

Title: Targeting and monitoring mean arterial pressure in critical illness: a mixed-methods service evaluation.

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Background: In sepsis and cardiac arrest, arterial hypotension is associated with poorer outcomes, including renal injury and mortality [1,2]. Guidelines recommend initial resuscitation to a mean arterial pressure (MAP) of at least 65mmHg, but evidence for this target is limited [3]. We undertook a service evaluation that aimed: (1) to assess clinical opinion regarding the optimal MAP target in critical illness; and (2) to evaluate performance in meeting current targets, quantifying the burden of hypotension among intensive care (ICU) patients with non-neurological primary diagnoses at the Royal Infirmary, Edinburgh.

Methods: A concurrent triangulation mixed-methods approach was utilised, integrating semi-structured interviews with critical care consultants and a quantitative analysis of MAP data. Interviews explored the clinical factors influencing and challenges in achieving MAP targets. Blood pressure data were prospectively recorded at one-minute intervals for adult (≥ 18 years) patients receiving level 3 ICU care. A hypotensive insult was defined by five sequential minutes below MAP target. Insults were described in terms of number, absolute duration, as a percentage of total valid monitoring time, and through a pressure-time index (PTI).

Results: We included 18 interviewees and 220,553 minutes of blood pressure data across 66 patients. Twelve (67%) consultants reported a standard MAP target of 65mmHg. The importance of evidence-based, individualised, and flexible targets was emphasised by participants. In practice, 53 (80%) patients received a target of 65mmHg at admission. Hypotension affected 55 (83%) patients and accounted for $>10\%$ of monitoring time in thirteen (20%) patients. The median PTI was 3.4mmHg*hour but 24 (36%) patients had a PTI over 10mmHg*hour.

Conclusions: We noted a high occurrence of hypotensive insults of predominantly mild but varying severity. Whilst clinicians suggest that a MAP target of 65mmHg is not universally suitable for all patients, our findings indicate limited personalisation of targets in practice.

References:

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