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Cardiorespiratory Protocols: Key Points and Analytical Guidance

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Module 22
Version 7 Final

Foreword

This guidance has been produced as part of a Continuing Medical Education programme for practitioners approved by the Department for Work and Pensions Chief Medical Adviser to carry out medical assessments.

All practitioners undertaking medical assessments must be registered practitioners who in addition, have undergone training in disability assessment medicine. The training includes theory training in a classroom setting, supervised practical training, and a demonstration of understanding as assessed by quality audit.

This guidance must be read with the understanding that, as experienced disability analysts, the practitioner will have detailed knowledge of the principles and practice of diagnostic techniques, and therefore such information is not contained in this guidance.

In addition, the guidance is not a stand-alone document, and forms only a part of the training and written documentation that a practitioner receives. As disability assessment is a practical occupation, much of the training also involves verbal information and coaching.

Thus, although the guidance may be of interest to non-medical readers, it must be remembered that some of the information may not be readily understood without background medical knowledge and an awareness of the other training given to disability analysts.

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Part A – Key Points

Introduction

These evidence based protocols are the result of extensive research by Atos Healthcare . They contain key points on the aetiology, diagnosis, treatment, prognosis, and main disabling features of the cardiorespiratory conditions that are most commonly encountered in the field of Disability Assessment Medicine.

These key points are intended to be particularly useful as a quick reference guide. The full text of the protocols is available on a CD and on SharePoint.

The key points that are presented in this section are complemented by the other parts of this module, which incorporate original analytical guidance and advice on the most relevant assessment techniques.

1. Ischaemic Heart Disease

1.1 Definition

- Myocardial ischaemia presents as angina, unstable angina, breathlessness and myocardial infarction (MI) or sudden death.
- Unstable angina is characterised by recent onset of frequent, severe or prolonged attacks of chest pain, which may only be partially relieved by GTN.

1.2 Aetiology

- Impaired coronary artery blood flow results from coronary artery atherosclerosis.
- A 50% reduction in the coronary artery lumen diameter on coronary artery angiogram is judged significant enough to cause angina.
- Unstable angina is caused by an unstable atheromatous plaque and usually presents with a rapid decline in exercise capacity or pain at rest.
- Myocardial infarction is usually due to occlusion of a coronary artery by atherosclerosis, with or without superadded thrombus. MI is rarely due to a coronary embolus.

1.3 Diagnosis

- Physical signs are rarely seen in angina.
- Exercise ECG to a standard protocol is the main diagnostic investigation.
- Coronary artery angiography is used to assess the site and extent of the stenosis pre-operatively and in cases where the exercises ECG test is inconclusive.

1.4 Treatment

- Medical treatment of angina includes:
  - Risk factor modification (smoking, hypertension, hypercholesterolaemia).
  - Anti-platelet therapy (low dose aspirin).
  - Specific anti-anginal therapies (nitrates, cardio-selective beta blockade, calcium channel blockers, potassium channel blockers).
- Revascularisation procedures for ischaemic heart disease include coronary artery bypass grafts (CABG) and percutaneous transluminal angioplasty (PTCA). Revascularisation results in good symptom relief and improved life expectancy.

1.5 Prognosis

- The prognosis for stable angina depends on the extent and site of the vascular disease: the highest mortality occurs in left main stem disease.
- The return to work rate post-CABG is disappointing, with many patients not returning to work despite being physically capable and symptom free.

1.6 Main Disabling Effects

- The main disabling effect of angina is effort limitation due to chest pain, breathlessness and fatigue. Exercise intolerance is likely to prevent heavy manual work.
- Chronic physical disability after MI due to angina, dyspnoea or fatigue is unusual.
- Psychological morbidity due to anxiety and depression commonly delays recovery.
- Persisting disability may be due to illness behaviour.
- Rehabilitation programmes improve mobility and perception of health, and facilitate return to work.

2. Hypertension

2.1 Description

- The level of blood pressure where the benefits of treatment outweigh the risks.
- The current NICE guidelines recommend treatment if there is a persistent rise in blood pressure to 160/100 mmHg or more.
- Hypertension is a major risk factor for cardiovascular disease

2.2 Aetiology

- Primary (essential) hypertension is of unknown aetiology and accounts for over 90% of cases.
- Age, salt intake, obesity, and alcohol consumption are risk factors for hypertension.
- The kidneys and their renin-angiotensin-aldosterone system have a key role in controlling blood pressure.
- Multiple genes influence the development of blood pressure.

The remaining 5% of patients have a specific cause for their hypertension:

- Cushing's Syndrome (high cortisol).
- Conn's Syndrome (high aldosterone).
- Phaeochromocytoma (high catecholamines).
- Para-thyroid and Thyroid Disease.
- Kidney Disease (renal artery stenosis, autoimmune).
- Coarctation of the Aorta.
- Drug Effects (oestrogen, non-steroidal anti-inflammatory drugs).

2.3 Presenting Features

- Hypertension is almost always asymptomatic.
- 'Dizziness', 'Headache' and 'Nose Bleed' are common symptoms that patients often associate with high blood pressure, although it has been shown that they are equally prevalent in normotensive and healthy populations.
- Severe or long-standing hypertension may cause damage to the cardiovascular and renal systems. These complications are known as "End-Organ" (or target organ) Damage.

2.4 The Key Findings on Examination

- Examination of the fundi and clinical examination for evidence of left ventricular hypertrophy provide the best evidence of the severity of hypertension.

2.5 Investigations

- Routine investigations should include urinalysis (blood, protein, glucose), serum urea, creatinine and electrolytes, cholesterol, glucose and a full blood count. These are chosen for their ability to detect many of the secondary causes of hypertension and important cardiovascular risk factors.
- A 12 lead ECG is especially valuable for detecting left ventricular hypertrophy.
- Chest X-ray is only useful when there is a specific indication such as breathlessness.

2.6 Treatment

2.6.1 Targets for Treatment

- The target for treatment is a blood pressure of less than 140/85 mmHg.
- Diabetics and those with established cardiovascular disease need tight blood pressure control. In these cases, the target is 140/80 mmHg.
- If patients are able to stop smoking, reduce their alcohol and salt intake, and maintain their ideal weight, then they are likely to achieve a useful reduction in blood pressure. They will also improve their risk factors for cardiovascular disease.

2.6.2 Thresholds for Drug Treatment

- Uncomplicated hypertension: diastolic >100 mmHg or systolic >160 mmHg.
- End-organ damage or coexisting risk factors: diastolic $\geq$ 90 mmHg.

2.7 Treatment considerations

- Only 25% of hypertensive patients will achieve the current targets for blood pressure reduction with a single drug. Most patients will require double or triple therapy.
- Poor control of blood pressure despite a triple combination of antihypertensive drugs is one of the indications for referral to a specialist clinic.
- Subjects with angina may benefit from a beta blocker and/or a calcium channel antagonist.
- Those with a significant reduction in cardiac output are best treated with a diuretic and either an ACE inhibitor or an ARB.

2.8 Prognosis

- With untreated malignant hypertension, 88% of patients are dead after two years.

- Effective control of hypertension can reduce the incidence of stroke by 40% and heart attack by 16%.

2.9 Main Disabling Effects

- The majority of hypertensives are asymptomatic.
- They do not have a functional disability from hypertension but may have disability due to a secondary condition such as stroke, visual loss, ischaemic heart disease, heart failure or peripheral vascular disease.
- The focus of the assessment should be directed at the condition that is directly causing disability.
- In some studies, labelling a person as hypertensive has led to increased absenteeism from work.
- Indeed, a small number of hypertensive claimants may adopt an illness behaviour or biopsychosocial pattern of disability.

3. Heart Failure

3.1 Definition

- Heart failure is said to be present when an abnormality of cardiac function causes failure of the heart to pump blood at a rate sufficient for metabolic requirements.
- Clinically heart failure may be LEFT sided, RIGHT sided or BIVENTRICULAR (congestive cardiac) failure.
- The consequences of heart failure can be inadequate cardiac output (forward failure) or increased filling pressure with fluid retention (backward failure).

3.2 Aetiology

- The commonest cause of heart failure is myocardial dysfunction with reduced left ventricular contraction.
- Two thirds result from coronary heart disease (CHD) often with a past history of myocardial infarction (MI).
- Most of the remainder are due to hypertension, thyroid disease, valvular disease, alcohol excess, or myocarditis.

3.3 Diagnosis

The important points in the diagnosis are:

- High index of suspicion
- Thorough history taking
- Directed clinical examination

The main presenting symptoms are:

- Reduced exercise capacity
- Dyspnoea (wheeze, orthopnoea, paroxysmal nocturnal dyspnoea [PND])
- Reduced appetite
- Weight loss

The important signs on examination are:

- Abnormal blood pressure
- Forceful apex beat
- Abnormal pulse
- Respiratory crackles
- Oedema
- Abnormal heart sounds

- Raised JVP
- Hepatomegaly and/or ascites
- Pleural effusion
- Parasternal heave.

Basic investigations should include:-

- Urinalysis
- Full blood count
- Chest X-ray
- Fasting blood glucose
- Serum urea and electrolytes
- Thyroid function.

Further investigations may include:-

- Electrocardiogram (ECG)
- Brain natriuretic peptide (BNP) test
- Echocardiography

3.4 Treatment

General Measures.

- Achieve optimal weight
- No smoking
- Encourage exercise
- Discourage added salt
- Treat hypertension if appropriate
- Discourage excess alcohol
- Detect and treat associated risk factors (e.g. diabetes, myxoedema, hyperlipidaemia)

Mild Failure:

- Thiazide diuretic
- ACE inhibitor
- Beta blocker for atrial fibrillation

Moderate Failure:

- Loop diuretic or combination of diuretics
- ACE inhibitor
- Beta blocker

Severe Failure:

- ACE inhibitor
- Beta blocker
- Spironolactone
- Digoxin
- Cardiomyoplasty
- Transplant

3.5 Prognosis

- The prognosis of heart failure is poor, with 5 year mortality ranging from 26% – 75%.
- Improving results are being seen with compliance with medical therapies. This is with stabilising the condition rather than cure.
- Ventricular arrhythmia is the most common cause of death in people with heart failure.
- About a third of all deaths in people with heart failure are preceded by a major ischaemic event.
- Prognosis is being constantly improved with increasing use of implanted intracardiac defibrillators (AICDs).

3.6 Main Disabling Effects

- The actual disability due to chronic heart failure is very variable, and each patient must be assessed individually.
- In the early stages, there is very little impairment of daily function.
- Functional capacity can be improved most notably by drug treatment.
- Patients frequently complain that muscle fatigue is a major limitation to their daily performance.
- Light or sedentary work may be well within capability.

- An ability to reach Stage 4 of the Bruce Protocol is associated with a low risk of sudden cardiac events.

- Significantly functional restriction may be due to depression or fear of an untoward event.
- The decrease in exercise tolerance in severe heart failure can be very limiting.
- Dressing and undressing, washing, rising from sitting and walking even a few steps may be significantly affected. □

4. Chest Pain

4.1 Definition

- Chest pain can be classified as central and lateral, each category being subdivided into acute and chronic duration. Chronic chest pain is more significant to the disability analyst.

4.2 Aetiology

- Pathological processes within the thoracic cage or viscera of the chest and upper abdomen can cause chronic chest pain.
- Ischaemic Heart Disease is an important differential diagnosis. Other cardiac causes include prolapsed mitral valve cusp, pulmonary hypertension and pulmonary stenosis.
- Dyspnoea, especially when associated with airways obstruction, may be described as “tightness in the chest” which may be misinterpreted by a clinician as chest pain.
- Musculoskeletal causes include recurrent mild trauma, thoracic or cervical spondylosis or spondylitis, and costochondritis.
- Oesophageal causes include oesophageal spasm, achalasia of the cardia and reflux oesophagitis.
- Pathology within the abdominal viscera includes gastric distension, peptic ulceration of the stomach and duodenum, gall bladder disease and chronic pancreatitis.
- Atypical non-cardiac chest pain is a common presentation of psychological distress.
- Spinal diseases, nerve root compression, neuritis, aortic aneurysm and intrathoracic malignant disease can cause lateral wall chest pain.

4.3 Prevalence

- Atypical non-cardiac chest pain is common.

4.4 Diagnosis

- The investigation of chronic chest pain may include resting and exercise ECGs, radiological and endoscopic investigations.

4.5 Treatment

- Where possible, the underlying condition is treated.
- Atypical non-cardiac chest pain is effectively treated by cognitive behaviour therapy.

4.6 Prognosis

- Atypical non-cardiac chest pain often persists despite negative investigations.

4.7 Main Disabling Effects

- Gastro-oesophageal causes of chest pain are rarely disabling. Chronic pancreatitis is the most likely condition to cause long-term debility.
- Musculoskeletal conditions rarely cause long-term disability, unless they cause a regional pain syndrome.
- Pulmonary hypertension and pulmonary stenosis are a cause of disability.
- Untreated, atypical non-cardiac chest pain is a cause of long-term disability.

5. Valvular Heart Disease

5.1 Description

- Disability is due to cardiac failure and reduced cardiac output.
- Valvular Heart Disease is due to a structural abnormality of one or more of the four heart valves.
- Important complications include thrombus formation and endocarditis.

5.2 Aetiology

- Valvular Heart Disease may be congenital, acquired or degenerative.
- Many congenital valve abnormalities are mild with no disabling effects.
- A small group with congenital heart disease have complex, inoperable conditions and include individuals with severe cardiac disability.
- Valve disease acquired through infection is most often due to rheumatic fever.
- Degenerative valve disease occurs later in life in association with calcification of the valve.

5.3 Prevalence

- Western countries have recently seen a reduction in the incidence of rheumatic fever.
- Degenerative disease is now more common in the developed world than rheumatic heart disease.
- Degenerative valve disease typically presents in the 7^{th} and 8^{th} decades.

5.4 Diagnosis

- Left-sided heart disease causes symptoms of left ventricular failure and poor cardiac output.
  - Atrial fibrillation is common in mitral valve disease.
  - Poor cardiac output is characterised by breathlessness, angina and effort syncope.
  - In right-sided valve disease, signs and symptoms of right heart failure predominate.
  - Echocardiography with Doppler is used to diagnose and assess suitability for surgery.

  - An estimated 8% of the population have an innocent or physiological murmur.
  - Mitral valve prolapse with demonstrable regurgitation is a focus for endocarditis.

5.5 Treatment

- Anti-coagulation is indicated in mitral valve disease and for prosthetic valves.
- At-risk individuals need antibiotic prophylaxis when undergoing routine minor surgical procedures.
- In asymptomatic aortic stenosis, diagnostic tests can indicate the need for surgery. In some cases, balloon valvuloplasty will be a more appropriate choice of procedure than valve replacement.
- For aortic regurgitation, conservative management is favoured. Use of an angiotensin-converting enzyme inhibitor can delay surgery for 3-4 years in more severely affected cases.
- In mitral stenosis, management is aimed at controlling atrial fibrillation and providing prophylactic medication. Various surgical procedures can be offered to those who respond poorly to medical management.
- Mild cases of mitral regurgitation may require no treatment. Echocardiogram may show left ventricular dysfunction in an asymptomatic patient, who can then be offered surgery to prevent irreversible damage to the heart. Reconstruction rather than replacement is the procedure of choice.

5.6 Prognosis

- Mortality is now much reduced following valve replacement.
- Following valve replacement, late complications include infection, prosthetic dysfunction and left ventricular disease.

5.7 Main Disabling Effects

- Before surgery, individuals may report little in the way of day-to-day disability.
- A good outcome following a surgical procedure can be expected.
- Recovery after aortic or mitral valve replacement is usually rapid, with those in fulltime work typically able to return after 2-3 months.
- Atrial fibrillation reduces exercise tolerance and can cause disabling palpitations and breathlessness.
- Severe restriction of effort tolerance may merit the consideration of WCA R support group criteria for mobilising.

6. Arrhythmias

6.1 Definition

- Normal sinus rhythm is generally accepted to be a regular rate of between 60 and 100 beats per minute, and any variation from this is, by definition, an arrhythmia.

6.2 Aetiology

- Arrhythmias may occur in the absence of cardiac disease, but are more commonly associated with structural heart disease, myocardial infarction, chronic ischaemia or external provocative factors such as drugs.

6.3 Prevalence

- The most common arrhythmia is extrasystole.
- The most common recurrent arrhythmia is atrial fibrillation.

6.4 Diagnosis

- Arrhythmias may be asymptomatic, or may cause palpitations, syncope, chest pain, dizziness, fatigue and mental impairment.
- Physical examination may be normal if the arrhythmia is intermittent.
- Diagnosis is made by systematic analysis of the ECG during the arrhythmia. If arrhythmias are intermittent, continuous monitoring by 24 hour ECG or patient activated recorder is necessary.

6.5 Treatment

- Indications for treatment are the relief of symptoms and the prevention of complications such as myocardial ischaemia, cardiac failure or embolism. The same arrhythmia may be treated in a patient with underlying heart disease, but left untreated in a patient with a structurally normal heart.
- Anti-arrhythmic drugs have potentially serious side effects and may exacerbate the arrhythmia or precipitate a new arrhythmia.
- Physical treatments include: cardioversion, catheter ablation and the insertion of a cardiac pacemaker or implantable defibrillator.

6.6 Prognosis

- There may be no excess mortality (e.g. with extraystoles), or a very high mortality (e.g. ventricular fibrillation). If the arrhythmia is associated with other aggravating factors such as ischaemia or macroscopic abnormalities of the myocardium, the prognosis tends to be worse.
- Supraventricular tachycardias, not suppressed by therapy, carry a poor prognosis due to an increased risk of sudden death.

6.7 Main Disabling Effects

- Arrhythmias cause disability by limiting exercise tolerance, and some carry the risk of sudden incapacity, e.g. syncope or loss of vision due to an embolus.
- Transient arrhythmias such as extra systoles do not usually cause any disability.
- Disability may be increased by side effects of medication or psychological factors such as anxiety or depression.
- The presence of an implanted pacemaker is entirely compatible with normal and even strenuous exercise. However, the underlying heart condition may still restrict exercise tolerance.

7. Peripheral Vascular Disease

7.1 Peripheral Vascular Disease (Arterial)

7.1.1 Description

- Chronic lower limb ischaemia is usually due to atherosclerotic occlusion of arteries.
- Peripheral arterial disease can cause ulcers due to tissue ischaemia.
- Aneurysms are generally asymptomatic, but present with life or limb threatening complications.
- Upper limb ischaemia is much less common due to a rich collateral blood supply.

7.1.2 Diagnosis

- The affected limb may appear normal.
- The pain of claudication may be felt in the calf, posterior thigh or buttock depending on the anatomical level of arterial obstruction.
- Difficulty in demonstrating a palpable pulse may indicate the level.
- The severity of the ischaemia is measured in terms of the claudication distance (walking distance before stopped by pain).
- Rest pain indicates severe ischaemia.

7.1.3 Treatment

- Walking 80% of the claudication distance, resting, then resuming walking, is to be encouraged.
- Cardiovascular risk factors should be treated. Stopping smoking should be actively encouraged.
- Worsening ischaemia may necessitate a surgical procedure. Depending on the length of the occluding lesion this may be by stenting or bypass grafting.

7.1.4 Prognosis

- Treatment of an isolated solitary obstruction yields good results.
- A supervised exercise programme may improve the claudication distance.

7.1.5 Main Disabling Effects

- Walking and climbing stairs are most likely to be affected.
- The claudication distance can vary from 30 to several hundred metres.

7.2 Peripheral Vascular Disease (Venous)

7.2.1 Description

- Acute DVT is not usually seen in the disability analysis setting.
- Varicose veins are very common, but only a small proportion of those affected have symptoms.

7.2.2 Diagnosis

- After recurrent DVT, the leg will be oedematous, with atrophy of cutaneous fat and dermal fibrosis. Varicose eczema and ulceration may be present.
- Diagnostic tests for DVT include Doppler studies and venogram.

7.2.3 Treatment

- Most ulcers can be healed by non-operative treatment.
- Long-term anti-coagulation is needed for recurrent DVT.
- Surgical treatment of varicose veins is usually for cosmetic reasons.

7.2.4 Prognosis

- Varicose veins respond very well to surgical treatment.
- The presence of deep venous incompetence is associated with poor ulcer healing and higher ulcer recurrence rates.

7.2.5 Main Disabling Effects

- Postoperatively, daily walking of distances up to 2km is encouraged.
- Venous disorders affect prolonged standing and walking long distances.
- Functional restriction may occur in chronic venous disorders which are poorly controlled or which feature non-healing ulcers.

8. Asthma

8.1 Description

- Asthma is a chronic inflammatory disease with increased airway responsiveness resulting in a reversible and variable bronchial obstruction. The reversible airway narrowing distinguishes it from other predominantly irreversible causes of airway narrowing such as COPD and emphysema.
- The diagnosis of asthma is a clinical one.
- Central to all definitions is the presence of symptoms (more than one of wheeze, breathlessness, chest tightness, cough) and of variable airflow obstruction.

8.2 Aetiology

- Development of asthma is multifactorial and depends on the interactions between multiple susceptibility genes and environmental factors.
- Environmental factors may include allergen exposure, diet and perinatal factors.
- Occupational factors may be significant in some cases.
- Common triggers of an asthma attack include
  - Environmental and occupational allergens (numerous)
  - Infections
  - Exercise
  - Cold air
  - Inhaled irritants
  - Emotion
  - Aspirin and to lesser extent NSAIDs
  - Gastroesophageal reflux

8.3 Diagnosis

- The diagnosis of asthma is based on the recognition of a characteristic pattern of symptoms and the absence of an alternative explanation for them.

- Tests of value include spirometry (the preferred test if available), peak flow rate (PFR), reversibility tests and provocation test (usually exercise).

8.4 Prognosis

- In people with mild chronic asthma, prognosis is good, and progression to severe disease is rare.

- People with chronic asthma can improve with treatment.

- Up to 5% have severe disease that responds poorly to treatment and are most at risk of morbidity and death from asthma.

8.5 Main Disabling Effects

- Asthma is a chronic but variable condition. Both the baseline level of symptoms and their variability must be assessed to arrive at a true picture of a claimant's disability.
- Modern asthma treatment is capable of eliminating or significantly reducing regular asthma symptoms.
- The asthmatic should be able to live independently and continue with their usual interests and hobbies.
- Poorly controlled asthmatics are likely to experience frequent or severe exacerbations that require additional treatment such as high dose oral steroids, nebulised bronchodilators or courses of antibiotics.
- The main effect of asthma is to impair exercise tolerance.

8.6 Occupational Asthma

- Asthma is one of the commonest occupational lung diseases.
- Occupational Asthma is defined as asthma, which is induced by an inhaled agent at work:
  - An irritant inhaled in toxic concentration, or
  - A hypersensitivity reaction to a sensitising agent.
- It is commonest amongst:
  - Paint Sprayers.
  - Bakers.
  - Plastics and Chemicals Workers.
  - Hairdressers.

- There are over 200 known respiratory sensitisers and more are being identified each year. In Medical Services, OASIS (Occupational Asthma Sensitiser Information Service) is able to give advice about identifying triggers for occupational asthma to doctors advising on claims to Industrial Injuries Scheme Benefits.
- A detailed, occupational history is the most crucial step towards reaching a diagnosis.
- The latent period is pathognomonic of occupational asthma: the time between initial exposure and the onset of symptoms. This period may be days or many years, typically up to two years.
- Typically, symptoms improve away from work, such as at weekends or during periods of holiday, and deteriorate again on return to work.

8.6.1 Investigations

- Work Place Challenge Test: The patient is removed from work for two weeks. They then return to work under clinical supervision. Several peak flow readings will have been taken before returning to work and further readings will be taken during the following three days at work.
- The Laboratory Challenge Test is the definitive test for occupational asthma. A specific agent is inhaled under laboratory conditions, and airway responsiveness is measured.

8.6.2 Treatment

- The most important aspect is: immediate removal from the exposure.
- Removal very early in the disease process may result in complete resolution of the asthma.

8.6.3 Differential Diagnosis

- Occupational asthma is a Prescribed Disease under the Industrial Injuries Provisions of the Social Security Act 1975
- It is necessary to differentiate between Occupational Asthma and Reactive Airways Dysfunction Syndrome (RADS).
- RADS follows exposure to high concentrations of gas, smoke, or fumes with irritant properties.
- There is no latent period. The onset of symptoms is within 24 hours of exposure and they may persist for a period of a few days or for as long as 12 years.
- RADS is not a Prescribed Disease, but it can qualify as an Industrial Accident.

9. Chronic Obstructive Pulmonary Disease

9.1 Description

- Chronic Obstructive Pulmonary Disease is a chronic progressive disorder characterised by airflow limitation.
- Airways limitation may be partly reversible (i.e. have an additional asthmatic element).
- COPD is disabling because of the reduced exercise tolerance.
- COPD has previously been referred to as Chronic Obstructive Airways Disease (COAD).
- The development of COPD is associated with the inhalation of atmospheric pollutants.

9.2 Aetiology

- The main cause is cigarette smoking.
- There is evidence that dusty occupations and air pollution lead to COPD. Occupational exposure to coal dust, grain, and various airborne chemicals is associated with COPD.

9.3 Diagnosis

- COPD can present either with cough and sputum, progressive breathlessness or both.
- Informal observations are helpful in staging severity of the disease.
- Early in the disease, clinical examination may be normal.
- In the later stages, there will be abnormal clinical findings.
- The single best diagnostic test in those with airflow limitation is the FEV1.
- FEV1 correlates better with effort tolerance than PEF (PFR).

9.4 Treatment

- The single most important intervention is smoking cessation.
- Medication may alleviate symptoms, but will not restore lost lung function.
- The majority will have some response to bronchodilators.
- Inhaled corticosteroids help 20-30% of patients.
- Oral corticosteroids may play a part in treating exacerbations, but should be avoided long-term.
- Pulmonary rehabilitation can both reduce symptoms and improve function.
- In severe cases, survival may be significantly increased by oxygen therapy.

9.5 Prognosis

- Lung function declines steadily if smoking continues.
- Lung function reverts relatively quickly to its normal gradient if smoking ceases.
- Rehabilitation is of most benefit to moderately dyspnoeic patients.

9.6 Main Disabling Effects

- Initially disablement is minimal.
- This can progress to difficulty walking quickly, then at normal pace or on stairs.
- More severely affected cases may have difficulty with daily activities such as dressing.
- Breathlessness at rest indicates minimal effort tolerance.
- Clinical findings **do not correlate well** with functional ability.

10. Asbestos Related Lung Disease

10.1 Description

- Asbestos is the generic term for a group of fibrous minerals.
- Asbestos fibres are highly resistant to physical and chemical breakdown. This gives them their commercial value in applications such as fireproofing, insulation, reinforced cement, and brake linings.
- In 1986, a legal ban on the use of asbestos was introduced in the UK.
- Workers in contact with asbestos are now required to wear protective clothing and breathe through sophisticated filters. Industry has had to replace asbestos with alternative materials.
- Inhalation of asbestos fibres can cause Asbestos Related Lung Disease:
  - Asbestosis.
  - Pleural Plaque.
  - Diffuse Pleural Thickening.
  - Mesothelioma.

10.2 Aetiology

- The fibres are narrow enough to be inhaled into the alveolar part of the lung.
- Asbestos fibres can persist in the body for decades.
- Fibrosis or ‘scarring’ of the lungs is caused by the body’s inflammatory response to the asbestos.
- In non-malignant asbestos related lung disease, the prevalence and severity of the conditions increase with increasing exposure to asbestos.

10.3 Asbestosis

- Asbestosis is interstitial pulmonary fibrosis caused by the inhalation of asbestos.
- The early stages of the disease are asymptomatic. When symptoms develop, patients complain of a non-productive cough, and breathlessness on sustained exertion.
- The Key Finding On Examination: Fine end-inspiratory crackles, which persist or increase after coughing.
- Chest expansion is usually reduced. (Patients often complain that they have difficulty taking a deep breath.)
- High resolution CT scanning is the investigation of choice.
- Asbestosis is usually slowly progressive.
- Asbestosis carries a five-fold increase in the risk of developing bronchial carcinoma.

- While there is no specific treatment for the presence of the asbestos fibres, the conditions which arise due to their presence (e.g, pulmonary fibrosis, COPD, asthma or tumours) are treated as they would be if caused by other mechanisms.

10.4 Pleural Plaque

- This is an area of local fibrous thickening on the lung pleura.
- Pleural plaques generally develop 10 to 20 years after exposure.
- Pleural plaque is usually asymptomatic, and often presents as an incidental finding on a CXR.
- Usually there are no specific clinical findings on examination.
- CXR most often shows multiple bilateral pleural plaques.
- On its own, this condition carries a good prognosis.

10.5 Diffuse Pleural Thickening

- This is uniform smooth thickening of the pleura.
- Pleural effusions cause inflammation and fibrosis. Recurrent episodes lead to pleural thickening.
- Diffuse pleural thickening is like a ‘straight jacket’ around the lungs. The more it spreads, the more it limits lung expansion.
- Diffuse pleural thickening usually presents with recurrent episodes of pleuritic pain, cough and breathlessness.
- This disease is usually slowly progressive.

10.6 Malignant Mesothelioma

- Mesothelioma is a malignant tumour of mesothelial cells, usually derived from the pleura.
- The tumour begins as a local mass, often associated with a pleural effusion. It gradually spreads to encase the lungs and extends to involve the chest wall and the pericardium.
- In heavily exposed individuals, the lifetime risk of developing mesothelioma is approximately 10%.
- Individuals who have never been exposed to asbestos have a lifetime risk of only one in a million. However, there does not seem to be a simple relationship between the amount of exposure and the risk of developing mesothelioma.
- The latent period after exposure is between 15 and 40 years, so mesothelioma usually presents between the ages of 50 and 70.
- Mesothelioma typically presents with chest pain, shortness of breath, day and night sweats and weight loss. (Patients will sometimes describe a persistent flu-like illness.)
- CT scanning is the radiographic investigation of choice.

- A pleural biopsy is obtained for histology.
- Median survival is approximately 18 months from the time of diagnosis.

10.7 Epidemiology

- The prevalence of asbestos related lung disease is expected to peak around 2020.
- Benign asbestos related lung disease was the largest cause of new cases of occupational respiratory disease in the UK during 1999.
- From 100 - 150 new cases of asbestosis are confirmed in the UK each year.
- Pleural plaques are the most frequent manifestation of asbestos related lung disease.
- Asbestos exposure typically affects people who have worked in the construction, ship building, asbestos production and rail industries.

10.8 Legal Aspects

- Mesothelioma, asbestosis, diffuse pleural thickening and primary carcinoma of the lung (where there is evidence of either asbestosis or a history of substantial exposure to asbestos without evidence of asbestosis) are Prescribed Diseases under the Industrial Injuries Provisions of the Social Security Contributions and Benefits Act 1982.

10.9 Treatment

- Currently, treatment of asbestos related lung disease is largely symptomatic and supportive.

11. Interstitial Lung Disease (ILD)

11.1 Definition

- ILDs encompass a diverse range of diseases that affect the gas exchanging regions of the lung, and which may progress to diffuse lung fibrosis.

11.2 Aetiology

- Interstitial lung fibrosis is commonly caused by:
  - Idiopathic pulmonary fibrosis (IPF).
  - Connective tissue disorders.
  - Sarcoidosis.
  - Extrinsic allergic alveolitis (EAA).
- The chronic interstitial lung disorders cause a restrictive pattern of ventilatory impairment: an overall reduction in lung volume and impaired gas diffusion across the alveolar-capillary membrane.

11.3 Prevalence

- The incidence of IPF increases with age, and is rare in those of working age.

11.4 Diagnosis

- Common features of ILD are a history of progressive dyspnoea and a dry cough.
- On auscultation of the chest, dry, fine end-inspiratory, basal ‘Velcro’ crackles are commonly heard.
- Pulmonary function tests show a restrictive pattern of impairment.
- Chest radiograph (CXR) shows widespread pulmonary shadows. High resolution computed tomography allows detailed evaluation, and lung biopsy allows histological diagnosis.

11.5 Treatment

- Conventional treatment of IPF includes corticosteroids, immunosuppressives (e.g. azathioprine), cytotoxic agents (e.g. cyclophosphamide) and antifibrotic agents (colchicines or d-penicillamine) either alone or in combination.
- There is no evidence that treatment improves survival or quality of life, and it is associated with a risk of serious complications. Hence, therapy may not be indicated for all patients.
- Lung transplantation may be considered for younger patients.
- Avoidance of the causative antigen is the mainstay of treatment for extrinsic allergic alveolitis.

11.6 Prognosis

- IPF is a progressive disorder: the mean length of time from diagnosis to death is between 3 and 5 years. Following lung transplantation, a 5-year survival rate of 50 - 60% can be achieved.
- In EAA, if exposure to the antigen ceases, the risk of continuing symptoms increases with the duration of initial exposure. If antigen exposure continues, progressive fibrosis occurs in a minority of individuals.

11.7 Main Disabling Effects

- The main disabling effect is breathlessness on exertion.
- With mild degrees of impairment, the results of lung function tests correlate poorly with symptoms.
- The side effects of treatments may be disabling.

12. Tuberculosis and Sarcoidosis

12.1 Tuberculosis

12.1.1 Description

- Tuberculosis is an infection caused by the organism *Mycobacterium tuberculosis.*
  - The most commonly affected site is the lung.
  - The prevalence of tuberculosis is increasing worldwide.
  - It causes more deaths worldwide than any other single infectious disease.
  - In the UK, the condition has seen resurgence, especially in London and the Southeast.

12.1.2 Aetiology

- Infection can be ‘primary’ or ‘post-primary’.
  - It can spread systemically to cause miliary TB, TB meningitis or TB in distant organs.
  - Those developing overt TB are a small proportion of all who are infected with the organism.
  - The majority of cases go undetected.

12.1.3 Prevalence

- More than 50% of UK cases are in those born outside the UK.
  - More than 33% of cases are in individuals from the Indian sub-continent.

12.1.4 Diagnosis

- There may be no symptoms reported.
  - When symptoms do occur they are usually non-specific.
  - Diagnosis may be more difficult to establish in HIV positive patients.
  - Clinical examination is seldom abnormal.
  - Radiological changes are usually non-specific but atypical pictures may be seen, particularly in HIV positive patients.
  - Tuberculosis can mimic many other conditions.

12.1.5 Treatment

- All confirmed cases should be treated.
  - The majority will be well enough to be managed as outpatients.
  - Fully trained specialists should supervise treatment.
  - After 2 weeks of treatment, patients can be considered non-infectious.
  - In the UK relapse is usually due to poor compliance.

12.1.6 Prognosis

- With appropriate treatment the cure rate is > 95%.
  - Drug resistant TB is currently rare in the UK.
  - Some cases will have serious and life threatening complications.

12.1.7 Main Disabling Effects

- In the majority of cases, disablement is likely to be minimal to mild.
  - Disablement may be due to debility or reduced stamina.

12.2 Sarcoidosis

12.2.1 Description

- Sarcoidosis is a multi-system disease of unknown origin.

12.2.2 Prevalence

- The condition is recognised worldwide.

12.2.3 Diagnosis

- The acute form usually affects young adults and it can be completely asymptomatic. Abnormal clinical findings and loss of lung function are unusual.
- The combination of erythema nodosum and bilateral hilar lymphadenopathy is known as Lofgren's syndrome.
- The chronic form has a more insidious onset and affects an older age group, with the involvement of many organs. If progressive fibrosis occurs then lung function may be lost.
- In advanced disease, the signs of fibrosis and airways obstruction will be evident.

12.2.4 Treatment

- For most patients, the condition will resolve spontaneously without treatment.
- Oral steroids are used in some patients with CXR changes or progressive symptoms, to try to prevent severe fibrosis.

12.2.5 Prognosis

- The majority of patients make a full recovery.
- Mortality is less than 3%.
- Afro-Caribbean ethnicity is a poor prognostic indicator.
- The outcome for the chronic form is much less favourable.

12.2.6 Main Disabling Effects

- The majority of cases will have no or minimal disability.
- Fatigue may limit exertional activities rather than respiratory symptoms.
- Severe cases with deteriorating lung function may meet the WCA R support group criteria for mobilising.
- Steroid treatment can cause further disability.

13. Bronchiectasis and Cystic Fibrosis

13.1 Bronchiectasis

13.1.1 Description

- Bronchiectasis is a chronic disease characterised by irreversible dilatation of the bronchi due to bronchial wall damage from infection and inflammation.

13.1.2 Aetiology

- Respiratory Infections cause the majority of cases, but other important causes include:
  - Cystic Fibrosis.
  - Bronchial Obstruction.
  - Immune Deficiency.
  - Smoking.

13.1.3 Clinical Features

- The cardinal features of bronchiectasis are a chronic cough and copious purulent sputum.
- An exacerbation occurs when an acute respiratory infection makes the condition worse. The additional symptoms usually include fever and pleuritic chest pain. Sometimes there is haemoptysis.
- Coarse crackles and/or wheeze may be audible on listening to the chest.
- Finger clubbing is associated with persistent purulent bronchiectasis.
- High resolution CT scanning is the best diagnostic tool.

13.1.4 Treatment

- Where possible, the underlying cause of bronchiectasis should be treated.
- The following techniques form the mainstay of treatment:
  - Reducing and clearing secretions. (Physiotherapy and anticholinergic drugs.)
  - Controlling infections. (High dose antibiotics and immunisations.)
  - Reducing airflow obstruction. (Bronchodilators for reversible obstruction.)
  - Surgical excision of the damaged lung.

13.1.5 Prognosis

- The normal course of bronchiectasis is a gradual deterioration of lung function, complicated by intermittent acute infective exacerbations.

13.2 Cystic Fibrosis

13.2.1 Description

- Cystic fibrosis (CF) is an inherited disease characterised by pancreatic insufficiency and recurrent respiratory tract infections.
- Damage to the pancreas occurs in 85% of cases.
- 90% of males with cystic fibrosis are infertile. Females have near-normal fertility.
- Pulmonary disease is the major cause of morbidity and mortality in CF. Neonates have histologically normal lungs, but mucous plugging and inflammation of the airways soon develops. Eventually destruction of lung tissue results in bronchiectasis.

13.2.2 Aetiology

- CF is caused by an autosomal recessive inherited disorder.

13.2.3 Diagnosis

- The diagnosis is usually made in childhood following the appearance of suspicious clinical features:
  - Meconium Ileus.
  - Steatorrhoea.
  - Failure to Thrive.
  - Recurrent Severe Respiratory Infections.
- The Sweat Test remains a key diagnostic tool. It relies on the high levels of sodium present in the sweat of those with CF.
- Genotyping is a very useful way of detecting the commonest CF mutations. However, there are many varieties of the mutation, and currently not all of them can be identified by this test.

13.2.4 Treatment

- The general principles of treatment are the same as those of bronchiectasis.
- Taking oral enzyme supplements with meals can successfully treat malabsorption.
- Patients with CF need a high calorie diet, up to 50% higher than the normal requirement.
- Work is underway to find a method for introducing an intact version of the CF gene to the lungs.

13.2.5 Prognosis

- Modern treatment of CF is now able to achieve a life expectancy of 30-40 years.

13.2.6 Main Disabling Effects

- Despite the likelihood of frequent respiratory tract infections, 56% of adults with CF are employed.

14. Stroke and Transient Ischaemic Attacks (T.I.A.s)

14.1 Stroke

14.1.1 Description

- Stroke is defined as a clinical syndrome of rapid onset of focal cerebral deficit lasting more than 24hours.
- Cerebrovascular disease remains the leading cause of institutional placement in adults who have lost functional ability to be independent.
- Most vascular injury to the brain is secondary to atherosclerosis or hypertension.
- It can occur at any age but there is increased incidence in the elderly with three quarters of all first strokes occurring in the over 65s.

14.1.2 Diagnosis

- The diagnosis of stroke can be made reasonably accurately by history taking and clinical examination.
- The clinical findings can vary greatly in severity from minor weakness to complete disability.
- A CT scan is the best initial investigation for acute stroke as it can be done quickly

14.1.3 Management

- Stroke management after the immediate stabilisation involves acute care and rehabilitation, and combines the use of medical and physical interventions to improve stroke outcome.
- Patients who receive organised stroke unit rehabilitation are more likely to survive their stroke, return home, and make a good recovery.
- Restoration of motor function is best achieved by intensive physiotherapy.
- Improvement in motor function can continue for up to six months.
- Language impairment (aphasia and dysphasia) is apparent in about one quarter of survivors of a stroke.
- Depression post stroke is common.

14.1.4 Prognosis

- The mortality rate increases with age.
- Of all stroke survivors nearly half are left dependant.
- Any deficit remaining after 6 months is likely to be permanent.

14.1.5 Disabling Effects

- 50% of people who survive a stroke will exhibit some residual disability after 6 months.
- The most common site of brain damage results in hemiplegia and can range from a mild weakness to complete paralysis.
- Other deficits which may be encountered include:
  - receptive or expressive dysphasia
  - a homonymous hemianopia
  - vertigo
  - difficulty with speech
  - chewing, and swallowing
  - ataxia
  - nystagmus

14.2 Transient Ischaemic Attacks (T.I.A.s)

14.2.1 Description

- Focal neurological abnormalities of sudden onset and brief duration
- Most T.I.As are due to cerebral emboli.
- T.I.As are most common in the middle aged or elderly.

14.2.2 Diagnosis

- Symptoms are identical to those of stroke but are transient.
- Consciousness remains intact throughout the episode.
- TIAs are rarely seen on a CT scan.
- Underlying risk factors (the same as for stroke) should be identified and treated if possible.

14.2.3 Main Disabling Effects

- T.I.A.s do not result in residual disability

15. Analytical Guidance

Introduction

The main tables in this section provide guidance concerning the cardio-respiratory conditions that are most commonly encountered when working in the field of Disability Assessment Medicine. Additional information that is of particular relevance to ESA approved practitioners is provided in the subsidiary tables that follow.

15.1 Asthma and COPD

15.1.1 Main features

Severe Disability Likely	History:	Multiple emergency respiratory admissions to hospital in the last 2 years. Treatment at Step 4 or 5 of BTS Asthma Guidelines. (Especially regular oral steroids or nebulised treatment.) Had to make major modifications to lifestyle, e.g. sleeping downstairs.
	Observation:	Breathless at rest, on minimal exertion, or on speaking. Typical appearance in COPD ranges from: thin, breathless, hyperinflated chest, to being, overweight, oedematous and cyanosed.
	Examination:	Evidence for severe disability is most likely to be derived from the medical and Typical Day histories, and from informal observation. Where examination findings are needed to provide confirmatory evidence, the techniques used should be minimally intrusive.
Significant Disability Likely	History:	Attendance at hospital respiratory clinic. Emergency respiratory admissions to hospital in the last 2 years. Emergency respiratory treatment from GP or Casualty in the last 2 years. Treatment at Step 3 or 4 of BTS Asthma Guidelines. (Especially intermittent use of oral steroids or nebuliser for exacerbations.) Active management by the claimant: e.g. regularly attends GP respiratory clinic, has written management plan, measures own peak flow. **Asthma is a variable condition:** ask about variability, symptoms and treatment over the last 2 years to avoid a potentially misleading “snapshot” view.
	Observation:	Breathless on mild exertion. (Walking in the examination centre.)
	Examination:	Wheeze on auscultation and/or reduced peak flow may be found on examination, but these provide only a “snapshot” view and correlate poorly with functional ability.
Significant Disability Unlikely	History:	Treatment at Step 1 to 3 of BTS Asthma Guidelines. Good asthma control achieved, with rare or mild exacerbations. Minimal restriction of Typical Day activities, especially walking and climbing stairs.
	Observation:	The medical and Typical Day histories are the most useful tools.

	Examination:	Wheeze on auscultation and/or reduced peak flow may be found on examination, but these provide only a “snapshot” view and correlate poorly with functional ability.
Prognosis		Asthma and COPD are chronic conditions. Once they have become established, improvement is unlikely and change is usually gradual.

15.2 Heart Failure, Valvular Heart Disease and Arrythmias

15.2.1 Main features

Severe Disability Likely	History:	Multiple emergency cardiac admissions to hospital in the last 2 years. Treatment with high dose combinations of cardiac drugs. May be awaiting heart transplant, valve replacement or revascularisation. Major modifications to lifestyle, e.g. receiving personal care from another person.
	Observation:	Breathless at rest, on minimal exertion or on speaking. Central cyanosis.
	Examination:	Evidence for severe disability is most likely to be derived from the medical and Typical Day histories, and from informal observation. Where examination findings are needed to provide confirmatory evidence, the techniques used should be minimally intrusive.
Significant Disability Likely	History:	Attendance at hospital cardiology clinic. Emergency cardiac admissions to hospital in the last 2 years. Echocardiogram, 24-hour tape, cardioversion. Treated with cardiac drugs. Marked fatigue, PND, orthopnoea and frequent *symptomatic* arrhythmias. Needs help with heavier daily tasks e.g. shopping and hoovering.
	Observation:	Breathless on mild exertion. (e.g. walking on the flat indoors.)
	Examination:	Abnormal findings on cardiovascular examination are likely, and may include: abnormalities of pulse, blood pressure and heart sounds: peripheral oedema, pulmonary oedema or pleural effusion, and liver enlargement may also be evident. Examination may be normal.

Significant Disability Unlikely	History:	Discharged from cardiac clinic. Stable on cardiac medication and symptoms well controlled. Successfully fitted with a pacemaker: this is compatible with normal exertion. Asymptomatic arrhythmia, e.g. extrasystoles. Minimal restriction of Typical Day activities, especially walking and climbing stairs.
	Observation:	The medical and Typical Day histories are the most useful tools.
	Examination:	No evidence of cardiac failure on examination.
Prognosis	**Heart Failure:**	Once chronic heart failure has become established, improvement is unlikely.
	Valve Disease and Arrhythmias:	Most arrhythmias and valve disease can be controlled by treatment. Consider any planned treatment when advising on prognosis. After successful treatment, the conditions are likely to remain stable for long periods.

15.2.2 Additional information for ESA approved practitioners

Consider NFD		The NFD "*a severe life threatening disease which is uncontrolled or uncontrollable*" would be appropriate for an arrhythmia that produces recurrent episodes of loss of consciousness or valve condition that carries a risk of sudden death.
Prognosis and review periods	**Heart Failure:**	A review period of 2 years or "in the longer term" will often be appropriate. However, if it seems likely that, with additional treatment, the condition may improve a shorter prognosis may be considered.
	Valve Disease and Arrhythmias:	In stable cases, review dates of 18 months or more are likely to be appropriate.

15.3 Bronchiectasis, Asbestos Related and Interstitial Lung Disease

15.3.1 Main features

Severe Disability Likely	History:	Multiple emergency respiratory admissions to hospital in the last 2 years. Long term or frequent courses of antibiotics in bronchiectasis. Awaiting lung transplantation. Reliant on oxygen therapy. Had to make major modifications to lifestyle, e.g., house bound, live-in carer.
	Observation:	Breathless at rest, on minimal exertion or on speaking. Central cyanosis. Cachexia.
	Examination:	Evidence for severe disability is most likely to be derived from the medical and Typical Day histories, and from informal observation. Where examination findings are needed to provide confirmatory evidence, the techniques used should be minimally intrusive.
Significant Disability Likely	History:	Occupational history is especially relevant in asbestos related lung disease. Attendance at hospital respiratory clinic. Lung biopsy in interstitial lung disease. Emergency respiratory admissions to hospital in the last 2 years. Frequent infective exacerbations in bronchiectasis.
	Observation:	Breathless on mild exertion. (e.g. walking on the flat indoors.) Cough and sputum in bronchiectasis.
	Examination:	• Bronchiectasis: coarse crackles on auscultation. • Asbestos Related: fine end-inspiratory crackles persisting after cough. • Interstitial Disease: fine end-inspiratory crackles.
Significant Disability Unlikely	History:	Many claimants suffering from these chronic conditions have minimal disability with stable or very slowly progressive disease. Discharged from hospital respiratory clinic. Rare or mild exacerbations in bronchiectasis. Minimal restriction of Typical Day activities, especially walking and climbing stairs.
	Observation:	Likely to be normal.
	Examination:	Respiratory examination is likely to be normal.

Prognosis		Mesothelioma carries a very poor prognosis. These are chronic conditions, improvement is unlikely and change is usually gradual.

15.3.2 Additional information for ESA approved doctors

Consider Support Group		A diagnosis of mesothelioma may trigger TI.
Consider NFD		A NFD may be appropriate for claimants who have a life-threatening disease, but who have not yet developed significant functional impairment.
Prognosis and review periods		A review period of 18 months, 2 years or “in the longer term” will often be appropriate.

15.4 Tuberculosis and Sarcoidosis

15.4.1 Main features

Severe Disability Likely	History:	**TB:** Claimants with AIDS who develop TB are likely to be suffering from an advanced stage of the disease. **Sarcoid:** Claimants with severe progressive chronic lung fibrosis. Had to make major modifications to lifestyle, e.g. sleeping downstairs.
	Observation:	Look ill. Breathless at rest, on minimal exertion, or on speaking. Cachexia.
	Examination:	Evidence for severe disability is most likely to be derived from the medical and Typical Day histories, and from informal observation. Where examination findings are needed to provide confirmatory evidence, the techniques used should be minimally intrusive.
Significant Disability Likely	History:	**TB:** Chronic untreated disease e.g., chronic cavitating, fibrotic lung disease. **Sarcoid:** Attendance at hospital respiratory clinic for active management. Treatment with corticosteroids or immunosuppressants.
	Observation:	Breathless on mild exertion. (e.g. walking on the flat indoors.)
	Examination:	Respiratory examination may be normal.
Significant Disability Unlikely	History:	Minimal restriction of Typical Day activities, especially walking and climbing stairs.
	Observation:	The medical and Typical Day histories are the most useful tools.
	Examination:	Respiratory examination is likely to be normal.
Prognosis	**TB:**	Compliance with treatment will usually lead to full recovery. Patients are no longer considered infectious after 2 weeks of treatment.
	Sarcoid:	The majority of cases have minimal or no disability. Acute sarcoidosis typically affects young adults of 20 – 35 years of age, usually resolving spontaneously without continuing disability. Chronic sarcoidosis affects an older age group. Change is unlikely if disabling fibrotic lung disease persists.

15.4.2 Additional information for ESA approved practitioners

Prognosis and review periods	**TB:**	Review in 6 months will often be appropriate.
	Sarcoid:	In acute sarcoidosis, a review after 6 or 12 months will often be appropriate. In chronic sarcoidosis with disabling fibrotic lung disease, a review period of 18 months, 2 years or “in the longer term” will often be appropriate

15.5 Peripheral Vascular Disease

15.5.1 Main features

Severe Disability Likely	History:	**Arterial Disease:** Rest pain or night pain in the affected limb. Requires strong opiate analgesia for ischaemic pain. Claudication restricts walking distance to 50 metres or less. A previous amputation, when the use of a prosthesis has not been possible. **Venous Disease:** Gross venous insufficiency with **massive** oedema.
	Observation:	May be reliant on walking sticks, crutches or a wheelchair.
	Examination:	Evidence for severe disability is most likely to be derived from the medical and Typical Day histories, and from informal observation. Where examination findings are needed to provide confirmatory evidence, the techniques used should be minimally intrusive.
Significant Disability Likely	History:	**Arterial Disease:** Revascularisation treatment planned, or in the past. History of **ischaemic** ulceration or amputation. A consistent history of claudication. **Venous Disease:** Attendance at hospital vascular or dermatology clinic. Large scale or repeated surgical treatment of varicose veins. Frequently recurrent or chronic venous ulceration requiring specialised dressings, bandaging techniques or skin grafting. Impaired walking ability will restrict activities such as shopping and travelling.
	Observation:	May walk with a limp.
	Examination:	**Arterial Disease:** Limb may be cold and pale and the skin may show trophic changes. Peripheral pulses may be absent. **Venous Disease**: Varicose eczema, active ulceration, lipodermatosclerosis (inverted champagne bottle leg) and chronic non-pitting oedema.
Significant Disability Unlikely	History:	Minimal restriction of Typical Day activities, especially walking and climbing stairs.
	Observation:	Likely to be normal.
	Examination:	Varicose veins, pigmentation, healed ulceration and mild swelling can be present without affecting functional ability.

Indicating Prognosis	**Varicose Vein Surgery:**	Patients are encouraged to walk after vein surgery, and are likely to achieve 2 km within a few days. Following successful surgery, standing, walking and climbing stairs will soon be unrestricted.
	DVT:	There is a spectrum of disease from acute local disease to severe or recurrent thrombosis. A single episode of DVT is likely to resolve quickly. Severe or recurrent thrombosis may take longer to resolve or cause chronic damage to the limb.

15.6 Hypertension

15.6.1 Main features

Assessing Disability		**Hypertension does not directly cause disability.** Only the very highest levels of blood pressure will directly cause symptoms. Hypertension may lead to cardiovascular disease, and in these cases, the focus of the assessment should be directed at the condition that is directly causing disability. **Interpreting the Blood Pressure:** A blood pressure measurement taken in the course of a disability examination is likely to be adversely affected by the circumstances. It can only provide a rough guide to the general level of the claimant's blood pressure, so all the available sources of information must be used to build up a picture of their overall condition. **Side Effects of Treatment:** Many hypertensive patients will suffer some side effects from their treatment, but these will usually be of nuisance value – without causing significant disability. **Grading Treatment in Hypertension:** Maximal treatment of hypertension suggests at least triple therapy. Claimants intolerant of treatments may not be taking three drugs, but will have tried all the main classes of anti-hypertensive treatment.
Indicating Prognosis		A claimant recently referred to a hospital hypertension clinic will require time for assessment and stabilisation. For a claimant whose blood pressure remains poorly controlled despite long-term attendance at a hospital hypertension clinic, change is usually gradual.

15.6.2 Additional information for ESA approved practitioners

Consider NFD		• The NFD "*a severe life threatening disease which is uncontrolled or uncontrollable*" would be appropriate for claimants whose hypertension remains severe, uncontrolled and life-threatening despite intensive intervention and attendance at a tertiary treatment centre.
Prognosis and review periods		• Where an NFD is indicated for a claimant with hypertension , a review period of at least 18 months will often be appropriate.

15.7 Ischaemic Heart Disease and Chest Pain

15.7.1 Main features

Severe Disability Likely	History:	**Ischaemic Heart Disease:** Multiple emergency cardiac admissions to hospital in the last 2 years. Frequent symptoms of angina on minimal/mild exertion. Treatment with high dose combinations of cardiac drugs. May be awaiting revascularisation. Severely restricted exercise tolerance, e.g. cannot manage stairs at home.
	Observation:	Looks grey and unwell. Breathless at rest, on minimal/mild exertion or on speaking.
	Examination:	Evidence for severe disability is most likely to be derived from the medical and Typical Day histories, and from informal observation. Where examination findings are needed to provide confirmatory evidence, the techniques used should be minimally intrusive.
Significant Disability Likely	History:	**Regional Pain Syndrome:** Attendance at pain clinic. Use of standard and atypical analgesic medications. Psychological distress. **Ischaemic Heart Disease:** Attendance at hospital cardiology clinic. Emergency cardiac admissions to hospital in the last 2 years. Treated with cardiac drugs. Frequent symptoms of angina, requiring GTN for relief. Attending cardiac rehabilitation course. Avoids rushing, walks at own pace.
	Observation:	Likely to be normal.
	Examination:	Cardiovascular examination may be normal.
Significant Disability Unlikely	History:	Discharged from cardiac clinic. Stable on cardiac medication and symptoms well controlled. History, symptoms and treatment not typical of angina. (Most non-cardiac chest pain is self-limiting and causes minimal disability.) Successfully completed cardiac rehabilitation course. Successful revascularisation procedure at least 6 months ago. Minimal restriction of Typical Day activities, especially walking and climbing stairs.
	Observation:	Likely to be normal.
	Examination:	Cardiovascular examination likely to be normal.

Prognosis	**Angioplasty:**	Recovery is expected to be within 4 weeks of angioplasty.
	CABG:	The British Heart Foundation recommends that return-to-work should be 4-8 weeks after a successful operation.[5]
	Post MI	The British Heart Foundation recommends that return-to-work should be 4-6 weeks post MI.

15.8 Stroke and Transient Ischaemic Attacks (T.I.A.s)

15.8.1 Main Features

	Significant disability unlikely	Significant disability likely	Severe disability likely
History & Symptoms	Fully conscious		Somnolent but can be wakened
	Orientated in time, place and person	Disorientated in one of the three	Disorientated in two or more
	Fully continent or can manage incontinence independently	Occasional bowel or bladder incontinence requiring help	Regularly incontinent and requiring help
	Feeds independently (with aids if needed)	Some help needed (e.g. cutting food) Feeds in reasonable time	Unable to feed self at all
	Sits and rises independently	Sits without support. Needs use of aid to rise	Cannot rise without support of another person
	Walks independently (reasonable distance and time)	Use of aids for reasonable distance in reasonable time	Cannot walk at all or requires support / supervision of another person
	Dresses independently	Help in some areas or uses aids	Cannot dress independently
	Can toilet independently (with or without aids)	Requires help in some areas	Cannot toilet independently
	No problem on stairs or uses handrail	Requires supervision from another person	Cannot use stairs even with supervision or support
Typical day	Independent day to day living and full social interaction	Some restrictions on ADLs and reduced social interaction	Requires help with most ADLs and severe restriction of social interaction

	Significant disability unlikely	Significant disability likely	Severe disability likely
Observations	Informal movements within normal limits No speech problem Mentally alert	Some restriction in upper or lower limb function Limited vocabulary Minor memory impairment	Full loss of function in at least one limb No coherent speech Significant cognitive impairment
Clinical findings	No significant clinical findings	Minor neurological deficits	Major neurological deficits

15.8.2 Overall analysis

Most common problems are as the result of the area affected and the density of the stroke. Cumulative effects must be considered where more than one limb is involved or mental or sensory deficits co-exist.

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