IAEM Clinical Guideline

Pericarditis: Management in the Emergency Department

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DISCLAIMER

IAEM recognises that patients, their situations, Emergency Departments and staff all vary. These guidelines cannot cover all clinical scenarios. The ultimate responsibility for the interpretation and application of these guidelines, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.

Revision History

Date	Version	Section	Summary of changes	Author
January 2026	V1.0	All	Final Version	DS/KM/SM

CONTENTS

GLOSSARY OF TERMS

BD	Twice daily
CXR	Chest X-ray
CRP	C-reactive protein
CMR	Cardiac magnetic resonance imaging
CT	Computed tomography
ECG	Electrocardiogram
ED	Emergency Department
ESR	Erythrocyte sedimentation rate
FBC	Full blood count
JVP	Jugular venous pressure
MI	Myocardial infarction
NSAID	Non-steroidal anti-inflammatory drug
OD	Once daily
TOE	Transoseophageal echocardiogram
TTE	Transthoracic echocardiogram
WCC	White cell count
U&E	Urea and electrolytes

Pericarditis: Management in the Emergency Department

INTRODUCTION

Acute pericarditis is defined as an inflammatory pericardial syndrome with or without pericardial effusion.[1] This can result from both infectious and non-infectious pathologies. Pericarditis is the most common disease of the pericardium encountered in clinical practice and accounts for 5% of non-ischemic chest pain presentations to the Emergency Department (ED).[2]

The acute form is defined as new-onset inflammation lasting <4- 6 weeks.[3] Acute pericarditis is seen more in adults (typically between 20 and 50 years old) and is more common in men.

Risk factors that should cause a high-index of suspicion are as follows.[4]

- Male sex
- Age 20 to 50 years
- Recent transmural myocardial infarction (MI)
- Cardiac surgery
- Neoplasm
- Intercurrent bacterial or viral infections
- Patients with uraemia or receiving dialysis
- Systemic autoimmune disorders (Rheumatoid Arthritis, Systemic Lupus Erythematous etc.)

Approximately 90% of cases of pericarditis can be idiopathic or due to viral infections.[2] Systemic autoimmune disorders are also a common cause. Other less common causes include bacterial, fungal and parasitic infection, post-MI or cardiotomy syndrome and uraemia. In patients from developing countries, Mycobacterium Tuberculosis is a common cause of pericarditis.[1]

Pericarditis is classified based on the duration of inflammation.[1]

- Acute Pericarditis: <4-6 weeks
- Incessant pericarditis: >4-6 weeks
- Recurrent Pericarditis: Recurrence of signs and symptoms following a documented episode of acute pericarditis with an intervening symptom free interval for >4 weeks
- Chronic pericarditis: signs and symptoms that persist for >3 months

PARAMETERS

Target Audience: This guideline has been developed for clinicians managing patients with suspected pericarditis in the ED.

Patient population: The target patient population is patients who present to the ED with suspected pericarditis.

AIMS

To provide an updated and evidence-based guideline in the diagnosis, evaluation, and timely management of patients presenting with acute pericarditis.

CLINICAL SIGNS

Pericarditis is diagnosed when 2 of the 4 following criteria are met.[1,3,6]

1. Characteristic chest pain (85% of patients) - Typically sharp and pleuritic, improved by sitting up or leaning forward.

2. Pericardial friction rub (33% of patients) - A scratchy/squeaking sound, heard best with the diaphragm of the stethoscope placed over the left sternal border.

3. ECG Changes (60% of cases).

4. Presence of pericardial effusion (60% of cases).

Patients can also present with vague non-specific symptoms such as malaise, fever, and diarrhoea.[1]

INVESTIGATIONS

ECG

An ECG should be performed in every patient with suspected acute pericarditis. Typical ECG changes can occur in up to 60% of pericarditis patients.

The common ECG changes are as follows:[3,6]

- Global upwardly concave (known as saddle shaped) ST segment elevations.
- PR segment depressions in most of the limb leads (I, II, aVL, aVF) and precordial leads (V2-6).

Troponin

A high-sensitivity blood troponin should be ordered in patients with suspected pericarditis. Elevated levels may be present in 35-50% of patients with pericarditis and reflect myocardial involvement (myopericarditis).[5] However, this test is not specific or sensitive.[6] The evaluation of troponin is mainly for the exclusion of myopericarditis. It is not shown to exhibit prognostic value on acute pericarditis.[6]

Full Blood Count (FBC)

An FBC should be ordered on all patients with suspected pericarditis. An elevated white cell count (WCC) may be seen with acute pericarditis or other infectious aetiology.[3]

Order a baseline FBC before starting treatment because colchicine may cause neutropenia and bone marrow suppression.[3]

C-reactive protein (CRP)

An Elevated CRP is common in inflammatory pericarditis.

Serum Urea and Electrolytes (U&E)

Serum U&E can be helpful in acute pericarditis as elevated levels of urea (particularly > 21.4 mmol/L [> 60 mg/dL]) may indicate a uraemic cause of the pericarditis.

Chest X-ray (CXR)

A CXR should be ordered in patients suspected of pericarditis. The heart size is typically normal in patients with pericarditis. In patients with a large pericardial effusion (typically >300ml) the cardiothoracic ratio may be increased.

A CXR may also be useful in identifying concomitant lung pathology (e.g. pneumonia, malignancy etc.) that can be related to the disease.[3]

Echocardiography

Transthoracic echocardiography should be considered to assess for the presence of pericardial effusion. Patients who are fit, healthy and low risk can be discharged prior to echocardiography and a transthoracic echocardiogram (TTE) can be organised as an early outpatient investigation.[3]

Pericardial effusion, based on the size at diastole, is characterised as mild (<10 mm), moderate (10-20 mm), or large (>20 mm).[5]

Other indications include the diagnosis of tamponade (3.1% of pericarditis cases). Echocardiography may also be used to differentiate between pericarditis and myocardial ischemia by excluding regional wall motion abnormalities in patients presenting with acute chest pain.[1]

Loculated pericardial effusions or effusions that contain clots (typically seen after cardiac surgery) can be difficult to visualise using the transthoracic approach. These can be better evaluated using a Transoesophageal echocardiography (TOE) approach.[1]

Computed Tomography (CT)

CT scanning is the most accurate technique to image calcified tissue within the pericardium. Whilst not necessary in initial workup, CT scanning can be helpful in patients with neoplastic disease to assist in treatment planning and patient follow-up.[1]

Cardiac magnetic resonance imaging (CMR)

CMR is useful in the further characterisation of pericarditis. Whilst not necessary in the initial, ED workup, CMR allows visualisation and tissue characterisation of both the pericardium and the heart in pericarditis. CMR actively distinguishes between mixed inflammatory myopericardial disease forms (e.g. myopericarditis and post-myocardial infarction pericardial injury).

Compared to CT, CMR provides information on the haemodynamic compromise of the non-compliant pericardium on cardiac filling.

MANAGEMENT

Management of pericarditis is dependent on the presence or absence of risk factors. Clinicians should be familiar with high-risk factors associated with pericarditis that are associated with a poor clinical outcome:[1]

Major risk factors associated with a poorer clinical outcome are as follows:

- High temperature (>38˚C)
- Sub-acute course (symptoms that occur over several days without a clear-cut onset).
- Evidence of a large pericardial effusion (diastolic echo-free space of >20mm)
- Cardiac Tamponade (see Special considerations)
- Failure to respond within 7 days to non-steroidal anti-inflammatory drugs (NSAIDs)

Minor risk factors associated with a poorer clinical outcome are as follows:

- Pericarditis with associated myocarditis (myopericarditis)
- Immunosuppression
- Trauma
- Oral anticoagulant therapy

Any presentation of suspected pericarditis with any predictor of a poor prognosis (either major or minor risk factors) should warrant admission for treatment and for an aetiology workup.[1]

Patients who present without any major or minor risk factors can be considered for discharge with empiric NSAID treatment and short-term follow-up after 1 week to assess response to treatment.[1]

Patients who have a poor response following 1 week of treatment with NSAIDs should be considered “Moderate Risk” and should be admitted for further treatment and aetiology investigations.[1]

Patients should restrict physical activity until resolution of symptoms and normalisation of biomarkers. Athletes should be advised to restrict competitive sports until 3 months after the resolution of symptoms.

Please refer to Figure 1 below for the management algorithm of patients with suspected acute pericarditis.

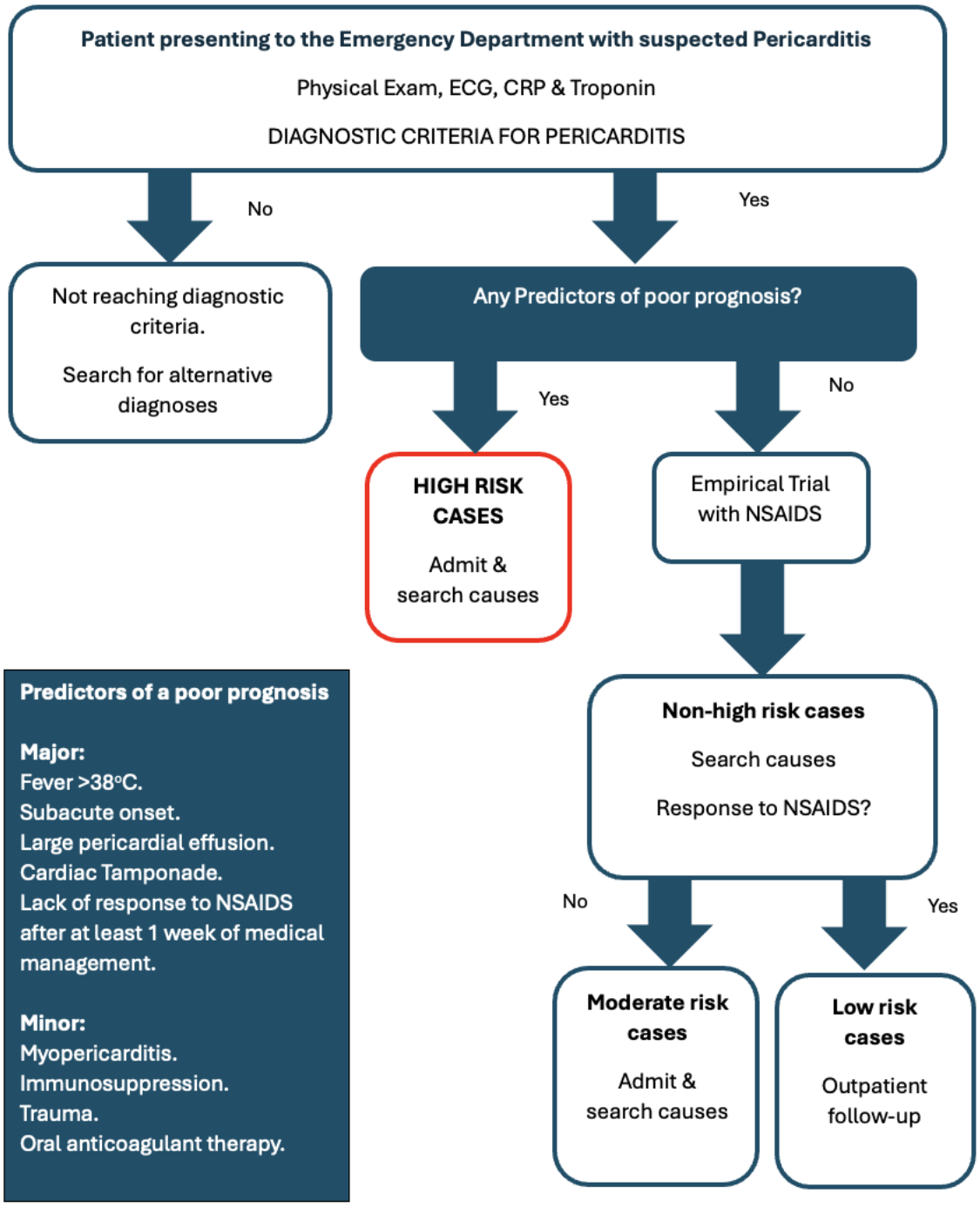

Figure 1: Proposed management algorithm for patient with suspected pericarditis, adapted from the European Society of Cardiology's 2015 guidelines on management of pericarditis.[1]

PHARMACEUTICAL MANAGEMENT

Aspirin

Aspirin is the NSAID of choice if the pericarditis is a complication of an acute MI.

Oral Tablet	• Starting dose 750 – 1000mg every 8 hours • Treatment duration: 2 weeks, then taper as below. • After 2 weeks, decrease dose by 250-500mg every 1-2 weeks.

Ibuprofen

Oral Tablet	• Starting dose 600mg every 8 hours • Treatment duration: 2 weeks, then taper as below. • After 2 weeks, decrease dose by 200-400mg weekly

The duration of treatment is guided by clinical symptoms and CRP levels. Tapering is used to reduce subsequent recurrence rates. Tapering should be employed in all cases including asymptomatic pericarditis. In uncomplicated cases, treatment is typically 1-2 weeks.

Gastroprotection should also be considered.

Colchicine

Colchicine is recommended as additional to NSAID empirical therapy to improve the response and increase remission rates.

Ascertain a baseline FBC before starting treatment due to the risk of colchicine induced neutropenia and bone marrow suppression.

Colchicine should be used in caution with patients with renal and hepatic impairment.

Oral Tablet	• Starting dose: 0.5mg OD (if <70kg) or 0.5mg BD (if over 70kg) • Treatment duration: 3 months (including tapering below*) • In last weeks, decrease dose to 0.5mg on alternate days (if <70kg) or 0.5mg OD (if >70kg)

*The tapering of colchicine is not mandatory. Consider decreasing the dose over the last few weeks to prevent persistence of symptoms and recurrence.[7]

SPECIAL CONSIDERATIONS

Cardiac Tamponade

Cardiac Tamponade is a life-threatening complication of pericarditis. It occurs in up to 3.1% of patients with pericarditis.[2]

Clinical signs of tamponade include:

- Tachycardia
- Hypotension
- Pulses paradoxus (inspiratory decrease in systolic blood pressure of >10mmHg during normal breathing)
- Raised jugular venous pressure (JVP)
- Muffled heart sounds
- Decreased ECG voltage with electrical alternans.
- Enlarged cardiac silhouette on CXR

If tamponade is suspected, an echocardiogram should be performed to identify the effusion, estimate its size and its degree of haemodynamic impact.

Treatment involves drainage of the pericardial fluid preferably by needle pericardiocentesis. In unstable patients, this should occur without delay.

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