

The Incidence of Hypoperfusion In Patients Waiting for a Medical Floor Bed

Ardolic B, Menendez B, Mihata R

Staten Island University Hospital, Staten Island, NY; Broward General Medical Center, Fort Lauderdale, FL; Methodist Hospital, Indianapolis, IN

Study Objectives: Identifying hypoperfusion in the critically ill elderly patient has been a highly researched topic in the emergency medicine, critical care and trauma literature over the last two decades. This has led to a number of invasive and some noninvasive tools to assist the clinician in the identification of hypoperfusion in the critically ill elderly patients. Little research has been done to identify hypoperfusion in patients who require inpatient evaluation but are clinically stable for a non-monitored setting. This is likely due to the very nature of the majority of the available indicators to detect hypoperfusion. Most clinicians would not be willing to obtain an ScvO₂ at the point of admission nor would they be willing to wait for the results of an additional serum lactate. This leaves a basic question which until now has been unanswered: What is the likelihood that a patient over the age of 65, who has been deemed stable by an emergency physician, is still hypoperfused, due to under resuscitation? StO₂, a noninvasive measure for detecting perfusion status is currently available. StO₂ has been shown to correlate well to ScvO₂ and has also been shown, in some studies, to predict mortality in the critically ill. Thus, can this device be used to screen for hypoperfusion in the patients over the age of 65? If this noninvasive measure can be effectively used, this may be of significant benefit to emergency physicians.

Methods: The study was performed at three EDs at different locations and diverse patient populations. Site one was an urban tertiary care receiving center in the Midwest. Site two was an urban tertiary care receiving center in the Southeast. Site three was a suburban university hospital in the Northeast. StO₂ measurements were obtained using an InSpectra StO₂ Tissue Oxygenation Monitor Model 650. Over four consecutive days, an StO₂ was measured on all patients over the age of 65 who had been admitted to a non monitored floor bed. All patients requiring ICU evaluation were excluded. A reading was taken by applying an StO₂ monitor to the thenar eminence until a stable reading was received, generally within two minutes. In some cases, management was changed based upon the reading, but this was not a requirement.

Results: A total of 127 patients received an StO₂ reading. At site one, 5 of 39 (13%) patients had an StO₂ below 75%. At site 2, 10 of 47 (21%) patients had an StO₂ below 75%. At site three, 10 of 41 (24%) had an StO₂ below 75%. In total, 20% of patients had an StO₂ below 75% in all three sites.

Conclusion: StO₂ has been shown to correlate to ScvO₂, and has also been shown to correlate an increased risk of mortality. There is a significant incidence of low StO₂ in the patient population most at risk for hypoperfusion and for under resuscitation. These findings suggest that patients who are awaiting floor admission may require additional urgent interventions. This tool may allow the emergency physician, or the medical team caring for the held patient, to identify patients most at risk for decompensation. Additional research needs to be performed to ascertain if this tool can also be used to guide resuscitation in the ED, such as early research is showing in the ICU and trauma setting.