

Wijesinghe D.K.

CLINICAL INDICATORS OF INTERNAL BLEEDING IN EMERGENCY TRAUMA CARE

Tutor: senior lecturer Waqar A.

Department of Surgical Diseases

Gomel State Medical University, Gomel

Clinical indicators of internal hemorrhage in emergency trauma care begin with the recognition that such bleeding represents a spectrum from occult, self-limited blood loss to rapid exsanguination, often following high-energy blunt mechanisms or penetrating injuries. The most consequential sources involve anatomic compartments where even moderate blood loss can precipitate life-threatening physiologic compromise, including traumatic intracranial hemorrhage, hemothorax, hemopericardium with tamponade, major vessel disruption, and solid organ injuries to the spleen and liver. Early clinical expression varies with injury location and bleeding rate, manifesting as nonspecific shock physiology tachycardia, hypotension, pallor, diaphoresis, dizziness, and syncope which may be the only initial findings in the compensated patient. However, the absence of overt hemodynamic instability does not exclude significant hemorrhage, as young patients and those with significant physiologic reserve may maintain normal vital signs until the point of acute decompensation, underscoring the need for a high index of suspicion based on injury mechanism and patient-specific risk modifiers such as anticoagulant or antiplatelet use.

Compartment-specific symptoms provide critical diagnostic clues that localize the source of bleeding and guide initial management priorities. Neurologic deterioration, including headache, loss of consciousness, seizures, or new focal deficits, strongly suggests intracranial hemorrhage requiring prompt neurosurgical evaluation. Respiratory difficulty, chest pain, and signs of poor perfusion with unilateral or absent breath sounds may indicate hemothorax, while the classic Beck's triad of muffled heart sounds, distended neck veins, and hypotension signals cardiac tamponade. In the abdomen, progressive pain, tenderness, and distension are common, though these signs may be subtle or absent in the early phase of solid organ injury. Beyond the torso, expanding ecchymoses, enlarging hematomas, or tense soft-tissue swelling following fractures may reflect ongoing bleeding into soft tissues, and severe extremity pain with tightness and neurovascular compromise suggests hemorrhage-related compartment syndrome. Because some patients may compensate early and remain hemodynamically stable initially, clinicians must integrate serial physical examination findings with the injury context to avoid diagnostic delay.

Diagnostic evaluation for clinical indicators of internal bleeding is initiated during the primary trauma survey, with parallel attention to airway, breathing, circulation, and hemorrhage control while rapidly assessing perfusion status. The Focused Assessment with Sonography in Trauma (FAST) serves as a rapid, bedside tool to detect intraperitoneal, intrathoracic, and pericardial blood, though a negative examination does not exclude injury, particularly in retroperitoneal or early hemorrhage. Contrast-enhanced computed tomography remains the definitive imaging modality for stable patients, providing precise localization of bleeding sources and guiding decisions between nonoperative management, endovascular intervention, or operative exploration. Adjunctive laboratory testing including serial hemoglobin and hematocrit, coagulation studies, and lactate levels supports the assessment of blood loss and evolving coagulopathy, with lactate serving as a sensitive marker of inadequate tissue perfusion even when vital signs remain deceptively normal.

Continuous reassessment of hemodynamic trends, physical examination, and laboratory parameters is essential, as the clinical indicators of internal bleeding often evolve rapidly and may be masked by compensatory mechanisms or the effects of anticoagulant therapy. Ultimately, favorable outcomes depend on maintaining a structured approach that correlates mechanism of injury, serial clinical findings, and timely diagnostic imaging to facilitate definitive hemorrhage control.