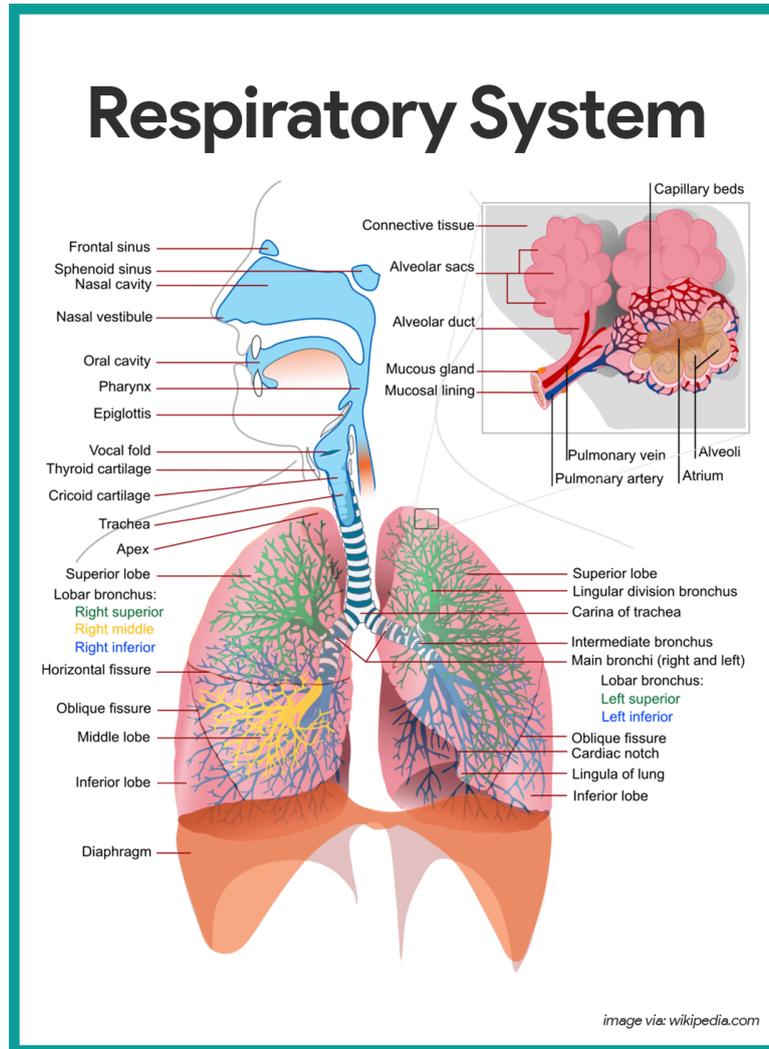
A physiological disorder is an illness that interferes with the correct functioning of the body. This causes a range of symptoms and effects in the body. A disorder affecting the functioning of one system of the body will also have several effects on other body systems as they all interrelate.

**P1: Explain the causes, signs and symptoms of different types of physiological disorders in service users and**

**M1: Analyse the changes in body systems and functions resulting from different types of physiological disorder on service users.**

**DISORDER 1: Respiratory system disorders**

The respiratory system is made up of the trachea, lungs, diaphragm and chest wall.



The purpose of the Respiratory System is to take in oxygen and eliminate waste gases such as carbon dioxide and water. This enables every cell in the body to respire. The respiratory system works very closely with the cardiovascular system and in particular the blood supply of the body.

**Correct functioning of the Respiratory System**

The primary organs of the respiratory system are the lungs, which work to take in oxygen and expel carbon dioxide as we breathe.

The gas exchange process is performed by the lungs and respiratory system. Air, a mix of oxygen and other gases, is inhaled. In the throat, the trachea, or windpipe, filters the air. The trachea branches into two bronchi, tubes that lead to the lungs. Once in the lungs,

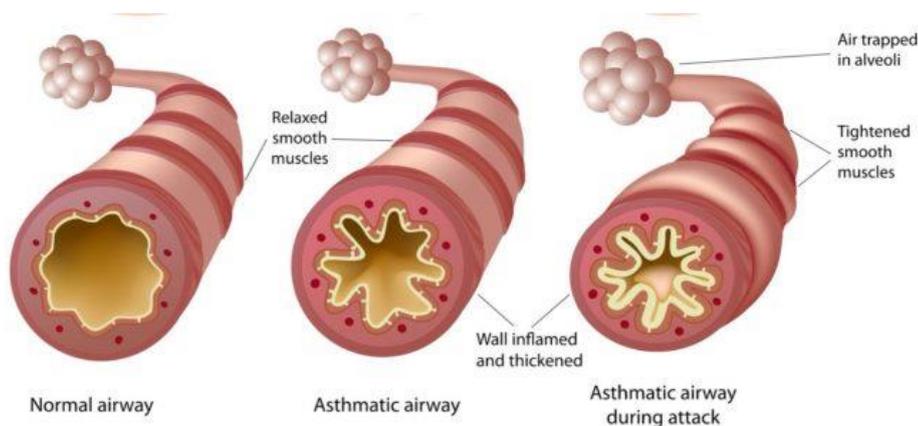
oxygen is moved into the bloodstream. Blood carries the oxygen through the body to where it is needed. Red blood cells collect carbon dioxide from the body's cells and transports it back to the lungs. An exchange of oxygen and carbon dioxide takes place in the alveoli, small structures within the lungs. The carbon dioxide, a waste gas, is exhaled and the cycle begins again with the next breath. The diaphragm is a dome-shaped muscle below the lungs that controls breathing. The diaphragm flattens out and pulls forward, drawing air into the lungs for inhalation. During exhalation the diaphragm expands to force air out of the lungs. Adults normally take 12 to 20 breaths per minute. Strenuous exercise drives the breath rate up to an average of 45 breaths per minute.

## Asthma

Service users who suffer from asthma have very over-sensitive airways whose lining can become inflamed and swollen. The inflammation causes the muscles surrounding the airways to contract, which narrow the airways and make a person wheeze and cough. They can become very breathless and their chest feels very tight. In particular it is the bronchi which narrow. Any substance which causes these effects is called a trigger. The most common triggers for people with asthma are dust, fur, pollen, and smoke. Exercise can also cause an asthma attack, as can very cold or very warm air. Asthma can occur in service users of any age and asthma attacks can be life-threatening. 5.4 million people in the UK are currently receiving treatment for asthma and 1 in 11 children are sufferers. In 2016 (most recent data) 1410 people died from asthma. The NHS spends around £1 billion a year treating people with asthma.

### Signs and symptoms of asthma

The *signs* of a disorder are observable by someone else e.g. the GP. This could be a raised temperature or a rash. The *symptoms* of a disorder are experienced by the individual. In asthma, all patients will experience difficulty breathing at some point. The signs and symptoms of asthma include a tight chest, difficulty breathing, wheeze and a cough. Other conditions can also cause these symptoms, but in asthma they keep returning, are worse at night or early in the morning or seem to happen in response to a certain trigger such as pollen.



An asthma attack can occur suddenly or build up slowly over a few hours or days.

Signs of a severe asthma attack include:

- wheezing, coughing and chest tightness becoming severe and constant
- being too breathless to eat, speak or sleep
- breathing faster
- a fast heartbeat
- drowsiness, confusion, exhaustion or dizziness
- blue lips or fingers
- fainting

## **Causes of asthma**

The exact causes are unknown. People with asthma have swollen (inflamed) and "sensitive" airways that become narrow and clogged with sticky mucus in response to certain triggers. Each individual has their own triggers.

Genetics, pollution and modern hygiene standards have been suggested as causes, but there's not currently enough evidence to know if any of these do cause asthma.

There is however, good evidence to show who is a greater risk of asthma. Environmental, inherited and lifestyle factors all play a part.

Allergies tend to run in families. If there is a history of asthma, eczema, hay fever or other allergies in the family, the patient is more likely to develop asthma. There is slightly more chance of asthma being passed on from the mother than from the father.

A child who suffers from allergies is said to be "atopic". If they have one allergy, they are more likely to develop another, including asthma.

Smoking during pregnancy and around babies and young children significantly increases their risk of developing asthma and other respiratory problems.

If a child was born early (before 37 weeks) and especially if they needed a ventilator they are more likely to develop asthma. A low birth weight can also be a risk factor for asthma.

Bronchiolitis is caused by a virus and affects children under the age of two. It leads to swelling in the lungs and airways. They will find it harder to breathe and will cough and wheeze. Having repeated bouts of bronchiolitis as a young child will increase the risk of developing asthma.

Occupational asthma is a type of asthma caused by certain things found in the workplace, such as chemicals or dust from flour or wood. If a service user has not had asthma before and if their symptoms improve when not at work, they probably have occupational asthma.

Hormones can increase the risk of developing asthma – some women first develop symptoms during or after the menopause.

Pollution can also increase the risk of developing asthma. Children who live near very busy roads, with high levels of traffic fumes and chemicals, are more likely to develop asthma.

## **Other systems affected by having Asthma: Cardiovascular system**

There is a link between having asthma and an increased risk of coronary heart disease or stroke. The link has not been fully researched and explained, but it is thought to be due to the inflammation of the airways and the inflammation of the heart and blood vessels. This

can also be dangerous as the pain and chest tightness of a heart attack can be confused for an asthma attack and be left untreated.

Recent research has also implicated the nervous system having a role in developing asthma. There are a sensitive group of neurons which connect the brain and the lungs, so any injury or abnormality in these nerves (especially the vagus nerve irritation) can stimulate the bronchial hyperreactivity. These nerves not only control the airway muscles but the chest muscles, which intervene in the inspiration and expiration movements. Further research is ongoing.

**D1: Evaluate the impact of physiological disorders on the health and wellbeing of service users (Asthma).**

Impact of asthma on a person’s health and well-being

	<b>Short-term</b>	<b>Long-term</b>
<b>Physical</b>	Asthma can affect a person’s physical health as discussed above, from a slight wheeze right up to a full-blown, life-threatening asthma attack with a period of hospitalisation.	Living with the risk of an attack at any time can be very stressful and sufferers must have their medication to hand at all times. This can make a person very reluctant to do any activity that may potentially trigger an asthma attack. Asthma often interrupts a person’s sleep and this can lead to long term fatigue.
<b>Emotional</b>	An asthma attack can be very frightening. Fear of having another attack can cause a great deal of anxiety in asthma sufferers. Sometimes people feel embarrassed or guilty after an attack.	Some people with asthma feel like a burden as they need more help and support than others. In an Asthma UK survey, two thirds of people with severe asthma said they felt depressed.
<b>Social</b>	Asthma sufferers often have to spend time at the asthma clinic or in hospital after a severe attack. This means they can miss a lot of time from school and work and away from family and friends.	Feeling different and missing key social events such as graduation or birthday parties can lead to a feeling of being different and left out. This can also affect social development in children and adolescents. This can lead to them feeling lonely and isolated.
<b>Intellectual</b>	Time lost at school and work can lead to a lack of intellectual stimulation and a loss of confidence in the ability to learn and develop compared with their peers. This can affect a person throughout their life.	Longer term, a person can fall behind with their progress at school and development at work. This can affect their career and money-earning potential in the long term.

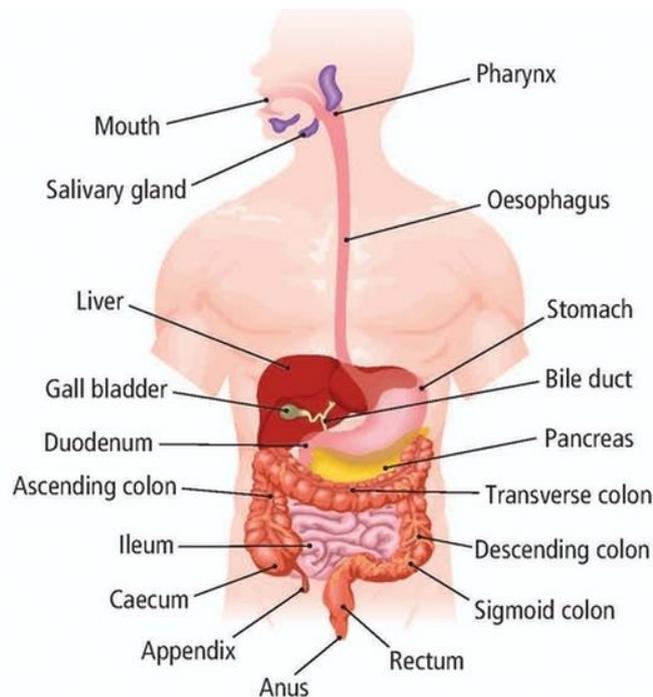
There is no doubt that suffering from asthma can have a huge impact on all aspects of a person’s life. Physically asthma has many effects on a person; mainly on their respiratory

system but also on other systems of the body such as the cardiovascular system. Asthma will affect every area of their lives, as well as decisions about which social activities to do, where to travel and which job a person may end up doing. Remembering to take medication daily and to carry medication and having it to hand at all times is very stressful. Sufferers have increased rates of anxiety and depression. This is a problem, because anxiety can be a trigger for an asthma attack.

Many people with asthma avoid social situations which involve exercise or smoky environments. This can lead to them becoming socially isolated and increase their risk of depression.

## **DISORDER 2: Digestive system disorders**

The digestive system is made up of the gastro-intestinal tract – a long tube from mouth, oesophagus, stomach, small intestine, large intestine, rectum and anus. There are also auxiliary organs which include the salivary glands, pancreas, liver and gall bladder. The purpose of the digestive system is to prepare food molecules, so they can be used by millions of cells in the body.



### **Correct functioning of the Digestive System**

The function of the digestive system is digestion and absorption. Digestion is the breakdown of food into small molecules, which are then absorbed into the body. The digestive system is divided into two major parts:

1) The digestive tract (alimentary canal) is a continuous tube with two openings: the mouth and the anus. It includes the mouth, pharynx, oesophagus, stomach, small intestine, and large intestine. Food passing through the internal cavity, or lumen, of the digestive tract does not technically enter the body until it is absorbed through the walls of the digestive tract and passes into blood or lymphatic vessels.

2) Accessory organs include the teeth and tongue, salivary glands, liver, gallbladder, and pancreas.

The treatment of food in the digestive system involves the following seven processes:

- **Ingestion** is the process of eating.
- **Propulsion** is the movement of food along the digestive tract. This occurs by peristalsis; a series of alternating contractions and relaxations of smooth muscle that lines the walls of the digestive organs and that forces food to move forward.
- **Secretion** of digestive enzymes and other substances liquefies and chemically breaks down the food.
- **Mechanical** digestion is the process of physically breaking down food into smaller pieces. This process begins with the chewing of food and continues with the muscular churning of the stomach.
- **Chemical** digestion is the process of chemically breaking down food into simpler molecules. The process is carried out by enzymes in the stomach and small intestines.
- **Absorption** is the movement of molecules (by passive diffusion or active transport) from the digestive tract to adjacent blood and lymphatic vessels. Absorption is the entrance of the digested food (now called nutrients) into the body.
- **Defecation** is the process of eliminating undigested material through the anus.

## **Bowel Cancer**

Bowel cancer is a general phrase for cancer that begins in the large bowel (intestine). Depending on where the cancer starts, bowel cancer is sometimes called colon or rectal cancer. Bowel cancer is one of the most common types of cancer diagnosed in the UK. Most people diagnosed with it are over the age of 60.

Cancer starts in our cells. Normally, our cells grow and divide as we need them. When old cells die, or cells are damaged, new cells replace them in an orderly way. In cancer, cell division is out of control. Old and damaged cells survive, and new cells are formed when they are not needed. These extra cells can grow into a tumour which is malignant – this means it can spread into other types of tissue and travel around the body. This can cause other tumours to grow in other parts of the body.

There are three main symptoms of bowel cancer:

- blood in the stools – that occurs for no obvious reason or can also occur with a change in bowel habit
- a persistent change in bowel habit – which usually means going more often, with looser stools
- lower abdominal (stomach) pain, bloating or discomfort – that's always caused by eating and may be associated with loss of appetite or sudden weight loss

Most people with these symptoms do not have bowel cancer. Other health problems can cause similar symptoms. For example:

- blood in the stools when associated with pain or soreness is more often caused by piles (haemorrhoids)

- a change in bowel habit or stomach pain is usually the result of something that has been eaten
- a change in bowel habit to going less often, with harder stools, is often due to dehydration

Sometimes, bowel cancer can stop digestive waste passing through the bowel. This is known as a bowel obstruction. Symptoms of a bowel obstruction can include:

- intermittent, and occasionally severe, stomach pain – this is always provoked by eating
- unintentional weight loss – with persistent stomach pain
- constant swelling of the tummy – with pain
- vomiting – with constant stomach swelling

It may cause pain in the abdomen, which causes the person to eat less and lose weight. A bowel obstruction is a life-threatening condition.

### **Causes of bowel cancer**

The exact cause of bowel cancer is still unknown. However, research has shown several factors make a person more likely to develop it.

Most cases of bowel cancer first develop inside clumps of cells called polyps on the inner lining of the bowel. These may then gradually disappear or can develop into bowel cancer.

The main risk factors for bowel cancer are:

- **Age:** Around 1 in 20 people develop bowel cancer. Almost 18 out of 20 cases of bowel cancer in the UK are diagnosed in people over the age of 60.
- **Family history:** Having a family history of bowel cancer in a first-degree relative – a mother, father, brother or sister – under the age of 50 can increase a service user's risk of developing the condition.
- **Diet:** A large body of evidence suggests a diet high in red and processed meat can increase the risk of developing bowel cancer. There is also evidence that suggests a diet high in fibre could help reduce the bowel cancer risk.
- **Smoking:** People who smoke cigarettes are more likely to develop bowel cancer, as well as other types of cancer.
- **Alcohol:** Drinking alcohol has been shown to be associated with an increased risk of bowel cancer.
- **Obesity:** Being overweight or obese is linked to an increased risk of bowel cancer, particularly in men.
- **Inactivity:** People who are physically inactive have a higher risk of developing bowel cancer.
- **Digestive disorders:** Some conditions affecting the bowel may put the person at a higher risk of developing bowel cancer. For example, bowel cancer is more common in people who have had extensive Crohn's disease or ulcerative colitis for more than 10 years.
- **Genetic conditions:** There are two rare inherited conditions that can lead to bowel cancer:
  - **familial adenomatous polyposis (FAP)** – a condition that triggers the growth of non-cancerous polyps inside the bowel

- hereditary non-polyposis colorectal cancer (HNPCC), also known as Lynch syndrome – an inherited gene fault (mutation) that increases the person's bowel cancer risk

Although the polyps caused by FAP are non-cancerous, there's a high risk that over time at least one will turn cancerous. Most people with FAP have bowel cancer by the time they're 50.

## **Stages of cancer**

- **Stage 1** means that a cancer is relatively small and contained within the organ it started in i.e. the bowel.
- **Stage 2** means that the tumour is larger than in stage 1, but the cancer has not started to spread into the surrounding tissues. Sometimes stage 2 means that cancer cells have spread into lymph nodes close to the tumour. This depends on the particular type of cancer.
- **Stage 3** means the cancer is larger. It may have started to spread into surrounding tissues and there are cancer cells in the lymph nodes in the area.
- **Stage 4** means the cancer has spread from where it started to another body organ. This is also called secondary or metastatic cancer.

## **Other systems affected by having Bowel Cancer: Circulatory system**

As a cancerous tumour grows on the bowel, it can shed cancerous cells which can be spread through the circulatory system. This can lead to the cancer spreading to other parts of the body.

### **Lymphatic system:**

The Lymphatic system normally helps to trap and destroy cancer cells as well as bacteria and other harmful organisms. Sometimes cancer cells get trapped in lymph nodes close to the cancer and may then start to grow there. This may mean that a lymph node needs to be removed close to the site of the tumour.

Sometimes doctors aren't sure if a cancer has spread to another part of the body or not. They look for cancer cells in the lymph nodes near the cancer. Cancer cells in these nodes is a sign that the cancer has begun to spread. This is often called as having positive lymph nodes. It means that the cells have broken away from the original cancer and got trapped in the lymph nodes.

### **Endocrine / Hormone system:**

The hormone system is a network of glands and organs in the body that produce hormones. Cancer and its treatments can sometimes change hormone levels and cause side effects. But some treatments can help to control cancer or prevent it coming back by changing particular hormone levels.

### **Other body systems:**

If enough blood is passed through the stools, blood tests may reveal anaemia or low haemoglobin levels. A service user may also notice fatigue. If colon cancer spreads to other areas of the body, the patient may develop symptoms related to that spread. If it has spread to the bones, the person may have bone pain in that region. If they are having difficulties with urination, it may be affecting their bladder or, in men, the prostate.

**D1: Evaluate the impact of physiological disorders on the health and wellbeing of service users (Bowel cancer).**

Impact of bowel cancer on a person’s health and well-being

	<b>Short term</b>	<b>Long term</b>
<b>Physical</b>	In the short term, a person will need immediate surgery and chemotherapy or radiotherapy. This has a huge impact on a person’s physical health and they will need a lot of care and support in the short term.	In addition to the information above, following surgery, some people will need a special diet or may need a stoma bag. This can be reversed at a later date.
<b>Emotional</b>	When diagnosed, service users can experience shock, anxiety, relief sadness and depression. Different people deal with it in different ways. Recovering from surgery can also take its emotional toll.	Living with a special diet or a stoma bag can be difficult to adjust to. Recovering from the shock of a potentially life-threatening disease can cause emotional disturbances such as long-term anxiety and depression.
<b>Intellectual</b>	Any disorder of the digestive system can have a big effect on a person’s energy levels and ability to concentrate. They can have difficulty making decisions and remembering facts and appointments. This will affect the person at work and at school.	Progress at work and school can be seriously affected and a person may not achieve the exam results they are capable of. An adult may not get a promotion or achieve the career they desired.
<b>Social</b>	Many of the symptoms of bowel cancer can be embarrassing for people to talk about and this can affect how confident they feel socially. Service users with bowel cancer will need to attend medical appointments and will need to stay in hospital, this will affect their social life.	Some activities a person previously took for granted may not now be possible. For example, swimming or extreme sports. Relationships with friends and family can alter and adjust. This can all effect how much social contact and support a person receives.

A Bowel cancer diagnosis has a huge effect on a person’s life. They have to deal with surgery, chemotherapy or radiotherapy treatment and the physical after-effects of the disease, such as living with a special diet or a stoma bag. Physically, Bowel cancer and its treatment have many effects on a person; on all body systems throughout the body. Sufferers also have to deal with the threat of the disease returning and being a potentially life-limiting disease. The life-long effects of chemotherapy treatment can include fatigue, loss of fertility, loss of nerve sensation, taste, smell, digestive problems, heart problems, high blood pressure as well as emotional difficulties.

There is no doubt that Bowel Cancer is a life-changing diagnosis.

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## **P2: Compare investigative and diagnostic procedures for different types of physiological disorders.**

### **Investigating and diagnosing Asthma.**

A diagnosis is the process by which a doctor determines the nature of a disease or disorder, based on signs, symptoms and investigations. As well as taking a clinical history: recording the signs and symptoms a patient presents, they will also carry-out a series of tests to confirm the diagnosis. Asthma is very similar to other respiratory conditions such as:

- COPD – chronic obstructive pulmonary disease. This is an umbrella term for chronic bronchitis and emphysema, characterised by loss of elasticity of the lungs.
- Pneumonia – an infection of the lungs by a virus.
- Pulmonary embolism – blood clot inside the lung

### **Clinical history**

The doctor will take a structured clinical history in people with suspected asthma. They will check for:

- wheeze, cough or breathlessness, and any daily or seasonal variation in these symptoms
- any triggers that make symptoms worse
- a personal or family history of atopic disorders.

### **Physical examination:**

The doctor will also examine people with suspected asthma to identify expiratory polyphonic wheeze and signs of other causes of respiratory symptoms, but they will be aware that even if examination results are normal the person may still have asthma.

### **Investigative tests:**

These tests are also used to see how effective asthma medication is and how well it is working.

### **Peak flow**

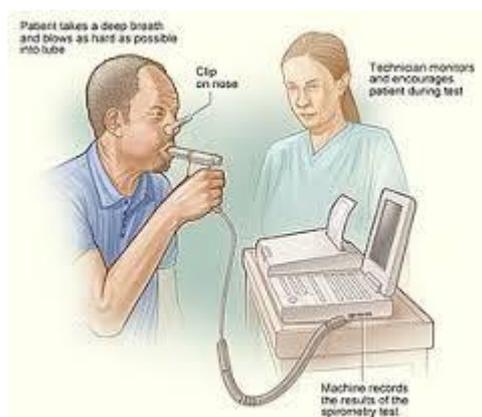
This is a lung function test to measure how fast a person can breathe out. They can do this test in the GP surgery or at home to measure their peak flow over time. It is measured in litres per minute.



Peak flow is suitable for adults and children over five, as long as they're able to blow well into the device. Scores will vary depending on the age, height, and gender. They can also be different depending on whether the peak flow is taken in the morning or at night.

## Spirometry

Spirometry is used to compare how narrow the airways are before and after using reliever medicine. It is used by the GP or asthma nurse to help diagnose asthma.



This is a breathing or 'lung function' test. It measures how much air the person can breathe out in a set time. This test is suitable for adults, young people and children over 5. They may be asked to do a relaxed breath first - it is often described as a big sigh into the machine. The GP or asthma nurse will then ask the patient to take a deep breath and breathe out as fast as they can, and for as long as they can, through a mouthpiece linked to a 'spirometer'.

Once there's an accurate result, they may be asked to take some asthma reliever medicine through a spacer. This is to open up the airways. This is known as bronchodilator reversibility (BDR).

The patient will be asked to wait 15-20 minutes and then blow into the machine a few times again. This is to see whether there's a big change in the airways after taking the medicine. If the airways become much less narrow, it makes it much more likely that they have asthma.

## FeNO testing

FeNO stands for 'fractional exhaled nitric oxide'. A FeNO test measures the levels of nitric oxide when you breathe out. Nitric oxide is produced in your lungs when your airways are inflamed because you're allergic to something you've breathed in. A high level of nitric oxide in the air you breathe out can be a sign that you have inflamed airways. This test is suitable for adults and children over five. But some younger children over five may still not be able to do the test well enough. FeNO testing may be done in your GP surgery if the equipment is available. Or you may need to go to hospital out-patients appointment for your FeNO test.



A FeNO test is done by breathing into a tube attached to a hand-held monitor. The reading shows up on the monitor. This test can be used for adults and children over 5.

FeNO can also be used to help diagnose asthma in adults and children when diagnosis is unclear. It can help work out what type of asthma you have (allergic or non-allergic). This is because levels of nitric oxide in your breath are higher if you have allergic type asthma. FeNO is not used in routine appointments for your asthma. But your GP may recommend it if you're using your preventer inhaler correctly, but you're still getting symptoms.

### **Bronchial challenge test**

This highly-specialised test is only carried out in a hospital out-patients department. It measures how your airways respond to asthma triggers. This is known as a direct challenge test. The idea is to deliberately irritate your airways to test the response. After the challenge test you'll be asked to do a spirometry test. This is to see how sensitive your airways are. This test is not usually recommended for children.

You'll be asked to breathe in a substance (histamine or methacholine) through a hand-held device or a nebuliser. The substance causes the airways to become inflamed and narrower and trigger asthma symptoms. After the test you'll be given reliever medicine to open the airways again.



Challenge tests are not routinely used for children. Guidelines recommend them for adults seventeen and over. They are not used to monitor your asthma control once you have asthma.

### **M2: Assess the importance of specific procedures in confirming the diagnosis of physiological disorders (Asthma).**

Asthma can be difficult to diagnose as it has many symptoms that are very similar to other disorders. Treatment of asthma includes steroids, which doctors are reluctant to use unless absolutely necessary due to their side effects. Treatments will also interfere with the results

of the tests. For these reasons, doctors want to be certain of the diagnosis before starting treatment for asthma.

### **NICE:**

NICE uses the most recent research and evidence-based medicine to structure the order and importance of different diagnostic tests for different situations.

The National Institute for Health and Care Excellence (NICE) is an independent organisation that helps those working in the NHS, local authorities and the wider community deliver high quality health and social care. They provide the following types of guidance or advice:

- Clinical guidelines – recommendations for the NHS about the treatment and care of people with specific conditions
- Health technology guidance – recommendations for the NHS on new and existing medicines, diagnostic techniques, treatments and procedures
- Public health guidance – recommendations for local authorities and others on promoting and maintaining good health and preventing disease
- Social care guidance – recommendations for local authorities and service providers about care for people using social care services

A clinical guideline advises healthcare professionals about the most appropriate treatment and care for people with a particular condition. A NICE clinical guideline is developed by following a set method, and using the best available evidence. If there is not enough evidence from clinical research, the advice is based on the views of members of the group developing the clinical guideline (the guideline development group) and other experts.

### **NICE guidelines for diagnosing asthma:**

NICE recommends that questioning and physical examination will take place first for adults, children and young people with suspected Asthma (see Algorithm a).

#### **For children under aged 16, the order of tests would be:**

1. Spirometry

If spirometry does not yield a clear result, the patient would be treated for 6-12 months and then reviewed (BDR – bronchodilator reversibility).

2. FeNO test

3. Monitor peak flow variability for 2-4 weeks.

#### **For adults aged 17 and over:**

1. FeNO first

2. Spirometry

3. BDR test

4. Monitor peak flow variability for 2-4 weeks

5. If still uncertain, refer for a histamine or Bronchial challenge test

If these tests are not available start treatment and monitor response.

**D2: Justify the potential benefits of different investigations and treatment options for service users diagnosed with physiological disorders.**

<b>Test</b>	<b>Benefits</b>	<b>Weaknesses</b>
Peak flow test	Easy and cheap Can be done at home to give a range of results and a pattern	Needs to be monitored over time to see a pattern – need to keep a diary Not a reliable source alone to diagnose asthma
Spirometry	Available at the GP surgery Can be administered by the asthma practice nurse	May not get results straight away Only useful if the Health professional can coach the patient to produce a reproducible test Patient must do every test standing OR sitting but not mix it up Doesn't measure how inflamed your airways are, only how restricted The test is only accurate if the patient is capable of following the directions and performing the manoeuvres correctly.
FeNO test	A simple test to administer Very good measure of airways inflammation	Requires expensive equipment Not suitable for under 5s Results are not accurate if you are a smoker
Branchial challenge test	Doesn't need any expensive equipment	Staff must be trained in the test Not suitable for children Only available at the hospital Relies on patients doing a good spirometry test Patients get tired after multiple spirometry tests Patients cannot use medication before the test

As discussed above, asthma can be difficult to diagnose, and a range of tests are needed for different patients, ages and situations. Each test has its own strengths and weaknesses and is useful in different situations. Asthma is also a variable disease – patients have periods where the symptoms improve and times when it gets worse. This can make it difficult to diagnose.

If a test is done during a period of remission, it may come back as normal. This does not mean the patient does not have asthma.

Tests need to be repeated on a series of occasions to get a realistic picture. A pattern or trend over time is needed to confirm a diagnosis. The tests above are also used to monitor a patient's response to treatments and to increase/ decrease their medication.



## **Disorder 2: Investigating and diagnosing Bowel Cancer.**

### **Bowel cancer screening**

In England, everyone aged 60 to 74 who is registered with a GP is eligible for NHS bowel cancer screening. This involves using a home testing kit to send off some samples of your stool to be tested for the presence of blood. This can help detect bowel cancer before symptoms appear, making it easier to treat and improving the chances of survival.

### **Investigating and diagnosing Bowel Cancer.**

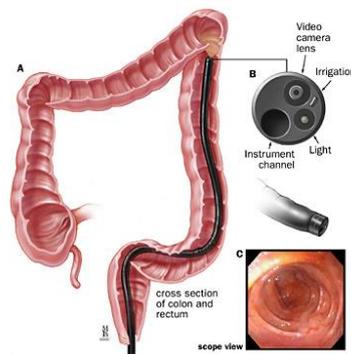
A GP will assess the symptoms of the patient and find out about family history. They will carry out a simple examination of the bottom known as a digital rectal examination and of the abdomen. They will be looking for lumps in the tummy or back passage. A blood test will be done to look for iron deficiency anaemia, due to bleeding from the cancer. The GP will then refer the patient to the local hospital.

### **Hospital tests**

The first test a local hospital will do is a simple examination called a flexible sigmoidoscopy.

#### **Flexible sigmoidoscopy**

A flexible sigmoidoscopy is an examination of your back passage (rectum) and some of your large bowel using a device called a sigmoidoscope.



A sigmoidoscope is a long, thin, flexible tube attached to a very small camera and light. It's inserted into your rectum and up into your bowel. The camera relays images to a monitor and can also be used to take biopsies, where a small tissue sample is removed for further analysis. The lower bowel needs to be as empty as possible when sigmoidoscopy is performed.

A small number of cancers can only be diagnosed by a more extensive examination of the colon. The two tests used for this are colonoscopy or computerised tomography (CT) colonography.

#### **Colonoscopy**

A colonoscopy is an examination of the entire large bowel using a device called a colonoscope, which is like a sigmoidoscope but a bit longer.



The bowel needs to be empty when a colonoscopy is performed, so the service user must to eat a special diet for a few days beforehand and take a medication to help empty your bowel (laxative). The patient is given a sedative to relax during the test. The doctor will then insert the colonoscope into the rectum and move it along the length of the large bowel. The camera relays images to a monitor, which allows the doctor to check for any abnormal areas within the rectum or bowel that could be the result of cancer. As with a sigmoidoscopy, a biopsy may also be performed during the test.

In a small number of people, it may not be possible to pass the colonoscope completely around the bowel and it is then necessary to have CT colonography.

### **CT colonography**

CT colonography, also known as a "virtual colonoscopy", involves using a computerised tomography (CT) scanner to produce three-dimensional images of the large bowel and rectum. During the procedure, gas is used to inflate the bowel using a thin, flexible tube placed in your rectum. CT scans are then taken from a number of different angles. As with a colonoscopy, the patient will need a special diet for a few days and take a laxative before the test to ensure your bowels are empty when it's carried out. This test can help identify potentially cancerous areas in people who are not suitable for a colonoscopy because of other medical reasons. A CT colonography is a less invasive test than a colonoscopy, but a patient may still need to have colonoscopy or flexible sigmoidoscopy at a later stage, so any abnormal areas can be removed or biopsied.

Emergency referrals, such as people with bowel obstruction, will be diagnosed by a CT scan. Those with severe iron deficiency anaemia and few or no bowel symptoms are usually diagnosed by colonoscopy.

### **Further tests**

If a diagnosis of bowel cancer is confirmed, further testing is usually carried out to check if the cancer has spread from the bowel to other parts of the body and which stage the cancer is at.

These tests can include:

- a CT scan of your abdomen and chest – to check if the rest of your bowel is healthy and whether the cancer has spread to the liver or lungs
- a magnetic resonance imaging (MRI) scan – this can provide a detailed image of the surrounding organs in people with cancer in the rectum

**M2: Assess the importance of specific procedures in confirming the diagnosis of physiological disorders (Bowel Cancer).**

NICE uses the most recent research and evidence-based medicine to structure the order and importance of different diagnostic tests for different situations:

**Diagnostic investigations**

Advise the patient that more than one investigation may be necessary to confirm or exclude a diagnosis of colorectal cancer.

Offer colonoscopy to patients without major comorbidity, to confirm a diagnosis of colorectal cancer. If a lesion suspicious of cancer is detected, perform a biopsy to obtain histological proof of diagnosis, unless it is contraindicated (for example, patients with a blood clotting disorder).

Offer flexible sigmoidoscopy then barium enema for patients with major comorbidity. If a lesion suspicious of cancer is detected perform a biopsy unless it is contraindicated.

Consider computed tomographic (CT) colonography as an alternative to colonoscopy or flexible sigmoidoscopy then barium enema, if the local radiology service can demonstrate competency in this technique. If a lesion suspicious of cancer is detected on CT colonography, offer a colonoscopy with biopsy to confirm the diagnosis, unless it is contraindicated.

Offer patients who have had an incomplete colonoscopy:

- repeat colonoscopy or
- CT colonography, if the local radiology service can demonstrate competency in this technique or
- barium enema.

A range of different tests are needed to diagnose this disorder, due to the complex nature of the bowel, it's structure and the different stages the disease may present.

**D2: Justify the potential benefits of different investigations and treatment options for service users diagnosed with physiological disorders.**

**Colon cancer Tests and Investigations - Advantages and Disadvantages**

Digital Rectal Exam (DRE)	 Advantages	A digital rectal exam (DRE) may be done as part of a routine physical exam. A digital rectal exam is an exam of the rectum. A doctor or nurse inserts a lubricated, gloved finger into the lower part of the rectum to feel for lumps or anything else that seems unusual. No cleansing of the colon is necessary. The test is usually quick and painless.
		Studies have not shown that screening for bowel cancer using digital rectal exam (DRE) helps decrease the number of deaths from the disease.

	Disadvantages	<p>Study results have shown that there is no evidence to support DRE as a screening method for bowel cancer.</p> <p>The test can detect abnormalities only in the lower part of the rectum.</p> <p>Additional procedures are necessary if the test indicates an abnormality.</p>
Faecal Immunochemical Test (FIT)	 Advantages	<p>No cleansing of the colon is necessary.</p> <p>Samples can be collected at home.</p> <p>The cost is low compared with other bowel cancer screening tests.</p> <p>This test does not cause bleeding or tearing/perforation of the lining of the colon.</p>
	 Disadvantages	<p>This test does not detect some polyps and cancers.</p> <p>Dietary restrictions and changes are not required for FIT.</p> <p>Additional procedures, such as colonoscopy, may be necessary if the test indicates an abnormality.</p> <p>False-negative test results can occur</p> <p>Screening test results may appear to be normal even though colorectal cancer is present.</p> <p>A person who receives a false-negative test result (one that shows there is no cancer when there really is) may delay seeking medical care even if there are symptoms.</p> <p>False-positive test results can occur</p> <p>Screening test results may appear to be abnormal even though no cancer is present.</p> <p>A false-positive test result (one that shows there is cancer when there really isn't) can cause anxiety and is usually followed by more tests (such as biopsy), which also have risks.</p> <p>A false-positive test result can cause anxiety and lead to more testing, including colonoscopy or barium enema with sigmoidoscopy.</p>
Barium Enema	 Advantages	<p>This test usually allows the doctor to view the rectum and the entire colon.</p> <p>Complications are rare.</p> <p>No sedation is necessary.</p>
	 Disadvantages	<p>The test may not detect some small polyps and cancers.</p> <p>Thorough cleansing of the colon is necessary before the test.</p> <p>False-positive results are possible.</p> <p>The doctor cannot perform a biopsy or remove polyps during the test.</p> <p>Additional procedures are necessary if the test indicates an abnormality.</p>
Sigmoidoscopy		<p>The test is usually quick, with few complications.</p> <p>For most patients, discomfort is minimal.</p>

	<p>Advantages</p>	<p>In some cases, the doctor may be able to perform a biopsy (the removal of tissue for examination under a microscope by a pathologist) and remove polyps during the test, if necessary. Less extensive cleansing of the colon is necessary with this test than for a colonoscopy.</p>
	<p> Disadvantages</p>	<p>This test allows the doctor to view only the rectum and the lower part of the colon. Any polyps in the upper part of the colon will be missed. There is a very small risk of bleeding or tearing/perforation of the lining of the colon. Additional procedures, such as colonoscopy, may be necessary if the test indicates an abnormality. There can be discomfort or pain during sigmoidoscopy. Tears in the lining of the colon and bleeding also may occur.</p>
Colonoscopy	<p> Advantages</p>	<p>This test allows the doctor to view the rectum and the entire colon. The doctor can perform a biopsy and remove polyps or other abnormal tissue during the test, if necessary.</p>
Colonoscopy	<p> Disadvantages</p>	<p>This test may not detect all small polyps, non-polypoid lesions, and cancers, but it is one of the most sensitive tests currently available. Thorough cleansing of the colon is necessary before this test. Some form of sedation is used in most cases. Although uncommon, complications such as bleeding and/or tearing/perforation of the lining of the colon can occur. Serious complications from colonoscopy are rare, but can include tears in the lining of the colon, bleeding, and problems with the heart or blood vessels. These complications may occur more often in older patients.</p>
Virtual Colonoscopy	<p> Advantages</p>	<p>This test allows the doctor to view the rectum and the entire colon. This is not an invasive procedure, so there is no risk of bleeding or tearing/perforation of the lining of the colon.</p>
Virtual Colonoscopy	<p> Disadvantages</p>	<p>This test may not detect all small polyps, non-polypoid lesions, and cancers. Thorough cleansing of the colon is necessary before the test. If a polyp or non-polypoid lesion 6 to 9 millimetres in size or larger is detected, standard colonoscopy, usually immediately after the virtual procedure, will be recommended to remove the polyp or lesion or perform a biopsy. Virtual colonoscopy often finds problems with organs other than the colon, including the kidneys, chest, liver, ovaries, spleen, and pancreas. Some of these findings lead to more testing. The risks and benefits of this follow-up testing are being studied.</p>

Bowel cancer can be difficult to diagnose, and a range of tests are needed for different situations. The priority is to diagnose the disease in its early stages, when it is most easy to treat. However, this can involve very small areas of tissue which are difficult to detect.

Treatment needs to be started as soon as possible to give the best possible outcome for the patient, so a range of tests and procedures enables to team to tailor the investigations to the individual's particular needs. Each test has its own strengths and weaknesses and is useful in different situations.

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### **P3: Explain the treatment and support available for service users with different physiological disorders**

#### **Treatments available for asthma sufferers**

There's currently no cure for asthma, but treatment can help control the symptoms, so patients are able to live a normal, active life. Inhalers are devices that let you breathe in medicine – are the main treatment. Tablets and other treatments may also be needed if your asthma is severe.



Each patient will have a personal action plan written with their doctor or asthma nurse. This includes information about their medicines, how to monitor their condition and what to do if they have an asthma attack.

Inhalers can help:

- relieve symptoms when they occur (reliever inhalers)

- stop symptoms developing (preventer inhalers)
- Some people need an inhaler that does both (combination inhalers).

### **Reliever inhalers**

Most people with asthma will be given a reliever inhaler. These are usually blue. Patients use a reliever inhaler to treat their symptoms when they occur. They should relieve symptoms within a few minutes. If a patient has to use their reliever inhaler 3 or more times a week, they may need additional treatment, such as a preventer inhaler.

Reliever inhalers have few side effects, but they can sometimes cause shaking or a fast heartbeat for a few minutes after they're used.

### **Preventer inhalers**

If a patient needs to use a reliever inhaler often, they may also need a preventer inhaler. A preventer inhaler is used every day to reduce the inflammation and sensitivity of the airways, which stops symptoms occurring. It's important to use it even when there are no symptoms.

Preventer inhalers contain steroid medicine. They don't usually have side effects but can sometimes cause:

- a fungal infection of the mouth or throat (oral thrush)
- a hoarse voice
- a sore throat

### **Combination inhalers**

If using reliever and preventer inhalers doesn't control a patient's asthma, they may need an inhaler that combines both. Combination inhalers are used every day to help stop symptoms occurring and provide long-lasting relief if they do occur. It's important to use it regularly, even if the patient doesn't have symptoms. Side effects of combination inhalers are similar to those of reliever and preventer inhalers.

### **Tablets**

A patient may also need to take tablets if using an inhaler alone isn't helping control their symptoms.

### **Leukotriene receptor antagonists (LTRAs)**

LTRAs are the main tablets used for asthma. They also come in syrup and powder form. They are taken every day to help stop symptoms occurring. Possible side effects include tummy aches and headaches.

### **Theophylline**

Theophylline may also be recommended if other treatments aren't helping to control symptoms. It's taken every day to stop symptoms occurring. Possible side effects include headaches and feeling sick.

## **Steroid tablets**

Steroid tablets may be recommended if other treatments aren't helping to control the symptoms. They can be taken either:

- as an immediate treatment when a patient has an asthma attack
- every day as a long-term treatment to prevent symptoms – this is usually only necessary for very severe asthma and inhalers don't control symptoms

Long-term or frequent use of steroid tablets can occasionally cause side effects such as:

- increased appetite, leading to weight gain
- easy bruising
- mood changes
- fragile bones (osteoporosis)
- high blood pressure

## **Other treatments**

Other treatments, such as injections or surgery, are rarely needed but may be recommended if all other treatments aren't helping.

## **Injections**

For some people with severe asthma, injections given every few weeks can help control the symptoms. The main injections for asthma are:

- omalizumab (Xolair)
- mepolizumab (Nucala)
- reslizumab (Cinqaero)

These medicines aren't suitable for everyone with asthma and can only be prescribed by an asthma specialist. The main side effect is discomfort where the injection is given.

## **Surgery**

A procedure called bronchial thermoplasty is very occasionally used as a treatment for severe asthma. It involves passing a thin, flexible tube down your throat and into your lungs. Heat is then used on the muscles around the airways to help stop them narrowing and causing asthma symptoms. There's some evidence to suggest this may reduce asthma attacks, but it's a relatively new treatment and the long-term effects aren't yet fully understood.

## **P4: Compare the types of carers and care settings for service users with different physiological disorders.**

### **Services available in Bury for Asthma sufferers**

#### **Primary care**

GP surgeries will provide support, treatment and advice for asthma sufferers. Many also have Practice Nurses and Advanced Nurse Practitioners who run specialist asthma management clinics at the surgery. Practice Nurses also work alongside Healthcare

Assistants, who provide invaluable support and assists them to providing patients with services to meet their health care needs. Many General Practice Nurses are able to prescribe a wide range of medication, including your repeat medication, nurses have been prescribing in general practice now for almost 15 years.

Bury CCG also supports the 2017 Greater Manchester Primary Care Standards which aim to address variation across the borough. One of the 9 key standards is Improving outcomes in childhood asthma.

This includes Asthma management. All patients diagnosed asthma (BTS level 4) to have a care plan which is reviewed annually and/or following unplanned admission/A&E attendance (this does not need to be face to face but the patient/carer must receive an update copy of their care plan should anything change).

### **Bury Children's Community Nursing Team** (based at Radcliffe Primary Care Centre)

Bury Children's Community Nursing Service provides nursing care closer to home, for children from birth to 16 (or up to 19 years if under the care of a paediatrician) with the aim of deflecting hospital attendances and reducing the length of hospital stays. We offer community clinics at various locations throughout the week across the Bury area. We look after children with a nursing need with acute illnesses, long term conditions, palliative care needs and complex health care needs.

### **Fairfield Hospital Respiratory Medicine department**

Outpatient clinics are run by the Respiratory Medicine department.

Staff: The department has 13 Respiratory medicine consultants and their staff. Some of the Consultants and/or members of their teams work between hospital sites within the Trust.

### **Pennine Lung Service - inpatients at Fairfield Hospital, North Manchester and The Royal Oldham**

This service is for all patients either referred in by their GP or seen as an emergency with respiratory disease and the associated conditions of the lungs and respiratory muscles. The Respiratory service provides a range of complex diagnostic and enhanced specialist interventional procedures for patients with respiratory disease. We have one of the largest diagnostic lung cancer services in the country where people are seen within 2 weeks - but on average within 1 week. Lung Cancer patients will often have a CT scan before clinic and then be seen at either FGH or NMGH. The service is supported by colleagues from the Christie and the Thoracic surgical centre at Wythenshawe.

General Respiratory Outpatient appointments are offered at all sites except Birch Hill. Specialist clinics for patients with the following conditions are also provided on a variety of sites:

- Severe Asthma (NMGH)
- Bronchiectasis (NMGH , RI)
- Tuberculosis (NMGH, ROH. RI)
- Pleural clinic and Thoracoscopy procedures (NMGH)
- Interstitial Lung Disease (FGH, NMGH, ROH)

- Sleep (NMGH, ROH, FGH)

The Trust also provides:

- Home Oxygen Assessment Service
- Nebuliser loan and issue
- Pulmonary rehabilitation (FGH and NMGH)
- Home & Community based COPD care (NMGH)

The service has specialist respiratory inpatient beds at: FGH, NMGH and ROH. The Trust has a specialist respiratory and physiology diagnostic service offering a range of diagnostic testing.

Staff:

- Respiratory specialist nurses
- Nursing
- Consultant Physicians
- Radiography staff
- Physiological measurement staff

The Respiratory service is available 7 days a week for all emergency referrals and Monday to Friday for non-emergency out-patient referrals from your GP. The community service provides home visits 7 days a week. The Respiratory service is available 7 days a week for all emergency referrals and Monday to Friday for non-emergency out-patient referrals from your GP. The community service provides home visits 7 days a week.

Other Inpatient staff include the Directorate manager, two Asthma Specialist Nurses, TB nurses, Lung Cancer (Macmillan) Specialist Nurses.

Key facts about the Respiratory Medicine department at Fairfield General Hospital:

- Time from GP referral to treatment: Up to 12 weeks for 9/10 patients
- Friends and Family Test score: service 86% Patients recommend this service. 374 responses

### **Voluntary organisations national charities**

- Asthma UK
- British Lung Foundation
- Asthma Relief Charity | Home

### **Voluntary organisations local support**

#### **Breathe Easy Bury support group**

Make new friends who know what you're going through and learn more about living with a lung condition.

- The Parish Hall, St James' Church, Walshaw Road, Bury, BL8 1PY

### **P3: Explain the treatment and support available for service users with different physiological disorders**

## **Treatment available for Bowel cancer patients**

Treatment for bowel cancer will depend on which part of the bowel is affected and how far the cancer has spread.

Surgery is usually the main treatment for bowel cancer, and may be combined with chemotherapy, radiotherapy or biological treatments, depending on the particular case.

If it's detected early enough, treatment can cure bowel cancer and stop it coming back.

Unfortunately, a complete cure isn't always possible and there's sometimes a risk that the cancer could recur at a later stage. A cure is highly unlikely in more advanced cases that can't be removed completely by surgery. But symptoms can be controlled and the spread of the cancer can be slowed using a combination of treatments.

### **Your treatment team**

The multidisciplinary team for treating a bowel cancer patient will include:

- a specialist cancer surgeon
- a radiotherapy and chemotherapy specialist (an oncologist)
- a radiologist
- a specialist nurse

When deciding what treatment is best for you, your care team will consider the type and size of the cancer, your general health, whether the cancer has spread to other parts of your body, and how aggressive the cancer is.

### **Surgery for colon cancer**

If colon cancer is at a very early stage, it may be possible to remove just a small piece of the lining of the colon wall, known as local excision.

If the cancer spreads into muscles surrounding the colon, it's usually necessary to remove an entire section of the colon, known as a colectomy.

There are 3 ways a colectomy can be performed:

- an open colectomy – where the surgeon makes a large cut (incision) in the abdomen and removes a section of the colon
- a laparoscopic (keyhole) colectomy – where the surgeon makes a number of small incisions in the abdomen and uses special instruments guided by a camera to remove a section of colon
- robotic surgery – a type of keyhole surgery where the surgeon's instruments guide the robot, which removes the cancer

During robotic surgery, there's no direct connection between the surgeon and the patient, which means it would be possible for the surgeon to not be in the same hospital as the patient. Robotic surgery isn't available in many centres in the UK at the moment.

During surgery, nearby lymph nodes are also removed. It's usual to join the ends of the bowel together after bowel cancer surgery, but very occasionally this isn't possible, and a stoma is needed.

Both open and laparoscopic colectomies are thought to be equally effective at removing cancer and have similar risks of complications.

But laparoscopic or robotic colectomies have the advantage of a faster recovery time and less postoperative pain. Laparoscopic surgery is now becoming the routine way of doing most of these operations.

Laparoscopic colectomies should be available in all hospitals that carry out bowel cancer surgery, although not all surgeons perform this type of surgery.

## **Surgery for rectal cancer**

There are a number of different types of operation that can be carried out to treat rectal cancer, depending on how far the cancer has spread. Some operations are entirely through the bottom, with no need for abdominal incisions. Some of the main techniques used are described below:

### **Local resection**

If the patient has a very small early-stage rectal cancer, the surgeon may be able to remove it in an operation called a local resection (transanal, through the bottom resection).

The surgeon puts an endoscope in through the back passage and removes the cancer from the wall of the rectum.

### **Total mesenteric excision**

In most cases, a local resection isn't possible. Instead, a larger area of the rectum will need to be removed. This area will include a border of rectal tissue free of cancer cells, as well as fatty tissue from around the bowel (the mesentery). This type of operation is known as total mesenteric excision (TME). Removing the mesentery can help ensure all the cancerous cells are removed, which can lower the risk of the cancer recurring at a later stage.

Depending on where in the rectum the cancer is located, one of two main types of TME operations may be carried out.

### **Anterior resection**

Low anterior resection is a procedure used to treat cases where the cancer is away from the sphincters that control bowel action. The surgeon will make an incision in the abdomen and remove part of the rectum, as well as some surrounding tissue to make sure any lymph glands containing cancer cells are also removed. They then attach the colon to the lowest part of the rectum or upper part of the anal canal. Sometimes the surgeon will turn the end of the colon into an internal pouch to replace the rectum. The patient will probably require a temporary stoma to give the joined section of bowel time to heal. This will be closed at a second, less major, operation.

### **Abdominoperineal resection**

Abdominoperineal resection is used to treat cases where the cancer is in the lowest section of the rectum. In this case, it's usually necessary to remove the whole of the rectum and surrounding muscles to reduce the risk of the cancer re-growing in the same area. This

involves removing and closing the anus and removing its sphincter muscles, so there's no option except to have a permanent stoma after the operation.

Bowel cancer surgeons always do their best to avoid giving people permanent stomas wherever possible.

## **Stoma surgery**

Where a section of the bowel is removed, and the remaining bowel joined, the surgeon may sometimes decide to divert your faeces away from the join to allow it to heal. The faeces are temporarily diverted by bringing a loop of bowel out through the abdominal wall and attaching it to the skin – this is called a stoma. A bag is worn over the stoma to collect the faeces. When the stoma is made from the small bowel (ileum) it's called an ileostomy, and when it's made from the large bowel (colon) it's called a colostomy. A specialist nurse known as a stoma care nurse can advise you on the best site for a stoma prior to surgery. The nurse will take into account factors such as your body shape and lifestyle, although this may not be possible where surgery is performed in an emergency.

In the first few days after surgery, the stoma care nurse will advise on the care necessary to look after the stoma and the type of bag suitable. Once the join in the bowel has safely healed, which can take several weeks, the stoma can be closed during further surgery. For various reasons, in some people re-joining the bowel may not be possible, or may lead to problems controlling bowel function, and the stoma may become permanent.

## **Side effects of surgery**

Bowel cancer operations carry many of the same risks as other major operations, including:

- bleeding
- infection
- developing blood clots
- heart or breathing problems

The operations all carry a number of risks specific to the procedure. One risk is that the joined-up section of bowel may not heal properly and leak inside the abdomen. This is usually only a risk in the first few days after the operation.

Another risk is for people having rectal cancer surgery. The nerves that control urination and sexual function are very close to the rectum, and sometimes surgery to remove a rectal cancer can damage these nerves.

After rectal cancer surgery, most people need to go to the toilet to open their bowels more often than before, although this usually settles down within a few months of the operation.

Occasionally, some people – particularly men – have other distressing symptoms, such as pain in the pelvic area and constipation alternating with frequent bowel motions. Frequent bowel motions can lead to severe soreness around the anal canal.

## **Radiotherapy**

There are several ways radiotherapy can be used to treat bowel cancer:

- before surgery – to shrink rectal cancers and increase the chances of complete removal
- instead of surgery – to cure or stop the spread of early-stage rectal cancer, if the patient can't have surgery
- as palliative radiotherapy – to control symptoms and slow the spread of cancer in advanced cases

Radiotherapy given before surgery for rectal cancer can be performed in 2 ways:

- external radiotherapy – where a machine is used to beam high-energy waves at the rectum to kill cancerous cells
- internal radiotherapy (brachytherapy) – where a tube that releases a small amount of radiation is inserted into the anus and placed next to the cancer to shrink it and kill the cancer cells

External radiotherapy is usually given daily, 5 days a week, with a break at the weekend. Depending on the size of the tumour, only 1 to 5 weeks of treatment may be needed. Each session of radiotherapy is short and will only last for 10 to 15 minutes. Palliative radiotherapy is usually given in short daily sessions, with a course ranging from 2 to 3 days, up to 10 days.

**Short-term side effects of radiotherapy can include:**

- feeling sick
- fatigue
- diarrhoea
- burning and irritation of the skin around the rectum and pelvis – this looks and feels like sunburn
- a frequent need to urinate
- a burning sensation when passing urine

These side effects should pass once the course of radiotherapy has finished.

**Long-term side effects of radiotherapy can include:**

- a more frequent need to pass urine or stools
- blood in the urine and stools
- infertility
- erectile dysfunction

If the patient wants to have children in the future, it may be possible to store a sample of their sperm or eggs before treatment begins so they can be used in fertility treatments in the future.

## **Chemotherapy**

There are 3 ways chemotherapy can be used to treat bowel cancer:

- before surgery – used in combination with radiotherapy to shrink the tumour
- after surgery – to reduce the risk of the cancer recurring

- palliative chemotherapy – to slow the spread of advanced bowel cancer and help control symptoms

Chemotherapy for bowel cancer usually involves taking a combination of medications that kill cancer cells. They can be given as a tablet (oral chemotherapy), through a drip in the arm (intravenous chemotherapy), or as a combination of both. Treatment is given in courses (cycles) that are 2 to 3 weeks long each, depending on the stage or grade of the cancer. A single session of intravenous chemotherapy can last from several hours to several days. Most patients having oral chemotherapy take tablets over the course of 2 weeks before having a break from treatment for another week. A course of chemotherapy can last up to 6 months, depending on how well the patient responds to the treatment.

Side effects of chemotherapy can include:

- fatigue
- feeling sick
- vomiting
- diarrhoea
- mouth ulcers
- hair loss with certain treatment regimens, but this is generally uncommon in the treatment of bowel cancer
- a sensation of numbness, tingling or burning in the hands, feet and neck

These side effects should gradually pass once the treatment has finished. It usually takes a few months for the hair to grow back if a patient experiences hair loss. Chemotherapy can also weaken the immune system, making the patient more vulnerable to infection.

### **Biological treatments**

Biological treatments, including cetuximab and panitumumab, are newer medicines also known as monoclonal antibodies. They target special proteins, called epidermal growth factor receptors (EGFRs), found on the surface of some cancer cells. As EGFRs help the cancer grow, targeting these proteins can help shrink tumours and improve the effect of chemotherapy. Biological treatments are sometimes used in combination with chemotherapy when the cancer has spread beyond the bowel (metastatic bowel cancer).

### **P4: Compare the types of carers and care settings for service users with different physiological disorders.**

#### **Services available in Bury for Bowel Cancer sufferers**

The NHS Bowel Cancer Screening Programme offers screening every two years to all men and women aged 60 to 74. People in this age group will automatically be sent an invitation, then their screening kit, so they can do the test at home.

Bowel cancer screening aims to detect bowel cancer at an early stage, in people with no symptoms, when treatment is more likely to be effective. Bowel cancer screening can also detect polyps. These are not cancers but may develop into cancers over time. They can easily be removed, reducing the risk of bowel cancer developing.

The screening test detects tiny amounts of blood, which you cannot normally see in your bowel motions. It is called the Faecal Occult Blood (FOB) test. The FOB test does not diagnose bowel cancer, but the results will tell you whether you need an examination of your bowel, a colonoscopy. A colonoscopy is an investigation that involves looking directly at the lining of your large bowel through a thin flexible tube with a camera attached. This procedure is the most effective way to diagnose bowel cancer.

People with an abnormal test result will be seen in the clinic by SSP's, Specialist Screening Practitioners. They will explain the colonoscopy investigation, complete a medical history assessment and make a decision as to the patient's suitability to proceed to colonoscopy. Accredited Screening Consultants will undertake the colonoscopy investigation. Endoscopy and ward staff will provide support for patient during their time spent in the department. The service provides community clinics and hospital screening Monday to Friday. Clinics are held in the community to service the population within the Pennine footprint:

- Moorgate Primary Care Centre, 22 Derby Way, Bury, BL9 0NJ.
- Ings Lane Clinic, Phoenix St, Rochdale, OL12 7DW.
- Oldham Integrated Care Centre, New Radcliffe St, Oldham, OL1 1NL.
- Higher Openshaw Primary Care Centre, Ashton Old Rd, Manchester, M11 1JG.

Endoscopy Units for screening colonoscopy lists:

- Fairfield General Hospital
- Rochdale Infirmary

### **The Christie Outreach team opened dedicated treatment space at Bury Townside Primary Care centre**

The Christie Chemotherapy nurses travel to Bury every Thursday to deliver selected Cancer treatments to patients living in these areas.

We use the Bury Townside Primary Care centre to deliver nurse led treatment. Nurses are employed by The Christie to deliver these treatments.

- 6 treatment chairs
- Treatment is delivered on a Thursday
- 800 treatments a year

### **Bury Multi-agency Cancer Service**

NHS Bury Clinical Commissioning Group (CCG) is working with Bury Cancer Support Centre, Macmillan Cancer Support and a number of local organisations to launch a new service on 3rd January 2018 for those who have been affected by cancer.

Recent figures suggest there are over 1,000 new cases of cancer diagnosed every year in Bury. In 2010 there were over 5,000 people living in Bury up to 20 years after a cancer diagnosis. Many of these people are living with unmet non-clinical needs, and this figure is estimated to rise to 10,800 by 2030.

The Bury Multi-agency Cancer Service offers a range of free and confidential support and advice to those who have received a cancer diagnosis (during or after treatment) as well as their carers and families.

Jointly funded by NHS Bury CCG and Macmillan Cancer Support, the service provides free and confidential support for non-clinical concerns, including:

- Financial and benefits advice
- Counselling and emotional support
- Employment advice and support
- Health and lifestyle advice
- Complementary therapies

Local people affected by cancer can access information, guidance and support by calling a single point of contact telephone number. A key worker will then refer them for support and advice to an appropriate local organisation, that includes:

- Age UK Bury
- Asian Development Association of Bury (ADAB)
- Bury Exercise and Therapy Scheme (BEATS)
- Bury Lifestyle Service
- Bury Society for Blind and Partially Sighted People
- Chai Cancer Care
- Citizens Advice Bureau (Bury)
- Creative Living Centre
- Health and Employment Service (Bury Council)
- Supportive Stem

They can also use it as an opportunity to meet other people affected by cancer.

#### **National charities that support Bowel Cancer patients:**

- Bowel Cancer UK
- Cancer Research UK
- Macmillan Cancer Support

There are patient support groups available that provide support for patients who have just had or are about to have a stoma. These include:

- Colostomy Association
- Ileostomy and Internal Pouch Support Group – this organisation provides a unique visiting service for anyone wishing to speak with someone who has been through similar surgery

#### **Colorectal Stoma Support Group (Oldham)**

- Contact: Julie Williams, colorectal clinical nurse specialist or Julie Meadows, stoma care clinical nurse specialist
- Meet at: Victoria Hotel, Hollinwood Ave, Chadderton, OL9 8DE

#### **Colo-rectal Support Group (Salford)** (Also known as Bowel Cancer Support group)

- Contact: The Clinical Nurse Specialists on 0161 206 1249 or Janet at The Christie at Salford Cancer
- The Mayo Building, Salford Royal NHS Foundation Trust, M6 8HD

- For colorectal patients and families.

### **Oldham Stoma Support (Oldham)**

- Support and help with any problems people have. There is always a stoma nurse present for advice. [www.colostomyassociation.org.uk](http://www.colostomyassociation.org.uk)
- Link Centre, Union Street, OL1 1DZ
- For anyone who needs help, including partners, friends and family.

### **South Manchester Bowel Support Group (Trafford)**

- A group of people who have experienced the effects of bowel cancer. They organise various events throughout the year and have guest speakers and specialist colorectal nurses at all meetings. They offer a chance for a friendly chat with others who understand people's situations.

### **M3: Assess the provision of treatment, support and types of care for service users with different physiological disorders.**

As discussed above there is a wide range of support available for service users suffering from both asthma and bowel cancer. These include statutory services across Primary Care, specialist outpatient and inpatient services in Secondary Care and a wide range of voluntary services both local and national.

This range of services is needed due to the wide variety of service users and their medical situations that present in Bury. Many patients do not need specialist, intensive treatments and care and can be managed fully in the community by Primary Care services e.g. mild to moderate asthmatics. This also helps to manage costs as managing a person in the community is cheaper and allows a person to lead a relatively normal, independent life in terms of family, school and work. This leads to less social care issues in the future.

Other patients are severely affected (severe asthma) or have life threatening disorders such as cancer. These require specialist expertise and treatments and must be treated in specialist departments in a hospital setting. A range of different services enables Bury to support and tailor care to meet the need of each individual and offer them the treatment and care they need to give the best possible outcome physically, emotionally and socially.

### **References:**

<https://www.buryccg.nhs.uk/you-and-your-health/choose-the-right-service/gp-surgery/>

<https://www.buryccg.nhs.uk/2018/01/03/new-service-launches-for-people-affected-by-cancer-in-bury/>

<http://www.pat.nhs.uk/our-services/bowel-cancer-screening.htm>