

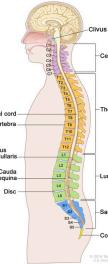


Red Flags in Common Clinical Presentations

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Teaching Points to be Addressed

- What is the usefulness of the clinical warning criteria (red flags)?
- How do we use the information from the critical warning criteria?
- Is there any special group of patients?



What Are Red Flags?

Foundation for Clinical Assessment in Emergency Medicine

⚠ Definition

- **Warning signs** that suggest a potentially serious underlying condition requiring urgent medical attention
- **Clinical indicators** that differentiate emergent from non-emergent presentations
- **Critical findings** that may not be immediately obvious but signal increased patient risk

❤ Importance in Emergency Medicine

- Early recognition of life-threatening conditions
- Reduction of morbidity and mortality through prompt intervention
- Appropriate resource allocation and hospital preparation

💡 How They Guide Paramedic Decision-Making

- Determine **transport priority** and destination selection
- Guide **field interventions** and treatment protocols
- Inform **hospital notifications** (stroke alerts, STEMI activation)
- Focus **assessment and documentation** on critical findings

💡 Example: Thunderclap Headache

Red Flag: "Worst headache of life" with sudden onset

Clinical Significance: Potential subarachnoid hemorrhage

Paramedic Actions:

- Initiate stroke alert protocol
- Rapid transport to stroke center
- Document time of onset and symptoms

Clinical Presentations: Red Flag Overview

Recognizing critical warning signs in common emergency presentations



Low Back Pain

Critical warning signs of spinal pathology requiring urgent intervention



Neck Pain

Indications of potential cervical instability and neurological compromise



Headache

Warning signs of life-threatening intracranial pathology



Chest Pain

Indicators of cardiac emergencies requiring immediate intervention



Abdominal Pain

Signs of surgical emergencies and acute abdomen requiring rapid transport



Altered Mental Status

Critical indicators of neurological emergencies and metabolic crises

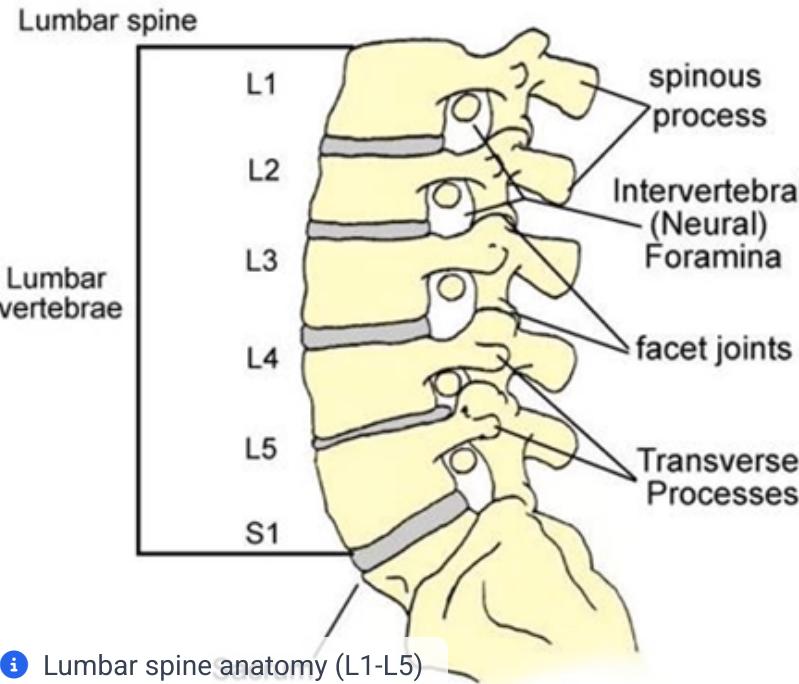


Syncope

Warning signs of cardiovascular collapse and cerebral hypoperfusion

Low Back Pain: Red Flags

Critical Warning Signs



⚠ History of cancer, unexplained weight loss, fever

Clinical Significance: Possible spinal infection or malignancy

Action: Document findings, notify receiving facility of concerns

⚠ Recent trauma with pain

Clinical Significance: Consider spinal fracture

Action: Apply spinal motion restriction if indicated

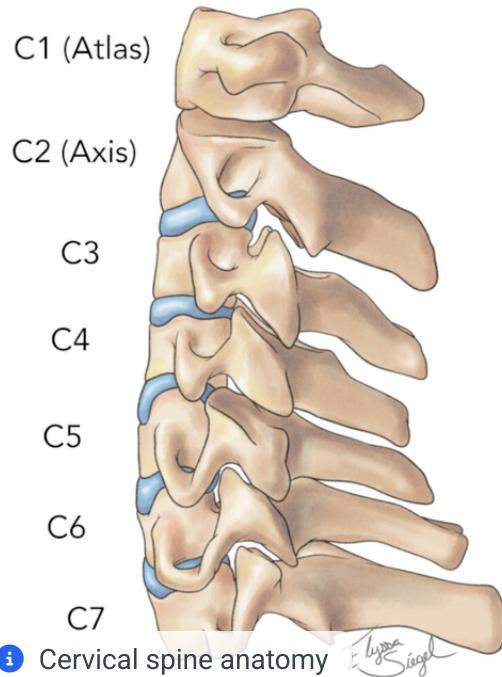
⚠ Progressive neurological deficit or saddle anesthesia

Clinical Significance: Possible cauda equina syndrome

Action: Urgent recognition & transport, document deficits

Neck Pain: Red Flags

Critical Warning Signs



⚠️ High-energy trauma

Clinical Significance: Cervical spine fracture or instability

Action: Maintain immobilization during transport

⚠️ Neurological symptoms (weakness, numbness)

Clinical Significance: Possible cord compression

Action: Document deficits, perform neurological assessment

⚠️ Systemic signs (fever, weight loss, cancer history)

Clinical Significance: Possible infection or malignancy

Action: Notify receiving hospital, document findings

Headache: Red Flags

Critical Warning Signs

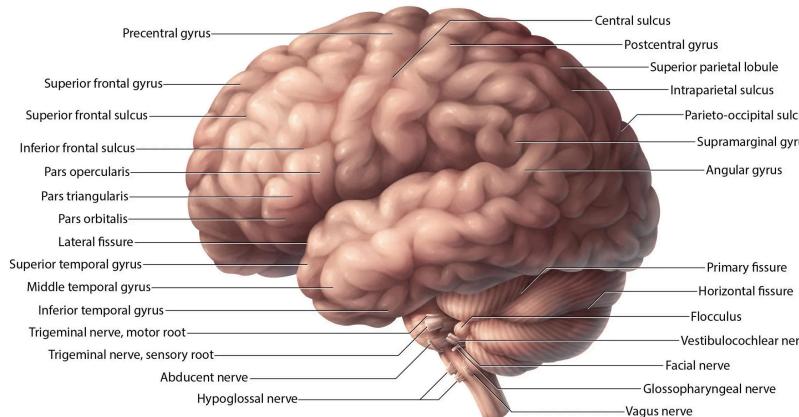


Figure 1: Lateral view of the brain.

💡 Brain regions involved in headache mechanisms

Sudden 'thunderclap' headache

Clinical Significance: Subarachnoid hemorrhage

Action: Initiate stroke alert, rapid transport

Headache with neurological deficits

Clinical Significance: Stroke or mass lesion

Action: Notify receiving facility, document deficits

Fever with neck stiffness

Clinical Significance: Meningitis

Action: Infection precautions, urgent transport

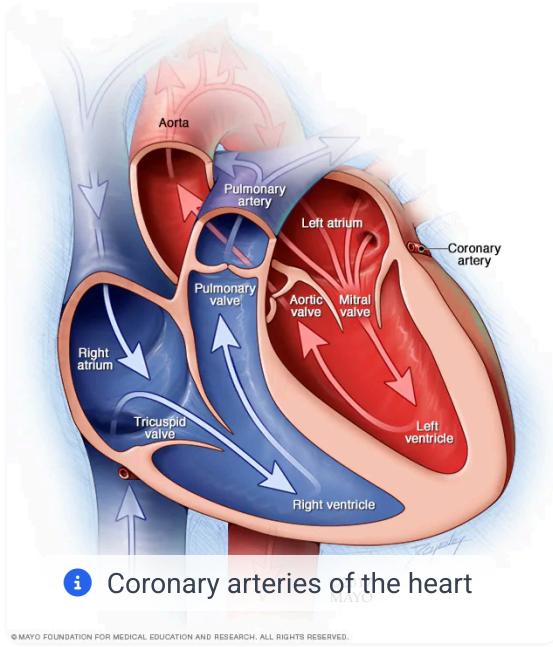
Headache after trauma

Clinical Significance: Subdural or epidural hematoma

Action: Maintain c-spine precautions, rapid assessment

Chest Pain: Red Flags

Critical Warning Signs



Crushing pain radiating to jaw/arm, diaphoresis, nausea

Clinical Significance: STEMI (ST-Elevation Myocardial Infarction)

Action: 12-lead ECG, administer aspirin, rapid transport



Tearing chest pain radiating to back

Clinical Significance: Aortic dissection

Action: Consider transport to tertiary care center



Hypotension or syncope with chest pain

Clinical Significance: Consider PE, MI, aortic dissection

Action: Notify hospital, manage shock, prioritize transport



Pain worse with exertion

Clinical Significance: Angina/myocardial ischemia

Action: Monitor closely, obtain 12-lead, prepare for ACS protocols

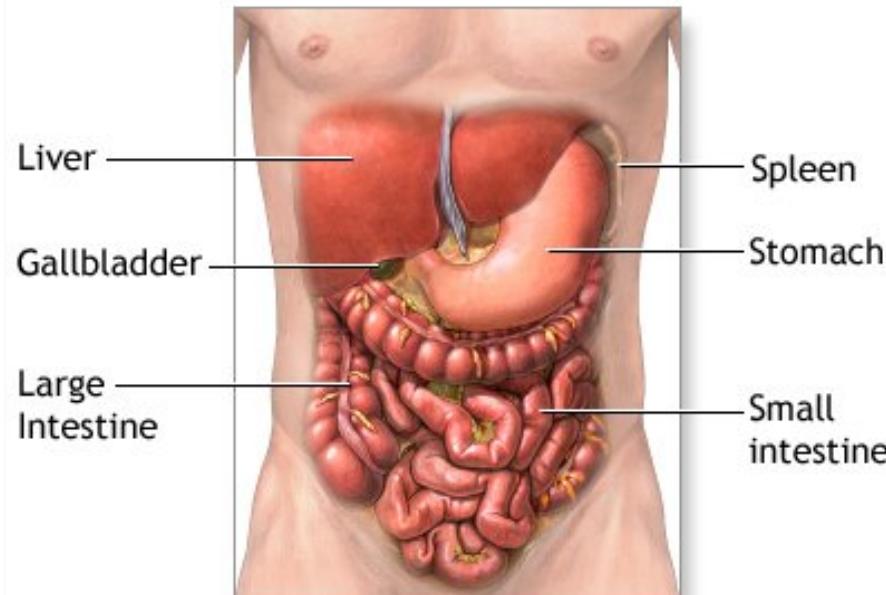


Time-sensitive condition: Activate STEMI protocols when indicated

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Abdominal Pain: Red Flags

Critical Warning Signs



Abdominal anatomy and organs

ADAM.

GI bleeding (hematemesis, melena)

Clinical Significance: Hypovolemic shock risk

Action: ABCs, IV access, transport

Rigid abdomen, rebound tenderness

Clinical Significance: Peritonitis

Action: Surgical emergency, rapid transport

AAA risk (older male, smoker, pulsatile mass, sudden severe pain)

Clinical Significance: Suspect rupture

Action: Manage shock, notify hospital

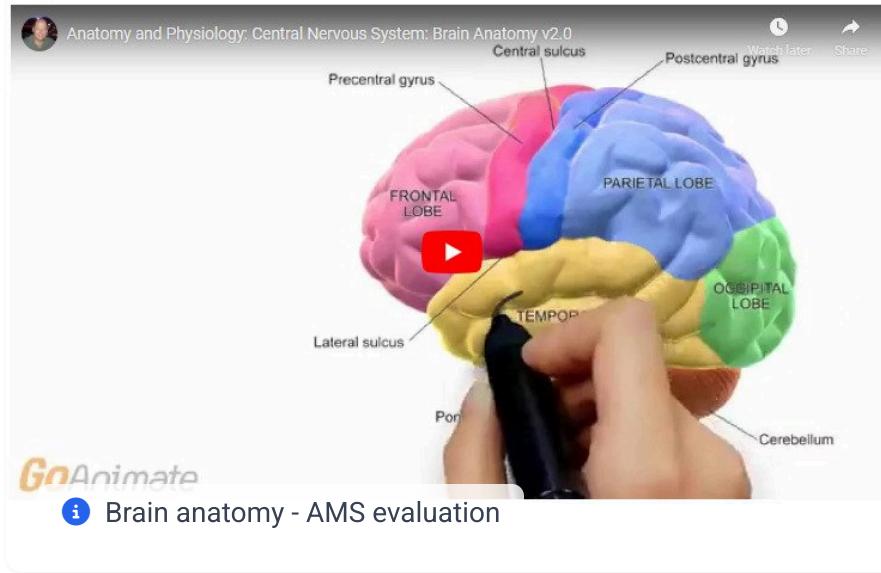
Persistent vomiting

Clinical Significance: Possible obstruction

Action: Monitor fluids/electrolytes

Altered Mental Status: Red Flags (Part 1)

Critical Warning Signs



Toxicome suspicion

Signs: Overdose, pill bottles, drug paraphernalia, odors

Action: Treat per poison/toxicology protocols, consider Naloxone

Glucose abnormalities

Always check glucose early!

Action: Immediate correction needed for hypo/hyperglycemia

Head trauma/anticoagulant use with new AMS

High risk for intracranial hemorrhage

Action: Rapid transport, hospital notification

Fever with AMS or meningismus

Suspect meningitis or sepsis

Action: Infection precautions, urgent transport

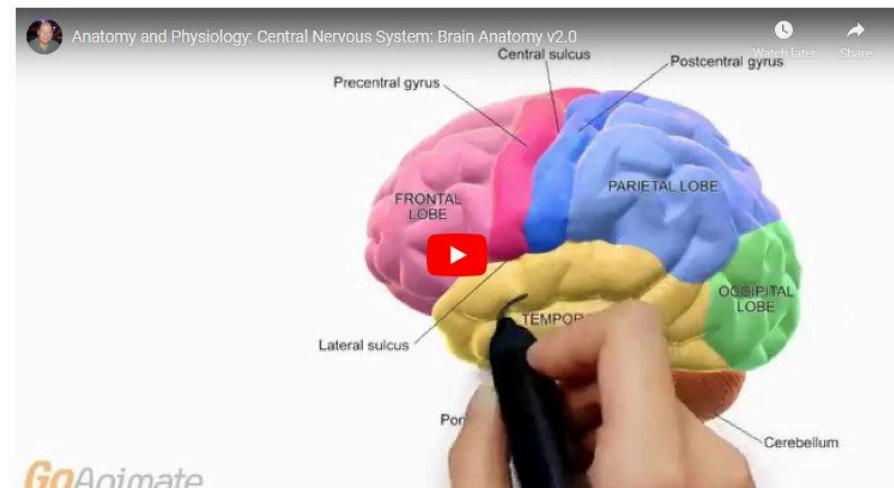
Seizure activity or prolonged post-ictal state

Requires urgent intervention and hospital evaluation

Action: Treat per protocol, monitor airway

Altered Mental Status: Red Flags (Part 2)

Critical Warning Signs (continued)



i Critical brain regions in AMS assessment

Focal neurologic deficits

(facial droop, weakness, unequal pupils, aphasia, abnormal posturing)

Clinical Significance: Possible stroke or intracranial hemorrhage

Action: Activate stroke alert; rapid transport

Sudden onset or rapid deterioration

Clinical Significance: Suggests stroke, seizure, hypoglycemia, or toxic ingestion

Action: Rapid identification and appropriate interventions

Hemodynamic instability

(hypotension, shock, weak pulses)

Clinical Significance: Consider sepsis, hemorrhage, cardiac causes

Action: Rapid transport and resuscitation

Respiratory distress or hypoxia

(bradypnea, hypoventilation, cyanosis, $\text{SpO}_2 < 90\%$)

Clinical Significance: Life-threatening impaired oxygenation

Action: Provide oxygen and/or ventilation support immediately

Airway compromise

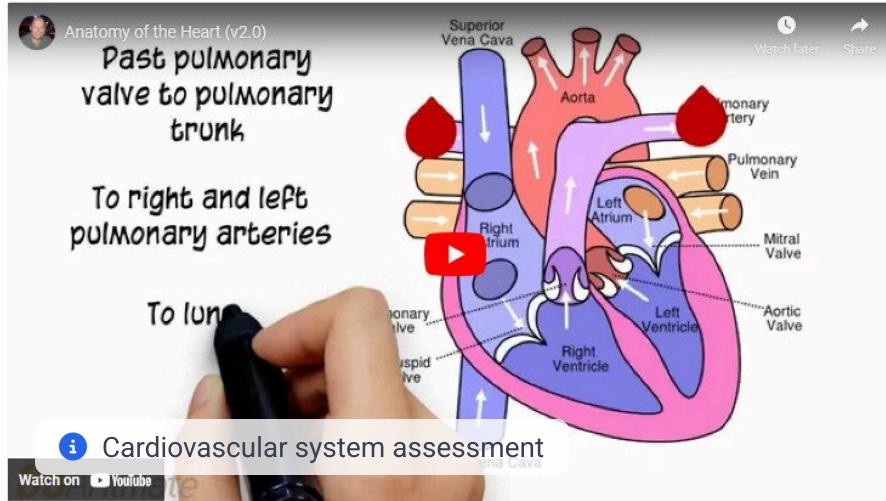
(inability to protect airway, gurgling, snoring, stridor)

Clinical Significance: Imminent risk of airway obstruction

Action: Urgent airway management required

Syncope Red Flags: Part 1

Critical Warning Signs



⚠️ Clustered recurrent episodes

Serious underlying etiology likely

⚠️ Supine syncope or during sleep

Suspicious for arrhythmia/cardiac cause

⚠️ Syncope in pregnancy

Consider ectopic pregnancy or obstetric emergency

⚠️ GI bleeding with syncope

High risk hypovolemia; manage fluid status

⚠️ Hypotension/shock at scene

Consider hemorrhage, arrhythmia, sepsis

⚠️ Trauma or head strike

Possible intracranial bleed/spine injury

ℹ️ Initial Assessment

Early recognition of these red flags enables rapid identification of serious causes of syncope requiring immediate intervention.

💡 Teaching Point

See Part 2 for additional red flags including neurological deficits, prolonged LOC, cardiac history, and exertional syncope.

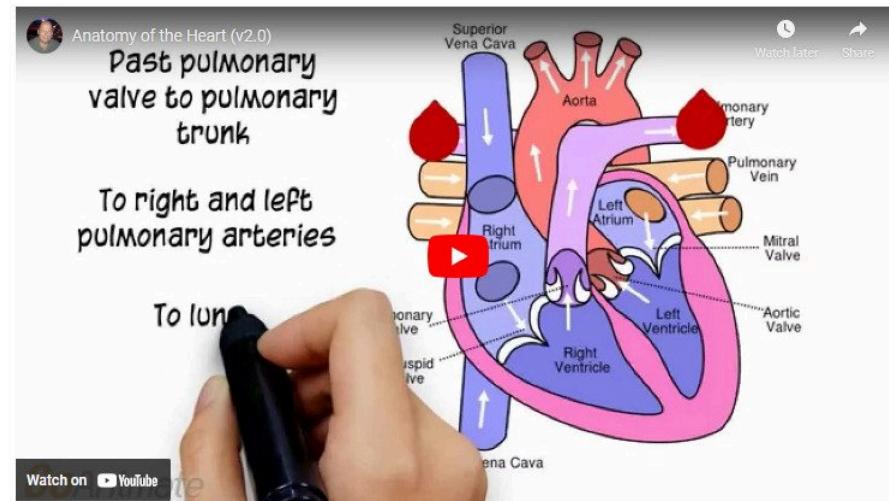


Requires close monitoring and rapid transport

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Syncope Red Flags: Part 2

Critical Warning Signs (continued)



Cardiovascular system assessment

Focal neurological deficits after event

Clinical Significance: Stroke/TIA

Action: Consider stroke alert activation

Prolonged LOC (>1–2 min) or post-event confusion

Clinical Significance: Seizure, intracranial hemorrhage

Action: Detailed neurological exam, urgent transport

Known cardiac disease or family history of sudden cardiac death

Clinical Significance: High arrhythmic risk

Action: Cardiac monitoring, notify receiving facility

Syncope with chest pain or palpitations

Clinical Significance: Ischemia or tachy/bradyarrhythmia

Action: 12-lead ECG, cardiac monitoring, rapid transport

Exertional syncope or minimal/no prodrome

Clinical Significance: Arrhythmia, structural heart disease, outflow obstruction

Action: Priority transport to facility with cardiac capabilities

Key Takeaways & Critical Red Flags



Early recognition improves outcomes & ensures hospital activation.
Paramedics must rapidly recognize red flags in the field.

Clinical Presentation Approach



Chest Pain & Headache

Often require STEMI or stroke alerts; rapid recognition and hospital team activation



Back & Neck Pain

Usually recognition & documentation, not field intervention;
immobilize when indicated



Abdominal Pain

Frequently surgical emergencies; supportive care & transport; watch
for rigid abdomen

Clinical Presentation Approach



Altered Mental Status

Requires a disciplined, systematic approach due to broad differential;
check glucose early



Syncope

Often points to cardiac, neurologic, or hemodynamic emergencies;
close monitoring and rapid transport

Critical Decision Points:

- ✓ STEMI/stroke alerts for time-sensitive conditions
- ✓ Secure airway early when compromised
- ✓ Always check glucose in altered mental status



Trust your clinical judgment and don't hesitate to advocate for your patient

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Case Studies: Identify the Red Flags

Review these scenarios and identify critical red flags that require immediate action



Case 1: Back Pain

Patient: 68-year-old female with history of breast cancer in remission for 5 years

Complaint: Progressive lower back pain for 3 weeks, now with bilateral leg weakness and difficulty urinating

Critical Thinking: What red flags are present? What should your priority actions be?

Hover for hint ↓



Case 2: Altered Mental Status

Patient: 24-year-old male found confused in apartment

Scene: Empty pill bottle nearby, diaphoretic, HR 120, BP 90/60, respirations shallow

Critical Thinking: What red flags are present? What are your immediate priorities?

Hover for hint ↓



Case 3: Headache

Patient: 42-year-old male with "worst headache of my life"

Presentation: Sudden onset during workout, nausea, photophobia, slight confusion

Critical Thinking: What red flags are present? What hospital notification is appropriate?

Hover for hint ↓



Case 4: Abdominal Pain

Patient: 76-year-old male with sudden severe abdominal pain

History: Smoker, hypertension. Pain radiates to back, abdomen feels "pulsating"

Critical Thinking: What life-threatening condition should you suspect?

Hover for hint ↓



Discussion Points

- 1 How does recognizing red flags change your treatment priorities?
- 2 What hospital notifications would be appropriate for each case?



Case Studies: Part 2

Additional scenarios covering neck pain, chest pain, and syncope red flags



Case 5: Neck Pain

Patient: 22-year-old male involved in motorcycle collision

Presentation: Complains of neck pain, numbness and tingling in both arms, unable to move fingers on left hand

Critical Thinking: What red flags are present? How should you manage this patient?

Hover for hint ↓



Case 6: Chest Pain

Patient: 58-year-old female with sudden tearing chest pain radiating to back

Vitals: BP 190/110 (R arm), 150/90 (L arm), pulse 115, history of hypertension

Critical Thinking: What red flags are present? What immediate concerns do you have?

Hover for hint ↓



Case 7: Syncope

Patient: 19-year-old male basketball player collapsed during game

History: No prodromal symptoms, brief LOC, family history of "heart problems"

Critical Thinking: What red flags are present? What is your transport decision?

Hover for hint ↓



Case 8: Syncope in Pregnancy

Patient: 26-year-old female, 8 weeks pregnant with syncope and lower abdominal pain

Vitals: BP 88/60, HR 122, pale and diaphoretic, reports vaginal spotting

Critical Thinking: What emergency condition is high on your differential diagnosis?

Hover for hint ↓



Key Discussion Points

- 1 Why does each case presentation require specific hospital notification or special transport considerations?
- 2 How does early recognition of these specific red flags improve patient outcomes?



Quick Reference Card: Red Flags by System



Neurological Red Flags

- **Thunderclap headache:** Rapid transport, stroke alert
- **Focal deficits:** Document, notify receiving facility
- **Neck stiffness + fever:** Infection precautions, urgent transport
- **Altered mental status:** Check glucose, assess airway



Abdominal Red Flags

- **Rigid abdomen/rebound:** Surgical emergency, rapid transport
- **GI bleeding:** Large-bore IV access, fluid resuscitation
- **Pulsatile mass + pain:** Suspect AAA, gentle handling, rapid transport
- **Persistent vomiting:** IV fluids, antiemetics, monitor electrolytes



Cardiovascular Red Flags

- **Crushing chest pain + radiation:** 12-lead ECG, aspirin, rapid transport
- **Hypotension with chest pain:** IV access, fluid bolus, hospital notification
- **Sudden dyspnea + chest pain:** Consider PE, high-flow O₂



Musculoskeletal Red Flags

- **High-energy trauma:** Maintain spinal immobilization
- **Progressive neurological deficit:** Document, urgent transport
- **Saddle anesthesia:** Potential cauda equina, urgent recognition
- **Unexplained weight loss + pain:** Document, suspect malignancy



Respiratory Red Flags

- **SpO₂ < 90%:** Immediate oxygen therapy
- **Stridor or gurgling:** Position airway, consider advanced management
- **Unequal breath sounds:** Consider pneumothorax, monitor closely



Emergency Action Principles

- ✓ Document red flags early in assessment
- ✓ Communicate findings clearly to receiving facility
- ✓ Prioritize rapid transport for time-sensitive conditions
- ✓ Trust your assessment skills and clinical judgment



When in doubt, transport to the appropriate facility and provide early notification

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Resources & Acknowledgments

Recommended Resources



Clinical References

- Paramedic Care: Principles & Practice
- Tintinalli's Emergency Medicine
- EMS Field Guide



Online Resources

- Emergency Medicine Practice
- UpToDate Clinical Database
- FOAM (Free Open Access Medical Education)

Acknowledgments



Contributors

This training module was developed in collaboration with emergency medicine physicians, experienced paramedics, and EMS educators to provide evidence-based guidance for field assessment.



Contact & Support

For questions about this training module or to request additional resources, please contact the EMS Education Department.



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Thank You

For your dedication to excellence in emergency medical care and patient safety



Remember: Early recognition saves lives

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