

Functional Haemodynamic Assessment and Treatment of Hypotensive Patients at the Mater during Medical Emergency Team (MET) Calls (FATHOM-MET) – a Quality Improvement Project

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Background

Hypotension is defined as systolic blood pressure lower than 90 mmHg or mean arterial blood pressure lower than 65 mmHg or a decrease of 40 mmHg or more from baseline¹. Hypotension is frequently but not universally associated with shock, which is defined a life-threatening, form of acute circulatory failure associated with inadequate oxygen utilization by the cells¹.

At the Mater Hospital, hypotension is the most common reason for Medical Emergency Team (MET) calls especially in the post-operative period (Figure 1). Intravenous fluid therapy is almost universally given as a first-line therapy^{2,3}. However, only about 50% of critically ill hypotensive patients are responsive to fluid therapy^{4,5}. Assessment of cardiac index and vasomotor tone to detect vasoplegia may allow earlier identification of patients with low vascular tone who require vasopressor therapy⁶. Therefore, maximising therapeutic efficacy and minimising the adverse consequences of intravenous fluid therapy.

Pulse pressure variation (PPV), stroke volume variation (SVV) and passive leg raising (PLR)¹⁴ have been validated to assess fluid responsiveness and are superior to clinicians and static measurements^{7,8}.

The Edwards Lifesciences ClearSight system non-invasively and continuously monitor a range of haemodynamic parameters including blood pressure, stroke volume, stroke volume variation, cardiac output and cardiac index⁹. The technology has been validated in a number of studies^{10,11}.

Reasons for Post-Op MET Calls
October - December 2017

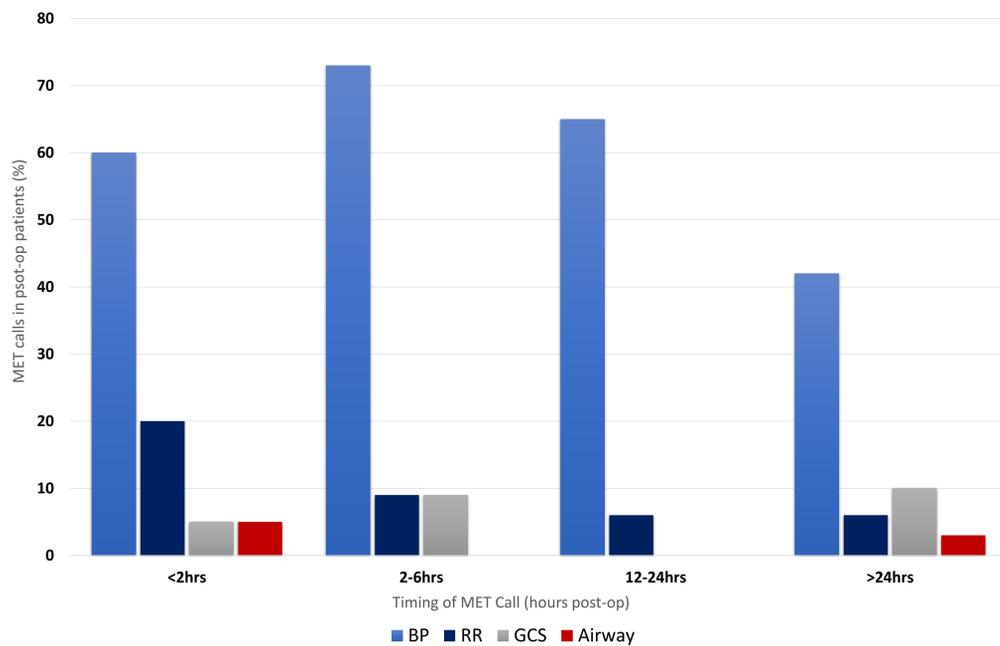


Figure 1: (Courtesy of Mr Peter Last, Mater Safety and Quality Unit)

Intervention

All patients having Medical Emergency Team (MET) calls for hypotension and attended by the Clinical Nurse Specialists (CNS) are eligible to be included in the quality improvement project.

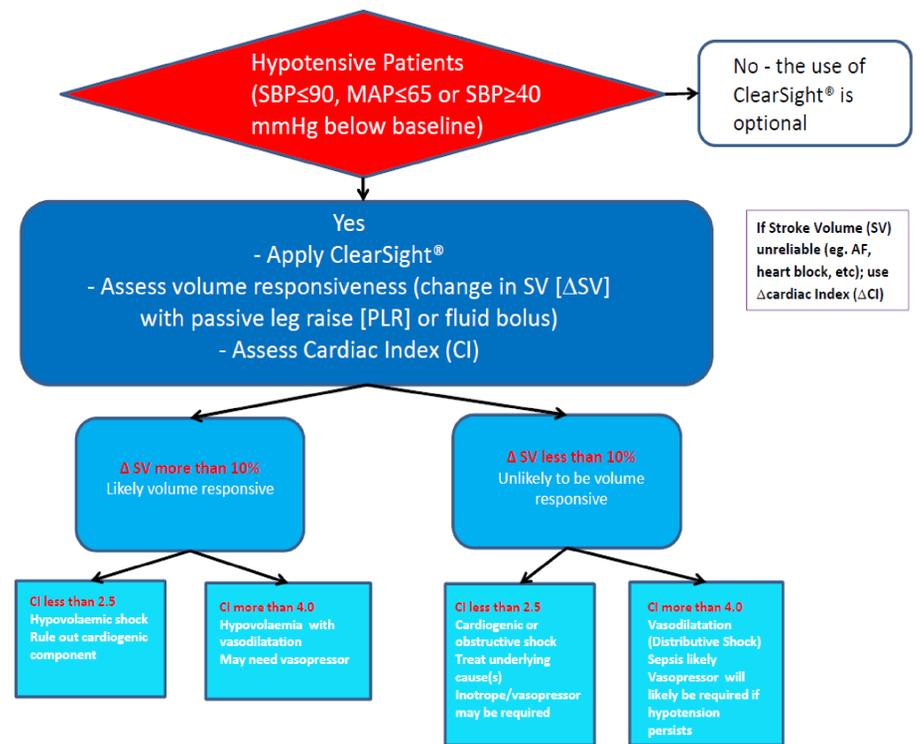


Figure 2: Source Edwards Lifesciences



Figure 3: Source Edwards Lifesciences

Aims

- To introduce an advanced non-invasive haemodynamic monitoring device, in addition to usual care, in the management of hypotensive patients during MET calls
- To assess fluid responsiveness in hypotensive patients either using the passive leg raise (PLR) manoeuvre or by measuring changes in stroke volume in response to a fluid challenge if it is clinically safe or necessary to administer fluids
- To measure cardiac output and assist in the diagnosis, classification and clinical management of circulatory shock
- To introduce a haemodynamic management algorithm to guide clinical decision making
- To monitor changes in clinical management and outcomes
- To monitor adverse events

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