

## Time to Move From SOFA 1.0 to 2.0?



The Sequential Organ Failure Assessment (SOFA) score was developed in 1994, more than 25 years ago. The primary purpose of the score was to provide clinicians with a method that could help them assess and monitor organ dysfunction in critically ill patients. SOFA score became one of the most widely used scoring systems in intensive care. However, many changes have occurred in clinical practice over the last decades. New interventions are being used, and there is a greater focus on non-invasive monitoring systems. All these developments suggest it might be time to update the SOFA score.

As proposed by the authors of this article, the fundamental principles of the SOFA should be retained. It should be as simple as possible with a limited number of objective variables. Since the initial SOFA score was developed, many biomarkers of organ function have been studied but not validated extensively. Hence, some variables proposed in the original SOFA score still represent the most reliable indicator of function for that organ system. For example, bilirubin concentrations are still the best choice for the hepatic system. Similarly, platelet count may still represent the best option for assessing the function of the coagulation system.

During the development of the original SOFA score, an important consideration was that the selected variables for each organ should ideally be independent of therapy. However, this might not be possible for the cardiovascular and respiratory systems. SOFA 2.0 may require the inclusion of changes in the use of vasopressor and inotropic agents for correcting hypotension or cardiac output. Vasopressin and its derivatives are being used in many centres. Metaraminol, phenylephrine and angiotensin II may also be considered for inclusion in addition to inotropic agents such as levosimendan and phosphodiesterase. In addition, venoarterial extracorporeal membrane oxygenation (VA-ECMO), cardiac assist devices, and other support systems may also be considered in assessing the cardiovascular system.

Another variable which might also be considered is blood lactate concentration, as values are related to morbidity and mortality in critically ill patients. A decrease during initial resuscitation indicates a good response to treatment. Changes in lactate concentrations are typically slow, and values can remain elevated after adequate resuscitation. Other factors such as liver function and drugs can also increase concentration levels.

There has been a shift in clinical practice towards less invasive monitoring. Respiratory support is a key criterion for a respiratory sub-SOFA score of 3 or 4. However, this could now include high-flow oxygen therapy (HFOT), non-invasive mechanical ventilation, and venovenous extracorporeal membrane oxygenation (VV-ECMO), as these are used more widely today. Renal replacement therapies are also widely available and can be used as an indicator of renal dysfunction.

The addition of other systems, such as gastrointestinal, metabolic or immune, could also be considered. However, the simplicity of SOFA must be retained as it is one of its key features.

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