Paramedic – Evidence Based Medicine (P-EBP) Program

Paramedic CAT (Critically Appraised Topic) Worksheet

Title: *MAP benchmark for permissive hypotension in hypovolemic shock*

Report By: *Rachel Munro*

2nd Party Appraiser: *Jen Greene*

Clinical Scenario: *There is high quality research on the benefits of permissive hypotension in patients experiencing hypovolemic shock. The literature has a varied definition of what the clinical definition of permissive hypotension is. Is there is a specific MAP to target that has proven beneficial? Is it possible to narrow this definition?*

PICO (Population – Intervention – Comparison – Outcome) Question:
Patients experiencing hypovolemic shock receiving

Is there a decreased mortality in patients in hypovolemic shock using permissive hypotension vs standard fluid resuscitation?

Search Strategy:
Permissive hypotension hypovolemic shock

Search Outcome:
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Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/ WEAKNESSES
Owattanpanich N. et al., 2018	*Meta-analysis of 30 RCT's comparing permissive hypotension and standard fluid resuscitation in patients experiencing hypovolemic shock*	*Meta-analysis of RCT's. LOE: 1*	*Primary: mortality* *Secondary: ARDS, AKI, and multi-organ disfunction*	*Primary: RR 0.50; 95% CI: 0.40-0.61* *No increase in secondary outcomes with permissive hypotension patients.*	*Publication bias noted but adjusted for.* *The use of risk ratio as opposed to odds ratio. More challenging to interpret and can be positively misconstrued (based on my minimal research)* *Meta-analysis conducted using a variety of reputable databases. Massive sample size. RCT's taken from varying regions.* *Variance in definition of permissive hypotension and standard resuscitation*
Tran et al., 2018	*Meta-analysis of 5 RCT's comparing permissive hypotension and standard fluid resuscitation in patients experiencing hypovolemic shock*	*Meta-analysis of RCT's. LOE: 1*	*Primary: 30-day mortality* *Secondary: PRBC use, coagulopathy, sepsis, renal failure*	*Primary: ==30% decrease in mortality?== OR 0.70; CI 95%: 0.53-0.92* *Secondary: Marked decrease in PRBC and fluid use in permissive hypotension patients.*	*Only 1/5 RCT's included was statistically significant on its own. Statistical significance with meta-analysis of 5 studies.* *Meta-analysis of articles with different primary outcomes.*

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					Meta-analysis conducted using a variety of reputable databases. Massive sample size. RCT's taken from varying regions.

Comments: *Any additional information about your search results.*

Consider: *Based on my research there doesn't seem to be a marked difference between a systolic blood pressure targets as opposed to targeting a MAP. See clinical bottom line.*

Clinical Bottom Line: *Several of the RCT's included in these two meta-analysis' definitions of permissive hypotension was based on a MAP of 50 or 50-60. As this is a less arbitrary benchmark as opposed to a systolic blood pressure I feel it would be a stronger target. As of currently I was unable to find a meta-analysis of RCT's with blood pressure being solely based on MAP. A meta-analysis looking specifically at MAP as the target would be beneficial.*

References:
Tran, A., Yates, J., Lau, A., Lampron, J., & Matar, M. (2018). Permissive hypotension versus conventional resuscitation strategies in adult trauma patients with hemorrhagic shock. *Journal of Trauma and Acute Care Surgery*, *84*(5), 802–808. doi: 10.1097/ta.0000000000001816

Owattanapanich, N., Chittawatanarat, K., Benyakorn, T., & Sirikun, J. (2018). Risks and benefits of hypotensive resuscitation in patients with traumatic hemorrhagic shock: a meta-analysis. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*, *26*(1). doi: 10.1186/s13049-018-0572-4

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