

QUESTION

Should noradrenaline vs. adrenaline be used for low blood pressure after return of spontaneous circulation after cardiac arrest?

POPULATION:	low blood pressure after return of spontaneous circulation after cardiac arrest
INTERVENTION:	noradrenaline
COMPARISON:	adrenaline
MAIN OUTCOMES:	Thirty day survival; Thirty day or hospital survival (pooled); Good functional outcome at thirty days or at hospital discharge ; Recurrent cardiac arrest; Recurrent cardiac arrest;
SETTING:	Pre-hospital or in-hospital
PERSPECTIVE:	
BACKGROUND:	
CONFLICT OF INTERESTS:	

ASSESSMENT

Problem Is the problem a priority?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know	The majority of patients after cardiac require a vasopressor for the treatment of low blood pressure and achieve the currently recommended target of 60-65 mmHg. Many different vasopressor are used worldwide including noradrenaline, adrenaline, dopamin, and vasopressin. All these have slightly different effects. It is currently unclear if any one of these are preferable in patients after cardiac arrest given the combination of brain and cardiac injury.	
Desirable Effects How substantial are the desirable anticipated effects?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> Trivial <input checked="" type="radio"/> Small <input type="radio"/> Moderate <input type="radio"/> Large <input type="radio"/> Varies <input type="radio"/> Don't know	The systematic review identified 7 observational studies and one randomized study. Based on these it is difficult to assess the the possible desirable effects. In general the larger RCT:s in patients cared for in the ICU have not shown any large difference in outcome depending on the choice of vasopressor. Based on the current evidence it is difficult to assess the desirable effects if there are any.	
Undesirable Effects How substantial are the undesirable anticipated effects?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> Trivial <input checked="" type="radio"/> Small <input type="radio"/> Moderate <input type="radio"/> Large <input type="radio"/> Varies <input type="radio"/> Don't know	It is possible that some vasopressors used could have significant side-effects. But based on the current evidence it is impossible to estimate.	
Certainty of evidence What is the overall certainty of the evidence of effects?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input checked="" type="radio"/> Very low <input type="radio"/> Low <input type="radio"/> Moderate <input type="radio"/> High <input type="radio"/> No included studies	There is one very small RCT. All the other studies are observational and it is clear that there is confounding by indication i.e. adrenaline may be used in the sicker patients. Even though there are aims to adjust for this but it is clear that there are residual confounding. The way of adjusting for severity of illness is also very variable between studies.	
Values Is there important uncertainty about or variability in how much people value the main outcomes?		

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input checked="" type="radio"/> Important uncertainty or variability <input type="radio"/> Possibly important uncertainty or variability <input type="radio"/> Probably no important uncertainty or variability <input type="radio"/> No important uncertainty or variability 	<p>People will value long-term outcome, but we do not know if the choice of vasopressor really makes a difference on these. Another studied outcome is rearrest. This is also important but people would probably value long-term outcome more.</p>	

Balance of effects

Does the balance between desirable and undesirable effects favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Favors the comparison <input type="radio"/> Probably favors the comparison <input checked="" type="radio"/> Does not favor either the intervention or the comparison <input type="radio"/> Probably favors the intervention <input type="radio"/> Favors the intervention <input type="radio"/> Varies <input type="radio"/> Don't know 	<p>Based on the current evidence we do not know what the optimal vasopressor is patients after cardiac arrest.</p>	

Resources required

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Large costs <input type="radio"/> Moderate costs <input type="radio"/> Negligible costs and savings <input type="radio"/> Moderate savings <input type="radio"/> Large savings <input type="radio"/> Varies <input checked="" type="radio"/> Don't know 	<p>All vasopressors are fairly cheap. But we found no study that has assessed costs of a specific vasopressor choice after cardiac arrest.</p>	

Certainty of evidence of required resources

What is the certainty of the evidence of resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Very low <input type="radio"/> Low <input type="radio"/> Moderate <input type="radio"/> High <input checked="" type="radio"/> No included studies 	<p>We found no studies that have assessed resources required based on the choice of vasopressor. The resources required are likely to be very similar between the drugs included in this review.</p>	

Cost effectiveness

Does the cost-effectiveness of the intervention favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS

<input type="radio"/> Favors the comparison <input type="radio"/> Probably favors the comparison <input type="radio"/> Does not favor either the intervention or the comparison <input type="radio"/> Probably favors the intervention <input type="radio"/> Favors the intervention <input type="radio"/> Varies <input type="radio"/> No included studies	<p>We found no studies that have assessed resources required based on the choice of vasopressor. The resources required are likely to be very similar between the drugs included in this review.</p>	
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Equity

What would be the impact on health equity?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> Reduced <input type="radio"/> Probably reduced <input type="radio"/> Probably no impact <input type="radio"/> Probably increased <input type="radio"/> Increased <input type="radio"/> Varies <input type="radio"/> Don't know	<p>It is likely that all it would be possible to use any of these vasopressor in most setting if there would be evidence to suggest superiority of a specific drug.</p>	

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> No <input type="radio"/> Probably no <input checked="" type="radio"/> Probably yes <input type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know	<p>The use of a vasopressor is standard practise in the ICU. For the patient the choice of which is probably not going to make any difference.</p>	

Feasibility

Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know	<p>The use of the type of vasopressors are probably feasible to implement in most hospitals. In the pre-hospital setting the situation may be a bit different.</p>	

SUMMARY OF JUDGEMENTS

PROBLEM	JUDGEMENT						
	No	Probably no	Probably yes	Yes		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	Don't know
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability			

BALANCE OF EFFECTS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	Don't know
RESOURCES REQUIRED	Large costs	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	Don't know
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	Moderate	High			No included studies
COST EFFECTIVENESS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	No included studies
EQUITY	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	Varies	Don't know
ACCEPTABILITY	No	Probably no	Probably yes	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	Probably yes	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention <input type="radio"/>	Conditional recommendation against the intervention <input type="radio"/>	Conditional recommendation for either the intervention or the comparison <input checked="" type="radio"/>	Conditional recommendation for the intervention <input type="radio"/>	Strong recommendation for the intervention <input type="radio"/>
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CONCLUSIONS

Recommendation

There is insufficient evidence to recommend a specific vasopressor to treat low blood pressure in patients after cardiac arrest.

Justification

There was disagreement among the ALS TF and therefore the type of TR was voted on. The TR that got the most votes was chosen. The voting was close with 9 votes favoring no recommendation and 7 votes favoring recommending the use of noradrenaline as the first choice.

Subgroup considerations

There is currently no evidence suggesting a different effect in a certain subgroup.

Implementation considerations

It would probably be easy to implement in most settings.

Monitoring and evaluation

Research priorities

There is limited data on this topic. There is a need for larger trials on this topic.

REFERENCES SUMMARY