MONTHLY FEATURE CPG SOPR SUMMARY

CPG Citation: Vlaar APJ, Dionne JC, de Bruin S, Wihnegerge M, Raasveld SJ, van Barrle FEHP, Antonelli M, Aubron C, Duranteau J, Juffermans NP, Meier J, Murphy GH, Abbasciano F, Muller MCA, Lance M, Nielsen ND, Schochl H, Hunt BJ, Cecconi M, Oczkowski S. Transfusion strategies in bleeding critically ill adults: a clinical practice guideline from thee European Society of Intensive Care Medicine. Intens Care Med 2021; **47**, 1368–1392. PMID: 34677620

Downloadable at: https://doi.org/10.1007/s00134-021-06531-x.

Scope of Guideline: Critical care clinicians working in adult ICU settings.

Inclusion: Use of blood products in bleeding patients, transfusion ratios, point of care testing and use of TXA.

Exclusion: BP monitoring, fluid resuscitation, vasopressor use, bleeding source control.

Key words: Bleeding, critical illness, transfusions.

Key Recommendations: *Each recommendation is accompanied by the "strength" of recommendation and the level of evidence (LoE) supporting that recommendation*

Recommendations (Strength)	LoE
FOR Clinical Action	
In patients with non-massive bleeding after vascular surgery, we suggest restrictive (7.5–8 g/ d/L) red blood cell transfusion threshold(Conditional).	Low
In patients with **non-massive postpartum hemorrhage**, we **suggest** restrictive transfusion, guided by presence of shock and symptoms potentially attributable to anemia (e.g. dyspnea, syncope, tachycardia, angina, neurological symptoms) or hemoglobin < 6 g/dL, rather than a liberal target hemoglobin of 9 g/dL (Conditional).	Low
In patients with non-massive **gastrointestinal bleeding**, we **suggest** restrictive (7 g/dL) transfusion vs. liberal (9 g/dL) RBC transfusion threshold (Conditional).	Moderate
We **suggest** using a restrictive platelet transfusion strategy (no transfusion) in patients with **intracranial hemorrhage** (spontaneous or traumatic intracerebral hemorrhage) who are on antiplatelet therapy (Conditional).	Moderate
We **recommend** the use of early (< 3 h from trauma) TXA in critically ill patients with bleeding or suspected bleeding due to trauma (**Strong**).	**High**
We **suggest** the use of TXA in critically ill patients with **acute traumatic brain injury and bleeding** due to trauma (Conditional).	Moderate
We recommend the use of TXA in critically ill patients with bleeding post-cardiac surgery (**Strong**).	**High**
We suggest the early use of TXA in critically ill patients with postpartum hemorrhage (Conditional).	**High**
NEUTRAL Clinical Action	
We make no recommendation regarding the use of cryopreserved or cold-stored platelets in bleeding patients with massive or non-massive hemorrhage.	Very Low
We make no recommendation for the use of PCC versus plasma alone in massively bleeding patients.	Very Low
We make no recommendation regarding the use of early empiric fibrinogen replacement in critically ill patients with massive hemorrhage due to trauma.	Low

We make no recommendation for the use of a restrictive vs a liberal platelet transfusion threshold in non-massively bleeding patients with thrombocytopenia.	Very Low
We make no recommendation for the use of a restrictive (no transfusion) vs liberal platelet transfusion strategy in critically ill patients with non-massive bleeding who are on antiplatelet therapy.	Very Low
We make no recommendation regarding the empiric use of fibrinogen concentrate in non-cardiac surgery critically ill patients with non-massive bleeding.	Low
We make no recommendation for a restrictive versus liberal plasma transfusion strategy for non-massively bleeding patients with or without coagulopathy.	Low
We make no recommendation regarding the use of TXA in critically ill patients with subarachnoid hemorrhage.	Low
We make no recommendation regarding the use of TXA in critically ill patients non-traumatic intracranial hemorrhage.	Moderate
We make no recommendation regarding the use of low-dose IV TXA or enteral TXA in critically ill patients with gastrointestinal bleeding.	Moderate
AGAINST Clinical Action We suggest **not using** high-dose IV TXA in critically ill patients with gastrointestinal bleeding (Conditional).	**High**

Benefits of Recommendations: These recommendations are the result of a careful evidence review, with the aim of identifying a variety of critically ill patients who would benefit from transfusions with various blood products vs. those who wouldn't. There are situations when clinicians may deviated from such because of unique clinical circumstances (bleeding severity, location, availability of blood products) or patient comorbidities; this is particularly true for patients using antiplatelet agents.

Harms/Adverse Effects of Recommendations: The absence of evidence in various clinical scenarios would suggest that most patients may not choose to receive transfusion products if it doesn't improve clinical symptoms or other outcomes.

The details of the reviewed literature are lacking in this document (ie. search strategy, quality scores, data extracted, Summary of Evidence tables), which may erode confidence in how the evidence was retrieved and synthesized?

Barriers to Uptake: Not specified.
Facilitators of Uptake: Not specified.

CLINICAL COMMENTARY: There are recommendations presented for use of platelets, RBC units and TXA.

This guideline has some useful recommendations for ER physicians. For **GI bleeds**, authors recommend AGAINST use of high dose TXA (Conditional, High LoE), and FOR a restrictive RBC transfusion threshold for non-massive GIB (7mg/dl; Conditional, Mod LoE). For **postpartum hemorrhage (PPH)**, use TXA early (Conditional, High LoE) and consider a restrictive RBC transfusion threshold for non-massive PPH (Conditional, Low LoE). Avoid platelets in **spontaneous/traumatic ICH** patients who use antiplatelet agents (Conditional, Mod LoE). Use TXA in **trauma** patients with acute TBI (Conditional, Mod LoE). Use TXA in **early trauma** (<3hrs) with bleeding (Strong, High LoE).

A number of future research recommendations are outlined in Table 2. Ongoing trials are summarized in Table 3.

****For EM QI performance metrics, only the early use of TXA in trauma bleeding (<3hrs) is a Strong Rec with High supporting LoE.** No other Recs should be operationalized as QI PMs, as Recs are Conditional, and supporting LoE is Moderate or Weak.

Disclaimer (if any stated): None.

Funding: (Reported) CPG sponsored by ESICM. No industry involvement.
***Conflicts of Interested*:** **(**Reported). None declared.

CPG Quality/ Trustworthiness Standards
Amalgamated from AGREE-II/NEATS instruments.

Quality/Trustworthiness Domain	
1. The clinical practice guideline (CPG) discloses and states explicitly its funding source.	✓
2. Financial conflicts of interest of guideline development group (GDG) members have been disclosed and managed.	✓
3. The CPG development group includes all of the relevant multidisciplinary stakeholders, including clinicians, methodologists and patients/caregivers. **No patients/caregivers inputs.**	?
4. The CPG objectives, health questions, scope of relevant providers and target recipients of care are clearly defined.	✓
5. Values/preferences of patients, caregivers, advocates and/or the public with experience with the clinical disease management has been sought/integrated into CPG development (reported clearly). **No reps on group; obtained from literature review.**	?
6. The search strategy for evidence is thoroughly developed and described.	X
7. The criteria for selecting relevant studies/evidence are clearly described.	✓
8. The quality, strengths and limitations of the body of evidence are clearly described (e.g., **GRADE**, Cochrane, etc.). Summaries of evidence tables are provided (**No**).	?
9. The health benefits, side effects, and risks were considered in formulating the recommendations.	✓
10. There is an explicit approach linking the evidence to formulate the recommendations.	✓
11. The strength of recommendations is clearly reported, including confidence in underlying evidence.	✓
12. Recommendations are clear and unambiguous, and easily identified in the CPG publication. **Scattered throughout document; Summary Table 1 = nice graphics!!**	?
13. Different options for management for managing the health questions are clearly presented.	✓
14. Experts externally reviewed the guideline prior to its publication.	X
15. The CPG describes a procedure to update the guideline.	X
16. The CPG provides advice, tools and/or clinical pathways for easy adoption/adaptation into practice.	X
17. The CPG describes barriers and facilitators to implement recommendations.	X
18. Performance metrics for monitoring implementation of recommendations for audit/feedback have been defined appropriately.	X
19. Resource implications for implementing CPG recommendations have been discussed.	X