Why you should read this article:

- To recognise the various types of chest pain
- To identify chest pain that requires urgent intervention
- To familiarise yourself with the elements of a structured chest pain assessment

Using a structured clinical assessment to identify the cause of chest pain

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Abstract

Chest pain is a common reason for patient presentation to emergency departments and visits to primary care settings. While most causes of chest pain are not life-threatening, a small proportion require urgent intervention, particularly cardiac conditions such as acute coronary syndrome. Therefore, it is essential for healthcare practitioners, including nurses, to identify the cause of chest pain in a safe, timely and effective manner. This article outlines the main causes of chest pain and describes the aspects of chest pain assessment, including patient history-taking, physical examination and clinical investigations. Assessing chest pain requires healthcare practitioners to have knowledge of its causes and pathophysiology, the use of structured assessment tools and the latest evidence-based guidelines.

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Keywords

angina, cardiorespiratory, cardiovascular diseases, chest pain, diagnosis, heart diseases, history taking, nursing care, pain, pain assessment, patient assessment, patients, professional issues

Aims and intended learning outcomes

The aim of this article is to enable nurses to reflect on their role in assessing patients who present with chest pain. After reading this article and completing the time out activities you should be able to:

- Identify the main causes of chest pain and their different presentations.
- Explain which causes of chest pain are potentially life-threatening and require urgent intervention.
- Outline the elements of a structured chest pain assessment, including patient history-taking, physical examination and clinical investigations.
- Understand the use of symptom analysis tools to obtain relevant information about patients' chest pain, to achieve a working diagnosis and make informed decisions about treatment.

Introduction

Chest pain has been defined as pain in the thorax, and it can be classified by its cause, for example cardiac or non-cardiac origin, and by the type of pain, for example localised or poorly localised, or pleuritic versus non-pleuritic (National Institute for Health and Care Excellence (NICE) 2017).

Chest pain is a common reason for patient presentation to emergency departments and visits to primary care settings (Parsonage et al 2013, Ayerbe et al 2016). NICE (2017) estimated that chest pain is the reason for 5% of presentations to emergency departments and around 1-2% of visits to primary care settings. The management of chest pain is underpinned by structured assessment and evidence-based guidelines. Some patients presenting with chest pain will have a life-threatening condition that requires urgent intervention to prevent further harm and possibly death; however, most causes of chest pain will not be life-threatening. Therefore, it is crucial to identify which patients are at immediate risk in a safe, timely and effective manner (Parsonage et al 2013).

This article describes the main causes of chest pain, and focuses on its assessment, including patient history-taking, physical examination and clinical investigations. Nurses work in a variety of clinical areas where patients may present with or develop chest pain, including primary care settings, hospital wards and walk-in centres.

Therefore, they should have the knowledge and skills to assess the presentation of chest pain and refer patients to the appropriate services in a timely manner.

Pathophysiology of chest pain

It is important to understand how the pathophysiology of chest pain is linked to its various presentations. To differentiate the origin of chest pain, Laird et al (2004) suggested that two broad categories of presenting pain should be considered – somatic pain and visceral pain.

Somatic chest pain originates from the chest wall (such as skin, ribs and intercostal muscles), pericardium (such as fibrous and parietal layer) and the parietal pleura. Pain from these structures is transmitted to the brain by the somatic nerve fibres that enable the brain to accurately locate the site. Therefore, the patient may be able to accurately locate the area of pain (Laird et al 2004).

Visceral chest pain originates from the deeper thoracic structures – such as the heart, blood vessels and oesophagus – and is carried in the autonomic nerve fibres, which provide a less precise location of the pain. The pain is generally described by patients as a discomfort, heaviness or ache (Laird et al 2004).

Common causes of chest pain

There are various potential causes of chest pain, which can mean that patient assessment is challenging. The most serious causes are acute coronary syndrome (ACS), aortic dissection (a tear in the wall of the aortic artery) and pulmonary embolism (PE) (blockage of an artery in the lungs) (Goodacre 2014), and these differential diagnoses must be considered at an early stage when assessing a presenting patient. Other causes of chest pain include gastrointestinal conditions, respiratory conditions, musculoskeletal causes and anxiety. Box 1 lists some of the common causes of chest pain.

TIME OUT 1

Consider the patients that you have cared for whose initial presentation was chest pain. What were the common causes you encountered and how did the assessment aid diagnosis of the cause? Did the patient act promptly to access medical advice and support, or did they wait and discuss it with their family or self-medicate to relieve the pain? What might this tell you about patients' self-assessment or self-management of chest pain?

Cardiac causes

It is essential to rule out cardiac causes of chest pain before considering other causes, because these may require urgent intervention. Potential cardiac causes include stable angina, ACS, aortic dissection and pericarditis.

Stable angina

Stable angina is characterised by cardiac chest pain where there is a trigger such as exertion, but symptoms stop after a few minutes of rest. Patients with stable angina are more likely to present in primary care settings than to the emergency department (Goodacre 2014). They usually present with classic symptoms of breathlessness, chest pain on exertion that eases with rest, and have risk factors for cardiovascular disease (Box 2) (Goodacre 2014).

Box 1. Common causes of chest pain

Cardiac causes

- Stable angina
- Acute coronary syndrome
- Aortic dissection
- Aortic stenosis
- Pericarditis

Non-cardiac causes

- Gastrointestinal conditions, such as acute pancreatitis, gastritis, peptic ulcer disease, cholecystitis and gastro-oesophageal reflux disease
- Respiratory conditions, such as pulmonary embolism, pneumothorax and pneumonia
- Musculoskeletal causes, such as trauma, for example rib fracture; inflammation; exercise and overuse injury
- Haematological causes, such as iron deficiency anaemia and sickle cell crisis
- Psychological conditions, such as anxiety
- Neuralgia
- Non-specific chest pain – no identified cause

Note that the cause of chest pain may be multifactorial

(Fritz and Faber 2012, McConaghy and Rupal 2013, National Institute for Health and Care Excellence 2017)

Acute coronary syndrome

One serious cardiac cause of chest pain is ACS. ACS is an umbrella term that refers to three main clinical manifestations: unstable angina; ST elevation myocardial infarction (STEMI); and non-ST elevation myocardial infarction (NSTEMI) (Smith et al 2015). ACS is most commonly caused by a rupture of atheromatous plaque in the coronary artery. In unstable angina and NSTEMI, the blood supply to the myocardium has become partially occluded, while in STEMI it has become completely occluded. Biochemical markers are used to detect myocardial damage, notably troponin assays. ACS requires prompt and timely intervention to re-establish adequate cardiac blood flow and prevent further myocardial damage and possibly death.

Unstable angina is characterised by prolonged (>20 minutes) angina at rest; new onset of severe angina; angina that is increasing in frequency, longer in duration, or lower in threshold; or angina that occurs after a recent myocardial infarction (Yusuf 2018). Symptoms are generally not relieved with rest or medicines such as glyceryl trinitrate.

Typically, patients with ACS will present with classic symptoms of retrosternal chest pain radiating to one arm or both arms, the shoulders, neck, back or jaw, and a feeling of a tight band or heavy weight across the chest. In addition, they often experience nausea, vomiting and sweating ('clammy' skin) through autonomic nervous system stimulation. The episode will feel worse than previously experienced episodes of stable angina or similar to any previous acute myocardial infarction the patient has experienced. The symptoms of ACS will often be frightening and unpleasant for the patient.

It should be noted that almost one third of patients with ACS may not present with classic symptoms of chest pain, and atypical presentation is increasingly likely in particular patient groups, such as women and people with diabetes mellitus (Kyaw et al 2018). Patients with ACS will also often have risk factors for cardiovascular disease (Box 2).

TIME OUT 2

Consider the patients that you have cared for who presented with chest pain caused by ACS. Did they all present with the classic symptoms of retrosternal chest pain radiating to one arm or both arms, the shoulders, neck, back or jaw, and a feeling of a tight band or heavy weight across the chest? Undertake further reading around the atypical presentation of ACS using an article such as Kyaw et al (2018). Which patient groups are increasingly unlikely to present with the classic symptoms in ACS?

Aortic dissection

Aortic dissection involves a separation in the aortic wall intima, causing blood to flow into a new false channel composed of the inner and outer layers of the media (Hicks and Black 2018). Although aortic dissection is uncommon, it is a medical emergency that has a high mortality rate if untreated (Goodacre 2014). Presenting patients often describe the pain as a severe sudden, ripping, tearing pain that is knife-like in nature (Fukui 2018). The pain is most severe on onset.

The most common risk factor for aortic dissection is suboptimally managed hypertension (Fukui 2018). Additional conditions that are associated with a high risk of aortic dissection include congenital and genetic cardiovascular disorders, aortic stenosis (narrowing of the aortic valve opening) and connective tissue disorders such as Marfan syndrome (Zucker 2018).

Box 2. Common risk factors for cardiovascular disease

- Smoking
- Hypertension
- High blood cholesterol
- Being physically inactive
- Being overweight or obese
- Diabetes mellitus
- Family history of heart disease
- Ethnic background – the risk of cardiovascular disease can be higher for patients with a South Asian or African Caribbean background than for the rest of the UK population
- Sex – men are more likely to develop cardiovascular disease at an earlier age than women
- Age – the risk of cardiovascular disease increases with age

(British Heart Foundation 2019)

If aortic dissection is likely, early escalation and medical imaging should be undertaken to improve patient outcomes.

Pericarditis

Pericarditis (inflammation of the pericardium) is often caused by a viral illness in patients with a history of systemic illness or coryza (inflammation of the mucous membranes lining the nasal cavity). Patients with pericarditis usually experience chest pain, most often pleuritic (exacerbated by inspiration), which is often relieved by sitting upright and leaning forward.

TIME OUT 3

Discuss the presentation of chest pain for ACS, aortic dissection and pleuritic chest pain with a colleague. How do the presentations generally differ between these conditions, and are there any similarities?

Key points

- The management of chest pain is underpinned by structured assessment and evidence-based guidelines
- Some patients presenting with chest pain will have a life-threatening condition that requires urgent intervention to prevent further harm and possibly death; however, most causes of chest pain will not be life-threatening
- There are various potential causes of chest pain, which can mean that patient assessment is challenging; differential diagnoses must be considered at an early stage when assessing a presenting patient
- The overall management of chest pain requires a multidisciplinary team approach and the ability to know when to act promptly, rather than continuing to undertake diagnostic investigations when the cause is clearly emerging and immediate treatment is required

Non-cardiac causes

The main non-cardiac causes of chest pain are respiratory conditions, gastrointestinal conditions, musculoskeletal causes, neuralgia, haematological causes and anxiety. Frieling (2018) noted that the reduction in patients' quality of life because of non-cardiac chest pain was similar to that caused by cardiac chest pain. They also found that non-cardiac chest pain can also have significant psychological effects. Reasons for this included symptom recurrence in approximately 50% of patients, and non-specific diagnosis with resulting feelings of uncertainty (Frieling 2018).

Respiratory conditions

Respiratory conditions that may cause chest pain include pneumonia, pleurisy (inflammation of the tissue between the lungs and ribcage), PE and pneumothorax. All these conditions are likely to cause pleuritic chest pain and breathlessness. Pleuritic chest pain is characterised by sudden and intense sharp, stabbing or burning pain in the chest when inhaling and exhaling. It is exacerbated by deep breathing, coughing, sneezing or laughing (Reamy et al 2017). When pleuritic inflammation occurs near the diaphragm, pain can be referred to the neck or shoulder.

Fever, cough and systemic illness are frequently associated with pneumonia and pleurisy. These symptoms can also be associated with PE, along with dizziness, shortness of breath, haemoptysis (coughing up blood) and collapse (Hopcroft and Forte 2014).

Gastrointestinal conditions

Gastrointestinal conditions that can cause chest pain include acute pancreatitis, cholecystitis (inflammation of the gallbladder), gastritis, peptic ulcer disease and gastro-oesophageal reflux disease (GORD) (NICE 2017).

Gastro-oesophageal pain caused by conditions such as GORD occurs when gastric contents enter the oesophagus from the stomach, causing a burning or chest tightness that is often confused with cardiac chest pain, particularly angina (American College of Gastroenterology 2012, Frieling 2018). Furthermore, the two conditions can co-exist (Manisty et al 2009), and similar pain can be caused by oesophageal spasm (Goodacre 2014). This

can be a clinical challenge when assessing chest pain.

Musculoskeletal causes

Musculoskeletal causes of chest pain include trauma, for example from an injury to the chest wall, inflammation such as costochondritis (affecting the rib cartilage), exercise or overuse injury. It may also have an iatrogenic cause (resulting from medical examination or treatment), for example trauma from surgery. Musculoskeletal chest pain tends to be worse on exertion and eased by rest, with pain experienced on palpation of the chest wall (Hopcroft and Forte 2014). If a musculoskeletal cause of chest pain has been identified, much of the further patient assessment can be completed using patient history-taking and physical examination (Winzenberg et al 2015).

Neuralgia

Neuralgia is pain caused by a damaged or irritated nerve, and can result from conditions such as viral herpes zoster, which may cause severe pain along the distribution of the sensory nerve. Herpes zoster could be mistaken for musculoskeletal chest pain if the lesions that occur in this condition are yet to appear. However, the symptoms of herpes zoster are usually unilateral and occur with allodynia (a rare type of pain, usually on the skin, caused by something that would not normally cause pain, such as a hair brushing against the skin). Patients may describe neuralgia pain as 'electric' or 'burning'.

Haematological causes

One haematological cause of chest pain is iron deficiency anaemia (Lynskey and Machin 2012). This may particularly occur in patients with cardiovascular disease, causing an exacerbation of anginal chest pain and shortness of breath. Sickle cell crisis is a complication of sickle cell disease (a group of inherited conditions that affect the red blood cells) that causes red blood cells to become sickle-shaped and block the microvasculature, leading to ischaemia and pain (Cheesman 2015). Acute chest syndrome is a major complication of sickle cell disease and a significant cause of morbidity and mortality in this patient group (Allareddy et al 2014). Symptoms include chest pain, cough and shortness of breath (Howard et al 2015).

Anxiety

Anxiety and other mental health conditions have been linked with non-cardiac chest pain (Campbell et al 2017). Anxiety is also common in patients with cardiovascular disease and may significantly influence cardiac health. Anxiety disorders are associated with the onset and progression of cardiovascular disease, and in many instances have been linked to adverse cardiovascular outcomes, including mortality (Celano et al 2016). Other causes of chest pain should be investigated and excluded before a diagnosis of anxiety-related chest pain is made.

Assessment of chest pain

Assessing patients presenting with chest pain is a skill that takes time to develop and requires underpinning knowledge, practical application and mentoring from colleagues. Healthcare practitioners should reflect on their level of competence and develop their skills in chest pain assessment. The overall management of chest pain requires a multidisciplinary team approach and the ability to know when to act promptly, rather than continuing to undertake diagnostic investigations when the cause is clearly emerging and immediate treatment is required.

A structured approach to chest pain assessment is generally used to ensure that important signs can be identified to aid diagnosis and that time is used effectively. Typically, the clinical assessment begins with history-taking, which involves gathering subjective information from the patient, such as when the pain started or the character of the pain.

Patients experiencing chest pain are likely to be anxious and concerned, particularly since they may associate chest pain with a cardiac condition. Their family members ('family' refers to anyone the patient considers significant) are also likely to be anxious. Therefore, it is important to establish a rapport and a therapeutic relationship with the patient and gain their trust. This will encourage the patient to reveal relevant information that enables the healthcare practitioner to achieve a working diagnosis and make informed decisions about the patient's health and treatment (Ganley and Gloster 2011).

TIME OUT 4

What structured assessment tools have you seen used in your area of practice to assess chest pain, including symptom analysis tools? Discuss with your colleagues which tools they prefer using and why. What do you think are the advantages and limitations of using such tools?

Patient history

It is important for the healthcare practitioner to obtain a detailed and accurate history from the patient, including:

- Medical history – to identify any symptoms that may have a correlation to previous medical conditions.
- Drug history – to identify whether the cause of the symptoms is iatrogenic, or a drug or allergic reaction (Innes et al 2018).
- Social and lifestyle history – to identify potential links between the patient's symptoms and their lifestyle behaviours, such as smoking and alcohol consumption, as well as whether the patient lives alone or with family members, which may affect factors such as future management (Innes et al 2018).

During the patient history-taking, the healthcare practitioner can also observe objective data, such as the appearance of the patient, for example if they have pale and clammy skin, or a raised respiration rate.

Symptom analysis tools

Symptom analysis tools enable the healthcare practitioner and the patient to explore symptoms in a structured manner, discussing when the symptoms began, their effects and what relieves them. One symptom analysis tool that may be useful when assessing chest pain

is the PQRST (Rogers et al 1989) mnemonic. The elements of PQRST are: provocative and palliative factors; quality; region or radiation; severity; and time.

Provocative and palliative factors

The healthcare practitioner should ask the patient what improves or exacerbates their chest pain. For example, chest pain in a condition such as pericarditis is typically worse on inspiration, movement and lying flat (Bouchard and Arya 2017). It tends to lessen when the patient is sitting upright or leaning forwards. Stable angina typically occurs with exertion and is relieved by rest and/or administering glyceryl trinitrate. Musculoskeletal chest pain may have been provoked initially by a strenuous workout the previous day; alternatively, moving the arms or deep inspiration could provoke pain that is relieved by non-steroidal anti-inflammatory drugs (NSAIDs).

Quality

The quality of the pain is the patient's perception of the pain, described in their own words. For example, the patient might describe experiencing a crushing central pain that feels like a tight band across their chest, which may indicate ACS, whereas if they describe experiencing a severe sharp pain in the side of the chest, this may be consistent with PE or pleurisy. Caution is advised if asking direct questions, for example 'is the pain sharp or dull?', because this may lead to bias and an inaccurate interpretation of the pain. Fairhurst et al (2018) emphasised the need to use open questions to encourage the patient to discuss their symptoms, such as 'What has been happening that brought you here today?'. Asking the patient what they think the cause of their pain is will often provide a clearer understanding of why they have presented with their symptoms.

Region or radiation

It is important to ask the patient if their chest pain occurs in one area only, or if it starts in one area and travels to another. For example, severe chest pain that radiates to the back between the shoulder blades is typical in aortic dissection.

Severity

Various pain scales can be used to enable the patient to quantify the severity of their chest pain. A visual analogue scale could be used in which the patient rates the pain from 0 (no pain) to 10 (worst pain possible), or a faces rating scale could be used, which uses simple pictures of facial expressions to represent various levels of pain. For example, using a visual analogue scale, the patient may rate their musculoskeletal chest pain as 2 at rest, but this may rise to 8 on movement of the arms. Similarly, chest pain in stable angina may typically be rated by the patient as 0 at rest, but this could rise to 8 or 9 on physical exertion.

Pain scores should be documented and reassessed after any intervention is undertaken, such as providing analgesia or administering glyceryl trinitrate. Pain scales are useful in assessing if the patient's pain has improved or worsened; however, it is important to be aware that the severity of pain will not necessarily correspond with the severity of diagnosis. The healthcare practitioner should also ask the patient how much the pain is affecting their ability to undertake their usual daily activities, to understand its psychological and social effects.

Time

The healthcare practitioner should ask the patient when the pain started, how long it has persisted for, and if they have experienced it previously. This may assist in ascertaining if the patient's chest pain is an exacerbation of chronic pain symptoms, such as stable angina, or acute pain resulting from a condition that has commenced recently, such as aortic dissection (Fukui 2018).

Chronic pain symptoms that have suddenly become increasingly frequent must be explored. For example, if a patient with stable angina has difficulty with even minimal exertion, this may indicate the development of unstable angina and the need for urgent cardiology referral. It is also important to understand how long the pain lasts. For example, the healthcare practitioner should ask if the pain developed shortly after eating a spicy meal and if it has lasted for 30 minutes or more, which may indicate a gastrointestinal cause. However, ACS must also be considered if the patient has risk factors for cardiovascular disease, because of the overlap in presenting symptoms. It is also important to ascertain if the patient has been given any medicines to treat their chest pain.

TIME OUT 5

What physical examinations and clinical investigations do you think would be beneficial in identifying the cause of a patient's chest pain? Where would you refer the patient if undertaking any of these is beyond your role as a nurse? Which assessment tools could you use to identify if the patient is acutely unwell or deteriorating?

Physical examination

A physical examination of the patient can identify symptoms that have not previously been discussed. This should take the form of a systematic approach to the body's systems, with any new symptoms discussed in depth with the patient. This reduces the chances of missing any signs that could aid diagnosis. The information from the patient history will guide healthcare practitioners in identifying what physical examinations and clinical investigations need to be conducted.

When undertaking a physical examination, the healthcare practitioner should (NICE 2017):

- Undertake a cardiovascular examination, including: heart sounds; blood pressure in both arms, pulse rate and rhythm; jugular venous pressure; carotid pulse; and checking the patient's ankles for oedema, which would indicate heart failure.
- Perform a chest wall examination – palpate for tenderness and assess whether movement of the chest wall reproduces the pain. Listen to the patient's lung fields for signs of infection. Measure their respiratory rate and oxygen saturations via pulse oximetry.
- Observe the patient's general appearance for pallor and sweating.
- Check the patient's abdomen for tenderness.

Revalidation

Prepare for revalidation: read this CPD article, answer the quiz and write a reflective account. For more information, go to **rcni.com/revalidation**

- Check the patient's neck for localised tenderness and stiffness.
- Check the patient's legs for swelling or tenderness.
- Check the patient's skin for rashes and bruising.
- Take the patient's temperature to check if it is raised, particularly over 38.5°C.

Often, the first assessment undertaken is recording the patient's vital signs, such as blood pressure, pulse, respiratory rate, temperature and blood glucose level. This objective data is often crucial in recognising if the patient is acutely unwell or deteriorating (Royal College of Physicians (RCP) 2017). Patients at risk of clinical deterioration can be identified using early warning tools, such as the National Early Warning Score (NEWS) 2 (RCP 2017), in conjunction with the healthcare practitioner's clinical judgement. If the patient appears to be acutely or critically unwell, an ABCDE (assessment, breathing, circulation, disability, exposure) assessment should be undertaken to prioritise and manage the physical systems that are most likely to affect the patient's health (Smith and Bowden 2017).

Monitoring the patient's vital signs can also indicate abnormal physiology and disease processes. For example, in the presence of a massive PE, signs that can aid diagnosis include hypotension, tachycardia and hypoxia; however, the healthcare practitioner should be aware that these signs may also be present in ACS (Morrone and Morrone 2018).

Clinical investigations

Clinical investigations will be guided by the patient's presenting condition, their suspected diagnosis, and input and advice from senior clinical colleagues. Patients presenting with chest pain, particularly those with a suspected diagnosis of ACS, should have a 12-lead electrocardiogram (ECG) recorded as soon as possible to identify if they require myocardial reperfusion therapy (NICE 2016). ECG interpretation in chest pain is beyond the scope of this article, and healthcare practitioners should undertake further study as required, including the significance of ST-segment elevation/depression, T-wave morphology and the QT interval.

Examples of other clinical investigations that should be undertaken in patients presenting with chest pain include: full blood count, urea and electrolytes levels, liver function tests, chest X-ray, lipase and amylase if suspected gastrointestinal cause, and computed tomography (CT) scan or ultrasound of the aorta if considering aortic dissection (NICE 2017, 2018).

Communication

Effective communication between all members of the multidisciplinary team is essential to ensure patients presenting with chest pain receive appropriate assessment, care and treatment. The use of communication tools such as the SBAR (situation, background, assessment, recommendation) tool can avoid communication breakdown between healthcare practitioners, which is one of the main causes of adverse events (Müller et al 2018). By providing a clear structure, SBAR can support the provision of all relevant information in a logical manner (Müller et al 2018), thus potentially enhancing the care provided to patients experiencing symptoms such as chest pain.

Conclusion

Chest pain is often a frightening and unpleasant experience for patients and their families. The main aim of a chest pain assessment is to quickly identify the cause and provide definitive treatment. This is particularly important if the cause is life-threatening and requires urgent intervention, such as in some cardiac conditions. Assessing chest pain is a skill that requires knowledge of its potential causes and pathophysiology, the elements of a structured clinical assessment and the latest evidence-based guidelines.

TIME OUT 6

Consider how the assessment of chest pain relates to The Code: Professional Standards of Practice and Behaviour for Nurses, Midwives and Nursing Associates (Nursing and Midwifery Council 2018) or, for non-UK readers, the requirements of your regulatory body

TIME OUT 7

Now that you have completed the article, reflect on your practice in this area and consider writing a reflective account: **rcni.com/reflective-account**

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Chest pain

TEST YOUR KNOWLEDGE BY COMPLETING THIS MULTIPLE-CHOICE QUIZ

1. Which statement is true?

a) Most patients presenting with chest pain will have a life-threatening condition ☐
b) Chest pain is defined as pain in the thorax ☐
c) Patients rarely present to emergency departments and primary care settings with chest pain ☐
d) Non-cardiac causes of chest pain must be ruled out before considering cardiac causes ☐

2. What are the two broad categories of presenting chest pain?

a) Somatic and visceral ☐
b) Minor and major ☐
c) Internal and external ☐
d) Physical and mental ☐

3. Which of these is an example of a non-cardiac cause of chest pain?

a) Pericarditis ☐
b) Aortic dissection ☐
c) Pneumothorax ☐
d) Aortic stenosis ☐

4. Which of the following is not a clinical manifestation of acute coronary syndrome (ACS)?

a) Unstable angina ☐
b) ST elevation myocardial infarction (STEMI) ☐
c) Stable angina ☐
d) Non-ST elevation myocardial infarction (NSTEMI) ☐

5. One risk factor for cardiovascular disease is:

a) Smoking ☐
b) High blood cholesterol ☐
c) Diabetes mellitus ☐
d) All of the above ☐

6. One of the classic symptoms of chest pain in patients with ACS is:

a) Sudden, ripping, tearing pain that is knife-like in nature ☐
b) The feeling of a tight band or heavy weight across the chest ☐
c) Severe sharp pain in the side of the chest ☐
d) Electric or burning sensation ☐

7. Which statement is false?

a) Reduction in patients' quality of life because of non-cardiac chest pain is similar to that caused by cardiac chest pain ☐
b) Musculoskeletal chest pain tends to be worse on exertion and eased by rest ☐
c) Chest pain in pericarditis is exacerbated by sitting upright and leaning forward ☐
d) Gastro-oesophageal pain is often confused with cardiac chest pain ☐

8. In the PQRST symptom analysis tool, what does the 'S' stand for?

a) Support ☐
b) Severity ☐
c) Side effects ☐
d) Self-management ☐

9. In the 'Q' (quality) section of the PQRST tool, the healthcare practitioner should ask the patient:

a) How they would describe the chest pain in their own words ☐
b) What improves or exacerbates the chest pain ☐
c) If the chest pain occurs in one area only, or if it starts in one area and travels to another ☐
d) When the chest pain started, how long it has persisted for, and if they have experienced it previously ☐

10. Which of the following should be part of the physical examination of a patient presenting with chest pain?

a) Undertaking a cardiovascular examination ☐
b) Undertaking a chest wall examination ☐
c) Observing the patient's general appearance for pallor and sweating ☐
d) All of the above ☐

How to complete this quiz

This multiple-choice quiz will help you to test your knowledge. It comprises ten questions that are broadly linked to the CPD article. There is one correct answer to each question.

- You can test your subject knowledge by attempting the questions before reading the article, and then go back over them to see if you would answer any differently.
- You might like to read the article before trying the questions.

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Further multiple-choice quizzes are available at rcni.com/cpd/test-your-knowledge

This multiple-choice quiz was compiled by ***Alex Bainbridge***

The answers to **this multiple-choice quiz** *are:*

1. b, 2. a, 3. c, 4. c, 5. d, 6. b, 7. c, 8. b, 9. a, 10. d

This activity has taken me ___ minutes/hours to complete. Now that I have read this article and completed this assessment, I think my knowledge is:

Excellent ☐ Good ☐ Satisfactory ☐ Unsatisfactory ☐ Poor ☐

As a result of this I intend to: _____

_____

_____