

LETTER



CCCS-SSAI WikiRecs clinical practice guideline: vasopressor blood pressure targets in critically ill adults with hypotension and vasopressor use in early traumatic shock

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These recommendations were developed by the Canadian Critical Care Society and the Scandinavian Society of Anaesthesiology and Intensive Care Medicine according to standards for trustworthy guidelines in collaboration with the MAGIC WikiRecs project. The WikiRecs project is an ongoing collaborative effort from a network of expert clinicians and methodologists aiming to rapidly produce trustworthy evidence summaries and clinical practice recommendations within 90 days of identification of potentially practice-changing evidence. See www.magicapp.org/public/guideline/OLwWKL for more details about methods and processes, full evidence summary (GRADE SoF-table), and practical information presented in multilayered formats, available on all devices.

PICO question #1: In adult critically ill patients with hypotension requiring vasopressor support, should we be prescribing a higher blood pressure target (mean arterial pressure (MAP) 75–85 mmHg) compared to a lower blood pressure target (MAP 60–70 mmHg)?

Recommendation: We suggest against the use of higher BP targets (MAP 75–85 mmHg) compared to lower blood pressure targets (MAP 60–70 mmHg) in adult critically ill patients with hypotension requiring vasopressors. (Conditional recommendation).

Summary of evidence: See Table 1.

Justification: Two randomized controlled trials (RCTs; 894 patients) were found to be relevant to our clinical question [1, 2]. Our weak recommendation against higher BP targets takes into consideration the absence of a demonstrated benefit and high resource-demands associated with higher dose or longer duration vasopressor infusions. Additionally, it may be that the prescription of higher thresholds, and a subsequent need for higher doses of vasopressors, leads to increased harm; however, this signal is limited by imprecision and risk of bias.

The guideline panel undertook significant internal debate regarding whether to lower the overall certainty because of lack of blinding given the objective nature of mortality as an outcome and the impracticalities of blinding an intervention such as BP targets. Ultimately, as ICU mortality is often the result of end-of-life decision-making [3], we decided to lower the overall certainty because of risk of bias. The guideline panel also acknowledged the difficulty in making recommendations without quality of life, morbidity indices, or long-term outcome data; and this represents an important consideration for future research in this area.

PICO question #2: In adult trauma patients with hypotension, should we use early vasopressors versus not use early vasopressors?

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Table 1 Evidence profile outlining outcomes studied, pooled relative and absolute estimates of effect, GRADE certainty rating, and summary statement

Outcome time frame	Study results and measurements	Absolute effect estimates		Certainty in effect estimates (quality of evidence)	Summary
		Lower MAP target (60–70 mmHg)	Higher MAP target (75–85 mmHg)		
Short-term mortality (90 days)	Relative risk: 1.05 (CI 95 % 0.9–1.23) Based on data from 894 patients in 2 studies	411 per 1000 Difference: 21 more per 1000 (CI 95 % 41 fewer–94 more)	433 per 1000	Low: due to serious imprecision and serious risk of bias	Higher MAP target (75–85 mmHg) probably has little or no difference on short-term mortality
Long-term mortality > 90 days (6 months)	Relative risk: 1.13 (CI 95 % 0.72–1.77) Based on data from 118 patients in 1 study	367 per 1000 Difference: 47 more per 1000 (CI 95 % 103 fewer–282 more)	414 per 1000	Low: due to serious risk of bias and serious imprecision	Higher MAP target (75–85 mmHg) probably has little or no difference on long-term mortality >90 days
Use of renal replacement therapy (28 days)	Relative risk: 0.96 (CI 0.80–1.14) Based on data from 894 patients in 2 studies	357 per 1000 Difference: 14 fewer per 1000 (CI 71 fewer–50 more)	343 per 1000	Low: due to serious risk of bias and serious imprecision	Higher MAP target (75–85 mmHg) probably has little or no difference on use of renal replacement therapy
Digit, limb, or skin ischemia	Relative risk: 0.94 (CI 95 % 0.41–2.16) Based on data from 894 patients in 2 studies	27 per 1000 Difference: 1 fewer per 1000 (CI 95 % 16 fewer–31 more)	25 per 1000	Very low: due to serious risk of bias and very serious imprecision	We are uncertain whether higher MAP target (75–85 mmHg) increases or decreases digit, limb, or skin ischemia
Myocardial ischemia	Relative risk: 1.45 (CI 95 % 0.37–5.71) Based on data from 894 patients in 2 studies	29 per 1000 Difference: 13 more per 1000 (CI 95 % 18 fewer–137 more)	36 per 1000	Very low: due to serious risk of bias and very serious imprecision	We are uncertain whether higher MAP target (75–85 mmHg) increases or decreases myocardial ischemia
Ventilator free days (28 days)	Measured by: days Scale: High better Based on data from 894 patients in 2 studies	15.9 (Mean) Difference: MD 0.84 fewer (CI 95 % 2.28 fewer–0.6 more)	15.1 (Mean)	Low: due to serious risk of bias and serious imprecision	Higher MAP target (75–85 mmHg) probably has little or no difference on ventilator free days

Recommendation: The panel did not make a recommendation for this question.

Summary of evidence: Please see electronic supplementary material for the evidence profile for this question.

Justification: As a result of the overwhelming concern for residual confounding bias, the panel felt the single RCT [4] addressing this research question provided more informative evidence as to the effect of vasopressor use in trauma as compared with the pooled non-randomized data [5]. Despite starting as high quality, point estimates from the RCT ended with very low certainty secondary to risk of bias and imprecision.

As highlighted by our patient representative, we lack data on long-term morbidity and quality of life indices that severely limits our ability to make a recommendation. Understanding that there is a lack of demonstrated benefit, and given that the use of vasopressors may be associated with increased resources and potentially harm, there was a significant amount of discussion amongst the panel as to whether a conditional recommendation against was most appropriate. Ultimately, given the high degree of uncertainty, it was decided to offer no recommendation at this time.

Electronic supplementary material

The online version of this article (doi:[10.1007/s00134-016-4539-5](https://doi.org/10.1007/s00134-016-4539-5)) contains supplementary material, which is available to authorized users.

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Compliance with ethical standards

Conflicts of interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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