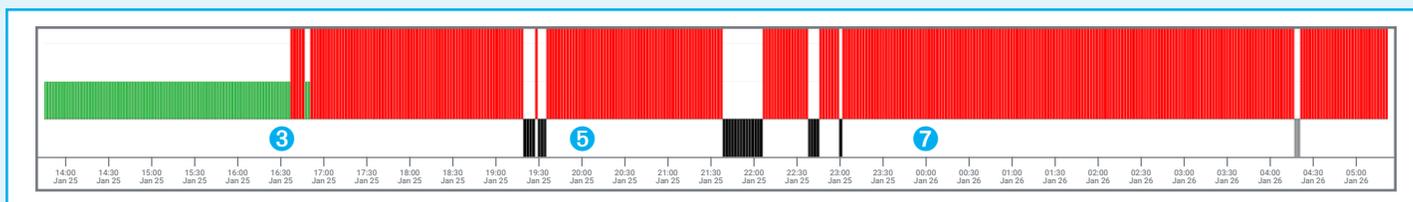# Case Study: Septic Shock

Septic shock, characterized by hypotension, altered tissue perfusion, and increased blood lactate levels, is the most severe form of sepsis. Around 8% of patients admitted to the ICU experience septic shock sometime during their ICU stay with a mortality rate of approximately 38%.[1]

Clinical Story

❶ Admitted to ICU for management of sepsis secondary to bladder surgery due to cancer.

❷ Extended length of stay for complications related to septic shock.

❸ Day 1: 16:30 Retrospective review showed that the patient began to show AHI Unstable (red).

❹ Retrospective review reveals that AHI recognized the instability, although the patient showed no signs of decompensation.

❺ Day 1: 20:00 Patient suffered from profound hypotension and high-dose vasopressors were initiated.

❻ Multiple drastic vasopressor titrations made over several hours for vacillating blood pressure. Patient's AHI output remained unstable (red) during that time.

❼ Day 2: 00:00 After the team was unable to maintain a stable blood pressure, patient coded. Ultimately, the care team was unable to resuscitate her.

Patient
Age: 45
Sex: Female
Hospital: Michigan Medicine
Reason for admission: Septic shock
Length of stay: 101 days

Opportunity
Through retrospective review, although the patient was known to be critically ill and unstable, AHI provided early and continuing real-time warnings of patient deterioration, possibly enabling a timelier titration of needed medications that could have improved the clinical outcome.

FIFTHeye

1- Vincent, Jean-Louis, Gabriel Jones, Sholto David, Elena Olariu, and Kevin K. Cadwell. "Frequency and mortality of septic shock in Europe and North America: a systematic review and meta-analysis." Critical care 23, no. 1 (2019): 1-11.

FIFTH EYE™ AHI is the FDA De Novo granted Analytic for Hemodynamic Instability, easily implemented with existing non-invasive ECG monitors. AHI provides updated colored bars every two minutes, revealing signs of hemodynamic stability (green) or instability (red).

AHI was developed in collaboration with clinicians at the University of Michigan. AHI uses real-time computing based on pattern analysis of a Lead-II ECG waveform to give clinicians updated information within their existing workflow, without requiring manual data input, score calculations, or complex integrations. It can identify at-risk patients in any hospital setting that involves continuous ECG monitoring, not just the ICU.

AHI is intended to describe an adult patient's hemodynamic status and indicate if a patient is showing signs of hemodynamic stability or instability. Signs of hemodynamic instability are defined as hypotension (systolic blood pressure <90 mmHg or mean arterial pressure (MAP) <70 mmHg) combined with tachycardia (heart rate ≥ 100 bpm).

STRENGTH IN NUMBERS: In an FDA reviewed clinical study, AHI identified hemodynamic instability with 96% sensitivity and 85% specificity compared to traditional vital signs-based reference standard. The study population consisted of over 28,000 AHI outputs across 222 consecutive eligible hospitalized patients. Diversity in the population, ailments and treatments of the study supports external validity of testing for purposes of generalizing results beyond study site population.
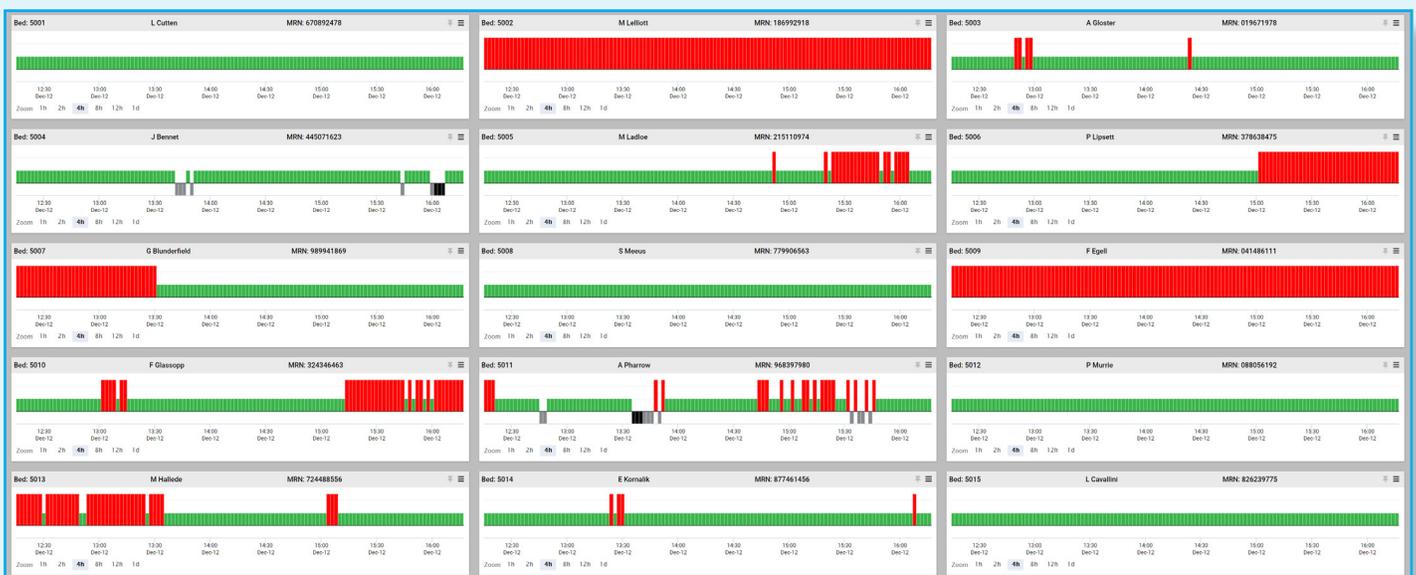
Multi-patient views help prioritize hospitalized adult patients to avoid failure to rescue.

› Prioritization of patients on nurse and physician rounds.
› Efficient shift-change huddle.
› Real-time feedback post-procedure and clinical interventions.
› Nurse empowerment with no nurse burden.
› Patient risk assessment at transfer to higher or lower level of care.
› Resource utilization (beds, clinicians).

Experience the beauty of AHI:
› Non-invasive accessibility. More expedient, less complication. Remote monitoring.
› One lead, multiple reads. Continuous monitoring to give rapid indication.
› Confidence in assessment. 96% Sensitivity. 85% Specificity.
› No additional work for clinicians. Easily integrated into existing ECG monitors and workflow.
› Outside of patient room.
› Less stress caused by the unknown. AHI provides clear/accurate assessment of patient trending.
› Developed in collaboration with Clinicians at Michigan Medicine | University of Michigan Hospital.
   AHI was born in a hospital and trained by clinicians.

Learn how AHI can help you better manage clinical care.
Email info@fiftheye.com or visit fiftheye.com

FIFTHeye
Beyond Vital Signs™