

Promoting Venous Return: Why Stressed Volume Matters

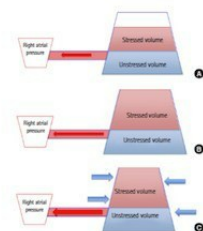


Fig. 2. Model of venous return. (A) Stressed volume responsible for Pms, (B) Illustrating how a fluid bolus augments venous return, and (C) illustrating how vasopressors augment venous return.

An intimate understanding of stressed and unstressed volume is “vital to managing hypotension in the emergency department”, according to Rory Spiegel, Department of Emergency Medicine, Stony Brook Medicine, USA, writing in *Clinical and Experimental Emergency Medicine*.

Spiegel describes mean systemic pressure (Pms) as an elusive concept that does not get the attention it deserves. He argues that Pms deserves attention along with left ventricular function when assessing circulatory failure in the emergency department.

Spiegel outlines the factors responsible for venous return in patients with circulatory failure, with a focus on stressed vs unstressed volume. The factors that promote venous return were first described in 1955 by Arthur Guyton as right atrial pressure, mean systemic pressure (Pms) and vascular resistance.

Spiegel explains how Pms is determined and that the greater the stressed volume, the greater the Pms and in turn, the venous return. The model is explained in relation to septic shock.

As emergency physicians have traditionally focused on volume replacement in patients presenting in shock, regardless of initial volume status, many patients receive large volume fluid resuscitations, when they may not be truly hypovolaemic. Spiegel notes that early use of low dose vasopressors will shift fluids from the unstressed venous beds to the useable stressed volume, and fluids administration should be limited unless there is evidence of significant hypovolaemia.

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