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Point-of-care testing for trauma, emergency, and critical care

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Point-of-care (POC) testing is defined as medical testing at or near the site of patient care. These devices serve as rapid and convenient tools to accelerate clinical decision-making for acute care patients. The goal of this talk is to (a) describe the clinical benefits of POC testing in trauma, emergency, and critical care, (b) highlight specific case studies where POC testing improves patient outcomes, (c) describe POC testing in austere settings including disasters, *en route* care, and military settings, (d) describe the types and formats of common POC devices, (e) illustrate the underlying scientific principles for POC device performance and how these affect clinical decision making, (f) describe situations where caution is advised for POC testing, and (g) discuss the future of POC testing in trauma, emergency, and critical care populations. Specifically, this talk will focus on POC testing for the recognition and management of sepsis, tight glycemic control, recognition of acute kidney injury (AKI), burn care, and cardiac injury. For sepsis, we will discuss the use of rapid molecular pathogen detection systems and biomarkers of infection (e.g., procalcitonin). Next, we will discuss the role of glucose monitoring for tight glycemic control and the clinical impact of blood glucose monitoring system accuracy during intensive insulin therapy. We will then describe the role of novel biomarkers of AKI including neutrophil gelatinase associated lipocalin, kidney injury molecule – 1, and cystatin C for POC testing. Burn patients will also be discussed as a unique high-risk population for POC testing including our institutions use of bedside devices for diagnosing sepsis and managing acute fluid resuscitation. Lastly, we will discuss the use of POC cardiac biomarkers including high sensitivity troponin testing in the emergency care setting.

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Operating in the trauma ICU

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Why operate in the ICU rather than in the Operating Room? There are two main reasons: lack of OR time and severity of patient condition. Examples of the first category are tracheostom and gastronomy. Percutaneous techniques make these procedures ideal for the ICU. Examples of the second category are decompressive laparotomy for abdominal compartment syndrome and procedures for intracranial hypertension. These procedures are above and beyond the usual ICU monitoring and therapeutic interventions. With proper planning and preparation surgical procedures can be performed as safely and effectively in the intensive care unit as they can be in the formal operating room.

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