



Answers for Everyday Critical Care and Trauma

Medics must answer difficult questions every shift. All too often decisions are made without the benefit of precise information. A more complete understanding of a patient can solidify the decision to divert to a trauma center—or validate the choice of a local emergency department.

The ZOLL X Series® helps take the guesswork out of decision making. It is the first pre-hospital monitor/defibrillator to feature the full Masimo® rainbow SET® Technology Platform. It delivers answers to key blood, fluid, and oxygenation questions so you can make the best call for your patients.

Parameter	Description
Total Hemoglobin (SpHb™)	Real-time noninvasive monitoring of hemoglobin, a key component in oxygen-carrying capacity
Oxygen Content (SpOC™)	A more complete picture of patient's oxygenation status by evaluating the combination of oxygen saturation (SpO ₂) and total hemoglobin (SpHb)
Pleth Variability Index (PVI™)	A measurement that may help clinicians noninvasively and continuously assess fluid status of patients
Perfusion Index (PI)	A noninvasive measure of peripheral perfusion

Noninvasive Hemoglobin Monitoring (SpHb)

DOES MY
PATIENT NEED
BLOOD?

Monitoring hemoglobin levels on a minute-by-minute basis lets medics look for warning signs that can indicate internal bleeding. Rapid and ongoing assessment of total hemoglobin is crucial to quantify blood loss and/or the need for transfusion.¹

Hemorrhage is the leading cause of death after injury.² The ability to answer questions accurately and quickly is critical to your patient's survival. In fact, upon arrival at a trauma center, at least 25% of severely injured patients are already coagulopathic.³

Oxygen Content (SpOC)

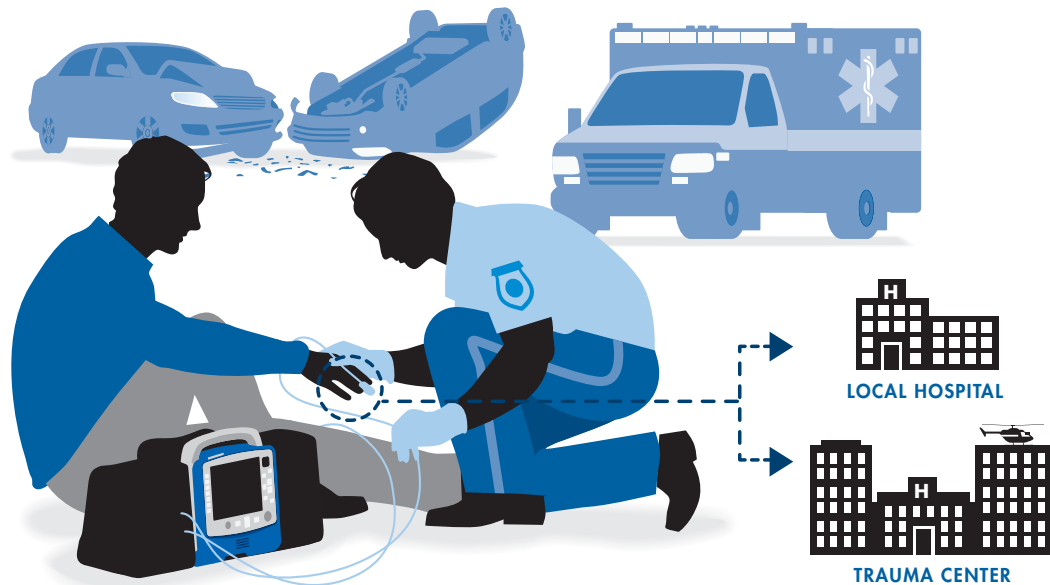
WHAT'S MY PATIENT'S OXYGENATION STATUS?

What good is knowing an oxygen saturation level if your patient doesn't have the blood volume to carry it? SpOC gives medics a more complete picture of a patient's oxygenation status by factoring in hemoglobin and oxygen saturation levels.

Pleth Variability Index (PVI)

WILL MY PATIENT RESPOND TO FLUID?

Fluid administration is crucial to preserving cardiac output and optimizing patient status. However, unnecessary fluid administration is associated with increased mortality⁴ and morbidity. PVI has been shown to predict fluid responsiveness in ventilated patients. PVI is a breakthrough measurement that can help medics noninvasively and continuously assess fluid status of patients⁵.



¹Lindner G, Exadaktylos A. How Noninvasive Haemoglobin Measurement with pulse CO-oximetry can change your practice: an expert review. *Emergency Medicine International*. 2013;1-4.

²Acosta JA, et al. Lethal injuries and time to death in a level I trauma center. *Journal of the American College of Surgeons*. 1998;186(5):528-533.

³MacLeod JB, et al. Early coagulopathy predicts mortality in trauma. *Journal of Trauma and Acute Care Surgery*. 2003;55(1):39-44.

⁴Bundgaard-Nielsen M, et al. *Acta Anaesthesiol Scand*. 2007;51(3):331-40.

⁵Cannesson M, et al. *Br J Anaesth*. 2008;101(2):200-6.