# Table of Contents

# 2 Part A – Manuscript

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# Quality of systematic reviews in African emergency medicine: a cross-sectional methodological study

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**Quality of systematic reviews in African emergency medicine: a cross-sectional methodological study**

**Abstract**

*Introduction*: Reliable systematic reviews are essential to inform clinical practice guidelines, policies and further research priorities in Africa. For systematic review findings to be trustworthy, they need to be conducted with methodological rigour and reported transparently. We assessed the methodological quality of systematic reviews published in African emergency medicine journals, comparing them to those published in international emergency medicine journals. Additionally, we describe the types of review literature published in the African journals.

*Methods*: We performed a cross-sectional methodological study of systematic reviews published in selected African and international emergency medicine journals from 2012 to 2021. Studies were eligible for inclusion if they were i) published in one of the top five emergency medicine journals in the African region or internationally, ii) a review article on an emergency medicine topic and iii) published between January 2012 and December 2021 in English or French. We searched PubMed, Web of Science and Scopus databases and hand-searched selected journals. Two authors screened titles, abstracts and full texts independently and in duplicate to select reviews for inclusion. Data extraction was performed by one reviewer, using a standardised form, after completing a calibration exercise. We described the characteristics of systematic reviews and assessed methodological quality using AMSTAR II.

*Results*: We identified 34 (37%) African and 511 (54%) international systematic reviews from 92 and 948 review articles respectively across 10 journals. We included all 34 African and a random sample of 100 international systematic reviews. Methodological quality was low or critically low for all the African systematic reviews (n=34, 100%) and all but three international systematic reviews (n=97, 97%). The median number of critical domain weaknesses was 4 (IQR 4;5) and 2 (IQR 2;4) for African and international systematic reviews respectively. The most common weaknesses across both African and international systematic reviews were i) not establishing *a priori* review protocols, ii) unclear selection of study designs iii) not providing a list of excluded studies and iv) unclear reporting on funding sources for included studies.

*Conclusion*: Emergency medicine systematic reviews published in African and international journals are lacking in methodological quality. Reporting an *a priori* protocol, developing a comprehensive search strategy, appropriate evidence synthesis and adequate assessment of the risk of bias, heterogeneity and evidence certainty will improve the quality of systematic reviews.

**Keywords**

Emergency medicine, systematic review, methodological quality, AMSTAR II

**African relevance**

- The unique and developing field of African emergency medicine needs reliable systematic reviews to effectively inform practices and policies
- The review landscape and quality of systematic reviews in African emergency medicine has not previously been investigated
- Consumers and producers of evidence synthesis literature in Africa should be aware of variations in the quality of reviews, impacting their usability
- The methodological quality of emergency medicine systematic reviews published in African journals are lacking
- Researchers are encouraged to collaborate with individuals or organisations with methodological expertise to facilitate skills transfer, increase awareness of the importance of evidence synthesis and improve review quality

## Introduction

Systematic reviews are often used to answer clinical questions and to inform practice guidelines and healthcare policy due to their ability to reflect the totality of evidence on a topic in a transparent, comprehensive and rigorous manner [1]. In low- and middle-income countries (LMICs) where healthcare systems face unique and complex challenges, evidence synthesis is especially important to support governments' decisions regarding equitable healthcare delivery [2] [3]. The increased recognition of the need for policy and practice to be informed by rigorous evidence is driving evidence synthesis activities across Africa [4]. With the rapid expansion of African emergency medicine literature, there is a need for local publishers to disseminate robust evidence synthesis literature on topics with African relevance [5].

Published evidence syntheses consists of various design types, including systematic reviews, scoping reviews, narrative or traditional literature reviews, mixed methods reviews, umbrella reviews and rapid reviews [6]. Traditional literature reviews vary in their methodology and often do not report on their methods. Correctly identifying review types are important for knowledge users, as each has its purpose and is not to be confused with systematic reviews which have authority in informing practice and policy [7].

Systematic reviews are only reliable if their methods are sound. The absence of rigorous methods or incomplete reporting may result in confusion, inappropriate guidance and conflicting practice [8] [9]. A distinction can be made between methodological quality and reporting quality. Methodological quality addresses how well a systematic review was designed and conducted (e.g. literature search, selection criteria, pooling of data) [10] and is synonymous with internal validity, while reporting quality evaluates the description of the methodology and findings [11], affecting transparency and reproducibility of reviews. Various tools exist to appraise the methodological quality of systematic reviews, the most recent and widely accepted being A MeaSurement Tool to Assess systematic Reviews (AMSTAR) [10] [12]. The current updated AMSTAR II enables the appraisal of systematic reviews of randomised and non-randomised studies of healthcare intervention [13]. For reporting, The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) is the most commonly used checklist [11].

The quality of systematic reviews across various fields has been investigated in previous methodological cross-sectional studies, exploring differences and the association of quality with certain study characteristics [14][15] towards improving future reviews [16]. Some of these characteristics include factors related to the journal, region, authors, funding and year of publication [17] [18] [19] [20]. The use of the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) system of rating certainty of evidence is gaining traction and might be a useful tool in improving the overall quality and utility of systematic reviews [21].

The conduct and reporting quality of emergency medicine systematic reviews have been examined in previous methodological reviews [22], with many having major flaws limiting their validity [23]. Currently, no literature exists assessing the methodological quality of systematic reviews published in African emergency medicine journals, comparing it to those published in international journals.

In this study, we sought to describe the review types published in African emergency medicine journals and assess the methodological quality of systematic reviews. We compared the quality of systematic reviews published in African emergency medicine journals to those published in international emergency medicine journals. Lastly, we explored possible predictors of methodological quality among systematic reviews published in African emergency medicine journals.

## Methods

We conducted a methodological cross-sectional study of existing systematic reviews published in emergency medicine journals between 2012 and 2021 to determine their methodological quality. Selected African and international emergency medicine journals were searched for eligible systematic reviews. We sampled systematic reviews from African and international journals for data extraction and appraisal. We were guided by methods suggested for methodological studies and followed the reporting framework for meta-epidemiological studies [17] [24]. We followed an *a priori* protocol (Appendix B) available in SUNScholarData [25]. Ethical approval was obtained from Stellenbosch University (X22/10/028).

### *Eligible studies*

We included systematic reviews on emergency medicine topics published in English or French. A published study was considered a systematic review if it followed systematic methods, including, at least, pre-specified eligibility criteria, transparent searching, explicit screening and a transparent data synthesis plan – similar to the definition used in previous methodological reviews [16]. Relevant emergency medicine topics were considered eligible if it included the initial evaluation, diagnosis, treatment, and coordination of care for unforeseen illness or injury [26]. We excluded studies available only as abstracts, primary research and non-systematic reviews or related papers such as scoping reviews, narrative reviews, guidelines and editorials.

### *Eligible journals*

We identified journals for searching through the SCImago Journal & Country Rank website, a publicly available portal that includes journal and country scientific indicators, and used the emergency medicine subject category filter [27]. SCImago determines regions according to the location of the publisher. Only two African journals were available, the African Journal of Emergency Medicine (AFJEM) and Emergency Medicine International (EMI). To supplement these, we searched the African Journals Online (AJOL) database and identified three additional relevant journals: South African Medical Journal (SAMJ), South African Journal of Critical Care (SAJCC) and the African Journal of Anaesthesia and Intensive Care (AJAIC) [28]. For international journals the top five journals according to H-index were selected: Annals of Emergency Medicine (AoEM), Resuscitation, Academic Emergency Medicine (AEM), Injury and Shock. The journal H-index is the number of papers (h) published in a journal that has been cited at least h times [29].

*Identifying systematic reviews for inclusion*
One author (JvN) searched online databases including PubMed, Web of Science and Scopus with filters for selected journals. The search string was developed with the assistance of a librarian, using keywords proven to be sensitive for identifying systematic reviews, including "search", "review", "systematic review" and "meta-analysis" [30]. For African journals, we supplemented the online search with hand searching, as these journals are not always indexed in databases. Appendix C contains the complete search strategy (Appendix C1), reported according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses literature search extension (PRISMA-S) guidelines, where applicable (Appendix C2) [31].

*Screening systematic reviews*
After deduplication, independent title and abstract screening was done by two reviewers (JvN and TF) in duplicate, using Systematic Review Accelerator [32]. Full texts of potentially eligible studies were retrieved and reviewed independently and in duplicate (JvN and TF). Disagreements were resolved by consensus between reviewers. Disputes were adjudicated by a senior author (MM or AR). Reasons for full-text exclusions were recorded as: no methods section, non-systematic review methods or full text not available (Appendix D).

*Sample size estimation and sampling*
We calculated an ideal sample size of 95 systematic reviews per group (African and International journals) to determine a minimal important difference of 20% for critically low or low AMSTAR II scores between systematic reviews from African compared to International journals with 80% power, similar to previous studies [15].

We sampled 100 systematic reviews per region using proportional stratified random sampling, stratifying by journal. We used an online random number sequence generator [33]. Each journal's contribution was proportional to the total number of systematic reviews it contributed to the group. We did not reach the minimum estimated sample size for the African journals group and therefore included all eligible systematic reviews.

*Data extraction*
A standardised form was used for extracting data. Data validity was ensured by a calibration process where two reviewers extracted a 10% sample until 80% agreement was achieved. One author (JvN) then completed the extraction process. Data was captured in Microsoft Excel. We extracted general characteristics (such as study and journal title, journal H-index, nationality of primary author's institution, year of publication and study focus) and methodological characteristics (relating to the authors, protocol, study methods, use of reporting guidelines, funding and use of the GRADE approach).

*Assessment of methodological quality*

We used AMSTAR II to assess the methodological quality of included systematic reviews [13]. AMSTAR II consists of 16 domains, of which seven are considered critical domains. The overall score translates into one of four global quality ratings: high (no or one non-critical domain weakness), moderate (more than one non-critical weakness), low (one critical flaw with or without non-critical weaknesses) and critically low (more than one critical flaw with or without non-critical weaknesses). The methodological quality was assessed by the primary investigator (JvN) after calibration with a co-reviewer (TF). Uncertainties were discussed with a senior author (MM or AR) until consensus was achieved.

*Data analysis*

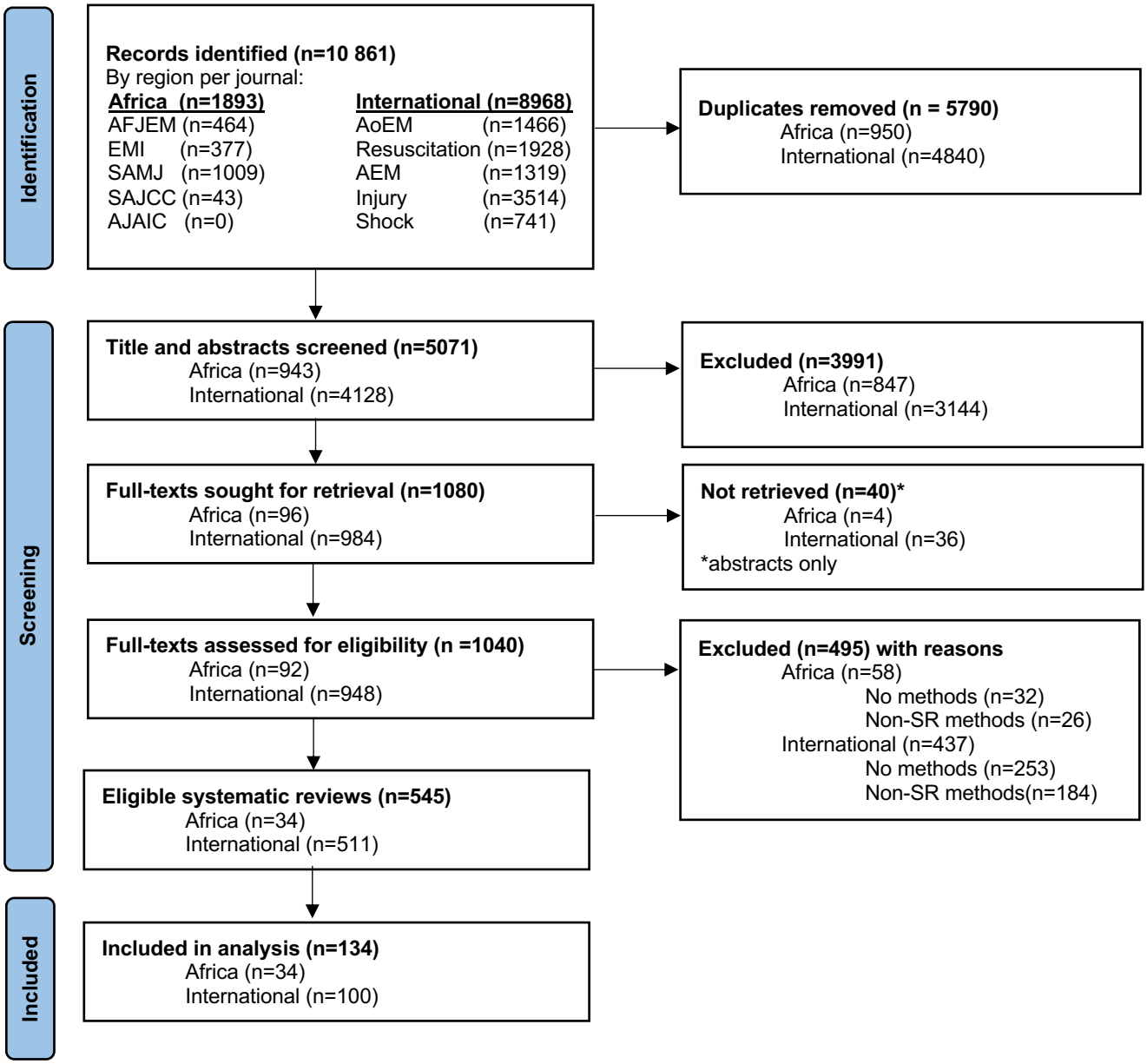
Analysis was conducted in STATA 17 [34]. Review types were described using frequencies and percentages. Study characteristics were described using frequencies and percentages for categorical data. Continuous data was described using means with standard deviations or medians and interquartile ranges (IQR), depending on the distribution. We planned multivariate logistic regression analysis to determine quality predictors, but this is not reported as there were too few events for meaningful interpretation.

**Results**

We identified 10 861 records (Africa n=1893, international n=8968), of which 5790 was duplicates. After title and abstract screening, 1080 (Africa n=96, international n=984) full-texts was sought for retrieval. 40 was only available as abstracts and could not be retrieved. Full text screening yielded 545 eligible systematic reviews, 34 in the African journal group and 511 in the international journal group. The final sample for analysis comprised 34 systematic reviews from African journals and 100 systematic reviews from international journals (Figure 1). A reference list for studies excluded at full text (Appendix D) and studies included in the analysis (Appendix E) is provided as supplemental material.

Of the 92 full-text review articles published in African journals, 34 (37%) were systematic reviews, 8 (9%) scoping reviews, 18 (20%) narrative reviews with methods (systematic style) and 32 (35%) were traditional literature reviews without reported methods.

**Figure 1**
**PRISMA flow diagram of included reviews**




AEM, Academic Emergency Medicine; AFJEM, African Journal of Emergency Medicine; AJAIC, African Journal of Anaesthesia and Intensive Care; AoEM, Annals of Emergency Medicine; EMI, Emergency Medicine International; SAJCC, Southern African Journal of Critical Care; SAMJ, South African Medical Journal

*Characteristics of included systematic reviews*

The general and methodological characteristics of the included systematic reviews are summarized in Table 1.1 and Table 1.2. Systematic reviews in African journals increased from 9 to 25 when comparing 2012-2016 to 2017-2021. African systematic reviews commonly had primary authors affiliated with African (n=12, 35%) and Northern American (n=9, 27%) institutions, while international systematic review authors were mostly from North America (n=44, 44%). Most systematic reviews addressed questions on the effectiveness of interventions, although more than a third of African systematic reviews had a focus other than diagnosis, prognosis, prevalence or effectiveness. This was a diverse group, including systematic reviews combining multiple research questions or answering a very specific question, for example regarding service delivery or healthcare systems.

Regarding methodological characteristics, very few systematic reviews in the African journal subgroup included an author with methodological expertise (n=1, 3%), had librarian assistance (n=3, 9%), developed an *a priori* protocol (n=5, 15%), reported on or had funding (n=10, 30%), or referenced a scoping review (n=0, 0%). The GRADE approach was used infrequently in both the African (n=2, 6%) and international (n=24, 24%) journal groups. More than two-thirds (n=24, 71%) of African systematic reviews did not identify themselves as such in the title.

**Table 1.1**
**General characteristics of included systematic reviews**

| Characteristic | African (n=34) | International (n=100) |
|---|---|---|
| **Journal contributions, n (%)** | | |
| AFJEM | 13 (38) | - |
| EMI | 13 (38) | - |
| SAJCC | 2 (6) | - |
| SAMJ | 6 (18) | - |
| AoEM | - | 13 (13) |
| Resuscitation | - | 36 (36) |
| AEM | - | 20 (20) |
| Injury | - | 25 (25) |
| Shock | - | 6 (6) |
| **Journal H-index, median ($Q_1$; $Q_3$)** | 19 (6; 19) | 130 (129; 139) |
| **Primary author region, n (%)** | | |
| Africa | 12 (35) | 0 (0) |
| Asiatic | 7 (21) | 17 (17) |
| Western Europe | 3 (9) | 30 (30) |
| Eastern Europe | 0 (0) | 0 (0) |
| Northern America | 9 (27) | 44 (44) |
| Latin America | 1 (3) | 2 (2) |
| Middle East | 2 (6) | 2 (2) |
| Pacific | 0 (0) | 5 (5) |
| **Year of publication, n (%)** | | |
| 2012-2016 | 9 (26) | 37 (37) |
| 2017-2021 | 25 (74) | 63 (63) |
| **Study focus, n (%)** | | |
| Effectiveness | 11 (32) | 45 (45) |
| Prevalence | 5 (15) | 6 (6) |
| Diagnostic | 5 (15) | 16 (16) |
| Prognostic | 1 (3) | 18 (18) |
| Other[a] | 12 (35) | 15 (15) |

[a]diverse group, including systematic reviews with more than one focus or a niche focus

**Table 1.2**
**Methodological characteristics of included systematic reviews**

| Characteristic | African (n=34) | International (n=100) |
|---|---|---|
| **Number of authors, n (%)** | | |
| 1-3 | 13 (38) | 23 (23) |
| 4-6 | 12 (35) | 46 (46) |
| >6 | 9 (27) | 31 (31) |
| **Authors included methodologist/statistician, n (%)** | 1 (3) | 12 (12) |
| **Librarian assistance, n (%)** | 3 (9) | 44 (44) |
| **Title contains "SR" and/or "MA", n (%)** | 24 (71) | 91 (91) |
| **Synthesis type, n (%)** | | |
| Meta-analysis | 12 (35) | 57 (57) |
| Narrative synthesis | 22 (65) | 43 (43) |
| **Protocol/methods developed *a priori*, n (%)** | 5 (15) | 45 (45) |
| Registered on PROSPERO | 3 (9) | 41 (41) |
| **Use of reporting guideline claimed, n (%)[a]** | 15 (44) | 77 (77) |
| **Funding, n (%)** | | |
| Not reported | 24 (71) | 22 (22) |
| Reported no external funding | 5 (15) | 49 (49) |
| Reported funding from non-profit organisations | 5 (15) | 29 (29) |
| **Number of studies included, median ($Q_1$; $Q_3$)** | 16.5 (10.8; 41.0) | 13.5 (10.0; 27.8) |
| **GRADE approach used, n (%)** | 2 (6) | 24 (24) |
| **Commissioned for guideline development, n (%)** | 4 (12) | 7 (7) |
| **Informed by scoping review, n (%)** | 0 (0) | 3 (3) |

[a]Reporting guidelines: African systematic reviews used PRISMA (100%), International systematic reviews used PRISMA (94.8%), MOOSE (1.3%) or PRISMA and MOOSE (3.9%)

*Methodological quality*

The majority of included systematic reviews scored poorly when assessed for methodological quality. Overall, all African and all but three international systematic reviews had a global quality score of either low or critically low (Table 2). Systematic reviews published in African journals had a median of four (IQR: 4, 5) critical domain weaknesses compared to a median of two (IQR: 2, 4) in systematic reviews published in international journals.

Systematic reviews published in international journals had better scores for all individual AMSTAR II domains, compared to systematic reviews published in African journals (Figure 2). We observed similar scores for some domains and notable differences for others. Seventy-four percent (n=25) of African, compared to 99% (n=99) of international journals had an adequate research question and inclusion criteria (domain 1). Only 6% (n=2) of African systematic reviews developed an *a priori* protocol, compared to 41% (n=41) of international ones (domain 2). Very few African (n=0, 0%) and international (n=4, 4%) systematic reviews adequately explained the selection of study designs for inclusion (domain 3). The literature search strategy was judged to be comprehensive in none of the African (n=0, 0%) and 30% (n=30) of the international systematic reviews (domain 4). Duplicate study selection was performed in 62% (n=21) and 89% (n=89) of African and international systematic reviews respectively, and duplicate data extraction in 41% (n=14) and 63% (n=63) respectively (domain 5 and 6). A list of excluded studies with justifications was rarely provided, only in 3% (n=1) of African and 5% (n=5) of international systematic reviews (domain 7). Included studies were described adequately in 24% (n=8) and 36% (n=36) of African compared to international systematic reviews (domain 8). Satisfactory risk of bias assessment was done in only 9% (n=3) of African, compared to 56% (n=56) of international, systematic reviews (domain 9). Reporting of funding for included studies was never (n=0) done in African systematic reviews and only done in 5% (n=5) of international systematic reviews (domain 10). Appropriate methods for statistical combination of results during meta-analysis was used in 21% (n=7) of African and 47% (n=47) of international systematic reviews (domain 11). Assessment of the potential impact of risk of bias in individual studies on the results of the meta-analysis was done in 18% (n=6) of African and 26% (n=26) of international systematic reviews (domain 12). When interpreting results, only 15% (n=5) of the African and 57% (n=57) of the international systematic reviews accounted for risk of bias in individual studies (domain 13). A satisfactory discussion and explanation of heterogeneity in the results was present in 21% (n=7) of African, compared to 62% (n=62) of international, systematic reviews (domain 14). Twenty-nine percent (n=10) of African and 34% (n=34) of international systematic reviews carried out an adequate investigation of publication bias when performing quantitative synthesis (domain 15). Both African and international systematic reviews did well in reporting sources of conflict of interest, 85% (n=29) and 98% (n=98) respectively (domain 16).

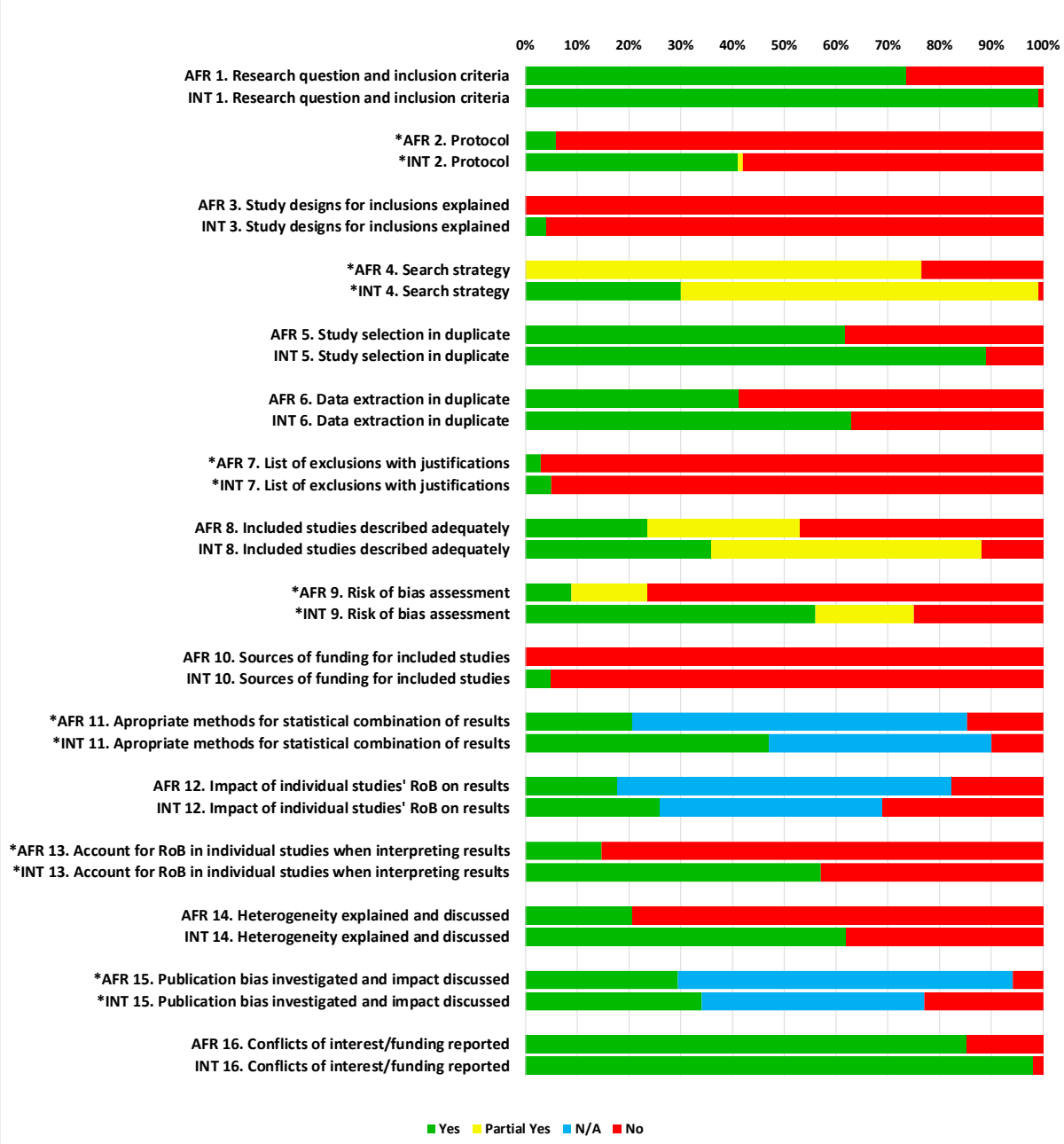
*Characteristics associated with methodological quality*

We were unable to statistically analyse predictors of methodological quality. However, during appraisal we observed that systematic reviews with a protocol and those following a reporting guideline were more transparent. Reviews using the assistance of a librarian generally had more complete search strategies and the impact of the risk of bias and other factors was better explored in reviews using the GRADE framework.

**Table 2**
**AMSTAR II results for African and International systematic reviews**

| | Africa (n=34) | International (n=100) |
|---|---|---|
| **Global quality rating, n (%)** | | |
| High | 0 (0) | 2 (2) |
| Moderate | 0 (0) | 1 (1) |
| Low | 1 (3) | 18 (18) |
| Critically low | 33 (97) | 79 (79) |
| **Number of critical domain weaknesses, median ($Q_1$; $Q_3$)** | 4 (4; 5) | 2 (2; 4) |

**Figure 2**
**AMSTAR II domain scores for systematic reviews published in African and International journals**




*Critical Domains

**Discussion**

Our study evaluated and compared the quality of systematic reviews in African and leading international emergency medicine journals and found both to be lacking. However, systematic reviews in international journals scored better in all individual AMSTAR II domains. Our results may have been affected by the limited number of African systematic reviews available, compared to the large pool of international systematic reviews from which we sampled. Although we were unable to analyse quality predictors, greater reviewer capacity and evidence-synthesis skills among international author teams may account for the discrepancies.

In order to reduce research waste and prevent duplication of effort, identifying and appraising existing reviews on a topic is one of the first steps in evidence synthesis and guideline development [1]. Paramount to this is easily identifiable, transparent and robust systematic reviews. We encountered various reviews without an appropriate description or reporting of methods. This may lead to clinicians or policymakers inappropriately using a review to inform policy and practice, resulting in misleading or conflicting treatment options. Some reviews were also labelled or reported as systematic reviews, without adhering to systematic review standards and methods – such as appropriate searching, screening, risk of bias assessment and evidence synthesis strategies. This issue is multifocal, where responsibility lies with the authors, peer-reviewers and journals in emergency medicine. However a good start to the solution lies in the use of systematic review reporting checklists and authors appraising their own work before submission [11] [13] [35].

Reliable healthcare policies and practice guidelines in African emergency medicine should be based on high-quality, relevant and transparent systematic reviews, with sufficient systematic review author capacity and evidence literacy [36]. Despite significant growth in resources and capacity building in evidence synthesis and guideline development in recent years, renewed efforts and action is warranted for emergency medicine journal editors, systematic review authors and peer-reviewers to improve systematic review reporting and quality [4] [37] [1]. Improving the quality of reporting and conduct will require increased collaboration and capacity building among local and international review authors. The development of evidence-based healthcare initiatives in Africa is a welcome step in the right direction, and has been associated with an increased research output, especially from South African authors [4] [38]. Cochrane South Africa has played an instrumental role in building local capacity for evidence synthesis and connecting African researchers to the global network of reviewers [39]. Collaboration of new reviewers with Cochrane-trained methodologists has the potential to increase review quality significantly. In Africa, such collaboration has been shown to be impacted by personal and working relationships [40] and the importance of social networks, extramural collaboration and communication across disciplines will be essential to further increase research productivity [41]. Collaborative efforts will also lead to capacity building through mentorship, skills transfer and the exposure to tools such as reporting checklists and the Cochrane Handbook for Systematic Reviews [42] [43]. Authors can further improve review capacity by joining local evidence-based initiatives and attending courses on evidence synthesis [4] [44].

Based on our findings, critical indicators for consideration by systematic review authors, journals and peer-reviewers to improve the quality and reporting of systematic reviews are i) reporting of an *a priori* protocol, ii) appropriate support to develop a comprehensive search strategy, iii) adequate risk of bias assessment per study design across outcomes, iv) incorporating an assessment of certainty of evidence and v) appropriate evidence synthesis and heterogeneity assessment. For review authors, who are typically busy clinicians in emergency medicine, collaboration with evidence synthesis methodologists will be key, including advanced applications such as GRADE and populating Summary of Findings Tables. For journal editors, we suggest requiring transparent reporting through stricter adherence of studies to reporting guidelines and facilitating author training by connecting authors to local evidence-based initiatives and individuals with expertise in evidence synthesis.

The absence of these methodological characteristics points towards the limited capacity for conducting systematic reviews which is prevalent in LMICs [36]. Oliver *et al* (2015) found that capacity is often constrained at the individual, team, organisation and system level and that training without practice had limited impact [36]. To facilitate systematic review skills development they suggest overcoming language barriers, increasing academic institutional support and integrating skills development into academic programmes and traditional career progression pathways. Improving systematic review quality will have the additional benefit of facilitating more relevant, higher quality primary research [45].

To our knowledge, this is the first study to assess the methodological quality of systematic reviews in African emergency medicine. We followed methods established *a priori* and adhered to clear reporting standards. The language restriction is unlikely to have excluded any relevant studies [5]. Our study may have limited generalisability since we only searched selected journals and did not reach the estimated sample size in the African journals group. In addition we only used information in the study report, protocol (if available) and supplementary data, and did not contact authors. We recognise that unblinded quality assessment might have introduced bias. However, we are confident that our findings are robust since ≥80% of African systematic reviews contained more than 4 critical domain weaknesses, making it unlikely for the overall ratings to change significantly even if a different reviewer were to conduct the assessment.

**Conclusion**

Systematic reviews on emergency medicine topics published in African and international journals are of poor methodological quality. Reporting of an *a priori* protocol, developing a comprehensive search strategy, adequate assessment of risk of bias and evidence certainty and appropriate evidence synthesis and heterogeneity assessment will improve the quality of systematic reviews. For future review authors, collaboration with evidence synthesis methodologists will be key. Future research should investigate barriers to systematic review authorship and enablers of institutional collaboration, providing insight into how evidence synthesis networks can be developed. A unified effort by reviewers, authors and journal editors to improve the quality of reviews will enable valuable skills transfer and ultimately improve patient care.

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**Supplemental files**
Appendix B: Protocol
Appendix C1: Search strategy
Appendix C2: PRISMA-S checklist
Appendix D: Excluded studies
Appendix E: Analysed systematic reviews studies
Appendix F: Reporting Checklist

**Dissemination of results**
Poster at Faculty of Medicine and Health Sciences of Stellenbosch University Annual Academic Day (AAD), conference and place of work presentations and social media platforms.

**CRediT authorship contribution statement**
**Jacques van Niekerk:** conceptualization, methodology, project administration, investigation, validation, data curation, formal analysis, writing – original draft and writing – review and editing. **Tomiwa Fapohunda:** investigation, validation, data curation and writing – review and editing. **Anke Rohwer:** conceptualization, methodology, writing – review and editing, project administration and supervision. **Michael McCaul:** conceptualization, methodology, writing – review and editing, project administration and supervision. All authors approved the final version and met the International Committee of Medical Journal Editors (ICMJE) criteria for authorship. JvN contributed 55%; TF: 10%; AR 15%; MM 20%.

**Declaration of Competing Interest**
MM is an editor of the African Journal of Emergency Medicine. MM was not involved in the editorial workflow for this manuscript. The African Journal of Emergency Medicine applies a double-blinded process for all manuscript peer reviews. All other authors declared no known conflicts of interest.

**References**


[1] McCaul M., Tovey D., Young T., Welch V., Dewidar O., Goetghebeur M., Kredo T., Tricco AC., Glover RE., Tufte J., et al. Resources supporting trustworthy, rapid and equitable evidence synthesis and guideline development: results from the COVID-19 evidence network to support decision-making (COVID-END). *J Clin Epidemiol* 2022; 151: 88–95. Doi: 10.1016/j.jclinepi.2022.07.008.

[2] Clarke M., Brice A., Chalmers I. Accumulating research: A systematic account of how cumulative meta-analyses would have provided knowledge, improved health, reduced harm and saved resources. *PLoS One* 2014; 9(7): 1–6. Doi: 10.1371/journal.pone.0102670.

[3] Stewart R., El-Harakeh A., Cherian SA. Evidence synthesis communities in low-income and middle-income countries and the COVID-19 response. *Lancet* 2020; 396(10262): 1539–41. Doi: 10.1016/S0140-6736(20)32141-3.

[4] Young T., Garner P., Clarke M., Volmink J. Series: Clinical Epidemiology in South Africa. Paper 1: Evidence-based health care and policy in Africa: past, present, and future. *J Clin Epidemiol* 2017; 83: 24–30. Doi: 10.1016/j.jclinepi.2016.06.006.

[5] Mould-Millman NK., Dixon J., Burkholder TW., Sefa N., Patel H., Yaffee AQ., Osisanya A., Oyewumi T., Botchey I., Osei-Ampofo M., et al. Fifteen years of emergency medicine literature in Africa: A scoping review. *African J Emerg Med* 2019; 9(1): 45–52. Doi: 10.1016/j.afjem.2019.01.006.

[6] Sataloff YX., Bush ML., Chandra R., Chepeha D., Rotenberg B., Fisher EW., Goldenberg D., Hanna EY., Kerschner JE., Kraus DH., et al. Systematic and other reviews: criteria and complexities. *J Neurol Surg* 2021; 56(7): 687–90. Doi: 10.3760/cma.j.cn115330-20210430-00245.

[7] Murad MH., Asi N., Alsawas M., Alahdab F. New evidence pyramid. *Evid Based Med* 2016; 21(4): 125–7. Doi: 10.1136/ebmed-2016-110401.

[8] Ioannidis JPA. The Mass Production of Redundant, Misleading, and Conflicted Systematic Reviews and Meta-analyses. *Milbank Q* 2016; 94(3): 485–514. Doi: 10.1111/1468-0009.12210.

[9] Page MJ., Moher D. Mass Production of Systematic Reviews and Meta-analyses: An Exercise in Mega-silliness? *Milbank Q* 2016; 94(3): 515–9. Doi: 10.1111/1468-0009.12211.

[10] Shea BJ., Grimshaw JM., Wells GA., Boers M., Andersson N., Hamel C., Porter AC., Tugwell P., Moher D., Bouter LM. Development of AMSTAR: A measurement tool to assess the methodological quality of systematic reviews. *BMC Med Res Methodol* 2007; 7: 1–7. Doi: 10.1186/1471-2288-7-10.

[11] Moher D., Liberati A., Tetzlaff J., Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *J Clin Epidemiol* 2009; 62(10): 1006–12. Doi: 10.1016/j.jclinepi.2009.06.005.

[12] Pussegoda K., Turner L., Garritty C., Mayhew A., Skidmore B., Stevens A., Boutron I., Sarkis-Onofre R., Bjerre LM., Hróbjartsson A., et al. Identifying approaches for assessing methodological and reporting quality of systematic reviews: A descriptive study. *Syst Rev* 2017; 6(1): 1–12. Doi: 10.1186/s13643-017-0507-6.

[13] Shea BJ., Reeves BC., Wells G., Thuku M., Hamel C., Moran J., Moher D., Tugwell P., Welch V., Kristjansson E., et al. AMSTAR 2: A critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. *BMJ* 2017; 358: 1–8. Doi: 10.1136/bmj.j4008.

[14] Xu C., Liu Y., Jia PL., Li L., Liu TZ., Cheng LL., Deng K., Borhan ASM., Thabane L., Sun X. The methodological quality of dose-response meta-analyses needed substantial improvement: a cross-sectional survey and proposed recommendations. *J Clin Epidemiol* 2019; 107: 1–11. Doi: 10.1016/j.jclinepi.2018.11.007.
[15] Tian J., Zhang J., Ge L., Yang K., Song F. The methodological and reporting quality of systematic reviews from China and the USA are similar. *J Clin Epidemiol* 2017; 85: 50–8. Doi: 10.1016/j.jclinepi.2016.12.004.
[16] Zhou X., Li L., Lin L., Ju K., Kwong JSW., Xu C. Methodological quality for systematic reviews of adverse events with surgical interventions: a cross-sectional survey. *BMC Med Res Methodol* 2021; 21(1): 1–10. Doi: 10.1186/s12874-021-01423-6.
[17] Mbuagbaw L., Lawson DO., Puljak L., Allison DB., Thabane L. A tutorial on methodological studies: The what, when, how and why. *BMC Med Res Methodol* 2020; 20(1): 1–12. Doi: 10.1186/s12874-020-01107-7.
[18] Ge L., Tian J hui., Li Y nan., Pan J xue., Li G., Wei D., Xing X., Pan B., Chen Y long., Song F jian., et al. Association between prospective registration and overall reporting and methodological quality of systematic reviews: a meta-epidemiological study. *J Clin Epidemiol* 2018; 93: 45–55. Doi: 10.1016/j.jclinepi.2017.10.012.
[19] Catillon M. Trends and predictors of biomedical research quality, 1990-2015: A meta-research study. *BMJ Open* 2019; 9(9): 1–10. Doi: 10.1136/bmjopen-2019-030342.
[20] Kaiser KA., Cofield SS., Fontaine KR., Glasser SP., Thabane L., Chu R., Ambrale S., Dwary AD., Kumar A., Nayyar G., et al. Is funding source related to study reporting quality in obesity or nutrition randomized control trials in top-tier medical journals. *Int J Obes* 2012; 36(7): 977–81. Doi: 10.1038/ijo.2011.207.
[21] Guyatt G., Oxman AD., Akl EA., Kunz R., Vist G., Brozek J., Norris S., Falck-Ytter Y., Glasziou P., Debeer H., et al. GRADE guidelines: 1. Introduction - GRADE evidence profiles and summary of findings tables. *J Clin Epidemiol* 2011; 64(4): 383–94. Doi: 10.1016/j.jclinepi.2010.04.026.
[22] Nawijn F., Ham WHW., Houwert RM., Groenwold RHH., Hietbrink F., Smeeing DPJ. Quality of reporting of systematic reviews and meta-analyses in emergency medicine based on the PRISMA statement. *BMC Emerg Med* 2019; 19(1): 1–8. Doi: 10.1186/s12873-019-0233-6.
[23] Kelly KD., Travers A., Dorgan M., Slater L., Rowe BH. Evaluating the quality of systematic reviews in the emergency medicine literature. *Ann Emerg Med* 2001; 38(5): 518–26. Doi: 10.1067/mem.2001.115881.
[24] Murad MH., Wang Z. Guidelines for reporting meta-epidemiological methodology research. *Evid Based Med* 2017; 22(4): 139–42. Doi: 10.1136/ebmed-2017-110713.
[25] SUNScolarData. https://scholardata.sun.ac.za. [accessed November 14, 2022].
[26] American College of Emergency Physicians. https://www.acep.org/patient-care/policy-statements/definition-of-emergency-medicine/. [accessed February 4, 2022].
[27] Scimago Journal & Country Rank. https://www.scimagojr.com/. [accessed July 11, 2022].
[28] African Journals Online. https://www.ajol.info/index.php/ajol. [accessed July 11, 2022].
[29] Hirsch JE. An index to quantify an individual's scientific research output. *Proc Natl Acad Sci U S A* 2005; 102(46): 16569–72. Doi: 10.1073/pnas.0507655102.
[30] Montori VM., Wilczynski NL., Morgan D., Haynes RB. Optimal search strategies for

retrieving systematic reviews from Medline: Analytical survey. *Br Med J* 2005; 330(7482): 68–71. Doi: 10.1136/bmj.38336.804167.47.

[31] Rethlefsen ML., Kirtley S., Waffenschmidt S., Ayala AP., Moher D., Page MJ., Koffel JB., Blunt H., Brigham T., Chang S., et al. PRISMA-S: an extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews. *Syst Rev* 2021; 10(1): 39. Doi: 10.1186/s13643-020-01542-z.

[32] SR-Accelerator. https://sr-accelerator.com/#/. [accessed July 15, 2022].

[33] RANDOM.ORG - True Random Number Service. https://www.random.org/. [accessed August 5, 2022].

[34] StataCorp. Stata Statistical Software: Release 17. College Station, TX: StataCorp LLC. 2021.

[35] Baethge C., Goldbeck-Wood S., Mertens S. SANRA—a scale for the quality assessment of narrative review articles. *Res Integr Peer Rev* 2019; 4(1): 2–8. Doi: 10.1186/s41073-019-0064-8.

[36] Oliver S., Bangpan M., Stansfield C., Stewart R. Capacity for conducting systematic reviews in low- and middle-income countries: A rapid appraisal. *Heal Res Policy Syst* 2015; 13(1): 1–8. Doi: 10.1186/s12961-015-0012-0.

[37] McCaul M., Durao S., Kredo T., Garner P., Young T., Rohwer A. Evidence synthesis workshops: Moving from face-to-face to online learning. *BMJ Evidence-Based Med* 2021; 26(5): 255–60. Doi: 10.1136/bmjebm-2020-111394.

[38] Uthman OA., Wiysonge CS., Ota MO., Nicol M., Hussey GD., Ndumbe PM., Mayosi BM. Increasing the value of health research in the WHO African Region beyond 2015 - Reflecting on the past, celebrating the present and building the future: A bibliometric analysis. *BMJ Open* 2015; 5(3): 1–8. Doi: 10.1136/bmjopen-2014-006340.

[39] Young T., Garner P., Kredo T., Mbuagbaw L., Tharyan P., Volmink J. Cochrane and Capacity Building in Low- and Middle-Income Countries: Where are we at? *Cochrane Database Syst Rev* 2013: 1–4. Doi: 10.1002/14651858.ed000072.

[40] Owusu-Nimo F., Boshoff N. Research collaboration in Ghana: patterns, motives and roles. *Scientometrics* 2017; 110(3): 1099–121. Doi: 10.1007/s11192-016-2221-x.

[41] Pan J., Zhong Y., Young S., Niezink NMD. Collaboration on evidence synthesis in Africa: a network study of growing research capacity. *Heal Res Policy Syst* 2021; 19(1): 1–18. Doi: 10.1186/s12961-021-00774-2.

[42] Enhancing the QUAlity and Transparency Of health Research. https://www.equator-network.org. [accessed January 31, 2023].

[43] Cochrane Handbook for Systematic Reviews of Interventions. https://training.cochrane.org/handbook. [accessed December 7, 2022].

[44] Centre for Evidence Based Health Care. https://www.cebhc.co.za. [accessed December 8, 2022].

[45] Clarke M. Doing new research? Don't forget the old - Nobody should do a trial without reviewing what is known. *PLoS Med* 2004; 1(2): 100–2. Doi: 10.1371/journal.pmed.0010035.

## 2.1 Supplemental Files

### *2.1.1 Appendix B: Protocol*

**Assessing the methodological quality of systematic reviews in African emergency medicine: a methodological study PROTOCOL**

**Research question**

Describe the types of review literature published in the African emergency medicine journals

Assess the methodological quality of African emergency medicine systematic reviews

Compare the methodological quality of African emergency medicine systematic reviews to internationally published systematic reviews

Explore potential predictors of poor methodological quality among African emergency medicine systematic reviews

**Design**

A methodological study using a cross-sectional design. The unit of analysis will be a published research report.

**Methods**

To identify emergency medicine review articles we will select journals to be searched using the SCImago Journal & Country Rank (https://www.scimagojr.com) and filtering by subject category "Emergency Medicine". The top five journals (ranked by journal H-index) in the regions "African" and "All regions/countries" will be selected, based on the 2021 Journal Citation Report. Journals will be searched for review literature published between January 2012 to December 2021 using a sensitive search string for identifying reviews and systematic reviews, using the following key terms: search, review, systematic review, meta-analysis. Selected journals will be searched via the following e-databases: MEDLINE, Scopus and Web of Science. Additionally, because African journals might be incompletely indexed on these databases, they will also be hand-searched via online access to the official journal websites. Citations of potentially eligible articles will be downloaded. Deduplication and screening will be done using freely available online software (https://sr-accelerator.com/#/deduplicator).

Screening of titles and abstracts as well as full texts will be done in duplicate by the principal investigator and a second reviewer. Disagreements between reviewers will be resolved via discussion and if still unresolved, adjudicated by a supervisor. Agreement rate between reviewers during full text screening will be recorded. Included articles will be separated into "systematic reviews" and "Other reviews". Systematic reviews will be evaluated for methodological quality using the AMSTAR II tool. Comparisons will be made between the African and international journal groups. Potential predictors of for poor quality will be explored in the African journal group.

**Eligibility**

We will include original literature review studies (secondary research) on the topic of emergency medicine, as defined by the ACEP, including initial evaluation, diagnosis, treatment, and coordination of care of unforeseen illness or injury. Only articles published between 1 January 2012 and 31 December 2021 (inclusive) published in English or

Francophone languages will be included. The following articles will be excluded: primary research (including all observational studies such as case reports, case series, cohort, case control), letters, editorials, expert opinions, commentaries, protocols, conference proceedings, abstracts only, policy/position/consensus statements, guidelines, duplicate publications of a review or its data, original article if an update is available, only pre-print or protocol available and literature reviews combined with original research, where the literature review is not the main objective of the study. For the study to be considered a systematic review and be included for analysis of methodological quality it must also fulfil the following basic definition of a systematic review: contain a description of methods (in the abstract or full text) and follow systematic methods (regardless of article title), including at least having pre-specified eligibility criteria, an identification process (literature search and screening) and a synthesis scheme (qualitative, quantitative, or narrative). For this objective we will exclude scoping reviews, narrative literature reviews and other non-systematic literature reviews.

**Sample size calculation**

Exact sample size calculation will be challenging because of no available information regarding meaningful differences in methodological quality of systematic reviews between geographical regions. Previous studies used 100 studies per subgroup [15].

We chose a sample size to achieve a precise confidence interval (CI) of ±0.05 around the proportion of SRs that are of poor quality (scoring “LOW” or “CRITICALLY LOW” on AMSTAR II) in African journals compared to international journals. If this is conservatively estimated at 0.60 in African journals and 0.40 in international journals, we would need 95 SRs in each group (total of 190) to achieve the desired CI.

**Sampling**

Sampling will be done from the frame of SR identified within the emergency medicine journals in For objectives 2 to 5, if more SRs than the calculated sample size of systematic reviews are identified, we will use a sample of 100 systematic reviews from each of the regional groups, “African” and “All regions/countries”. Within these two groups, proportional stratified random sampling will be done, with stratification for each journal. Each study report will be assigned a number and a random number generator (https://www.random.org) will be used to generate a number string until the calculated sample size for each group has been reached.

**Data extraction**

Data from each SR will be extracted using a standardized data extraction form (Form 2). Extraction will be performed in duplicate to reduce errors and ensure data quality and validity. If duplicate extraction is not possible, extraction will be done by the principal investigator and a random 10% sample reviewed by the study supervisor. Disagreements will be resolved through discussion or adjudication by a third reviewer if necessary. A pilot data extraction will be done by each data extractor and reviewed by one of the study supervisors before commencing formal data extraction. Data extraction for the outcome measurement of study methodological quality will be done using the A MeaSurement Tool to Assess systematic Reviews 2 (AMSTAR II).

The primary outcome measures will be:

- Binarized global methodological quality category (Low/Critically Low vs Moderate/High)
- number of AMSTAR II critical domain (CD) weaknesses (maximum of seven)

Other data items for extraction will include: Journal data (journal title, journal H-index, journal country), author data (number of authors, nationality of primary author's affiliated institution, inclusion of methodologist/biostatistician) and study data (year of publication, title, synthesis type, a priori protocol, registration of protocol, registry name, registration number, funding specified, funding source, topic, number of included studies, the use of GRADE approach, was study commissioned for guidelines and was study informed by a scoping review).

Some of these variables will be used in the exploratory objective to compare between the pre-defined stratification groups as well as in the multivariable logistic regression model.

**Data management**

Title/Abstract and full text screening will be done with online software (SR-Accelerator). Data extraction will be done in Excel. Documents will be stored on the principal investigator personal laptop which is password protected. Backups will be made regularly to an external solid-state drive (SSD). Only the principal investigator and his study supervisors will have access to the data. Aggregated data for analysis will be imported into STATA software for analysis. The primary outcome will be study methodological quality, measured as global methodological quality category (binarised as low/critically low vs moderate/high) and number of AMSTAR II critical domain (CD) weaknesses.

**Hypothesis**

Hypothesis testing will be done for objective 4 and 5.

Null hypothesis ($H_0$): there is no difference in the proportion difference (PD) of methodological quality (binary global quality category and number of CD weaknesses) when comparing SRs across the following strata:

- Journal region (African vs all other)
- Journal H-index (≤50, 51-100, 101-150, ≥151)
- Journal requiring SR reporting checklist (yes vs no)
- Principal author institutional affiliation (African vs other)
- Inclusion of methodological author (yes vs no)
- Type of synthesis (qualitative vs quantitative)
- Registration of protocol, AMSTAR II domain 2 (yes vs no)
- Funding specified, AMSTAR II domain 10 (yes vs no)
- number of included studies
- GRADE approach used (yes vs no)
- Commissioned for guidelines (yes vs no)
- Informed by scoping review (yes vs no)

**Data analysis**

Data will be captured in Excel and imported to Stata statistical software for analysis, using Stata version 17 (StataCorp, Texas, 2021). A p-value <0.05 will be considered statistically significant. 95% Confidence Intervals (CIs) will be used. Descriptive and inferential statistics will be used to describe data.

For the first objective of determining methodological quality, descriptive analysis will be performed. The counts of "NO" for all domains as well as critical domains will be summarised.
Categorical data will be described using frequencies and relative frequencies (percentages) with their associated 95% CIs. Central tendency and variability for numerical data that is normally distributed will be described using means and standard deviations and if not normally distributed, medians and IQRs.

For the second objective of exploring risk factors for poor methodological quality, the proportion difference in methodological quality (global binary quality category and number of CD weakness) will be investigated, stratified by pre-defined variables. These pre-defined stratification variables are as mentioned in section 7.9.

The effect estimator used for potential differences between strata will be the risk difference (RD), or proportion difference, where the proportion per strata is calculated as follows:
a) number of studies scoring low or critically low / number of studies in group,
b) total number of critical domains scoring "NO"/ total number of CDs

The chi-squared test will be used for evaluating statistical significance of potential inter-strata differences (independent variables/strata=binary and the dependent variable=binary).

Finally, regression analysis will be conducted to determine strength of association for certain variables with the primary outcome of CD weaknesses. Bivariate logistic regression will be used to test variables for statistical significance at the 0.2 significance level. Factors found to be statistically significantly associated, will be included in a multivariate logistic regression model with correction for potential confounders, to identify independent predictors for low/critically low methodological quality.

| | **OUTCOME VARIABLE** | **VARIABLE TYPE** | **ANALYSIS** |
|---|---|---|---|
| **1ST AND 2ND OBJECTIVE**<br>**IDENTIFY AND DESCRIBE SRS IN AFRICAN EM JOURNALS** | | | Descriptive statistics, frequencies, proportions, |
| **3RD OBJECTIVE**<br>**QUALITY OF SRS IN AFRICAN EM JOURNALS** | 1. AMSTAR2 category (low/critically low vs moderate/high) | 1. Categorical binary<br>2. Numerical discrete | Descriptive statistics, frequencies, proportions, medians, IQRs |

| | | | |
|---|---|---|---|
| | 2. AMSTAR2 CD weaknesses | | |
| **4TH AND 5TH OBJECTIVE EXPLORING VARIABLES ASSOCIATED WITH POOR METHODOLOCIAL QUALITY** | | | |
| **JOURNAL REGION (AFRICAN VS OTHER)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |
| **JOURNAL H-INDEX (≤50, 51-100, 101-150, ≥151)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |
| **JOURNAL REQUIRING SR REPORTING CHECKLIST (YES VS NO)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |
| **PRINCIPAL AUTHOR AFFILIATION (AFRICAN VS OTHER)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |
| **INCLUSION OF METHODOLOGIST/BIOSTATISTICIAN (YES VS NO)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |
| **TYPE OF SYNTHESIS (QUALITATIVE VS QUANTITATIVE)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |
| **REGISTRATION OF PROTOCOL (YES VS NO)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |
| **FUNDING (YES VS NO)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |
| **NUMBER OF INCLUDED STUDIES** | AMSTAR2 category | Numerical | Independent samples t-test, logistic regression |
| **GRADE APPROACH USED (YES VS NO)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |
| **COMMISSIONED FOR GUIDELINES (YES VS NO)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |
| **INFORMED BY SCOPING REVIEW (YES VS NO)** | AMSTAR2 category | Categorical binary | Chi-squared test, logistic regression |

**Dealing with missing data**

Missing information will be dealt with by contacting the original author to request missing data. Sensitivity analysis will be considered if appropriate. The potential impact of missing data on the findings will be addressed in the Discussion section.

**Ethics**

Application for ethical approval not necessary as only aggregated, anonymised data already in the public domain will be used. Application for exemption will be done.

**Study limitations and assumptions**

- The study will only include SRs published within a certain time frame and only from selected African and high-ranking international journals.
- Grey literature will not be searched
- Inclusion criteria for quality evaluation selects for a specific group of studies that meet the basic criteria of a SR – it does not evaluate the quality of all review articles of which there are many more published in EM journals.
- The accuracy of the AMSTAR2 score may suffer since authors may not report methods used in sufficient detail. Although assessing quality only on what has been reported is realistic since that is the only information available to general readers to evaluate quality.
- Potential for selection bias: Some eligible SRs published in other African journals, apart from the ones selected, may have been left out.

**Conflict of interest**

The author has no conflicts of interest to declare.

**Funding sources/sponsors**

None

**Disseminations of results**

Poster at faculty annual research day, journal publication, presentation at conferences (such as EMSSA and badEM), workplace and social media.

**Contact details for further information**

Jacques van Niekerk

**Organizational affiliation of the review**

Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Stellenbosch University

# Appendix C

### *2.1.2 Appendix C1: Search Strategy*

| **Keywords*** | | **Restriction for year** | | **Restriction for journal** |
|---|---|---|---|---|
| Search OR review, OR meta-analysis OR systematic review | **AND** | 2012 to 2021 | **AND** | "journal name" |

*Where possible terms were searched for in MeSH as well as all text words.

Deduplication was done in duplicate using SR-Accelerator.

**MEDLINE via PubMed**
Search conducted on 13 July 2022
Journal restrictions (separate searches):
"African journal of emergency medicine : Revue africaine de la médecine d'urgence"[Journal], "Emergency medicine international"[Journal], "South African medical journal Suid-Afrikaanse tydskrif vir geneeskunde"[Journal], "Annals of emergency medicine"[Journal], "Resuscitation"[Journal], "Academic emergency medicine : official journal of the Society for Academic Emergency Medicine"[Journal], "Injury"[Journal], "Shock (Augusta, Ga.)"[Journal].

Not indexed: Southern African Journal of Critical Care (SAJCC) and African Journal of Anaesthesia and Intensive Care (AJAIC).

Example**:**
review[Title/Abstract] OR review[Publication Type] OR search[Title/Abstract] OR meta-analysis[Title/Abstract] OR "meta analysis"[Title/Abstract] OR meta-analysis[MeSH Major Topic] OR meta-analysis[Publication Type] OR systematic-review[Title/Abstract] OR "systematic review"[Title/Abstract] OR systematic review[Publication Type] OR review, systematic[MeSH Major Topic] AND 2012:2021[dp] AND "African journal of emergency medicine : Revue africaine de la médecine d'urgence"[Journal]

Records retrieved: 86

**Web of Science**
Search conducted on 13 July 2022
Journal restrictions (separate searches):
SO=(African Journal of Emergency Medicine), SO=(Emergency Medicine International), SO=(SOUTH AFRICAN MEDICAL JOURNAL), SO=(SOUTHERN AFRICAN JOURNAL OF CRITICAL CARE), SO=(ANNALS OF EMERGENCY MEDICINE), SO=(RESUSCITATION), SO=(ACADEMIC EMERGENCY MEDICINE), SO=(INJURY INTERNATIONAL JOURNAL OF THE CARE OF THE INJURED), SO=(SHOCK).

Not indexed: African Journal of Anaesthesia and Intensive Care (AJAIC)

Example:
((TI=review OR AB=review) OR (TI=search OR AB=search) OR (TI=meta analysis OR AB=meta analysis) OR (TI=systematic review OR AB=systematic review) OR DT=(review)) AND (PY=(2012-2021) AND SO=(African Journal of Emergency Medicine))

Records retrieved: 93

**Scopus**
Search conducted on 13 July 2022
Journal restrictions (separate searches):
EXACTSRCTITLE("African Journal Of Emergency Medicine"), EXACTSRCTITLE("Emergency Medicine International"), EXACTSRCTITLE("South African Medical Journal"), EXACTSRCTITLE("Southern African Journal Of Critical Care"), EXACTSRCTITLE("Annals Of Emergency Medicine"), EXACTSRCTITLE("Resuscitation"), EXACTSRCTITLE("Academic Emergency Medicine"), ( LIMIT-TO ( EXACTSRCTITLE,"Injury" ) ), ( LIMIT-TO ( EXACTSRCTITLE , "Shock" ) ).

Not indexed: African Journal of Anaesthesia and Intensive Care (AJAIC)

Example:
TITLE-ABS-KEY("review") OR TITLE-ABS-KEY("search") OR TITLE-ABS-KEY("meta analysis") OR TITLE-ABS-KEY("meta-analysis") OR TITLE-ABS-KEY("systematic review") OR TITLE-ABS-KEY("systematic-review") OR DOCTYPE(re) OR INDEXTERMS("systematic review") OR INDEXTERMS(systematic-review) OR INDEXTERMS("meta analysis") OR INDEXTERMS(meta-analysis) AND PUBYEAR > 2011 AND PUBYEAR < 2022 AND EXACTSRCTITLE("African Journal Of Emergency Medicine") AND SUBJAREA(MEDI)

Records retrieved: 136

**Handsearching**

The five selected African journals were hand searched via online access – website addresses listed below. The AJAIC does not have a website, therefore it was searched via the AJOL website.

| | |
|---|---|
| AFJEM | https://www.sciencedirect.com/journal/african-journal-of-emergency-medicine |
| EMI | https://www.hindawi.com/journals/emi/ |
| SAMJ | http://www.samj.org.za/index.php/samj |
| SAJCC | http://www.sajcc.org.za/index.php/SAJCC |
| AJAIC | https://www.ajol.info/index.php/ajaic/issue/archive |

### *2.1.3 Appendix C2: PRISMA-S checklist*

| Section/topic | # | Checklist item | Location(s) Reported |
|---|---|---|---|
| **INFORMATION SOURCES AND METHODS** | | | |
| Database name | 1 | Name each individual database searched, stating the platform for each. | Appendix C1 |
| Multi-database searching | 2 | If databases were searched simultaneously on a single platform, state the name of the platform, listing all of the databases searched. | N/A |
| Study registries | 3 | List any study registries searched. | N/A |
| Online resources and browsing | 4 | Describe any online or print source purposefully searched or browsed (e.g., tables of contents, print conference proceedings, web sites), and how this was done. | Appendix C1 |
| Citation searching | 5 | Indicate whether cited references or citing references were examined, and describe any methods used for locating cited/citing references (e.g., browsing reference lists, using a citation index, setting up email alerts for references citing included studies). | N/A |
| Contacts | 6 | Indicate whether additional studies or data were sought by contacting authors, experts, manufacturers, or others. | N/A |
| Other methods | 7 | Describe any additional information sources or search methods used. | Appendix C1 |
| **SEARCH STRATEGIES** | | | |
| Full search strategies | 8 | Include the search strategies for each database and information source, copied and pasted exactly as run. | Appendix C1 |
| Limits and restrictions | 9 | Specify that no limits were used, or describe any limits or restrictions applied to a search (e.g., date or time period, language, study design) and provide justification for their use. | Appendix C1 |
| Search filters | 10 | Indicate whether published search filters were used (as originally designed or modified), and if so, cite the filter(s) used. | N/A |
| Prior work | 11 | Indicate when search strategies from other literature reviews were adapted or reused for a substantive part or all of the search, citing the previous review(s). | N/A |
| Updates | 12 | Report the methods used to update the search(es) (e.g., rerunning searches, email alerts). | N/A |
| Dates of searches | 13 | For each search strategy, provide the date when the last search occurred. | Appendix C1 |

| | | | |
|---|---|---|---|
| **PEER REVIEW** | | | |
| Peer review | 14 | Describe any search peer review process. | N/A |
| **MANAGING RECORDS** | | | |
| Total Records | 15 | Document the total number of records identified from each database and other information sources. | Appendix C1 |
| Deduplication | 16 | Describe the processes and any software used to deduplicate records from multiple database searches and other information sources. | Methods: Screening Systematic Reviews; Appendix C1 |

PRISMA-S: An Extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews
Rethlefsen ML, Kirtley S, Waffenschmidt S, Ayala AP, Moher D, Page MJ, Koffel JB, PRISMA-S Group.
Last updated
February 27, 2020.

### *2.1.4 Appendix D: Excluded studies*

## African reviews: no methods

[1] Biondich AS., Joslin JD. Coca: The History and Medical Significance of an Ancient Andean Tradition. *Emerg Med Int* 2016; 2016: 4048764. Doi: 10.1155/2016/4048764.

[2] Boyle A., Beniuk K., Higginson I., Atkinson P. Emergency Department Crowding: Time for Interventions and Policy Evaluations. *Emerg Med Int* 2012; 2012: 838610. Doi: 10.1155/2012/838610.

[3] Chandra A., Firth J., Sheikh A., Patel P. Emergencies related to HIV infection and treatment (part 1). *African J Emerg Med* 2013. Doi: 10.1016/j.afjem.2013.03.005.

[4] Chandra A., Firth J., Sheikh A., Patel P. Emergencies related to HIV infection and treatment (part 2). *African J Emerg Med* 2013. Doi: 10.1016/j.afjem.2013.04.001.

[5] Chausse JM., Malekele L., Paruk F. Improved understanding of the pathophysiology of sepsis: Setting the scene for potential novel adjunctive therapies. *South African J Crit Care* 2018. Doi: 10.7196/SAJCC.201.v34i1.361.

[6] den Hollander D., Albertyn R., Ambler J. Palliation, end-of-life care and burns; concepts, decision-making and communication – A narrative review. *African J Emerg Med* 2020; 10(2): 95–8. Doi: https://doi.org/10.1016/j.afjem.2020.01.003.

[7] den Hollander D., Albertyn R., Ambler J. Palliation, end-of-life care and burns; practical issues, spiritual care and care of the family – A narrative review II. *African J Emerg Med* 2020; 10(4): 256–60. Doi: https://doi.org/10.1016/j.afjem.2020.07.011.

[8] El Sayad M., Noureddine H. Recent Advances of Hemorrhage Management in Severe Trauma. *Emerg Med Int* 2014; 2014: 638956. Doi: 10.1155/2014/638956.

[9] El Sayed MJ., Zaghrini E. Prehospital Emergency Ultrasound: A Review of Current Clinical Applications, Challenges, and Future Implications. *Emerg Med Int* 2013; 2013: 531674. Doi: 10.1155/2013/531674.

[10] Flower O., Hellings S. Sedation in Traumatic Brain Injury. *Emerg Med Int* 2012; 2012: 637171. Doi: 10.1155/2012/637171.

[11] Greene T., Amour M., Koyfman A., Foran M. Asthma essentials. *African J Emerg Med* 2013. Doi: 10.1016/j.afjem.2012.11.011.

[12] Hamilton B., Kwakyi E., Koyfman A., Foran M. Diagnosis and management of acute coronary syndrome. *African J Emerg Med* 2013. Doi: 10.1016/j.afjem.2012.11.012.

[13] Jeejeebhoy FM., Morrison LJ. Maternal Cardiac Arrest: A Practical and Comprehensive Review. *Emerg Med Int* 2013; 2013: 274814. Doi: 10.1155/2013/274814.

[14] Joslin J., Ostermann M. Care of the Critically Ill Emergency Department Patient with Acute Kidney Injury. *Emerg Med Int* 2012; 2012: 760623. Doi: 10.1155/2012/760623.

[15] Kanmounye US. The Rise of Inflow Cisternostomy in Resource-Limited Settings: Rationale, Limitations, and Future Challenges. *Emerg Med Int* 2021; 2021: 6630050. Doi: 10.1155/2021/6630050.

[16] Konert A., Smereka J., Szarpak L. The Use of Drones in Emergency Medicine: Practical and Legal Aspects. *Emerg Med Int* 2019; 2019: 3589792. Doi: 10.1155/2019/3589792.

[17] Krolikowski AM., Koyfman A. Methamphetamine and MDMA: “Safe” drugs of abuse. *African J Emerg Med* 2014. Doi: 10.1016/j.afjem.2013.01.005.

[18] Krolikowski AM., Koyfman A. Emergency Centre care for sexual assault victims. *African J Emerg Med* 2012. Doi: 10.1016/j.afjem.2011.12.005.

[19] Landry A., Geduld H., Koyfman A., Foran M. An overview of acute burn management in the Emergency Centre. *African J Emerg Med* 2013; 3(1): 22–9. Doi: https://doi.org/10.1016/j.afjem.2012.08.004.

[20] Lindner G., Exadaktylos AK. How Noninvasive Haemoglobin Measurement with Pulse CO-Oximetry Can Change Your Practice: An Expert Review. *Emerg Med Int* 2013; 2013: 701529. Doi: 10.1155/2013/701529.

[21] Lovallo E., Koyfman A., Foran M. Crush syndrome le syndrome de compression. *African J Emerg Med* 2012. Doi: 10.1016/j.afjem.2012.05.005.

[22] Modisett KL., Koyfman A., Runyon MS. The diagnosis of and emergent care for the patient with subarachnoid haemorrhage in resource-limited settings. *African J Emerg Med* 2014. Doi: 10.1016/j.afjem.2014.04.002.

[23] Nteziyaremye J., Paasi G., Burgoine K., Sadiq Balyejjusa J., Tegu C., Olupot-Olupot P. Perspectives on aetiology, pathophysiology and management of shock in African children. *African J Emerg Med* 2017. Doi: 10.1016/j.afjem.2017.10.002.

[24] Papastylianou A., Mentzelopoulos S. Current Pharmacological Advances in the Treatment of Cardiac Arrest. *Emerg Med Int* 2012; 2012: 815857. Doi: 10.1155/2012/815857.

[25] Pour TR., Koyfman A., Runyon MS. Emergency centre management of paediatric diarrhoea: An overview. *African J Emerg Med* 2013; 3(2): 75–82. Doi: https://doi.org/10.1016/j.afjem.2012.06.004.

[26] Richards GA., Bentley A., Gopalan PD., Brannigan L., Paruk F. Is there a role for melatonin in the ICU? *South African J Crit Care* 2021. Doi: 10.7196/SAJCC.2021.V37I2.490.

[27] Richards GA., Joubert I. Extracorporeal membrane oxygenation (ECMO). *South African J Crit Care* 2013. Doi: 10.7196/SAJCC.161.

[28] Tacon CL., Flower O. Diagnosis and Management of Bacterial Meningitis in the Paediatric Population: A Review. *Emerg Med Int* 2012; 2012: 320309. Doi: 10.1155/2012/320309.

[29] Taylor DM., Hodkinson PW., Khan AS., Simon EL. Research skills and the data spreadsheet: A research primer for low- and middle-income countries. *African J Emerg Med* 2020; 10: S140–4. Doi: https://doi.org/10.1016/j.afjem.2020.05.003.

[30] Tupchong K., Koyfman A., Foran M. Sepsis, severe sepsis, and septic shock: A review of the literature. *African J Emerg Med* 2015. Doi: 10.1016/j.afjem.2014.05.004.

[31] Welniak TJ., Panzenbeck A., Koyfman A., Foran M. Chronic obstructive pulmonary disease: Emergency care in acute exacerbation. *African J Emerg Med* 2015. Doi: 10.1016/j.afjem.2014.08.002.

[32] Zisakis AK., Varsos V., Exadaktylos A. What is New and Innovative in Emergency Neurosurgery? Emerging Diagnostic Technologies Provide Better Care and Influence Outcome: A Specialist Review. *Emerg Med Int* 2013; 2013: 568960. Doi: 10.1155/2013/568960.

## African reviews: non-systematic review methods

[1] Badoe E. A critical review of child abuse and its management in Africa. *African J Emerg Med* 2017; 7: S32–5. Doi: https://doi.org/10.1016/j.afjem.2017.09.002.

[2] Brown BS., Pogue KA., Williams E., Hatfield J., Thomas M., Arthur A., Thomas SH. Helicopter EMS Transport Outcomes Literature: Annotated Review of Articles Published 2007–2011. *Emerg Med Int* 2012; 2012: 876703. Doi: 10.1155/2012/876703.

[3] Ciccone O., Mathews M., Birbeck GL. Management of acute seizures in children: A review with special consideration of care in resource-limited settings. *African J Emerg Med* 2017; 7: S3–9. Doi: https://doi.org/10.1016/j.afjem.2017.09.003.

[4] Eisner ZJ., Delaney PG., Widder P., Aleem IS., Tate DG., Raghavendran K., Scott JW. Prehospital care for traumatic spinal cord injury by first responders in 8 sub-Saharan African countries and 6 other low- and middle-income countries: A scoping review. *African J Emerg Med* 2021; 11(3): 339–46. Doi: https://doi.org/10.1016/j.afjem.2021.04.006.

[5] Erenler AK., Baydin A. Interleukin-33 (IL-33) as a Diagnostic and Prognostic Factor in Traumatic Brain Injury. *Emerg Med Int* 2020; 2020: 1832345. Doi: 10.1155/2020/1832345.

[6] Forero R., McDonnell G., Gallego B., McCarthy S., Mohsin M., Shanley C., Formby F., Hillman K. A Literature Review on Care at the End-of-Life in the Emergency Department. *Emerg Med Int* 2012; 2012: 486516. Doi: 10.1155/2012/486516.

[7] Hansmann A., Morrow BM., Lang H-J. Review of supplemental oxygen and respiratory support for paediatric emergency care in sub-Saharan Africa. *African J Emerg Med* 2017; 7: S10–9. Doi: https://doi.org/10.1016/j.afjem.2017.10.001.

[8] Khayyat YM. Pharmacological Management of Esophageal Food Bolus Impaction. *Emerg Med Int* 2013; 2013: 924015. Doi: 10.1155/2013/924015.

[9] Lazarev A., Golokhvast K., Borozda I. Review of the Problems of Diagnosis of Endopelvic Haemorrhage, Its Intensity, Volume, and Duration, and Treatment Methods of Circulatory Injuries and Surgical Hemostasis after Pelvic Fractures. *Emerg Med Int* 2019; 2019: 2514146. Doi: 10.1155/2019/2514146.

[10] Lipe DN., Mann PB., Babakhanlou R., Cruz Carreras MT., Guido Hita A., Wattana MK. Evaluation and Management of Genitourinary Emergencies in Patients with Cancer. *Emerg Med Int* 2021; 2021: 4511968. Doi: 10.1155/2021/4511968.

[11] Malherbe P., Smit P., Sharma K., McCaul M. Guidance we can trust? The status and quality of prehospital clinical guidance in sub-Saharan Africa: A scoping review.

*African J Emerg Med* 2021; 11(1): 79–86. Doi: https://doi.org/10.1016/j.afjem.2020.08.005.

[12] Mould-Millman NK., Dixon J., Burkholder TW., Sefa N., Patel H., Yaffee AQ., Osisanya A., Oyewumi T., Botchey I., Osei-Ampofo M., et al. Fifteen years of emergency medicine literature in Africa: A scoping review. *African J Emerg Med* 2019; 9(1): 45–52. Doi: 10.1016/j.afjem.2019.01.006.

[13] Nguembu S., Meloni M., Endalle G., Dokponou H., Dada OE., Senyuy WP., Kanmounye US. Paroxysmal Sympathetic Hyperactivity in Moderate-to-Severe Traumatic Brain Injury and the Role of Beta-Blockers: A Scoping Review. *Emerg Med Int* 2021; 2021: 5589239. Doi: 10.1155/2021/5589239.

[14] Nicks B., Henley J., Mfinanga J., Manthey D. Neurologic emergencies in resource-limited settings: A review of stroke care considerations. *African J Emerg Med* 2015; 5(1): 37–44. Doi: https://doi.org/10.1016/j.afjem.2014.06.002.

[15] Ocak U., Zhang JH. Contribution of Experimental Animal Research Studies to the Emergency Medicine Literature. *Emerg Med Int* 2019; 2019: 8578674. Doi: 10.1155/2019/8578674.

[16] Oyegbile YO., Brysiewicz P. Measuring patient experience in the emergency department: A scoping review. *African J Emerg Med* 2020; 10(4): 249–55. Doi: https://doi.org/10.1016/j.afjem.2020.07.005.

[17] Pope J V., Edlow JA. Avoiding Misdiagnosis in Patients with Neurological Emergencies. *Emerg Med Int* 2012; 2012: 949275. Doi: 10.1155/2012/949275.

[18] Restrepo JNJ., Leon OJ., Florez LAQ. Ocular Ultrasonography: A Useful Instrument in Patients with Trauma Brain Injury in Emergency Service. *Emerg Med Int* 2019. Doi: 10.1155/2019/9215853.

[19] Rout J., Essack S., Brysiewicz P. Guideline recommendations for antimicrobial stewardship education for clinical nursing practice in hospitals: A scoping review. *South AFRICAN J Crit CARE* 2021. Doi: 10.7196/SAJCC.2021.v37i3.482.

[20] Rout J., Essack S., Brysiewicz P. Guidelines for the hospital role of the clinical nurse in antimicrobial stewardship: A scoping review. *South African J Crit Care* 2021. Doi: 10.7196/SAJCC.2021.V37I2.481.

[21] Shawahna R., Ghoul A., Zaid N., Damrah W., Jaber M. Improving Communication with Patients Discharged from the Emergency Department with Noncardiac Chest Pain: A Scoping Review with Narrative Synthesis. *Emerg Med Int* 2021; 2021: 6695210. Doi: 10.1155/2021/6695210.

[22] Skulec R., Parizek T., David M., Matousek V., Cerny V. Lung Point Sign in Ultrasound Diagnostics of Pneumothorax: Imitations and Variants. *Emerg Med Int* 2021; 2021: 6897946. Doi: 10.1155/2021/6897946.

[23] Stephen VS., Pluymers NA., Gauton SJ. Emergency management of calcium channel blocker overdose. *S Afr Med J* 2019. Doi: 10.7196/SAMJ.2019.v109i9.13704.

[24] Terry B., Bisanzo M., McNamara M., Dreifuss B., Chamberlain S., Nelson SW., Tiemeier K., Waters T., Hammerstedt H. Task shifting: Meeting the human resources needs for acute and emergency care in Africa. *African J Emerg Med* 2012. Doi: 10.1016/j.afjem.2012.06.005.

[25] Wan Y., Griffiths S., Ganau M. Neurosurgical Care of Nonpowder Firearm Injuries: A Narrative Review of the Literature. *Emerg Med Int* 2019; 2019: 4680184. Doi: 10.1155/2019/4680184.

[26] Whiley SP., Mantokoudis G., Ott D., Zimmerman H., Exadaktylos AK. A Review of Full-Body Radiography in Nontraumatic Emergency Medicine. *Emerg Med Int* 2012; 2012: 108129. Doi: 10.1155/2012/108129.

## African reviews: full text not available

[1] Chatterjee A. Workplace violence in emergency medicine. African J Emerg Med 2013; 3(4, Supplement). Doi: https://doi.org/10.1016/j.afjem.2013.08.032.

[2] Hofmeyr R. State of the art: Rescue intubation through supraglottic airways. African J Emerg Med 2013; 3(4, Supplement): S6. Doi: https://doi.org/10.1016/j.afjem.2013.08.011.

[3] Hofmeyr R. State of the art: Video and optical laryngoscopy. African J Emerg Med 2013; 3(4, Supplement): S16. Doi: https://doi.org/10.1016/j.afjem.2013.08.042.

[4] Majeed MA., Yeo D. Fascia iliaca block, for fractured femur, in Emergency Departments. African J Emerg Med 2013; 3(4, Supplement): S12. Doi: https://doi.org/10.1016/j.afjem.2013.08.029.

## International reviews: no methods

[1] Abbott J. The POLST Paradox: Opportunities and Challenges in Honoring Patient End-of-Life Wishes in the Emergency Department. *Ann Emerg Med* 2019. Doi: 10.1016/j.annemergmed.2018.10.021.

[2] Al-Ashqar M., Panteli M., Chakrabarty G., Giannoudis P V. Atypical fractures: An issue of concern or a myth? *Injury* 2018. Doi: 10.1016/j.injury.2017.12.016.

[3] Altshuler AE., Kistler EB., Schmid-Schönbein GW. Autodigestion: Proteolytic degradation and multiple organ failure in shock. *Shock* 2016. Doi: 10.1097/SHK.0000000000000544.

[4] Antonucci E., Gleeson PJ., Annoni F., Agosta S., Orlando S., Taccone FS., Velissaris D., Scolletta S. Angiotensin II in Refractory Septic Shock. *Shock* 2017. Doi: 10.1097/SHK.0000000000000807.

[5] Ayalon I., Bodilly L., Kaplan J. THE IMPACT OF OBESITY ON CRITICAL ILLNESSES. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001821.

[6] Azad T., Pan G., Verma R. Epley Maneuver (Canalith Repositioning) for Benign Positional Vertigo. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13985.

[7] Babhulkar S. Unstable trochanteric fractures: Issues and avoiding pitfalls. *Injury* 2017. Doi: 10.1016/j.injury.2017.02.022.

[8] Bafi AT., Tomotani DY V., De Freitas FGR. Sepsis in solid-organ transplant patients. *Shock* 2017. Doi: 10.1097/SHK.0000000000000700.

[9] Bajcetic M., Spasic S., Spasojevic I. REDOX THERAPY IN NEONATAL SEPSIS: REASONS, TARGETS, STRATEGY, AND AGENTS. *SHOCK* 2014. Doi: 10.1097/SHK.0000000000000198.

[10] Bakhsh A. Rocuronium Versus Succinylcholine for Rapid Sequence Intubation. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13846.

[11] Bakhsh A., Ritchie M. Video Laryngoscopy vs. Direct Laryngoscopy. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13627.

[12] Balachandran G., Bharathy KGS., Sikora SS. Penetrating injuries of the inferior vena cava. *Injury* 2020. Doi: 10.1016/j.injury.2020.08.022.

[13] Ball RL., Keyloun JW., Brummel-Ziedins K., Orfeo T., Palmieri TL., Johnson LS., Moffatt LT., Pusateri AE., Shupp JW. BURN-INDUCED COAGULOPATHIES: A COMPREHENSIVE REVIEW. *SHOCK* 2020. Doi: 10.1097/SHK.0000000000001484.

[14] Barlow B., Bissell BD. Evaluation of Evidence, Pharmacology, and Interplay of Fluid Resuscitation and Vasoactive Therapy in Sepsis and Septic Shock. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001783.

[15] Benitez Cardenas AS., Samuel PP., Olson JS. Current challenges in the development of acellular hemoglobin oxygen carriers by protein engineering. *Shock* 2019. Doi: 10.1097/SHK.0000000000001053.

[16] Bergmann CB., Beckmann N., Salyer CE., Crisologo PA., Nomellini V., Caldwell CC. Lymphocyte Immunosuppression and Dysfunction Contributing to Persistent Inflammation, Immunosuppression, and Catabolism Syndrome (PICS). *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001675.

[17] Bernard AW., Gorgas D., Greenberger S., Jacques A., Khandelwal S. The Use of Reflection in Emergency Medicine Education. *Acad Emerg Med* 2012; 19(8): 978–82. Doi: 10.1111/j.1553-2712.2012.01407.x.

[18] Besen BAMP., Taniguchi LU. Negative fluid balance in sepsis: When and how? *Shock* 2017. Doi: 10.1097/SHK.0000000000000701.

[19] Betz ME., Wintersteen M., Boudreaux ED., Brown G., Capoccia L., Currier G., Goldstein J., King C., Manton A., Stanley B., et al. Reducing Suicide Risk: Challenges and Opportunities in the Emergency Department. *Ann Emerg Med* 2016; 68(6): 758–65. Doi: 10.1016/j.annemergmed.2016.05.030.

[20] Beyda R., Johari D. Tranexamic Acid for Upper Gastrointestinal Bleeding. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13835.

[21] Blokhuis TJ., Pape HC., Frolke JP. Timing of definitive fixation of major long bone fractures: Can fat embolism syndrome be prevented? *Inj J CARE Inj* 2017. Doi: 10.1016/j.injury.2017.04.015.

[22] Bozza FA., D'Avila JC., Ritter C., Sonneville R., Sharshar T., Dal-Pizzol F. Bioenergetics, mitochondrial dysfunction, and oxidative stress in the pathophysiology of septic encephalopathy. *Shock* 2013. Doi: 10.1097/SHK.0b013e31828fade1.

[23] Brenner M., Moore L., Dubose J., Scalea T. RESUSCITATIVE ENDOVASCULAR BALLOON OCCLUSION OF THE AORTA (REBOA) FOR USE IN TEMPORIZING INTRA-ABDOMINAL AND PELVIC HEMORRHAGE: PHYSIOLOGIC SEQUELAE AND CONSIDERATIONS. *SHOCK* 2020. Doi: 10.1097/SHK.0000000000001542.

[24] Brink O. Hip fracture clearance: How much optimisation is necessary? *Injury* 2020. Doi: 10.1016/j.injury.2020.02.046.

[25] Bronkhorst MWGA., Patka P., Van Lieshout EMM. Effects of sequence variations in innate immune response genes on infectious outcome in trauma patients: A comprehensive review. *Shock* 2015. Doi: 10.1097/SHK.0000000000000450.

[26] Brummelhuis WJ., Joles JA., Stam J., Verrips CT., Braam B. Biological and technical considerations regarding the removal of bacteriotoxins in sepsis with emphasis on toxic shock syndrome toxin 1. *Shock* 2012. Doi: 10.1097/SHK.0b013e3182429b38.

[27] Bryson DJ., Wicks L., Ashford RU. The investigation and management of suspected malignant pathological fractures: A review for the general orthopaedic surgeon. *Injury* 2015. Doi: 10.1016/j.injury.2015.07.028.

[28] Burke SJ., Karlstad MD., Jason Collier J. Pancreatic Islet Responses to Metabolic Trauma. *Shock* 2016. Doi: 10.1097/SHK.0000000000000607.

[29] Camicia G., Pozner R., De Larrañaga G. Neutrophil extracellular traps in sepsis. *Shock* 2014. Doi: 10.1097/SHK.0000000000000221.

[30] Cardenas JC. Thrombin Generation Following Severe Trauma: Mechanisms, Modulators, and Implications for Hemostasis and Thrombosis. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001773.

[31] Carvalhaes CG., Cayô R., Gales AC. Klebsiella pneumoniae carbapenemase-producing klebsiella pneumoniae in the intensive care unit: A real challenge to physicians, scientific community, and society. *Shock* 2013. Doi: 10.1097/SHK.0b013e31828faf1f.

[32] Cavalcanti AB., Lisboa T., Gales AC. Is selective digestive decontamination useful for critically ill patients? *Shock* 2017. Doi: 10.1097/SHK.0000000000000711.

[33] Chang R., Holcomb JB. Choice of Fluid Therapy in the Initial Management of Sepsis, Severe Sepsis, and Septic Shock. *Shock* 2016. Doi: 10.1097/SHK.0000000000000577.

[34] Christiaans SC., Duhachek-Stapelman AL., Russell RT., Lisco SJ., Kerby JD., Pittet J-F. Coagulopathy after severe pediatric trauma. *Shock* 2014. Doi: 10.1097/SHK.0000000000000151.

[35] Cogan CJ., Kandemir U. Role of peripheral nerve block in pain control for the management of acute traumatic orthopaedic injuries in the emergency department: Diagnosis-based treatment guidelines. *Injury* 2020. Doi: 10.1016/j.injury.2020.04.016.

[36] Collins SP., Levy PD., Martindale JL., Dunlap ME., Storrow AB., Pang PS., Albert NM., Felker GM., Fermann GJ., Fonarow GC., et al. Clinical and Research Considerations for Patients With Hypertensive Acute Heart Failure: A Consensus Statement from the Society for Academic Emergency Medicine and the Heart Failure Society of America Acute Heart Failure Working Group. *Acad Emerg Med* 2016; 23(8): 922–31. Doi: 10.1111/acem.13025.

[37] Convertino VA., Wirt MD., Glenn JF., Lein BC. The compensatory reserve for early and accurate prediction of hemodynamic compromise: A review of the underlying physiology. *Shock* 2016. Doi: 10.1097/SHK.0000000000000559.

[38] Conway JC., Friedman BW. Medical Expulsive Therapy (Alpha Blockers) for Urologic Stone Disease. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13935.

[39] Conway J., Friedman B. Intensive Glucose Control for Critically Ill Patients. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13777.

[40] Conway J., Friedman B. Intravenous Magnesium Sulfate for Acute Asthma Exacerbation in Adults. *Acad Emerg Med* 2020. Doi: 10.1111/acem.14066.

[41] Coopersmith CM., Deutschman CS. The new sepsis definitions: Implications for the basic and translational research communities. *Shock* 2017. Doi: 10.1097/SHK.0000000000000763.

[42] Corrêa TD., Filho RR., Assunção MSC., Silva E., Lima A. Vasodilators in septic shock resuscitation: A clinical perspective. *Shock* 2017. Doi: 10.1097/SHK.0000000000000777.

[43] Cunningham BP., Brazina S., Morshed S., Miclau III T. Fracture healing: A review of clinical, imaging and laboratory diagnostic options. *Injury* 2017. Doi: 10.1016/j.injury.2017.04.020.

[44] Curry N., Davis PW. What's new in resuscitation strategies for the patient with multiple trauma? *Injury* 2012. Doi: 10.1016/j.injury.2012.03.014.

[45] De Maio A., Vazquez D. Extracellular heat shock proteins: A new location, a new function. *Shock* 2013. Doi: 10.1097/SHK.0b013e3182a185ab.

[46] Denipah N., Dominguez CM., Kraai EP., Kraai TL., Leos P., Braude D. Acute Management of Paradoxical Vocal Fold Motion (Vocal Cord Dysfunction). *Ann Emerg Med* 2017. Doi: 10.1016/j.annemergmed.2016.06.045.

[47] Dolin HH., Papadimos TJ., Stepkowski S., Chen X., Pan ZK. A Novel Combination of Biomarkers to Herald the Onset of Sepsis Prior to the Manifestation of Symptoms. *Shock* 2018. Doi: 10.1097/SHK.0000000000001010.

[48] Donohoe E., Roberts HJ., Miclau T., Kreder H. Management of Lower Extremity Fractures in the Elderly: A Focus on Post-Operative Rehabilitation. *Injury* 2020. Doi: 10.1016/j.injury.2020.04.050.

[49] Duber HC., Barata IA., Cioe-Pena E., Liang SY., Ketcham E., Macias-Konstantopoulos W., Ryan SA., Stavros M., Whiteside LK. Identification, Management, and Transition of Care for Patients With Opioid Use Disorder in the Emergency Department. *Ann Emerg Med* 2018; 72(4): 420–31. Doi: 10.1016/j.annemergmed.2018.04.007.

[50] Edlow JA. Review of studies on pedestrian and bicyclist safety, 1991-2007. *Ann Emerg Med* 2012. Doi: 10.1016/j.annemergmed.2012.07.019.

[51] El-Daly I., Reidy J., Culpan P., Bates P. Thromboprophylaxis in patients with pelvic and acetabular fractures: A short review and recommendations. *Injury* 2013. Doi: 10.1016/j.injury.2013.04.030.

[52] Elmer J., Alam HB., Wilcox SR. Hemoglobin-based oxygen carriers for hemorrhagic shock. *Resuscitation* 2012. Doi: 10.1016/j.resuscitation.2011.09.020.

[53] Essandoh K., Li Y., Huo J., Fan G-C. MiRNA-mediated macrophage polarization and its potential role in the regulation of inflammatory response. *Shock* 2016. Doi: 10.1097/SHK.0000000000000604.

[54] Fattahi F., Zetoune FS., Ward PA. COMPLEMENT AS A MAJOR INDUCER OF HARMFUL EVENTS IN INFECTIOUS SEPSISE. *SHOCK* 2020. Doi: 10.1097/SHK.0000000000001531.

[55] Ferreira J. The Theory is Out There: The Use of ALPHA-2 Agonists in Treatment of Septic Shock. *Shock* 2018. Doi: 10.1097/SHK.0000000000000979.

[56] Figler B., Edward Hoffler C., Reisman W., Jeff Carney K., Moore T., Feliciano D., Master V. Multi-disciplinary update on pelvic fracture associated bladder and urethral injuries. *Injury* 2012. Doi: 10.1016/j.injury.2012.03.031.

[57] Fox EE., Holcomb JB., Wade CE., Bulger EM., Tilley BC. Earlier Endpoints are Required for Hemorrhagic Shock Trials among Severely Injured Patients. *Shock* 2017. Doi: 10.1097/SHK.0000000000000788.

[58] Frumkin K. Rapid Reversal of Warfarin-Associated Hemorrhage in the Emergency Department by Prothrombin Complex Concentrates. *Ann Emerg Med* 2013; 62(6): 616–26. Doi: 10.1016/j.annemergmed.2013.05.026.

[59] Frumkin K., Bloom AS. Ischemic Conditioning: Implications for Emergency Medicine. *Ann Emerg Med* 2016; 68(3): 268–74. Doi: 10.1016/j.annemergmed.2016.02.020.

[60] Fu G., Deng M., Neal MD., Billiar TR., Scott MJ. Platelet-monocyte aggregates: Understanding mechanisms and functions in Sepsis. *Shock* 2021. Doi: 10.1097/SHK.0000000000001619.

[61] Fuller BM., Mohr NM., Hotchkiss RS., Kollef MH. Reducing the burden of acute respiratory distress syndrome: The case for early intervention and the potential role of the emergency department. *Shock* 2013. Doi: 10.1097/SHK.0000000000000142.

[62] Gessner DM., Horn J-L., Lowenberg DW. Pain management in the orthopaedic trauma patient: Non-opioid solutions. *Injury* 2020. Doi: 10.1016/j.injury.2019.04.008.

[63] Geven C., Bergmann A., Kox M., Pickkers P. Vascular effects of adrenomedullin and the anti-adrenomedullin antibody adrecizumab in sepsis. *Shock* 2018. Doi: 10.1097/SHK.0000000000001103.

[64] Gill RS., Bigam DL., Cheung P-Y. The role of cyclosporine in the treatment of myocardial reperfusion injury. *Shock* 2012. Doi: 10.1097/SHK.0b013e31824bc9ab.

[65] Gillani S., Cao J., Suzuki T., Hak DJ. The effect of ischemia reperfusion injury on skeletal muscle. *Injury* 2012. Doi: 10.1016/j.injury.2011.03.008.

[66] Gobatto ALN., Besen BAMP., Azevedo LCP. How can we estimate sepsis incidence and mortality? *Shock* 2017. Doi: 10.1097/SHK.0000000000000703.

[67] Gottlieb M., Koyfman A., Long B. Outpatient Treatment for Low-Risk Febrile Neutropenia. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13847.

[68] Gottlieb M., Koyfman A., Long B. Tranexamic Acid for the Treatment of Epistaxis. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13760.

[69] Gottlieb M., Long B. Diagnostic accuracy of the history, physical examination, and laboratory testing for giant cell arteritis. *Acad Emerg Med* 2021. Doi: 10.1111/acem.14196.

[70] Graham K., Moon-Massat PF., Unger EC. Dodecafluoropentane emulsion (DDFPE) as a resuscitation fluid for treatment of hemorrhagic shock and traumatic brain injury: A review. *Shock* 2019. Doi: 10.1097/SHK.0000000000001060.

[71] Guerado E., Bertrand ML., Cano JR. Management of calcaneal fractures: What have we learnt over the years? *Injury* 2012. Doi: 10.1016/j.injury.2012.05.011.

[72] Guerado E., Cruz E., Cano JR., Crespo P V., Alaminos M., Sanchez-Quevedo MD., Campos A. Bone mineral density aspects in the femoral neck of hip fracture patients. *Inj J CARE Inj* 2016. Doi: 10.1016/S0020-1383(16)30005-5.

[73] Gutierrez-Gomez S., Wahl L., Blecher R., Olewnik., Iwanaga J., Maulucci CM., Dumont AS., Tubbs RS. Sacral fractures: An updated and comprehensive review. *Injury* 2021. Doi: 10.1016/j.injury.2020.11.015.

[74] Hake ME., Young H., Hak DJ., Stahel PF., Hammerberg EM., Mauffrey C. Local antibiotic therapy strategies in orthopaedic trauma: Practical tips and tricks and review of the literature. *Injury* 2015. Doi: 10.1016/j.injury.2015.05.008.

[75] Hamed A., Miller AC. Coadministration of Probiotics With Prescribed Antibiotics for Preventing Clostridium difficile Diarrhea. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13557.

[76] Hanley K., Wittenberg H., Gurjala D., Safir MH., Chen EH. Caring for Transgender Patients: Complications of Gender-Affirming Genital Surgeries. *Ann Emerg Med* 2021; 78(3): 409–15. Doi: 10.1016/j.annemergmed.2021.04.008.

[77] Hanuscin C., Hassel J., Khan A. Ondansetron (Zofran) for Pediatric Gastroenteritis. *Acad Emerg Med* 2021. Doi: 10.1111/acem.14042.

[78] Hartmann C., Radermacher P., Wepler M., Nußbaum B. Non-hemodynamic effects of catecholamines. *Shock* 2017. Doi: 10.1097/SHK.0000000000000879.

[79] Hazeldine J., Hampson P., Lord JM. The impact of trauma on neutrophil function. *Injury* 2014. Doi: 10.1016/j.injury.2014.06.021.

[80] He H., Long Y., Zhou X., Wang X., Zhang H., Chai W., Cui N., Wang H., Liu D. Oxygen-Flow-Pressure Targets for Resuscitation in Critical Hemodynamic Therapy. *Shock* 2018. Doi: 10.1097/SHK.0000000000000929.

[81] Hick JL., Hanfling D., Cantrill S V. Allocating Scarce Resources in Disasters: Emergency Department Principles. *Ann Emerg Med* 2012; 59(3): 177–87. Doi: 10.1016/j.annemergmed.2011.06.012.

[82] Ho AFW., Chong J., Ong MEH., Hausenloy DJ. Remote Ischemic Conditioning in Emergency Medicine - Clinical Frontiers and Research Opportunities. *Shock* 2020. Doi: 10.1097/SHK.0000000000001362.

[83] Ho Y-L., Sales VVTR., Joelsons D. Are early antibiotics important for everyone? *Shock* 2017. Doi: 10.1097/SHK.0000000000000696.

[84] Hodgson C., Carteaux G., Tuxen D V., Davies AR., Pellegrino V., Capellier G., Cooper DJ., Nichol A. Hypoxaemic rescue therapies in acute respiratory distress syndrome: Why, when, what and which one? *Injury* 2013. Doi: 10.1016/j.injury.2012.11.017.

[85] Hooper TJ., De Pasquale M., Strandenes G., Sunde G., Ward KR. Challenges and possibilities in forward resuscitation. *Shock* 2014. Doi: 10.1097/SHK.0000000000000096.

[86] Hooper TJ., Nadler R., Badloe J., Butler FK., Glassberg E. Implementation and execution of military forward resuscitation programs. *Shock* 2014. Doi: 10.1097/SHK.0000000000000081.

[87] Horst TA., Jupiter JB. Stabilisation of distal radius fractures: Lessons learned and future directions. *Injury* 2016. Doi: 10.1016/j.injury.2015.09.030.

[88] Hoskinson S., Morison Z., Shahrokhi S., Schemitsch EH. Managing AVN following internal fixation: Treatment options and clinical results. *Injury* 2015. Doi: 10.1016/j.injury.2014.11.016.

[89] Huang YF., Wang G., Peng TQ. Calpain Activation and Organ Failure in Sepsis: Molecular Insights and Therapeutic Perspectives. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001679.

[90] Hung JF., Cheng PL., Lee YK., Tsai TY. Critical Care Delivery Solutions in the Emergency Department: Evolving Models in Caring for ICU Boarders. *Ann Emerg Med* 2020; 76(6): 729–30. Doi: 10.1016/j.annemergmed.2020.06.023.

[91] Ilgen JS., Humbert AJ., Kuhn G., Hansen ML., Norman GR., Eva KW., Charlin B., Sherbino J. Assessing Diagnostic Reasoning: A Consensus Statement Summarizing Theory, Practice, and Future Needs. *Acad Emerg Med* 2012; 19(12): 1454–61. Doi: https://doi.org/10.1111/acem.12034.

[92] Janicova A., Relja B. Neutrophil Phenotypes and Functions in Trauma and Trauma-Related Sepsis. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001695.

[93] Jayaprakash N., Pflaum-Carlson J., Gardner-Gray J., Hurst G., Coba V., Kinni H., Deledda J. Critical Care Delivery Solutions in the Emergency Department: Evolving Models in Caring for ICU Boarders. *Ann Emerg Med* 2020; 76(6): 709–16. Doi: 10.1016/j.annemergmed.2020.05.007.

[94] Jensen AR., Drucker NA., Khaneki S., Ferkowicz MJ., Yoder MC., Deleon ER., Olson KR., Markel TA. Hydrogen Sulfide: A Potential Novel Therapy for the Treatment of Ischemia. *Shock* 2017. Doi: 10.1097/SHK.0000000000000894.

[95] Jentzer JC., Clements CM., Wright RS., White RD., Jaffe AS. Improving Survival From Cardiac Arrest: A Review of Contemporary Practice and Challenges. *Ann Emerg Med* 2016; 68(6): 678–89. Doi: 10.1016/j.annemergmed.2016.05.022.

[96] Jia H. Pulmonary Angiotensin-Converting Enzyme 2 (ACE2) and Inflammatory Lung Disease. *Shock* 2016. Doi: 10.1097/SHK.0000000000000633.

[97] Johnson-Arbor K., Verstraete R. Bloodless Management of the Anemic Patient in the Emergency Department. *Ann Emerg Med* 2022. Doi: 10.1016/j.annemergmed.2021.06.015.

[98] Jones AE. Lactate clearance for assessing response to resuscitation in severe sepsis. *Acad Emerg Med* 2013. Doi: 10.1111/acem.12179.

[99] Joseph B., Scalea T. THE CONSEQUENCES OF AGING ON THE RESPONSE TO INJURY AND CRITICAL ILLNESS. *SHOCK* 2020. Doi: 10.1097/SHK.0000000000001491.

[100] Kaneki M. METABOLIC INFLAMMATORY COMPLEX IN SEPSIS: SEPTIC CACHEXIA AS A NOVEL POTENTIAL THERAPEUTIC TARGET. *Shock* 2017. Doi: 10.1097/SHK.0000000000000906.

[101] Karantanas AH. What's new in the use of MRI in the orthopaedic trauma patient? *Injury* 2014. Doi: 10.1016/j.injury.2014.01.012.

[102] Kauvar D., Cotton B., Khan M., Perreira B., Brenner M., Ferrada P., Horer T., Kirkpatrick A., Ordonez C., Pirouzram A., et al. Challenges and Opportunities for Endovascular Treatment of Hemorrhage in Combat Casualty Care. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001514.

[103] Kauvar D., Cotton B., Khan M., Perreira B., Brenner M., Ferrada P., Horer T., Kirkpatrick A., Ordonez C., Pirouzram A., et al. Circulatory Trauma: A Paradigm for

Understanding the Role of Endovascular Therapy in Hemorrhage Control. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001513.

[104] Kelly LS., Darden DB., Fenner BP., Efron PA., Mohr AM. The Hematopoietic Stem/Progenitor Cell Response to Hemorrhage, Injury, and Sepsis: A Review of Pathophysiology. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001699.

[105] Kessler DO., Cheng A., Mullan PC. Debriefing in the Emergency Department After Clinical Events: A Practical Guide. *Ann Emerg Med* 2015; 65(6): 690–8. Doi: 10.1016/j.annemergmed.2014.10.019.

[106] Khan MM., Yang W-L., Wang P. Endoplasmic reticulum stress in sepsis. *Shock* 2015. Doi: 10.1097/SHK.0000000000000425.

[107] Khosrojerdi A., Soudi S., Hosseini AZ., Eshghi F., Shafiee A., Hashemi SM. Immunomodulatory and Therapeutic Effects of Mesenchymal Stem Cells on Organ Dysfunction in Sepsis. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001644.

[108] Kinghorn A., Finlayson G., Faulkner A., Riley N. Perilunate Injuries: Current Aspects of Management. *Injury* 2021. Doi: 10.1016/j.injury.2021.09.012.

[109] Klontzas ME., Papadakis GZ., Marias K., Karantanas AH. Musculoskeletal trauma imaging in the era of novel molecular methods and artificial intelligence. *Injury* 2020. Doi: 10.1016/j.injury.2020.09.019.

[110] Kokkalis ZT., Ballas EG., Mavrogenis AF., Soucacos PN. Distal biceps and triceps ruptures. *Injury* 2013. Doi: 10.1016/j.injury.2013.01.003.

[111] Kottke MA., Walters TJ. Where's the Leak in Vascular Barriers? A Review. *Shock* 2016. Doi: 10.1097/SHK.0000000000000666.

[112] Kowalsky DS., Wolfson AB. Topical Antibiotics for Clinical and Microbiologic Cure of Bacterial Conjunctivitis. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13663.

[113] Kusadasi N., Groeneveld ABJ. A perspective on mesenchymal stromal cell transplantation in the treatment of sepsis. *Shock* 2013. Doi: 10.1097/SHK.0000000000000039.

[114] Kwofie K., Wolfson AB. Antibiotics for culture-positive asymptomatic bacteriuria in pregnant women can prevent pyelonephritis. *Acad Emerg Med* 2021. Doi: 10.1111/acem.14227.

[115] Latson GW. Perftoran (Vidaphor)-Introduction to Western medicine. *Shock* 2019. Doi: 10.1097/SHK.0000000000001063.

[116] Leighton JL., You D., Schneider P. Limiting Blood Loss in Orthopaedic Trauma: Strategies and Effects. *Injury* 2020. Doi: 10.1016/j.injury.2020.04.040.

[117] Leite-Avalca MCG., Zampronio A., Lehmann C. Cannabinoid Receptor 1 and 2 Signaling Pathways Involved in Sepsis. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001763.

[118] Leyfman Y., Erick TK., Reddy SS., Galwankar S., Nanayakkara PWB., Di Somma S., Sharma P., Stawicki SP., Chaudry IH. POTENTIAL IMMUNOTHERAPEUTIC TARGETS FOR HYPOXIA DUE TO COVI-FLU. *SHOCK* 2020. Doi: 10.1097/SHK.0000000000001627.

[119] Li JJ., Chao P., Gernsheimer J., Verma R. Octreotide for Gastrointestinal Hemorrhage from Esophageal Varices. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13901.

[120] Li X., Hammer AM., Rendon JL., Choudhry MA. Intestine Immune Homeostasis after Alcohol and Burn Injury. *Shock* 2015. Doi: 10.1097/SHK.0000000000000353.

[121] Liang S. Vaccines for Preventing Influenza in Healthy Individuals. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13668.

[122] Liang SY., Theodoro DL., Schuur JD., Marschall J. Infection Prevention in the Emergency Department. *Ann Emerg Med* 2014; 64(3): 299–313. Doi: 10.1016/j.annemergmed.2014.02.024.

[123] Liu F-C., Chuang Y-H., Tsai Y-F., Yu H-P. Role of neutrophil extracellular traps following injury. *Shock* 2014. Doi: 10.1097/SHK.0000000000000146.

[124] Liu Y., Li YM., Xu DX., Zhang J., Peng ZY. Severe COVID-19: Immunosuppression or Hyperinflammation? *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001724.

[125] Loftus TJ., Efron PA., Moldawer LL., Mohr AM. β-blockade use for traumatic injuries and immunomodulation: A review of proposed mechanisms and clinical evidence. *Shock* 2016. Doi: 10.1097/SHK.0000000000000636.

[126] Long B., Gottlieb M. Higher-dose versus standard-dose prophylactic anticoagulation in hospitalized patients with COVID-19. *Acad Emerg Med* 2022. Doi: 10.1111/acem.14417.

[127] Long B., Gottlieb M. Catheter-directed thrombolysis for prevention of postthrombotic syndrome. *Acad Emerg Med* 2022. Doi: 10.1111/acem.14397.

[128] Long B., Koyfman A., Gottlieb M. Accuracy of Point-of-care Ultrasound for Diagnosing Soft Tissue Abscess. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13881.

[129] Long B., Koyfman A., Gottlieb M. Factors Predicting Difficult Endotracheal Intubation. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13824.

[130] Long B., Koyfman A., Gottlieb M. Lactobacillus reuteri for Treatment of Infant Colic. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13977.

[131] Long B., Koyfman A., Gottlieb M. Retinal Pathology in Patients With Acute-onset Flashes and Floaters. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13813.

[132] Long B., Koyfman A., Gottlieb M. Utility of Spinal Immobilization in Patients With Penetrating Trauma. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13852.

[133] Lopez E., Srivastava AK., Pati S., Holcomb JB., Wade CE. Platelet-derived microvesicles: A potential therapy for trauma-induced coagulopathy. *Shock* 2018. Doi: 10.1097/SHK.0000000000000974.

[134] Luck ME., Herrnreiter CJ., Choudhry MA. Gut Microbial Changes and their Contribution to Post-Burn Pathology. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001736.

[135] Luthringer TA., Fillingham YA., Okroj K., Ward EJ., Della Valle C. Periprosthetic Joint Infection After Hip and Knee Arthroplasty: A Review for Emergency Care Providers. *Ann Emerg Med* 2016; 68(3): 324–34. Doi: 10.1016/j.annemergmed.2016.03.004.

[136] Macias-Konstantopoulos W., Heins A., Sachs CJ., Whiteman PJ., Wingkun NJG., Riviello RJ. Between Emergency Department Visits: The Role of Harm Reduction Programs in Mitigating the Harms Associated With Injection Drug Use. *Ann Emerg Med* 2021; 77(5): 479–92. Doi: 10.1016/j.annemergmed.2020.11.008.

[137] Madathil RJ., Hira RS., Stoeckl M., Sterz F., Elrod JB., Nichol G. Ischemia reperfusion injury as a modifiable therapeutic target for cardioprotection or neuroprotection in patients undergoing cardiopulmonary resuscitation. *Resuscitation* 2016. Doi: 10.1016/j.resuscitation.2016.04.009.

[138] Madurska MJ., Ross JD., Scalea TM., Morrison JJ. State-of-the-Art Review-Endovascular Resuscitation. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001636.

[139] Maegele M., Schöchl H., Cohen MJ. An update on the coagulopathy of trauma. *Shock* 2014. Doi: 10.1097/SHK.0000000000000088.

[140] Maliha G., Morgan J., Vrahas M. Transient osteoporosis of pregnancy. *Injury* 2012. Doi: 10.1016/j.injury.2012.03.009.

[141] Maqungo S., Kauta N., Held M., Mazibuko T., Keel MJ., Laubscher M., Ahmad SS. Gunshot injuries to the lower extremities: Issues, controversies and algorithm of management. *Injury* 2020. Doi: 10.1016/j.injury.2020.05.024.

[142] Martin TJ., Eltorai AS., Dunn R., Varone A., Joyce MF., Kheirbek T., Adams Jr. C., Daniels AH., Eltorai AEM. Clinical management of rib fractures and methods for prevention of pulmonary complications: A review. *Injury* 2019. Doi: 10.1016/j.injury.2019.04.020.

[143] Mazzeffi MA., Chow JH., Tanaka K. COVID-19 Associated Hypercoagulability: Manifestations, Mechanisms, and Management. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001660.

[144] McGee WT., Raghunathan K., Adler AC. Utility of functional hemodynamics and echocardiography to aid diagnosis and management of shock. *Shock* 2015. Doi: 10.1097/SHK.0000000000000472.

[145] Medby C. Is there a place for crystalloids and colloids in remote damage control resuscitation? *Shock* 2014. Doi: 10.1097/SHK.0000000000000117.

[146] Mendes P V., Zampieri FG., Park M. Is there a role for balanced solutions in septic patients? *Shock* 2017. Doi: 10.1097/SHK.0000000000000697.

[147] Metsemakers WJ., Kuehl R., Moriarty TF., Richards RG., Verhofstad MHJ., Borens O., Kates S., Morgenstern M. Infection after fracture fixation: Current surgical and microbiological concepts. *Injury* 2018. Doi: 10.1016/j.injury.2016.09.019.

[148] Meyers L., Frawley T., Goss S., Kang C. Ebola Virus Outbreak 2014: Clinical Review for Emergency Physicians. *Ann Emerg Med* 2015; 65(1): 101–8. Doi: 10.1016/j.annemergmed.2014.10.009.

[149] Michael GE., Jesus JE. Treatment of Potential Organ Donors in the Emergency Department: A Review. *Ann Emerg Med* 2012; 60(4): 485–91. Doi: 10.1016/j.annemergmed.2012.04.018.

[150] Michalowitz A., Yang J., Castaneda P., Litrenta J. Existing and emerging methods of diagnosis and monitoring of pediatric musculoskeletal infection. *Injury* 2020. Doi: 10.1016/j.injury.2020.06.020.

[151] Miller JB., Heitsch L., Madsen TE., Oostema J., Reeves M., Zammit CG., Sabagha N., Sozener C., Lewandowski C., Schrock JW. The Extended Treatment Window's Impact on Emergency Systems of Care for Acute Stroke. *Acad Emerg Med* 2019; 26(7): 744–51. Doi: https://doi.org/10.1111/acem.13698.

[152] Moellman JJ., Bernstein JA., Lindsell C., Banerji A., Busse PJ., Camargo CAJ., Collins SP., Craig TJ., Lumry WR., Nowak R., et al. A consensus parameter for the evaluation and management of angioedema in the emergency department. *Acad Emerg Med Off J Soc Acad Emerg Med* 2014; 21(4): 469–84. Doi: 10.1111/acem.12341.

[153] Molina PE., Sulzer JK., Whitaker AM. Alcohol abuse and the injured host: Dysregulation of counterregulatory mechanisms review. *Shock* 2013. Doi: 10.1097/SHK.0b013e318285b86d.

[154] Mondrinos MJ., Kennedy PA., Lyons M., Deutschman CS., Kilpatrick LE. PROTEIN KINASE C AND ACUTE RESPIRATORY DISTRESS SYNDROME. *SHOCK* 2013. Doi: 10.1097/SHK.0b013e318294f85a.

[155] Morgenstern J., Heitz C., Bond C., Milne WK. Hot Off the Press: Accuracy of Signs and Symptoms for the Diagnosis of Community-acquired Pneumonia. *Acad Emerg Med* 2021. Doi: 10.1111/acem.14102.

[156] Morgenstern M., Kühl R., Eckardt H., Acklin Y., Stanic B., Garcia M., Baumhoer D., Metsemakers W-J. Diagnostic challenges and future perspectives in fracture-related infection. *Injury* 2018. Doi: 10.1016/S0020-1383(18)30310-3.

[157] Mosier JM., Hypes C., Joshi R., Whitmore S., Parthasarathy S., Cairns CB. Ventilator Strategies and Rescue Therapies for Management of Acute Respiratory Failure in the Emergency Department. *Ann Emerg Med* 2015; 66(5): 529–41. Doi: 10.1016/j.annemergmed.2015.04.030.

[158] Moskop JC., Geiderman JM., Marshall KD., McGreevy J., Derse AR., Bookman K., McGrath N., Iserson K V. Another Look at the Persistent Moral Problem of Emergency Department Crowding. *Ann Emerg Med* 2019; 74(3): 357–64. Doi: 10.1016/j.annemergmed.2018.11.029.

[159] Mowafi H., Dworkis D., Bisanzo M., Hansoti B., Seidenberg P., Obermeyer Z., Hauswald M., Reynolds TA. Making Recording and Analysis of Chief Complaint a Priority for Global Emergency Care Research in Low-income Countries. *Acad Emerg Med* 2013; 20(12): 1241–5. doi: https://doi.org/10.1111/acem.12262.

[160] Mu X., Li Y., Fan G-C. Tissue-resident macrophages in the control of infection and resolution of inflammation. *Shock* 2021. Doi: 10.1097/SHK.0000000000001601.

[161] Nannaparaju M., Mortada S., Wiik A., Khan W., Alam M. Posterolateral corner injuries: Epidemiology, anatomy, biomechanics and diagnosis. *Injury* 2018. Doi: 10.1016/j.injury.2017.10.008.

[162] Newman DH., Shreves AE., Runde DP. Pediatric Urinary Tract Infection: Does the Evidence Support Aggressively Pursuing the Diagnosis? *Ann Emerg Med* 2013; 61(5): 559–65. Doi: 10.1016/j.annemergmed.2012.10.034.

[163] Niesler U., Palmer A., Radermacher P., Huber-Lang MS. Role of alveolar macrophages in the inflammatory response after trauma. *Shock* 2014. Doi: 10.1097/SHK.0000000000000167.

[164] Nolan JP., Ornato JP., Parr MJA., Perkins GD., Soar J. Resuscitation highlights in 2020. *Resuscitation* 2021. Doi: 10.1016/j.resuscitation.2021.01.037.

[165] Nolan LS., Wynn JL., Good M. Exploring clinically-relevant experimental models of neonatal shock and necrotizing enterocolitis. *Shock* 2020. Doi: 10.1097/SHK.0000000000001507.

[166] Nolt B., Tu F., Wang X., Ha T., Winter R., Williams DL., Li C. Lactate and Immunosuppression in Sepsis. *Shock* 2018. Doi: 10.1097/SHK.0000000000000958.

[167] Nomellini V., Kaplan LJ., Sims CA., Caldwell CC. Chronic Critical Illness and Persistent Inflammation: What can we Learn from the Elderly, Injured, Septic, and Malnourished? *Shock* 2018. Doi: 10.1097/SHK.0000000000000939.

[168] Ortiz-Diaz E., Lan CK. Intra-abdominal hypertension in medical critically Ill patients: A narrative review. *Shock* 2014. Doi: 10.1097/SHK.0000000000000100.

[169] Osuchowski MF., Aletti F., Cavaillon JM., Flohe SB., Giamarellos-Bourboulis EJ., Huber-Lang M., Relja B., Skirecki T., Szabo A., Maegele M. SARS-COV-2/COVID-19: EVOLVING REALITY, GLOBAL RESPONSE, KNOWLEDGE GAPS, AND OPPORTUNITIES. *SHOCK* 2020. Doi: 10.1097/SHK.0000000000001565.

[170] Owers C., Garner J. Intra-abdominal injury from extra-peritoneal ballistic trauma. *Injury* 2014. Doi: 10.1016/j.injury.2012.07.191.

[171] Pallin DJ., Baugh CW., Postow MA., Caterino JM., Erickson TB., Lyman GH. Immune-related Adverse Events in Cancer Patients. *Acad Emerg Med Off J Soc Acad Emerg Med* 2018; 25(7): 819–27. Doi: 10.1111/acem.13443.

[172] Panwar R. Untreated Relative Hypotension Measured as Perfusion Pressure Deficit During Management of Shock and New-Onset Acute Kidney Injury - A Literature Review. *Shock* 2018. Doi: 10.1097/SHK.0000000000001033.

[173] Patel S., Colaco HB., Elvey ME., Lee MH. Post-traumatic osteonecrosis of the proximal humerus. *Injury* 2015. Doi: 10.1016/j.injury.2015.06.026.

[174] Pati S., Pilia M., Grimsley JM., Karanikas AT., Oyeniyi B., Holcomb JB., Cap AP., Rasmussen TE. Cellular therapies in trauma and critical care medicine: Forging new frontiers. *Shock* 2015. Doi: 10.1097/SHK.0000000000000482.

[175] Patterson TT., Nicholson S., Wallace D., Hawryluk GWJ., Grandhi R. Complex Feed-Forward and Feedback Mechanisms Underlie the Relationship between Traumatic Brain Injury and the Gut-Microbiota-Brain Axis. *Shock* 2019. Doi: 10.1097/SHK.0000000000001278.

[176] Pearce O., Al-Hourani K., Kelly M. Ankle fractures in the elderly: Current concepts. *Injury* 2020. Doi: 10.1016/j.injury.2020.10.093.

[177] Pepe M., Bortone AS., Giordano A., Cecere A., Burattini Md O., Nestola PL., Patti G., Di Cillo O., Signore N., Forleo C., et al. Cardiogenic Shock following Acute Myocardial Infarction: What's New? *Shock* 2020. Doi: 10.1097/SHK.0000000000001377.

[178] Petrone P., Kassimi K., Jiménez-Gómez M., Betancourt A., Axelrad A., Marini CP. Management of esophageal injuries secondary to trauma. *Injury* 2017. Doi: 10.1016/j.injury.2017.06.012.

[179] Pidcoke HF., Spinella PC., Ramasubramanian AK., Strandenes G., Hervig T., Ness PM., Cap AP. Refrigerated platelets for the treatment of acute bleeding: A review of the

literature and reexamination of current standards. *Shock* 2014. Doi: 10.1097/SHK.0000000000000078.

[180] Portela RC., Miller AC. Antivirals With Corticosteroids for the Treatment of Acute Bell's Palsy. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13563.

[181] Pusateri AE., Glassberg E., Weiskopf RB. Reassessment of the need for an oxygen carrier for the treatment of traumatic hemorrhage when blood is not an option. *Shock* 2019. Doi: 10.1097/SHK.0000000000001417.

[182] Putnam J., Wolfson AB. Proton Pump Inhibitors for Stress Ulcer Prophylaxis in Critically Ill Patients. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13914.

[183] Rech MA., Barbas B., Chaney W., Greenhalgh E., Turck C. When to Pick the Nose: Out-of-Hospital and Emergency Department Intranasal Administration of Medications. *Ann Emerg Med* 2017. Doi: 10.1016/j.annemergmed.2017.02.015.

[184] Roach K., Ritchie M., Zehtabchi S. Aspirin for Preventing a First Heart Attack or Stroke. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13808.

[185] Rogers M., Brown R., Stanger S. Frailty in orthopaedics: is age relevant? *Injury* 2020. Doi: 10.1016/j.injury.2020.07.031.

[186] Rogmark C., Kristensen MT., Viberg B., Rönnquist SS., Overgaard S., Palm H. Hip fractures in the non-elderly—Who, why and whither? *Injury* 2018. Doi: 10.1016/j.injury.2018.06.028.

[187] Ronaldi AE., Madurska MJ., Bozzay JD., Polcz JE., Baer DG., Burmeister DM., White PW., Rasmussen TE., White JM. Targeted Regional Optimization: Increasing the Therapeutic Window for Endovascular Aortic Occlusion In Traumatic Hemorrhage. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001814.

[188] Rudnick MR., Blair GJ., Kuschner WG., Barr J. Lactic acidosis and the role of sodium bicarbonate: A narrative opinion. *Shock* 2020. Doi: 10.1097/SHK.0000000000001415.

[189] Ruiz-Castilla M., Roca O., Masclans JR., Barret JP. Recent advances in biomarkers in severe burns. *Shock* 2016. Doi: 10.1097/SHK.0000000000000497.

[190] Sahni V. Maxillofacial trauma scoring systems. *Injury* 2016. Doi: 10.1016/j.injury.2016.02.001.

[191] Salluh JIF., Póvoa P. Corticosteroids in severe sepsis and septic shock: A concise review. *Shock* 2017. Doi: 10.1097/SHK.0000000000000704.

[192] Salomao R., Brunialti MKC., Rapozo MM., Baggio-Zappia GL., Galanos C., Freudenberg M. Bacterial sensing, cell signaling, and modulation of the immune response during sepsis. *Shock* 2012. Doi: 10.1097/SHK.0b013e318262c4b0.

[193] Samraj RS., Zingarelli B., Wong HR. Role of biomarkers in sepsis care. *Shock* 2013. Doi: 10.1097/SHK.0b013e3182a66bd6.

[194] Santos SS., Brunialti MKC., Soriano FG., Szabo C., Salomao R. Repurposing of Clinically Approved Poly-(ADP-Ribose) Polymerase Inhibitors for the Therapy of Sepsis. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001820.

[195] Saugel B., Trepte CJ., Heckel K., Wagner JY., Reuter DA. Hemodynamic Management of Septic Shock: Is It Time for "individualized Goal-Directed Hemodynamic Therapy" and for Specifically Targeting the Microcirculation? *Shock* 2015. Doi: 10.1097/SHK.0000000000000345.

[196] Sawa T., Naito Y., Kato H., Amaya F. Cellular stress responses and monitored cellular activities. *Shock* 2016. Doi: 10.1097/SHK.0000000000000603.

[197] Sayyadioskoie SR., Schwacha MG. Myeloid-Derived Suppressor Cells (MDSCs) and the Immunoinflammatory Response to Injury (Mini Review). *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001795.

[198] Schemitsch C., Nauth A. Psychological factors and recovery from trauma. *Injury* 2020. Doi: 10.1016/j.injury.2019.10.081.

[199] Schmidt AH. Acute compartment syndrome. *Injury* 2017. Doi: 10.1016/j.injury.2017.04.024.

[200] Schmitz GR., Gottlieb M. Managing a Cutaneous Abscess in the Emergency Department. *Ann Emerg Med* 2021. Doi: 10.1016/j.annemergmed.2020.12.003.

[201] Schöchl H., Schlimp CJ., Maegele M. Tranexamic acid, fibrinogen concentrate, and prothrombin complex concentrate: Data to support prehospital use? *Shock* 2014. Doi: 10.1097/SHK.0000000000000093.

[202] Schofield Z V., Woodruff TM., Halai R., Wu MC-L., Cooper MA. Neutrophils - A key component of ischemia-reperfusion injury. *Shock* 2013. Doi: 10.1097/SHK.0000000000000044.

[203] Schurr JW., Szumita PM., Degrado JR. Neuroendocrine Derangements in Early Septic Shock: Pharmacotherapy for Relative Adrenal and Vasopressin Insufficiency. *Shock* 2017. Doi: 10.1097/SHK.0000000000000864.

[204] Seamon MJ., Chovanes J., Fox N., Green R., Manis G., Tsiotsias G., Warta M., Ross SE. The use of emergency department thoracotomy for traumatic cardiopulmonary arrest. *Injury* 2012. Doi: 10.1016/j.injury.2012.04.011.

[205] Self WH., Semler MW., Bellomo R., Brown SM., Deboisblanc BP., Exline MC., Ginde AA., Grissom CK., Janz DR., Jones AE., et al. Liberal Versus Restrictive Intravenous Fluid Therapy for Early Septic Shock: Rationale for a Randomized Trial. *Ann Emerg Med* 2018; 72(4): 457–66. Doi: 10.1016/j.annemergmed.2018.03.039.

[206] Sen Gupta A. Hemoglobin-based oxygen carriers: Current state-of-the-art and novel molecules. *Shock* 2019. Doi: 10.1097/SHK.0000000000001009.

[207] Sepehri A., Slobogean GP. Which study outcomes change practice. *Injury* 2020. Doi: 10.1016/j.injury.2019.10.082.

[208] Serpico M., Riscinti M. Proton Pump Inhibitors for Acute Upper Gastrointestinal Bleeding. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13899.

[209] Shah M., Rajha E., DiNardo C., Muckey E., Wierda WG., Yeung SCJ. Adverse Events of Novel Therapies for Hematologic Malignancies: What Emergency Physicians Should Know. *Ann Emerg Med* 2020; 75(2): 264–86. Doi: 10.1016/j.annemergmed.2019.07.015.

[210] Shandro J., Chisolm-Straker M., Duber HC., Findlay SL., Munoz J., Schmitz G., Stanzer M., Stoklosa H., Wiener DE., Wingkun N. Human Trafficking: A Guide to Identification and Approach for the Emergency Physician. *Ann Emerg Med* 2016. Doi: 10.1016/j.annemergmed.2016.03.049.

[211] Shi C., Li S., Wang Z., Shen H. Prehospital aortic blood flow control techniques for non-compressible traumatic hemorrhage. *Injury* 2021. Doi: 10.1016/j.injury.2021.02.070.

[212] Simon JR., Kraus C., Rosenberg M., Wang DH., Clayborne EP., Derse AR. "Futile Care"-An Emergency Medicine Approach: Ethical and Legal Considerations. *Ann Emerg Med* 2017; 70(5): 707–13. Doi: 10.1016/j.annemergmed.2017.06.005.

[213] Skaugset LM., Farrell S., Carney M., Wolff M., Santen SA., Perry M., Cico SJ. Can You Multitask? Evidence and Limitations of Task Switching and Multitasking in Emergency Medicine. *Ann Emerg Med* 2016; 68(2): 189–95. Doi: 10.1016/j.annemergmed.2015.10.003.

[214] Sniderman J., Henry P. Articular reductions – how close is close enough? A narrative review. *Injury* 2020. Doi: 10.1016/j.injury.2019.10.083.

[215] Spiess BD. Perfluorocarbon emulsions, platelet counts, and inflammation. *Shock* 2019. Doi: 10.1097/SHK.0000000000001154.

[216] Stanley K., Lora M., Merjavy S., Chang J., Arora S., Menchine M., Jacobson KR. HIV Prevention and Treatment: The Evolving Role of the Emergency Department. *Ann Emerg Med* 2017; 70(4): 562–72. Doi: 10.1016/j.annemergmed.2017.01.018.

[217] Stiel L., Meziani F., Helms J. Neutrophil Activation during Septic Shock. *Shock* 2018. Doi: 10.1097/SHK.0000000000000980.

[218] Strandenes G., Berséus O., Cap AP., Hervig T., Reade M., Prat N., Sailliol A., Gonzales R., Simon CD., Ness P., et al. Low titer group o whole blood in emergency situations. *Shock* 2014. Doi: 10.1097/SHK.0000000000000150.

[219] Swol J., Belohlávek J., Brodie D., Bellezzo J., Weingart SD., Shinar Z., Schober A., Bachetta M., Haft JW., Ichiba S., et al. Extracorporeal life support in the emergency department: A narrative review for the emergency physician. *Resuscitation* 2018. Doi: 10.1016/j.resuscitation.2018.10.014.

[220] Tabatabai A., Galvagno SM., O'Connor J V., Scalea TM., Deatrick KB. Extracorporeal Life Support (ECLS): A Review and Focus on Considerations for COVID-19. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001677.

[221] Tepler P., Zehtabchi S. Corticosteroids for Treating Pneumonia. *Acad Emerg Med* 2019. Doi: 10.1111/acem.13678.

[222] Timmermans K., Kox M., Scheffer GJ., Pickkers P. Danger in the intensive care unit: Damps in critically ill patients. *Shock* 2016. Doi: 10.1097/SHK.0000000000000506.

[223] Torres Filho IP. Mini-review: Perfluorocarbons, oxygen transport, and microcirculation in low flow states: In vivo and in vitro studies. *Shock* 2019. Doi: 10.1097/SHK.0000000000000994.

[224] Tortella FC., Leung LY. TRAUMATIC BRAIN INJURY AND POLYTRAUMA IN THEATERS OF COMBAT: THE CASE FOR NEUROTRAUMA RESUSCITATION? *SHOCK* 2015. Doi: 10.1097/SHK.0000000000000380.

[225] Tosounidis TH., Daskalakis II., Giannoudis P V. Fracture blisters: pathophysiology and management. *Injury* 2020. Doi: 10.1016/j.injury.2020.11.059.

[226] Tosounidis TH., Sheikh H., Stone MH., Giannoudis P V. Pain relief management following proximal femoral fractures: Options, issues and controversies. *Injury* 2015. Doi: 10.1016/j.injury.2015.08.014.

[227] Trevelin SC., Carlos D., Beretta M., Da Silva JS., Cunha FQ. Diabetes mellitus and sepsis: A challenging association. *Shock* 2017. Doi: 10.1097/SHK.0000000000000778.

[228] Tuma M., Canestrini S., Alwahab Z., Marshall J. Trauma and endothelial glycocalyx: The microcirculation helmet? *Shock* 2016. Doi: 10.1097/SHK.0000000000000635.

[229] Tyler PD., Yang LM., Snider SB., Lerner AB., Aird WC., Shapiro NI. New Uses for Thromboelastography and Other Forms of Viscoelastic Monitoring in the Emergency Department: A Narrative Review. *Ann Emerg Med* 2021; 77(3): 357–66. Doi: 10.1016/j.annemergmed.2020.07.026.

[230] Tzimenatos L., Nigrovic LE. Managing Diabetic Ketoacidosis in Children. *Ann Emerg Med* 2021. Doi: 10.1016/j.annemergmed.2021.02.028.

[231] Valerio MS., Janakiram NB., Goldman SM., Dearth CL. Pleiotropic actions of Vitamin D in composite musculoskeletal trauma. *Injury* 2020. Doi: 10.1016/j.injury.2020.06.023.

[232] Valesky W., Chow L. Prone Positioning for Acute Respiratory Distress Syndrome in Adults. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13948.

[233] Wardi G., Brice J., Correia M., Liu D., Self M., Tainter C. Demystifying Lactate in the Emergency Department. *Ann Emerg Med* 2020; 75(2): 287–98. Doi: 10.1016/j.annemergmed.2019.06.027.

[234] Watson JJJ., Pati S., Schreiber MA. Plasma transfusion: History, current realities, and novel improvements. *Shock* 2016. Doi: 10.1097/SHK.0000000000000663.

[235] Wei Y., Kim J., Ernits H., Remick D. The septic neutrophil - Friend or foe. *Shock* 2021. Doi: 10.1097/SHK.0000000000001620.

[236] Weingart SD., Levitan RM. Preoxygenation and Prevention of Desaturation During Emergency Airway Management. *Ann Emerg Med* 2012; 59(3): 165–75. Doi: 10.1016/j.annemergmed.2011.10.002.

[237] Welck MJ., Hayes T., Pastides P., Khan W., Rudge B. Stress fractures of the foot and ankle. *Injury* 2017. Doi: 10.1016/j.injury.2015.06.015.

[238] Welck MJ., Zinchenko R., Rudge B. Lisfranc injuries. *Injury* 2015. Doi: 10.1016/j.injury.2014.11.026.

[239] Weniger M., Angele MK., Chaudry IH. The Role and Use of Estrogens Following Trauma. *Shock* 2016. Doi: 10.1097/SHK.0000000000000670.

[240] Westafer LM., Schriger DL. Deconstructing the Network Meta-analysis. *Ann Emerg Med* 2020; 76(1): 31–3. Doi: 10.1016/j.annemergmed.2020.02.019.

[241] Wilcox SR., Kabrhel C., Channick RN. Pulmonary hypertension and right ventricular failure in emergency medicine. *Ann Emerg Med* 2015. Doi: 10.1016/j.annemergmed.2015.07.525.

[242] Winkler MS., Nierhaus A., Poppe A., Greiwe G., Gräler MH., Daum G. Sphingosine-1-Phosphate: A Potential Biomarker and Therapeutic Target for Endothelial Dysfunction and Sepsis? *Shock* 2017. Doi: 10.1097/SHK.0000000000000814.

[243] Wolf A., Lusczek ER., Beilman GJ. Hibernation-Based Approaches in the Treatment of Hemorrhagic Shock. *Shock* 2018. Doi: 10.1097/SHK.0000000000001094.

[244] Wu F., Chipman A., Pati S., Miyasawa B., Corash L., Kozar RA. Resuscitative Strategies to Modulate the Endotheliopathy of Trauma: From Cell to Patient. *SHOCK* 2020. Doi: 10.1097/SHK.0000000000001378.

[245] Wu PE., Juurlink DN. Clinical Review: Loperamide Toxicity. *Ann Emerg Med* 2017; 70(2): 245–52. Doi: 10.1016/j.annemergmed.2017.04.008.

[246] Yepuri N., Dhawan R., Cooney M., Pruekprasert N., Meng Q., Cooney RN. Sparstolonin B: A Unique Anti-Inflammatory Agent. *Shock* 2019. Doi: 10.1097/SHK.0000000000001326.

[247] Yi C., Hak DJ. Traumatic spinopelvic dissociation or U-shaped sacral fracture: A review of the literature. *Injury* 2012. Doi: 10.1016/j.injury.2010.12.011.

[248] Zampieri FG., Mazza B. Mechanical ventilation in sepsis: A reappraisal. *Shock* 2017. Doi: 10.1097/SHK.0000000000000702.

[249] Zampieri FG., Park M., Azevedo LCP. Colloids in sepsis: Evenly distributed molecules surrounded by uneven questions. *Shock* 2013. Doi: 10.1097/SHK.0b013e31828faf82.

[250] Zeineddin A., Dong JF., Wu F., Terse P., Kozar RA. Role of Von Willebrand Factor after Injury: It May Do More Than We Think. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001690.

[251] Zhang MQ., Macala KF., Fox-Robichaud A., Mendelson AA., Lalu MM. Sex- and Gender-Dependent Differences in Clinical and Preclinical Sepsis. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001717.

[252] Zhang R-W., Liu L-L., Zeng L-L., Li R-J., Shen Y-H., Zhang B., Liu Z-Z., Chen M-F., Jiang S-M., Jiang L-B., et al. Atrial Natriuretic Peptide: A Potential Early Therapy for the Prevention of Multiple Organ Dysfunction Syndrome Following Severe Trauma. *Shock* 2018. Doi: 10.1097/SHK.0000000000000947.

[253] Zhou H., Fan EK., Fan J. Cell-cell interaction mechanisms in acute lung injury. *Shock* 2021. Doi: 10.1097/SHK.0000000000001598.

## International reviews: non-systematic review methods

[1] Al-Qattan MM., Al-Qattan AM. A review of phalangeal neck fractures in children. *Injury* 2015. Doi: 10.1016/j.injury.2015.02.018.

[2] Alexander AJ., Dark C. Freestanding Emergency Departments: What Is Their Role in Emergency Care? *Ann Emerg Med* 2019; 74(3): 325–31. Doi: 10.1016/j.annemergmed.2019.03.018.

[3] Anagnostou E., Larentzakis A., Vassiliu P. Trauma system in Greece: Quo Vadis? *Injury* 2018. Doi: 10.1016/j.injury.2018.05.022.

[4] Andersen LW., Lind PC., Vammen L., Høybye M., Holmberg MJ., Granfeldt A. Adult post-cardiac arrest interventions: An overview of randomized clinical trials. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2019.12.003.

[5] Andrew Koman L. Management of upper extremity arterial penetrating vascular trauma. *Injury* 2021. Doi: 10.1016/j.injury.2021.10.001.

[6] Arulkumaran N., Deutschman CS., Pinsky MR., Zuckerbraun B., Schumacker PT., Gomez H., Gomez A., Murray P., Kellum JA. Mitochondrial function in sepsis. *Shock* 2016. Doi: 10.1097/SHK.0000000000000463.

[7] Arulkumaran N., Suleman R., Ball J. Use of ice-cold crystalloid for inducing mild therapeutic hypothermia following out-of-hospital cardiac arrest. *Resuscitation* 2012. Doi: 10.1016/j.resuscitation.2011.10.002.

[8] Atzema CL., Maclagan LC. The Transition of Care Between Emergency Department and Primary Care: A Scoping Study. *Acad Emerg Med Off J Soc Acad Emerg Med* 2017; 24(2): 201–15. Doi: 10.1111/acem.13125.

[9] Baertl S., Alt V., Rupp M. Surgical enhancement of fracture healing – operative vs. nonoperative treatment. *Injury* 2021. Doi: 10.1016/j.injury.2020.11.049.

[10] Becker TK., Hansoti B., Bartels S., Bisanzo M., Jacquet GA., Lunney K., Marsh R., Osei-Ampofo M., Trehan I., Lam C., et al. Global Emergency Medicine: A Review of the Literature From 2015. *Acad Emerg Med* 2016; 23(10): 1183–91. Doi: 10.1111/acem.12999.

[11] Becker TK., Bartels S., Hansoti B., Jacquet GA., Lunney K., Marsh R., Osei-Ampofo M., Lam C., Levine AC. Global emergency medicine: a review of the literature from 2014. *Acad Emerg Med Off J Soc Acad Emerg Med* 2015; 22(8): 976–84. Doi: 10.1111/acem.12733.

[12] Becker TK., Hansoti B., Bartels S., Hayward AS., Hexom BJ., Lunney KM., Marsh RH., Osei-Ampofo M., Trehan I., Chang J., et al. Global Emergency Medicine: A Review of the Literature From 2016. *Acad Emerg Med Off J Soc Acad Emerg Med* 2017; 24(9): 1150–60. Doi: 10.1111/acem.13216.

[13] Becker TK., Jacquet GA., Marsh R., Schroeder ED., Bartels S., Duber HC., Cockrell H., Levine AC. Global emergency medicine: a review of the literature from 2013. *Acad Emerg Med Off J Soc Acad Emerg Med* 2014; 21(7): 810–7. Doi: 10.1111/acem.12414.

[14] Becker TK., Trehan I., Hayward AS., Hexom BJ., Kivlehan SM., Lunney KM., Modi P., Osei-Ampofo M., Pousson A., Cho DK., et al. Global Emergency Medicine: A Review of the Literature From 2017. *Acad Emerg Med Off J Soc Acad Emerg Med* 2018; 25(11): 1287–98. Doi: 10.1111/acem.13456.

[15] Beed M., de Beer T., Brindley PG. Two decades of British newspaper coverage regarding do not attempt cardiopulmonary resuscitation decisions: Lessons for clinicians. *Resuscitation* 2015. Doi: 10.1016/j.resuscitation.2014.10.002.

[16] Bierens J., Abelairas-Gomez C., Barcala Furelos R., Beerman S., Claesson A., Dunne C., Elsenga HE., Morgan P., Mecrow T., Pereira JC., et al. Resuscitation and emergency care in drowning: A scoping review. *Resuscitation* 2021. Doi: 10.1016/j.resuscitation.2021.01.033.

[17] Black JA., Pierce VS., Juneja K., Holcomb JB. Complications of Hemorrhagic Shock and Massive Transfusion-a Comparison Before and After the Damage Control Resuscitation Era. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001676.

[18] Brill JB., Brenner M., Duchesne J., Roberts D., Ferrada P., Horer T., Kauvar D., Khan M., Kirkpatrick A., Ordonez C., et al. The Role of TEG and ROTEM in Damage Control Resuscitation. *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001686.

[19] Brown MD., Burton JH., Nazarian DJ., Promes SB. Clinical Policy: Use of Intravenous Tissue Plasminogen Activator for the Management of Acute Ischemic Stroke in the Emergency Department. *Ann Emerg Med* 2015; 66(3): 322–33. Doi: 10.1016/j.annemergmed.2015.06.031.

[20] Brown MD., Burton JH., Nazarian DJ., Promes SB. Clinical Policy: Use of Intravenous Tissue Plasminogen Activator for the Management of Acute Ischemic Stroke in the Emergency Department from the. *Ann Emerg Med* 2015. Doi: 10.1016/j.annemergmed.2015.06.031.

[21] Brown MD., Byyny R., Diercks DB., Gemme SR., Gerardo CJ., Godwin SA., Hahn SA., Hatten BW., Haukoos JS., Ingalsbe GS., et al. Clinical Policy: Emergency Department Management of Patients Needing Reperfusion Therapy for Acute ST-Segment Elevation Myocardial Infarction. *Ann Emerg Med* 2017. Doi: 10.1016/j.annemergmed.2017.09.035.

[22] Brown MD., Byyny R., Diercks DB., Gemme SR., Gerardo CJ., Godwin SA., Hahn SA., Hatten BW., Haukoos JS., Ingalsbe GS., et al. Clinical Policy: Critical Issues in the Diagnosis and Management of the Adult Psychiatric Patient in the Emergency Department. *Ann Emerg Med* 2017. Doi: 10.1016/j.annemergmed.2017.01.036.

[23] Cantrill S V., Brown MD., Carlisle RJ., Delaney KA., Hays DP., Nelson LS., O'Connor RE., Papa A., Sporer KA., Todd KH., et al. Clinical policy: Critical issues in the prescribing of opioids for adult patients in the emergency department. *Ann Emerg Med* 2012. Doi: 10.1016/j.annemergmed.2012.06.013.

[24] Carpenter CR., Hammouda N., Linton EA., Doering M., Ohuabunwa UK., Ko KJ., Hung WW., Shah MN., Lindquist LA., Biese K., et al. Delirium Prevention, Detection, and Treatment in Emergency Medicine Settings: A Geriatric Emergency Care Applied Research (GEAR) Network Scoping Review and Consensus Statement. *Acad Emerg Med* 2021; 28(1): 19–35. Doi: https://doi.org/10.1111/acem.14166.

[25] Carpenter CR., Mudd PA., West CP., Wilber E., Wilber ST. Diagnosing COVID-19 in the Emergency Department: A Scoping Review of Clinical Examinations, Laboratory Tests, Imaging Accuracy, and Biases. *Acad Emerg Med* 2020; 27(8): 653–70. Doi: https://doi.org/10.1111/acem.14048.

[26] Chalkias A., Fanos V., Noto A., Castrén M., Gulati A., Svavarsdóttir H., Iacovidou N., Xanthos T. 1H NMR-metabolomics: Can they be a useful tool in our understanding of cardiac arrest? *Resuscitation* 2014. Doi: 10.1016/j.resuscitation.2014.01.025.

[27] Challoumas D., Dimitrakakis G. Advances in the treatment of blunt thoracic aortic injuries. *Injury* 2015. Doi: 10.1016/j.injury.2014.10.065.

[28] Chang BP., Wira C., Miller J., Akhter M., Barth BE., Willey J., Nentwich L., Madsen T. Neurology Concepts: Young Women and Ischemic Stroke-Evaluation and Management in the Emergency Department. *Acad Emerg Med* 2018; 25(1): 54–64. Doi: 10.1111/acem.13243.

[29] Chawla LS., Fink M., Goldstein SL., Opal S., Gómez A., Murray P., Gómez H., Kellum JA. The epithelium as a target in sepsis. *Shock* 2016. Doi: 10.1097/SHK.0000000000000518.

[30] Cognat E., Koehl B., Lilamand M., Goutagny S., Belbachir A., de Charentenay L., Guiddir T., Zetlaoui P., Roos C., Paquet C. Preventing Post-Lumbar Puncture Headache. *Ann Emerg Med* 2021; 78(3): 443–50. Doi: 10.1016/j.annemergmed.2021.02.019.

[31] Cohn B. Are prophylactic antibiotics necessary for anterior nasal packing in epistaxis? *Ann Emerg Med* 2015. Doi: 10.1016/j.annemergmed.2014.08.011.

[32] Cohn B. Can bedside oculomotor (HINTS) testing differentiate central from peripheral causes of vertigo? *Ann Emerg Med* 2014. Doi: 10.1016/j.annemergmed.2014.01.010.

[33] Considine J., Gazmuri RJ., Perkins GD., Kudenchuk PJ., Olasveengen TM., Vaillancourt C., Nishiyama C., Hatanaka T., Mancini ME., Chung SP., et al. Chest compression components (rate, depth, chest wall recoil and leaning): A scoping review. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2019.08.042.

[34] Costello L-AS., Lithander FE., Gruen RL., Williams LT. Nutrition therapy in the optimisation of health outcomes in adult patients with moderate to severe traumatic brain injury: Findings from a scoping review. *Injury* 2014. Doi: 10.1016/j.injury.2014.06.004.

[35] Coster JE., Turner JK., Bradbury D., Cantrell A. Why Do People Choose Emergency and Urgent Care Services? A Rapid Review Utilizing a Systematic Literature Search and Narrative Synthesis. *Acad Emerg Med* 2017; 24(9): 1137–49. Doi: https://doi.org/10.1111/acem.13220.

[36] Dalle Ave AL., Shaw DM., Gardiner D. Extracorporeal membrane oxygenation (ECMO) assisted cardiopulmonary resuscitation or uncontrolled donation after the circulatory determination of death following out-of-hospital refractory cardiac arrest—An ethical analysis of an unresolved clinical dilem. *Resuscitation* 2016. Doi: 10.1016/j.resuscitation.2016.07.003.

[37] De Souza DC., Barreira ER., Faria LS. The epidemiology of sepsis in childhood. *Shock* 2017. Doi: 10.1097/SHK.0000000000000699.

[38] Deiorio NM., Fitch MT., Jung JLN., Promes SB., Thibodeau LG., Woolley WL., Gisondi MA., Gruppen LD. Evaluating Educational Interventions in Emergency Medicine. *Acad Emerg Med* 2012. Doi: 10.1111/acem.12022.

[39] Dickert NW., Metz K., Fetters MD., Haggins AN., Harney DK., Speight CD., Silbergleit R. Meeting unique requirements: Community consultation and public disclosure for research in emergency setting using exception from informed consent. *Acad Emerg Med Off J Soc Acad Emerg Med* 2021; 28(10): 1183–94. Doi: 10.1111/acem.14264.

[40] Dieltjens T., De Buck E., Verstraeten H., Adriaenssens L., Clarysse M., Moens O., Devreker A., Bastiaen M., Claessens C., Verhelst K. Evidence-based recommendations on automated external defibrillator training for children and young people in Flanders-Belgium. *Resuscitation* 2013. Doi: 10.1016/j.resuscitation.2013.03.025.

[41] Diercks DB., Promes SB., Schuur JD., Shah K., Valente JH., Cantrill S V. Clinical policy: Critical issues in the evaluation and management of adult patients with suspected acute nontraumatic thoracic aortic dissection from the american college of emergency physicians clinical policies subcommittee (writing committee) on thorac. *Ann Emerg Med* 2015. Doi: 10.1016/j.annemergmed.2014.11.002.

[42] Diercks DB., Promes SB., Schuur JD., Shah K., Valente JH., Cantrill S V., Clin ACEP. Clinical Policy: Critical Issues in the Evaluation and Management of Adult Patients With Suspected Acute Nontraumatic Thoracic Aortic Dissection. *Ann Emerg Med* 2015; 65(1): 32–42. Doi: 10.1016/j.annemergmed.2014.11.002.

[43] Dodd A., Hughes A., Sargant N., Whyte AF., Soar J., Turner PJ. Evidence update for the treatment of anaphylaxis. *Resuscitation* 2021. Doi: 10.1016/j.resuscitation.2021.04.010.

[44] Douma MJ., Graham TAD., Ali S., Dainty KN., Bone A., Smith KE., Dennet L., Brindley PG., Kroll T., Frazer K. What are the care needs of families experiencing cardiac arrest?: A survivor and family led scoping review. *Resuscitation* 2021. Doi: 10.1016/j.resuscitation.2021.09.019.

[45] Douma MJ., MacKenzie E., Loch T., Tan MC., Anderson D., Picard C., Milovanovic L., O'Dochartaigh D., Brindley PG. Prone cardiopulmonary resuscitation: A scoping and expanded grey literature review for the COVID-19 pandemic. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2020.07.010.

[46] Ducasse J., Dehours E., Cerfon VH., Bounes V. Review of Emergency Medicine Publications: Methodology, Ethics and Setting. *Ann Emerg Med* 2012; 60(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S42–S42. Doi: 10.1016/j.annemergmed.2012.06.092.

[47] Edlow JA. Clinical policy: Use of intravenous tPA for the management of acute ischemic stroke in the emergency department. *Ann Emerg Med* 2013. Doi: 10.1016/j.annemergmed.2012.11.005.

[48] El-Menyar A., Mekkodathil A., Abdelrahman H., Latifi R., Galwankar S., Al-Thani H., Rizoli S. Review of Existing Scoring Systems for Massive Blood Transfusion in Trauma Patients: Where Do We Stand? *Shock* 2019. Doi: 10.1097/SHK.0000000000001359.

[49] Etchill EW., Myers SP., Raval JS., Hassoune A., Sengupta A., Neal MD. Platelet Transfusion in Critical Care and Surgery: Evidence-Based Review of Contemporary Practice and Future Directions. *Shock* 2017. Doi: 10.1097/SHK.0000000000000794.

[50] Fallat ME., Cooper A., Salomone J., Mooney D., Scherer LRT., Wesson D., Bulger E., Adelson PD., Benjamin L., Gerardi M., et al. Withholding or Termination of Resuscitation in Pediatric Out-of-Hospital Traumatic Cardiopulmonary Arrest. *Ann Emerg Med* 2014; 63(4): 504–15. Doi: 10.1016/j.annemergmed.2014.01.013.

[51] Farrell SE., Kuhn GJ., Coates WC., Shayne PH., Fisher J., Maggio LA., Lin M. Critical appraisal of emergency medicine education research: the best publications of 2013. *Acad Emerg Med Off J Soc Acad Emerg Med* 2014; 21(11): 1274–83. Doi: 10.1111/acem.12507.

[52] Finkelstein SA., Cortel-LeBlanc MA., Cortel-LeBlanc A., Stone J. Functional neurological disorder in the emergency department. *Acad Emerg Med Off J Soc Acad Emerg Med* 2021; 28(6): 685–96. Doi: 10.1111/acem.14263.

[53] Fisher J., Lin M., Coates WC., Kuhn GJ., Farrell SE., Maggio LA., Shayne P. Critical appraisal of emergency medicine educational research: the best publications of 2011. *Acad Emerg Med Off J Soc Acad Emerg Med* 2013; 20(2): 200–8. Doi: 10.1111/acem.12070.

[54] Flowerdew L., Brown R., Vincent C., Woloshynowych M. Identifying Nontechnical Skills Associated With Safety in the Emergency Department: A Scoping Review of the

Literature. *Ann Emerg Med* 2012; 59(5): 386–94. Doi: 10.1016/j.annemergmed.2011.11.021.

[55] Fouche PF., Carlson JN., Ghosh A., Zverinova KM., Doi SA., Rittenberger JC. Frequency of adjustment with comorbidity and illness severity scores and indices in cardiac arrest research. *Resuscitation* 2017. Doi: 10.1016/j.resuscitation.2016.10.020.

[56] Franklin BJ., Vakili S., Huckman RS., Hosein S., Falk N., Cheng K., Murray M., Harris S., Morris CA., Goralnick E. The Inpatient Discharge Lounge as a Potential Mechanism to Mitigate Emergency Department Boarding and Crowding. *Ann Emerg Med* 2020; 75(6): 704–14. Doi: 10.1016/j.annemergmed.2019.12.002.

[57] Gaieski DF., Neumar RW., Fuchs B., Abella BS., Kolansky D., Delfin G., Leary M., Goyal M. Haemodynamic management strategies are not explicitly defined in the majority of therapeutic hypothermia implementation studies. *Resuscitation* 2012. Doi: 10.1016/j.resuscitation.2011.12.016.

[58] Gallo L., Hua ND., Mercuri M., Silveira A., Worster A., BEEM. Adherence to Standards for Reporting Diagnostic Accuracy in Emergency Medicine Research. *Acad Emerg Med* 2017; 24(8): 914–9. Doi: 10.1111/acem.13233.

[59] Godwin SA., Burton JH., Gerardo CJ., Hatten BW., Mace SE., Silvers SM., Fesmire FM. Clinical Policy: Procedural Sedation and Analgesia in the Emergency Department. *Ann Emerg Med* 2014; 63(2): 247–58. Doi: 10.1016/j.annemergmed.2013.10.015.

[60] Godwin SA., Cherkas DS., Panagos PD., Shih RD., Byyny R., Wolf SJ., Carpenter CR., Diercks DB., Gemme SR., Gerardo CJ., et al. Clinical Policy: Critical Issues in the Evaluation and Management of Adult Patients Presenting to the Emergency Department With Acute Headache Approved by the ACEP Board of Directors June 26, 2019 Clinical Policy Endorsed by the Emergency Nurses Associati. *Ann Emerg Med* 2019. Doi: 10.1016/j.annemergmed.2019.07.009.

[61] Gordon L., Paal P., Ellerton JA., Brugger H., Peek GJ., Zafren K. Delayed and intermittent CPR for severe accidental hypothermia. *Resuscitation* 2015. Doi: 10.1016/j.resuscitation.2015.02.017.

[62] Gottlieb M., Khishfe B. Are Antibiotics Necessary for Dental Pain Without Overt Infection? *Ann Emerg Med* 2017. Doi: 10.1016/j.annemergmed.2016.08.006.

[63] Gottlieb M., Khishfe B. Idarucizumab for the Reversal of Dabigatran. *Ann Emerg Med* 2017; 69(5): 554–8. Doi: 10.1016/j.annemergmed.2016.11.025.

[64] Gottlieb M., Russell FM. How Safe Is the Ultrasonographically Guided Peripheral Internal Jugular Line? *Ann Emerg Med* 2018. Doi: 10.1016/j.annemergmed.2017.08.047.

[65] Green SM., Norse AB., Jackson BF., Carman MJ., Roback MG. Regulatory Challenges to Emergency Medicine Procedural Sedation. *Ann Emerg Med* 2021; 77(1): 91–102. Doi: 10.1016/j.annemergmed.2020.08.004.

[66] Green SM., Roback MG. Is the Mallampati Score Useful for Emergency Department Airway Management or Procedural Sedation? *Ann Emerg Med* 2019; 74(2): 251–9. Doi: 10.1016/j.annemergmed.2018.12.021.

[67] Greif R., Bhanji F., Bigham BL., Bray J., Breckwoldt J., Cheng A., Duff JP., Gilfoyle E., Hsieh M-J., Iwami T., et al. Education, Implementation, and Teams: 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2020.09.014.

[68] Gul SS., Cohen SA., Avery L., Balakrishnan MP., Balu R., Chowdhury MAB., Crabb D., Huesgen KW., Hwang CW., Maciel CB., et al. Cardiac arrest: An interdisciplinary review of the literature from 2018. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2019.12.030.

[69] Gultekin R., Huang S., Clavisi O., Pattuwage L., König TC., Gruen R. Pharmacological interventions in traumatic brain injury: Can we rely on systematic reviews for evidence? *Injury* 2016. Doi: 10.1016/j.injury.2015.10.011.

[70] Gurley KL., Edlow JA. Avoiding Misdiagnosis in Patients With Posterior Circulation Ischemia: A Narrative Review. *Acad Emerg Med* 2019; 26(11): 1273–84. Doi: 10.1111/acem.13830.

[71] Hahn DK., Geocadin RG., Greer DM. Quality of evidence in studies evaluating neuroimaging for neurologic prognostication in adult patients resuscitated from cardiac arrest. *Resuscitation* 2014. Doi: 10.1016/j.resuscitation.2013.10.031.

[72] Hahn SA., Lavonas EJ., Mace SE., Napoli AM., Fesmire FM., Phys ACE. Clinical Policy: Critical Issues in the Initial Evaluation and Management of Patients Presenting to the Emergency Department in Early Pregnancy. *Ann Emerg Med* 2012; 60(3): 381–90. Doi: 10.1016/j.annemergmed.2012.04.021.

[73] Hammouda N., Carpenter CR., Hung WW., Lesser A., Nyamu S., Liu S., Gettel CJ., Malsch A., Castillo EM., Forrester S., et al. Moving the needle on fall prevention: A Geriatric Emergency Care Applied Research (GEAR) Network scoping review and consensus statement. *Acad Emerg Med* 2021; 28(11): 1214–27. Doi: https://doi.org/10.1111/acem.14279.

[74] Hartling L., Milne A., Foisy M., Lang ES., Sinclair D., Klassen TP., Evered L. What Works and What's Safe in Pediatric Emergency Procedural Sedation: An Overview of Reviews. *Acad Emerg Med Off J Soc Acad Emerg Med* 2016; 23(5): 519–30. Doi: 10.1111/acem.12938.

[75] Harvey PR., Higenbottam C V., Owen A., Hulme J., Bion JF. Peer-led training and assessment in basic life support for healthcare students: Synthesis of literature review and fifteen years practical experience. *Resuscitation* 2012. Doi: 10.1016/j.resuscitation.2012.01.013.

[76] Harvey V., Perrone J., Kim P. Does the use of tranexamic acid improve trauma mortality? *Ann Emerg Med* 2014. Doi: 10.1016/j.annemergmed.2013.08.028.

[77] Hatten BW., Cantrill S V., Dubin JS., Ketcham EM., Runde DP., Wall SP., Wolf SJ. Clinical Policy: Critical Issues Related to Opioids in Adult Patients Presenting to the Emergency Department. *Ann Emerg Med* 2020; 76(3): e13–39. Doi: 10.1016/j.annemergmed.2020.06.049.

[78] Haverkamp FJC., Giesbrecht GG., Tan ECTH. The prehospital management of hypothermia — An up-to-date overview. *Injury* 2018. Doi: 10.1016/j.injury.2017.11.001.

[79] Hawk K., Hoppe J., Ketcham E., LaPietra A., Moulin A., Nelson L., Schwarz E., Shahid S., Stader D., Wilson MP., et al. Consensus Recommendations on the Treatment of Opioid Use Disorder in the Emergency Department. *Ann Emerg Med* 2021; 78(3): 434–42. Doi: 10.1016/j.annemergmed.2021.04.023.

[80] Hawkes CP., Ryan CA., Dempsey EM. Comparison of the T-piece resuscitator with other neonatal manual ventilation devices: A qualitative review. *Resuscitation* 2012. Doi: 10.1016/j.resuscitation.2011.12.020.

[81] Hawkes GA., Kelleher J., Ryan CA., Dempsey EM. A review of carbon dioxide monitoring in preterm newborns in the delivery room. *Resuscitation* 2014. Doi: 10.1016/j.resuscitation.2014.07.012.

[82] Heitz CR., Coates W., Farrell SE., Fisher J., Juve AM., Yarris LM. Critical Appraisal of Emergency Medicine Educational Research: The Best Publications of 2015. *Acad Emerg Med* 2017; 24(10): 1212–25. Doi: 10.1111/acem.13305.

[83] Herren C., Sobottke R., Dadgar A., Ringe MJ., Graf M., Keller K., Eysel P., Mallmann P., Siewe J. Peripartum pubic symphysis separation - Current strategies in diagnosis and therapy and presentation of two cases. *Injury* 2015. Doi: 10.1016/j.injury.2015.02.030.

[84] Hirner SM., Pigoga JL., Naidoo A V., Hynes EJC., Omer YO., Wallis LA., Bills CB. Potential Solutions For Screening, Triage, And Severity Scoring Of Suspected COVID-19 Positive Patients In Low-Resource Settings: A Scoping Review. *Ann Emerg Med* 2021; 78(2 MA-101): S46–S46.

[85] Ho G., Tantigate D., Kirschenbaum J., Greisberg JK., Vosseller JT. Increasing age in Achilles rupture patients over time. *Inj J CARE Inj* 2017. Doi: 10.1016/j.injury.2017.04.007.

[86] Horst JA., Trehan I., Warner BW., Cohn BG. Can children with uncomplicated acute appendicitis be treated with antibiotics instead of an appendectomy? *Ann Emerg Med* 2015. Doi: 10.1016/j.annemergmed.2015.01.025.

[87] Huff JS., Melnick ER., Tomaszewski CA., Thiessen MEW., Jagoda AS., Fesmire FM., Bernstein D., Brecher D., Brown MD., Burton JH., et al. Clinical Policy: Critical Issues in the Evaluation and Management of Adult Patients Presenting to the Emergency Department With Seizures. *Ann Emerg Med* 2014; 63(4): 437–47. Doi: 10.1016/j.annemergmed.2014.01.018.

[88] Ince C., Mayeux PR., Nguyen T., Gomez H., Kellum JA., Ospina-Tascón GA., Hernandez G., Murray P., De Backer D. The endothelium in sepsis. *Shock* 2016. Doi: 10.1097/SHK.0000000000000473.

[89] Jacquet GA., Foran M., Bartels S., Becker TK., Schroeder ED., Duber HC., Goldberg E., Cockrell H., Levine AC., Literature GEM. Global Emergency Medicine: A Review of the Literature From 2012. *Acad Emerg Med* 2013; 20(8): 835–43. Doi: 10.1111/acem.12173.

[90] Jun S., Plint AC., Campbell SM., Curtis S., Sabir K., Newton AS. Point-of-care Cognitive Support Technology in Emergency Departments: A Scoping Review of Technology Acceptance by Clinicians. *Acad Emerg Med* 2018; 25(5): 494–507. Doi: https://doi.org/10.1111/acem.13325.

[91] Keeves J., Ekegren CL., Beck B., Gabbe BJ. The relationship between geographic location and outcomes following injury: A scoping review. *Injury* 2019. Doi: 10.1016/j.injury.2019.07.013.

[92] Keijzer HM., Hoedemaekers CWE., Meijer FJA., Tonino BAR., Klijn CJM., Hofmeijer J. Brain imaging in comatose survivors of cardiac arrest: Pathophysiological correlates and prognostic properties. *Resuscitation* 2018. Doi: 10.1016/j.resuscitation.2018.09.012.

[93] Keil LG., Platts-Mills TF., Jones CW. Systematic Reviews Published in Emergency Medicine Journals Do Not Routinely Search Clinical Trials Registries: A Cross-Sectional Analysis. *Ann Emerg Med* 2015; 66(4): 424–7. Doi: 10.1016/j.annemergmed.2014.10.001.

[94] Kelen GD., Catlett CL., Kubit JG., Hsieh YH. Hospital-Based Shootings in the United States: 2000 to 2011. *Ann Emerg Med* 2012; 60(6): 790–8. Doi: 10.1016/j.annemergmed.2012.08.012.

[95] Klein L., Moore J., Biros M. A 20-year Review: The Use of Exception From Informed Consent and Waiver of Informed Consent in Emergency Research. *Acad Emerg Med Off J Soc Acad Emerg Med* 2018; 25(10): 1169–77. Doi: 10.1111/acem.13438.

[96] Koch RM., Kox M., De Jonge MI., Van Der Hoeven JG., Ferwerda G., Pickkers P. Patterns in bacterial-and viral-induced immunosuppression and secondary infections in the ICU. *Shock* 2017. Doi: 10.1097/SHK.0000000000000731.

[97] Kourouche S., Buckley T., Munroe B., Curtis K. Development of a blunt chest injury care bundle: An integrative review. *Injury* 2018. Doi: 10.1016/j.injury.2018.03.037.

[98] Ktistakis I., Guerado E., Giannoudis P V. Pin-site care: can we reduce the incidence of infections? *Injury* 2015. Doi: 10.1016/S0020-1383(15)30009-7.

[99] Kwofie K., Wolfson AB. Antibiotics for otitis media with effusion in children. *Acad Emerg Med* 2021. Doi: 10.1111/acem.14246.

[100] Lampard JG., Lang E. Vasopressors for hypotensive shock. *Ann Emerg Med* 2013. Doi: 10.1016/j.annemergmed.2012.08.028.

[101] Levine M., Ruha AM., Goldstein JN. Can Asymptomatic Patients With a Supratherapeutic International Normalized Ratio Be Safely Treated as Outpatients? *Ann Emerg Med* 2012; 59(4): 318–20. Doi: 10.1016/j.annemergmed.2011.04.023.

[102] Li B., Johari P., Camacho Ruiz C. Topiramate (Topamax) for migraine prophylaxis. *Acad Emerg Med* 2021. Doi: 10.1111/acem.14242.

[103] Lim C., Singh M. Subcutaneous sumatriptans for acute migraine attacks in adults. *Acad Emerg Med* 2021. Doi: 10.1111/acem.14208.

[104] Lin M., Fisher J., Coates WC., Farrell SE., Shayne P., Maggio L., Kuhn G. Critical Appraisal of Emergency Medicine Education Research: The Best Publications of 2012. *Acad Emerg Med* 2014; 21(3): 322–33. Doi: 10.1111/acem.12336.

[105] Lo BM., Carpenter CR., Hatten BW., Wright BJ., Brown MD., Attack AC of EPCPS (Writing C on STI. Clinical Policy: Critical Issues in the Evaluation of Adult Patients With Suspected Transient Ischemic Attack in the Emergency Department. *Ann Emerg Med* 2016. Doi: 10.1016/j.annemergmed.2016.06.048.

[106] Lockey DJ., Lyon RM., Davies GE. Development of a simple algorithm to guide the effective management of traumatic cardiac arrest. *Resuscitation* 2013. Doi: 10.1016/j.resuscitation.2012.12.003.

[107] Lyons PG., Edelson DP., Churpek MM. Rapid response systems. *Resuscitation* 2018. Doi: 10.1016/j.resuscitation.2018.05.013.

[108] Mace SE., Gemme SR., Valente JH., Eskin B., Bakes K., Brecher D., Brown MD., Clinical ACEP. Clinical Policy for Well-Appearing Infants and Children Younger Than 2 Years of Age Presenting to the Emergency Department With Fever. *Ann Emerg Med* 2016; 67(5): 625–39. Doi: 10.1016/j.annemergmed.2016.01.042.

[109] Maconochie IK., Aickin R., Hazinski MF., Atkins DL., Bingham R., Couto TB., Guerguerian A-M., Nadkarni VM., Ng K-C., Nuthall GA., et al. Pediatric Life Support: 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2020.09.013.

[110] Mamtani M., Conlon LW. Can we safely discharge low-risk patients with febrile neutropenia from the emergency department? *Ann Emerg Med* 2014. Doi: 10.1016/j.annemergmed.2013.07.006.

[111] Manidakis N., Sperelakis I., Hackney R., Kontakis G. Fractures of the ulnar coronoid process. *Injury* 2012. Doi: 10.1016/j.injury.2011.08.030.

[112] Martin M., Conlon LW. Does Platelet Transfusion Improve Outcomes in Patients With Spontaneous or Traumatic Intracerebral Hemorrhage? *Ann Emerg Med* 2013; 61(1): 58–61. Doi: 10.1016/j.annemergmed.2012.03.025.

[113] McCarthy A., Curtis K., Holland AJA. Paediatric trauma systems and their impact on the health outcomes of severely injured children: An integrative review. *Injury* 2016. Doi: 10.1016/j.injury.2015.12.028.

[114] McLure M., Eastwood K., Parr M., Bray J. A rapid review of advanced life support guidelines for cardiac arrest associated with anaphylaxis. *Resuscitation* 2021. Doi: 10.1016/j.resuscitation.2020.10.001.

[115] Mercier E., Nadeau A., Brousseau AA., Emond M., Lowthian J., Berthelot S., Costa AP., Mowbray F., Melady D., Yadav K., et al. Elder Abuse in the Out-of-Hospital and Emergency Department Settings: A Scoping Review. *Ann Emerg Med* 2020; 75(2): 181–91. Doi: 10.1016/j.annemergmed.2019.12.011.

[116] Mi M., Kanakaris NK., Wu X., Giannoudis P V. Management and outcomes of open pelvic fractures: An update. *Injury* 2021. Doi: 10.1016/j.injury.2020.02.096.

[117] Morris TM., Marlborough FJ., Montgomery RJ., Allison KP., Eardley WGP. Smoking and the patient with a complex lower limb injury. *Injury* 2021. Doi: 10.1016/j.injury.2020.12.025.

[118] Musey Jr. PI., Schultebraucks K., Chang BP. Stressing Out About the Heart: A Narrative Review of the Role of Psychological Stress in Acute Cardiovascular Events. *Acad Emerg Med* 2020. Doi: 10.1111/acem.13882.

[119] Najefi A-A., Najefy A., Vemulapalli K. Paediatric calcaneal fractures: A guide to management based on a review of the literature. *Injury* 2020. Doi: 10.1016/j.injury.2020.03.050.

[120] Nene R V., Coyne CJ. Management of Cancer-Associated Venous Thromboembolism in the Emergency Department. *Ann Emerg Med* 2017; 69(6): 768–76. Doi: 10.1016/j.annemergmed.2016.12.003.

[121] Norris EM., Lockey AS. Human factors in resuscitation teaching. *Resuscitation* 2012. Doi: 10.1016/j.resuscitation.2011.11.001.

[122] O'Reilly GM., Cameron PA., Joshipura M. Global trauma registry mapping: A scoping review. *Injury* 2012. Doi: 10.1016/j.injury.2012.03.003.

[123] O'Reilly GM., Gabbe B., Moore L., Cameron PA. Classifying, measuring and improving the quality of data in trauma registries: A review of the literature. *Injury* 2016. Doi: 10.1016/j.injury.2016.01.007.

[124] O'Reilly GM., Joshipura M., Cameron PA., Gruen R. Trauma registries in developing countries: A review of the published experience. *Injury* 2013. Doi: 10.1016/j.injury.2013.02.003.

[125] Olasveengen TM., de Caen AR., Mancini ME., Maconochie IK., Aickin R., Atkins DL., Berg RA., Bingham RM., Brooks SC., Castrén M., et al. 2017 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations Summary. *Resuscitation* 2017. Doi: 10.1016/j.resuscitation.2017.10.021.

[126] Olasveengen TM., Mancini ME., Perkins GD., Avis S., Brooks S., Castren M., Chung SP., Considine J., Couper K., Escalante R., et al. Adult Basic Life Support 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2020.09.010.

[127] Olasveengen TM., Mancini ME., Perkins GD., Avis S., Brooks S., Castrén M., Chung SP., Considine J., Couper K., Escalante R., et al. Adult Basic Life Support: International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2020.09.010.

[128] Orlowski MH., Soares WE., Kerrigan KL., Zerden ML. Management of Postabortion Complications for the Emergency Medicine Clinician. *Ann Emerg Med* 2021; 77(2): 221–32. Doi: 10.1016/j.annemergmed.2020.09.008.

[129] Oto B., Corey II DJ., Oswald J., Sifford D., Walsh B. Early Secondary Neurologic Deterioration After Blunt Spinal Trauma: A Review of the Literature. *Acad Emerg Med* 2015; 22(10): 1200–12. Doi: https://doi.org/10.1111/acem.12765.

[130] Otto Q., Nolan JP., Chamberlain DA., Cummins RO., Soar J. Utstein Style for emergency care — the first 30 years. *Resuscitation* 2021. Doi: 10.1016/j.resuscitation.2021.03.022.

[131] Palmer CS., Cameron PA., Gabbe BJ. A review of the revised Functional Capacity Index as a predictor of 12 month outcomes following injury. *Injury* 2017. Doi: 10.1016/j.injury.2017.01.006.

[132] Parish AJ., Yuan DMK., Raggi JR., Omotoso OO., West JR., Ioannidis JPA. An umbrella review of effect size, bias, and power across meta-analyses in emergency medicine. *Acad Emerg Med* 2021; 28(12): 1379–88. Doi: https://doi.org/10.1111/acem.14312.

[133] Pelaccia T., Plotnick LH., Audetat MC., Nendaz M., Lubarsky S., Torabi N., Thomas A., Young M., Dory V. A Scoping Review of Physicians' Clinical Reasoning in Emergency Departments. *Ann Emerg Med* 2020; 75(2): 206–17. Doi: 10.1016/j.annemergmed.2019.06.023.

[134] Perkins GD., Graesner J-T., Semeraro F., Olasveengen T., Soar J., Lott C., Van de Voorde P., Madar J., Zideman D., Mentzelopoulos S., et al. European Resuscitation Council Guidelines 2021: Executive summary. *Resuscitation* 2021. Doi: 10.1016/j.resuscitation.2021.02.003.

[135] Phillips B., Shaw J., Turco L., McDonald D., Carey J., Balters M., Wagner M., Bertellotti R., Cornell DL., Agrawal DK., et al. Traumatic pulmonary pseudocyst: An underreported entity. *Injury* 2017. Doi: 10.1016/j.injury.2016.12.006.

[136] Pieracci FM., Schubl S., Gasparri M., Delaplain P., Kirsch J., Towe C., White TW., Whitbeck S., Doben AR. The Chest Wall Injury Society Recommendations for Reporting Studies of Surgical Stabilization of Rib Fractures. *Injury* 2021. Doi: 10.1016/j.injury.2021.02.032.

[137] Pillay TG., Singh B. A review of traumatic chylothorax. *Injury* 2016. Doi: 10.1016/j.injury.2015.12.015.

[138] Polzer H., Polzer S., Mutschler W., Prall WC. Acute fractures to the proximal fifth metatarsal bone: Development of classification and treatment recommendations based on the current evidence. *Injury* 2012. Doi: 10.1016/j.injury.2012.03.010.

[139] Pusateri AE., Weiskopf RB., Bebarta V., Butler F., Cestero RF., Chaudry IH., Deal V., Dorlac WC., Gerhardt RT., Given MB., et al. Tranexamic acid and trauma: Current status and knowledge gaps with recommended research priorities. *Shock* 2013. Doi: 10.1097/SHK.0b013e318280409a.

[140] Rimmelé T., Payen D., Cantaluppi V., Marshall J., Gomez H., Gomez A., Murray P., Kellum JA. Immune cell phenotype and function in sepsis. *Shock* 2016. Doi: 10.1097/SHK.0000000000000495.

[141] Rivers EP., Jaehne AK., Nguyen HB., Papamatheakis DG., Singer D., Yang JJ., Brown S., Klausner H. Early biomarker activity in severe sepsis and septic shock and a contemporary review of immunotherapy trials: Not a time to give up, but to give it earlier. *Shock* 2013. Doi: 10.1097/SHK.0b013e31827dafa7.

[142] Ronga M., Fagetti A., Canton G., Paiusco E., Surace MF., Cherubino P. Clinical applications of growth factors in bone injuries: Experience with BMPs. *Injury* 2013. Doi: 10.1016/S0020-1383(13)70008-1.

[143] Safdar B., Ona Ayala KE., Ali SS., Seifer BJ., Hong M., Greenberg MR., Choo EK., McGregor AJ. Inclusion of Sex and Gender in Emergency Medicine Research—A 2018 Update. *Acad Emerg Med* 2019; 26(3): 293–302. Doi: https://doi.org/10.1111/acem.13688.

[144] Samuels-Kalow ME., Stack AM., Porter SC. Effective Discharge Communication in the Emergency Department. *Ann Emerg Med* 2012; 60(2): 152–9. Doi: 10.1016/j.annemergmed.2011.10.023.

[145] Sandroni C., Cariou A., Cavallaro F., Cronberg T., Friberg H., Hoedemaekers C., Horn J., Nolan JP., Rossetti AO., Soar J. Prognostication in comatose survivors of cardiac arrest: An advisory statement from the european resuscitation council and the european society of intensive care medicine. *Resuscitation* 2014. Doi: 10.1016/j.resuscitation.2014.08.011.

[146] Schmölzer GM., O'Reilly M., Davis PG., Cheung P-Y., Roehr CC. Confirmation of correct tracheal tube placement in newborn infants. *Resuscitation* 2013. Doi: 10.1016/j.resuscitation.2012.11.028.

[147] Schnaubelt S., Monsieurs KG., Semeraro F., Schlieber J., Cheng A., Bigham BL., Garg R., Finn JC., Greif R., Bray J., et al. Clinical outcomes from out-of-hospital cardiac arrest in low-resource settings — A scoping review. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2020.08.126.

[148] Schroeder ED., Jacquet G., Becker TK., Foran M., Goldberg E., Aschkenasy M., Bertsch K., Levine AC., Med GE. Global Emergency Medicine: A Review of the Literature From 2011. *Acad Emerg Med* 2012; 19(10): 1196–203. Doi: 10.1111/j.1553-2712.2012.01447.x.

[149] Shah R., Leung S., Samuels-Kalow M., Schoenfeld E., Richardson L., Lin M. A Scoping Review of Current Social Emergency Medicine Research. *Ann Emerg Med* 2020; 76(ACEP Research Forum): S91–S91.

[150] Shand S., Curtis K., Dinh M., Burns B. What is the impact of prehospital blood product administration for patients with catastrophic haemorrhage: an integrative review. *Injury* 2019. Doi: 10.1016/j.injury.2018.11.049.

[151] Shankar KN., Bhatia BK., Schuur JD. Toward Patient-Centered Care: A Systematic Review of Older Adults' Views of Quality Emergency Care. *Ann Emerg Med* 2014; 63(5): 529–50. Doi: 10.1016/j.annemergmed.2013.07.509.

[152] Shaw I., Trueger NS., Pirotte MJ. What Is the Time to Muscle Relaxation after Intramuscular Administration of Neuromuscular Blockers? *Ann Emerg Med* 2015. Doi: 10.1016/j.annemergmed.2015.04.013.

[153] Singletary EM., Zideman DA., Bendall JC., Berry DA., Borra V., Carlson JN., Cassan P., Chang WT., Charlton NP., Djärv T., et al. 2020 International Consensus on First Aid

Science With Treatment Recommendations. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2020.09.016.

[154] Smeding L., Plötz FB., Groeneveld ABJ., Kneyber MCJ. Structural changes of the heart during severe sepsis or septic shock. *Shock* 2012. Doi: 10.1097/SHK.0b013e31824c3238.

[155] Soar J., Berg KM., Andersen LW., Böttiger BW., Cacciola S., Callaway CW., Couper K., Cronberg T., D'Arrigo S., Deakin CD., et al. Adult Advanced Life Support: 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2020.09.012.

[156] Soar J., Donnino MW., Maconochie I., Aickin R., Atkins DL., Andersen LW., Berg KM., Bingham R., Böttiger BW., Callaway CW., et al. 2018 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations Summary. *Resuscitation* 2018. Doi: 10.1016/j.resuscitation.2018.10.017.

[157] Soar J., Maconochie I., Wyckoff MH., Olasveengen TM., Singletary EM., Greif R., Aickin R., Bhanji F., Donnino MW., Mancini ME., et al. 2019 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. *Resuscitation* 2019. Doi: 10.1016/j.resuscitation.2019.10.016.

[158] Stansfield R., Morris D., Jesulola E. The Use of Tranexamic Acid (TXA) for the Management of Hemorrhage in Trauma Patients in the Prehospital Environment: Literature Review and Descriptive Analysis of Principal Themes. *Shock* 2020. Doi: 10.1097/SHK.0000000000001389.

[159] Stolarski AE., Kim J., Zhang QY., Remick DG. Cytokine Drizzle-The Rationale for Abandoning "Cytokine Storm." *SHOCK* 2021. Doi: 10.1097/SHK.0000000000001769.

[160] Störmann P., Lustenberger T., Relja B., Marzi I., Wutzler S. Role of biomarkers in acute traumatic lung injury. *Injury* 2017. Doi: 10.1016/j.injury.2017.08.041.

[161] Sutton EL., Kearney RS. What works? Interventions to reduce readmission after hip fracture: A rapid review of systematic reviews. *Injury* 2021. Doi: 10.1016/j.injury.2021.04.049.

[162] Talikowska M., Tohira H., Bailey P., Finn J. Cardiopulmonary resuscitation quality: Widespread variation in data intervals used for analysis. *Resuscitation* 2016. Doi: 10.1016/j.resuscitation.2016.02.008.

[163] Tapking C., Popp D., Herndon DN., Branski LK., Hundeshagen G., Armenta AM., Busch M., Most P., Kinsky MP. Cardiac dysfunction in severely burned patients: Current understanding of etiology, pathophysiology, and treatment. *Shock* 2020. Doi: 10.1097/SHK.0000000000001465.

[164] Thiele L., Flabouris A., Thompson C. Acute clinical deterioration and consumer escalation in the hospital setting: A literature review. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2020.08.011.

[165] Tomaszewski CA., Nestler D., Shah KH., Sudhir A., Brown MD. Clinical Policy: Critical Issues in the Evaluation and Management of Emergency Department Patients With Suspected Non-ST-Elevation Acute Coronary Syndromes. *Ann Emerg Med* 2018; 72(5): E65–106. Doi: 10.1016/j.annemergmed.2018.07.045.

[166] Trehan I., Kivlehan SM., Balhara KS., Hexom BJ., Pousson AY., Quao NSA., Rybarczyk MM., Selvam A., Bonney J., Bhaskar N., et al. Global Emergency Medicine: A Review of the Literature From 2019. *Acad Emerg Med* 2020. Doi: 10.1111/acem.14107.

[167] Trehan I., Kivlehan SM., Balhara KS., Bonney J., Hexom BJ., Pousson AY., Quao NSA., Rybarczyk MM., Selvam A., Nicholson BD., et al. Global emergency medicine: A scoping review of the literature from 2020. *Acad Emerg Med Off J Soc Acad Emerg Med* 2021; 28(11): 1328–40. Doi: 10.1111/acem.14356.

[168] Trehan I., Osei-Ampofo M., Balhara KS., Hexom BJ., Kivlehan SM., Modi P., Pousson AY., Selvam A., Quao NSA., Cho DK., et al. Global Emergency Medicine: A Review of the Literature from 2018. *Acad Emerg Med Off J Soc Acad Emerg Med* 2019; 26(10): 1186–96. Doi: 10.1111/acem.13832.

[169] Vadakkencherry Ramaswamy V., Abiramalatha T., Weiner GM., Trevisanuto D. A comparative evaluation and appraisal of 2020 American Heart Association and 2021 European Resuscitation Council neonatal resuscitation guidelines. *Resuscitation* 2021. Doi: 10.1016/j.resuscitation.2021.08.039.

[170] Valeriano A., Van Heer S., de Champlain F., C. Brooks S. Crowdsourcing to save lives: A scoping review of bystander alert technologies for out-of-hospital cardiac arrest. *Resuscitation* 2021. Doi: 10.1016/j.resuscitation.2020.10.035.

[171] Van Lieshout EMM., Den Hartog D. Effect of platelet-rich plasma on fracture healing. *Injury* 2021. Doi: 10.1016/j.injury.2020.12.005.

[172] Walter LA., Schoenfeld EM., Smith CH., Shufflebarger E., Khoury C., Baldwin K., Hess J., Heimann M., Crosby C., Sontheimer SY., et al. Emergency department-based interventions affecting social determinants of health in the United States: A scoping review. *Acad Emerg Med Off J Soc Acad Emerg Med* 2021; 28(6): 666–74. Doi: 10.1111/acem.14201.

[173] Waterbrook AL., Hiller K., Hays DP., Berkman M. Do Topical Antibiotics Help Prevent Infection in Minor Traumatic Uncomplicated Soft Tissue Wounds? *Ann Emerg Med* 2013; 61(1): 86–8. Doi: 10.1016/j.annemergmed.2012.08.002.

[174] White G., Kanakaris NK., Faour O., Valverde JA., Martin MA., Giannoudis P V. Quadrilateral plate fractures of the acetabulum: An update. *Injury* 2013. Doi: 10.1016/j.injury.2012.10.010.

[175] Wilson MH., Hinds J., Grier G., Burns B., Carley S., Davies G. Impact brain apnoea – A forgotten cause of cardiovascular collapse in trauma. *Resuscitation* 2016. Doi: 10.1016/j.resuscitation.2016.05.007.

[176] Winearls J., Campbell D., Hurn C., Furyk J., Ryan G., Trout M., Walsham J., Holley A., Shuttleworth M., Dyer W., et al. Fibrinogen in traumatic haemorrhage: A narrative review. *Injury* 2017. Doi: 10.1016/j.injury.2016.12.012.

[177] Wiseman T., Foster K., Curtis K. Mental health following traumatic physical injury: An integrative literature review. *Injury* 2013. Doi: 10.1016/j.injury.2012.02.015.

[178] Wolf SJ., Byyny R., Carpenter CR., Diercks DB., Gemme SR., Gerardo CJ., Godwin SA., Hahn SA., Harrison NE., Hatten BW., et al. Clinical Policy: Critical Issues in the Evaluation and Management of Adult Patients Presenting to the Emergency Department With Acute Headache: Approved by the ACEP Board of Directors June 26, 2019 Clinical Policy Endorsed by the Emergency Nurses Associat. *Ann Emerg Med* 2019. Doi: 10.1016/j.annemergmed.2019.07.009.

[179] Wolf SJ., Byyny R., Carpenter CR., Diercks DB., Gemme SR., Gerardo CJ., Godwin SA., Hahn SA., Hatten BW., Haukoos JS., et al. Clinical Policy: Critical Issues in the Management of Adult Patients Presenting to the Emergency Department With Community-Acquired Pneumonia. *Ann Emerg Med* 2021. Doi: 10.1016/j.annemergmed.2020.10.024.

[180] Wolf SJ., Hahn SA., Nentwich LM., Raja AS., Silvers SM., Brown MD., Disease: AC of EPCPS (Writing C on T. Clinical Policy: Critical Issues in the Evaluation and Management of Adult Patients Presenting to the Emergency Department With Suspected Acute Venous Thromboembolic Disease. *Ann Emerg Med* 2018. Doi: 10.1016/j.annemergmed.2018.03.006.

[181] Wolf SJ., Lo B., Shih RD., Smith MD., Fesmire FM. Clinical Policy: Critical Issues in the Evaluation and Management of Adult Patients in the Emergency Department With Asymptomatic Elevated Blood Pressure. *Ann Emerg Med* 2013; 62(1): 59–68. Doi: 10.1016/j.annemergmed.2013.05.012.

[182] Wyckoff MH., Singletary EM., Soar J., Olasveengen TM., Greif R., Liley HG., Zideman D., Bhanji F., Andersen LW., Avis SR., et al. 2021 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Neonatal Life Support; Education, Implementation, and Teams. *Resuscitation* 2021. Doi: 10.1016/j.resuscitation.2021.10.040.

[183] Wyckoff MH., Wyllie J., Aziz K., de Almeida MF., Fabres JW., Fawke J., Guinsburg R., Hosono S., Isayama T., Kapadia VS., et al. Neonatal Life Support 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. *Resuscitation* 2020. Doi: 10.1016/j.resuscitation.2020.09.015.

[184] Yarris LM., Juve AM., Coates WC., Fisher J., Heitz C., Shayne P., Farrell SE. Critical Appraisal of Emergency Medicine Education Research: The Best Publications of 2014. *Acad Emerg Med Off J Soc Acad Emerg Med* 2015; 22(11): 1327–36. Doi: 10.1111/acem.12801.

## International reviews: full text not available

[1] Adhikari S., Farrell I., Stolz U. How Accurate Is Ultrasonography in Confirming Endotracheal Tube Placement? A Meta-analysis. Ann Emerg Med 2012; 60(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S18–S18. Doi: 10.1016/j.annemergmed.2012.06.073.

[2] Alqatari M., Morgan SR., Chang A., Pines JM. Non-Emergency Department Interventions to Reduce Emergency Department Utilization: A Systematic Review. Ann Emerg Med 2012; 60(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S155–S155. Doi: 10.1016/j.annemergmed.2012.06.473.

[3] Bliton J., Oostema JA., Falzon L., Brown M. A Systematic Review of Methods Used in Individual Patient Data Meta-Analyses of Clinical Trials of Acute Cardiovascular Diseases. Ann Emerg Med 2013; 62(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S151–S151.

[4] Carpenter CR., Kennedy M., Arendts G., Schnitker L., Eagles D., Mooijaart S., Fowler S., LaMantia M., Han J. Accuracy of Emergency Department Delirium Screening: A Diagnostic Meta-Analysis. Ann Emerg Med 2018; 72(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S96–7. Doi: 10.1016/j.annemergmed.2018.08.248.

[5] Davis JJ., Baier L., Fields JM., Esener D. Carotid Ultrasound for Fluid Responsiveness: A Systematic Review. Ann Emerg Med 2019; 74(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S135–6. Doi: 10.1016/j.annemergmed.2019.08.304.

[6] Desai R., Singh S., Parekh T., Sachdeva S., Kumar L., Sachdeva R., Kumar G. COVID-19 and Shock: A Cautionary Tale for Elderly Patients From a Pooled Analysis. Ann Emerg Med 2020. Doi: 10.1016/j.annemergmed.2020.04.014.

[7] Dore L., Periyanayagam U., McCarthy D., Courtney D. Epiglottitis In Adults: A Systematic Review of Mortality and Airway Intervention in the Post-vaccine Era. Ann Emerg Med 2012; 60(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S64–S64. Doi: 10.1016/j.annemergmed.2012.06.153.

[8] Formosa EA., Kishimoto V., Orchanian-Cheff A., Hayman KG. Emergency Department Interventions for Homelessness: A Systematic Review. Ann Emerg Med 2019; 74(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S119–S119. Doi: 10.1016/j.annemergmed.2019.08.261.

[9] Gardner-Gray J., Hurst G., Lewandowksi A., Natsui S., Miller J. Delayed Intracranial Hemorrhage in the Anticoagulated Patient: A systematic Review. Ann Emerg Med 2013; 62(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S117–S117.

[10] Gaspari R., Rajendraprasad S., Schofer J. Review of Emergency Ultrasonography Literature Published 2009-2011. Ann Emerg Med 2012; 60(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S144–S144. Doi: 10.1016/j.annemergmed.2012.06.441.

[11] Goldberger E., Friedman BW. The Relative Frequency of Akathisia from Parenteral Antidopaminergics: A Systematic Review and Meta-Analysis. Ann Emerg Med 2017; 70(Annual Meeting and Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S105–S105. Doi: 10.1016/j.annemergmed.2017.07.244.

[12] Guirgis FW., Khadpe J., Kuntz G., Wears R., Kalynych C., Jones AE. Long-Term, Organ-Specific Outcomes in Survivors of Severe Sepsis or Septic Shock: A Systematic Review. Ann Emerg Med 2013; 62(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S132–S132.

[13] Hussain A., Carpenter CR., Sivilotti M., Pines JM. Subarachnoid Hemorrhage in the Emergency Department: A Systematic Review and Meta-Analysis of Diagnostic Accuracy in History, Physical Exam Findings, and Testing. Ann Emerg Med 2013; 62(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S42–S42.

[14] Jones J., Cudnik MT., Stockton S., Macedo J., Darbha S., Hiestand B. The Diagnosis of Acute Mesenteric Ischemia: A Systematic Review and Meta-Analysis. Ann Emerg Med 2012; 60(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S23–S23. Doi: 10.1016/j.annemergmed.2012.06.338.

[15] Kim C., Lim T., Kim W., Shin H., Na S. Diagnostic Accuracy of Adding Copeptin to Cardiac Troponin for Non-ST-Elevation Myocardial Infarction: A Systematic Review and Meta-Analysis. Ann Emerg Med 2018; 72(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S30–1. Doi: 10.1016/j.annemergmed.2018.08.075.

[16] Lan HM., Chen KF., Chen CD. Presepsin as a Powerful Biomarker for Diagnosis of Both Sepsis (Sepsis 3.0) and Infectious Systemic Inflammatory Response Syndrome: A Systematic Review and Network Meta-Analyses for Diagnostic Tests. Ann Emerg Med 2018; 72(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S139–40. Doi: 10.1016/j.annemergmed.2018.08.358.

[17] Liu Y., Alsaawi A., Bjornsson H., McCarthy M. Ultrasonography-guided Peripheral Venous Access: A Systematic Review. Ann Emerg Med 2012; 60(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S109–10. Doi: 10.1016/j.annemergmed.2012.06.285.

[18] Lo R., Leung L., Hung K., Brabrand M., Chan S., Yeung C., Lam C., Graham CA. The Predictive Value of Quick Sepsis-Related Organ Failure Assessment for Prognosis of Sepsis in the Emergency Department: A Systematic Review. Ann Emerg Med 2018; 72(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S62–S62. Doi: 10.1016/j.annemergmed.2018.08.152.

[19] Maitoza L., Neeman E., Funaro M., Pierce RW. MICROCIRCULATION DYSFUNCTION IN CRITICALLY ILL CHILDREN: A SYSTEMATIC REVIEW. SHOCK 2019.

[20] Maria V., Pasquale B., Carmine I., Giuseppe S. Epinephrine for out of hospital cardiac arrest: A systematic review and meta-analysis of randomized controlled trials. Resuscitation 2019. Doi: 10.1016/j.resuscitation.2019.01.016.

[21] Mellick LB., Sinex J., Gibson R., Mears K. A Systematic Review of the Literature on Survival Time of Torsed Testicles. Ann Emerg Med 2017; 70(Annual Meeting and Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S99–S99. Doi: 10.1016/j.annemergmed.2017.07.471.

[22] Moore PQ., Fahimi J., Alter H. The Effect of Change in Insurance Status on Emergency Department Utilization: A Systematic Review. Ann Emerg Med 2013; 62(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S58–S58.

[23] Omron R., Van Meter M., Conlon L., Doshi A., Fredette J., Prepejchal R., Peng LL., Kuhn G. The Relationship Between Patient Follow-Up and Deliberate Practice in Emergency Medicine Education: A Review of the Literature. Ann Emerg Med 2013; 62(CORD Academic Assembly): S168–S168. Doi: 10.1016/j.annemergmed.2013.06.028.

[24] Organick-Lee JY., Silva L., Bellolio F., Homme J., Anderson J. Intranasal Ketamine for Acute Pain Management in Children: A Systematic Review and Meta-analysis. Ann Emerg Med 2020; 76(ACEP Research Forum): S36–S36.

[25] Pettigrew J., Caperell K. Route of Administration Specific Placebo Response Meta-Analysis for Acute Treatment of Migraine. Ann Emerg Med 2013; 62(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S126–S126.

[26] Posaw LL., Bell G., Healey H., Lee S. Teaching Point-of-Care Ultrasound in Emergency Medicine: A Systematic Review of Current Structured Methods. Ann Emerg Med 2019; 74(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S56–S56. Doi: 10.1016/j.annemergmed.2019.08.147.

[27] Searles Q., Gruessner A., Wilcox K., Andrews P., Satalin J., Gatto L., Habashi N., Nieman G. ARDS MORTALITY WITH STANDARD OF CARE VENTILATION: A REVIEW. SHOCK 2017.

[28] Shen W., Hu XC., Xu WH. ADVANCES IN MANAGEMENT OF DELIRIUM IN CRITICALLY ILL ADULTS: A SYSTEMATIC REVIEW AND META-ANALYSIS. SHOCK 2019.

[29] Sun B., Gibson T., Weiss R. Predictors of Serious Outcomes After Syncope: A Systematic Review and Meta-Analysis. Ann Emerg Med 2017; 70(Annual Meeting and Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S30–S30. Doi: 10.1016/j.annemergmed.2017.07.097.

[30] Tran Q., Bayram I., Case M., Connor C., Doggett D., Fawole O., Ijagbemi M., Pham JC. Pediatric Emergency Department Discharge Failure: A Systemic Review of Risk Factors and Interventions. Ann Emerg Med 2013; 62(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S52–S52.

[31] Tran Q., Bayram J., Case M., Connor C., Doggett D., Fawole O., Ijagbemi M., Pham JC. Risk Factors for Adult Emergency Department Discharge Failure: A Systemic Review. Ann Emerg Med 2013; 62(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S51–S51.

[32] Vargas M., Buonanno P., Iacovazzo C., Servillo G. Epinephrine for out of hospital cardiac arrest: A systematic review and meta-analysis of randomized controlled trials. Resuscitation 2019. Doi: 10.1016/j.resuscitation.2019.10.026.

[33] Waseem M., McDonald C., Parish A. Lactate and Lactate Clearance to Predict Mortality in Pediatric Sepsis: A Systematic Review and Diagnostic Meta-Analysis. Ann Emerg Med 2020; 76(ACEP Research Forum): S120–S120.

[34] West JR., Fenig M. The Frequency of Endotracheal Intubation After Ketamine Sedation of Out-of-Hospital and Emergency Department Patients With Acute Agitated Delirium: A Systematic Review and Meta-Analysis. Ann Emerg Med 2018; 72(Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S22–S22. Doi: 10.1016/j.annemergmed.2018.08.052.

[35] West JR., Williams AB. Apneic Oxygenation Via Conventional Nasal Cannula to Prevent Oxygen Desaturation During Rapid Sequence Intubation in the Emergency Department and Intensive Care Unit: A Systematic Review and Meta-Analysis. Ann Emerg Med 2017; 70(Annual Meeting and Research Forum of the American-College-of-Emergency-Physicians (ACEP)): S10–S10. Doi: 10.1016/j.annemergmed.2017.07.046.

[36] Zhu L., Lou D. Ocular injuries from pressurised bottled drinks in China. Injury 2014. Doi: 10.1016/j.injury.2013.09.039.

### *2.1.5 Appendix E: Analysed systematic reviews*

## African Systematic Reviews [1-34]

[1] Abujaber S., Chang CY., Reynolds TA., Mowafi H., Obermeyer Z. Developing metrics for emergency care research in low- and middle-income countries. *African J Emerg Med* 2016; 6(3): 116–24. Doi: https://doi.org/10.1016/j.afjem.2016.06.003.

[2] Barbosa E., Gulela B., Taimo MA., Lopes DM., Offorjebe OA., Risko N. A systematic review of the cost-effectiveness of emergency interventions for stroke in low- and middle-income countries. *African J Emerg Med* 2020; 10: S90–4. Doi: https://doi.org/10.1016/j.afjem.2020.05.009.

[3] Beatty L., Green R., Magee K., Zed P. A Systematic Review of Ethanol and Fomepizole Use in Toxic Alcohol Ingestions. *Emerg Med Int* 2013; 2013: 638057. Doi: 10.1155/2013/638057.

[4] Broadis E., Chokotho T., Borgstein E. Paediatric burn and scald management in a low resource setting: A reference guide and review. *African J Emerg Med* 2017; 7: S27–31. Doi: https://doi.org/10.1016/j.afjem.2017.06.004.

[5] Cao Z., Yang Z., Liang Z., Cen Q., Zhang Z., Liang H., Liu R., Zeng L., Xie Y., Wang Y. Prone versus Supine Position Ventilation in Adult Patients with Acute Respiratory Distress Syndrome: A Meta-Analysis of Randomized Controlled Trials. *Emerg Med Int* 2020; 2020: 4973878. Doi: 10.1155/2020/4973878.

[6] Chen Z., Wei X., Liu G., Tai Q., Zheng D., Xie W., Chen L., Wang G., Sun J-Q., Wang S., et al. Higher vs. Lower DP for Ventilated Patients with Acute Respiratory Distress Syndrome: A Systematic Review and Meta-Analysis. *Emerg Med Int* 2019; 2019: 4654705. Doi: 10.1155/2019/4654705.

[7] Chiarini S., Ruscelli P., Cirocchi R., D’Andrea V., Sensi B., Santoro A., Corsi A., Zepponi F., Fedeli P., Gioia S. Intersigmoid Hernia: A Forgotten Diagnosis—A Systematic Review of the Literature over Anatomical, Diagnostic, Surgical, and Medicolegal Aspects. *Emerg Med Int* 2020; 2020: 4891796. Doi: 10.1155/2020/4891796.

[8] De Clercq H., Naudé A., Bornman J. Investigating nystagmus in patients with traumatic brain injury: A systematic review (1996 - 2016). *South African Med J* n.d.

[9] Dixon J., Comstock G., Whitfield J., Richards D., Burkholder TW., Leifer N., Mould-Millman N-K., Calvello Hynes EJ. Emergency department management of traumatic brain injuries: A resource tiered review. *African J Emerg Med* 2020; 10(3): 159–66. Doi: https://doi.org/10.1016/j.afjem.2020.05.006.

[10] Ebrahimi M., Mirhaghi A., Najafi Z., Shafaee H., Hamechizfahm Roudi M. Are Pediatric Triage Systems Reliable in the Emergency Department? *Emerg Med Int* 2020; 2020: 9825730. Doi: 10.1155/2020/9825730.

[11] Endalamaw A., Birhanu Y., Alebel A., Demsie A., Habtewold TD. The burden of road traffic injury among trauma patients in Ethiopia: A systematic review and meta-analysis. *African J Emerg Med* 2019; 9: S3–8. Doi: https://doi.org/10.1016/j.afjem.2019.01.013.

[12] Flores AH., Kassamali S., Won GY., Stein JC., Reynolds T. Frequency of utilisation of ultrasound in the diagnosis of ectopic pregnancy in Sub-Saharan Africa countries: A systematic review. *African J Emerg Med* 2015; 5(1): 31–6. Doi: https://doi.org/10.1016/j.afjem.2014.08.001.

[13] Gilfillan K V., Dannatt L., Stein DJ., Vythilingum B. Heroin detoxification during pregnancy: A systematic review and retrospective study of the management of heroin addiction in pregnancy. *South African Med J* n.d.

[14] Guo Y., Cao F., Li C., Yang H., Xia S., Li F. Continuous Hemofiltration Reduces Mortality in Severe Acute Pancreatitis: A Meta-Analysis. *Emerg Med Int* 2020; 2020: 6474308. Doi: 10.1155/2020/6474308.

[15] Hardcastle TC., Stander M., Kalafatis N., Hodgson RE., Gopalan D. External patient temperature control in emergency centres, trauma centres, intensive care units and operating theatres: A multi-society literature review. *South African Med J* n.d.

[16] Huang C-C., Lan H-M., Li C-J., Lee T-H., Chen W-L., Lei W-Y., Hsieh P-Y., Yang M-C., Chou C-C., Wu H-P., et al. Use High-Flow Nasal Cannula for Acute Respiratory Failure Patients in the Emergency Department: A Meta-Analysis Study. *Emerg Med Int* 2019; 2019: 2130935. Doi: 10.1155/2019/2130935.

[17] Jordan P., Ten Ham W., Fataar D. Endotracheal tube verification in adult mechanically ventilated patients. *South African J Crit Care* n.d.

[18] Lourens A., Botha JC. Hypertonic saline (HTS) versus standard (isotonic) fluid therapy for traumatic brain injuries: a systematic review. *African J Emerg Med* 2014; 4(4): 188–94. Doi: https://doi.org/10.1016/j.afjem.2014.03.003.

[19] Miller N., Miller M., Hill LT. The impact of antioxidant supplementation on clinical outcomes in the critically ill: A meta-analysis. *South African J Crit Care* n.d.

[20] Ngaruiya C., Kawira A., Mali F., Kambua F., Mwangi B., Wambua M., Hersey D., Obare L., Leff R., Wachira B. Systematic review on epidemiology, interventions and management of noncommunicable diseases in acute and emergency care settings in Kenya. *African J Emerg Med* 2021; 11(2): 264–76. Doi: https://doi.org/10.1016/j.afjem.2021.02.005.

[21] Nutbeam T. In adult patients presenting as emergencies with upper gastrointestinal bleeding, does tranexamic acid decrease mortality? *African J Emerg Med* 2015; 5(2): 85–92. Doi: https://doi.org/10.1016/j.afjem.2015.01.005.

[22] Pourmand A., Dimbil U., Drake A., Shokoohi H. The Accuracy of Point-of-Care Ultrasound in Detecting Small Bowel Obstruction in Emergency Department. *Emerg Med Int* 2018; 2018: 3684081. Doi: 10.1155/2018/3684081.

[23] Rodríguez JJ., Higuita-Gutiérrez LF., Carrillo Garcia EA., Castaño Betancur E., Luna Londoño M., Restrepo Vargas S. Meta-Analysis of Failure of Prehospital Endotracheal Intubation in Pediatric Patients. *Emerg Med Int* 2020; 2020: 7012508. Doi: 10.1155/2020/7012508.

[24] Roy DJ., Pande SD., Liew ZH., Roy D. Role of Parathyroid Hormone Assay and Bedside Ultrasound in the Emergency Department in Differentiating Acute Kidney Injury from Chronic Kidney Disease: A Systematic Review. *Emerg Med Int* 2019; 2019: 2102390. Doi: 10.1155/2019/2102390.

[25] Rybarczyk MM., Schafer JM., Elm CM., Sarvepalli S., Vaswani PA., Balhara KS., Carlson LC., Jacquet GA. A systematic review of burn injuries in low- and middle-income countries: Epidemiology in the WHO-defined African Region. *African J Emerg Med* 2017; 7(1): 30–7. Doi: https://doi.org/10.1016/j.afjem.2017.01.006.

[26] Salehi AM., Khazaei S., Masumi M., Shavandi F., Kavand M., Jenabi E., Khatiban M. Reinforcement and Maintenance of Human Resources for Health Systems during Long-Term Crises: A Systematic Review of Systematic Reviews. *Emerg Med Int* 2021; 2021: 9613443. Doi: 10.1155/2021/9613443.

[27] Saunders CJ., Sewduth D., Naidoo N. Keeping our heads above water: A systematic review of fatal drowning in South Africa. *South African Med J* n.d.

[28] Schafer JM., Welwarth J., Novack V., Balk DS., Beals T., Naraghi L., Khattab EK., Hoffmann B. Detection of splenic microabscesses with ultrasound as a marker for extrapulmonary tuberculosis in patients with HIV: A systematic review. *South African Med J* n.d.

[29] Tsao Y-L., Hsu C-C., Chen K-T. Blunt Traumatic Retropharyngeal Hematoma with Respiratory Symptoms: A Systematic Review of Reported Cases. *Emerg Med Int* 2021; 2021: 5158403. Doi: 10.1155/2021/5158403.

[30] Visser Kift E., Maartens G., Bamford C. Systematic review of the evidence for rational dosing of colistin. *South African Med J* n.d.

[31] Wachira BW., Mwai M. A baseline review of the ability of hospitals in Kenya to provide emergency and critical care services for COVID-19 patients. *African J Emerg Med* 2021; 11(2): 213–7. Doi: https://doi.org/10.1016/j.afjem.2021.01.001.

[32] Wells M., Goldstein LN., Bentley A. A systematic review and meta-analysis of the accuracy of weight estimation systems used in paediatric emergency care in developing countries. *African J Emerg Med* 2017; 7: S36–54. Doi: https://doi.org/10.1016/j.afjem.2017.06.001.

[33] Willett JK. Imaging in trauma in limited-resource settings: A literature review. *African J Emerg Med* 2019; 9: S21–7. Doi: https://doi.org/10.1016/j.afjem.2018.07.007.

[34] Wu W., Liu J., Zhou Z. Preoperative Risk Factors for Short-Term Postoperative Mortality of Acute Mesenteric Ischemia after Laparotomy: A Systematic Review and Meta-Analysis. *Emerg Med Int* 2020; 2020: 1382475. Doi: 10.1155/2020/1382475.

## International systematic reviews [1-100]

[1] Al Deeb M., Barbic S., Featherstone R., Dankoff J., Barbic D. Point-of-care Ultrasonography for the Diagnosis of Acute Cardiogenic Pulmonary Edema in Patients Presenting With Acute Dyspnea: A Systematic Review and Meta-analysis. *Acad Emerg Med* 2014; 21(8): 843–52. Doi: https://doi.org/10.1111/acem.12435.

[2] Alshehri A., Abulaban A., Bokhari R., Kojan S., Alsalamah M., Ferwana M., Murad MH. Intravenous Versus Nonintravenous Benzodiazepines for the Cessation of Seizures: A Systematic Review and Meta-analysis of Randomized Controlled Trials. *Acad Emerg Med* 2017; 24(7): 875–83. Doi: https://doi.org/10.1111/acem.13190.

[3] An M., Kim Y., Cho W-K. Effect of smart devices on the quality of CPR training: A systematic review. *Resuscitation* n.d.

[4] Barquet A., Giannoudis P V., Gelink A. Femoral neck fractures after removal of hardware in healed trochanteric fractures. *Injury* n.d.; 48.

[5] Bartlett ES., Valenzuela T., Idris A., Deye N., Glover G., Gillies MA., Taccone FS., Sunde K., Flint AC., Thiele H., et al. Systematic review and meta-analysis of intravascular temperature management vs. surface cooling in comatose patients resuscitated from cardiac arrest. *Resuscitation* n.d.

[6] Bergmans SF., Schober P., Schwarte LA., Loer SA., Bossers SM. Prehospital fluid administration in patients with severe traumatic brain injury: A systematic review and meta-analysis. *Injury* n.d.; 51.

[7] Blyth L., Atkinson P., Gadd K., Lang E. Bedside Focused Echocardiography as Predictor of Survival in Cardiac Arrest Patients: A Systematic Review (vol 19, pg 1119, 2012). *Acad Emerg Med* 2015; 22(7): 892. Doi: 10.1111/acem.12734.

[8] Buick JE., Wallner C., Aickin R., Meaney PA., de Caen A., Maconochie I., Skifvars MB., Welsford M. Paediatric targeted temperature management post cardiac arrest: A systematic review and meta-analysis. *Resuscitation* n.d.

[9] Carpenter CR., Pines JM., Schuur JD., Muir M., Calfee RP., Raja AS. Adult Scaphoid Fracture. *Acad Emerg Med* 2014; 21(2): 101–21. Doi: https://doi.org/10.1111/acem.12317.

[10] Chen H., Ma J., Liu A., Cui Y., Ma X. The association between sarcopenia and fracture in middle-aged and elderly people: A systematic review and meta-analysis of cohort studies. *Injury* n.d.; 51.

[11] Chopra AS., Wong N., Ziegler CP., Morrison LJ. Systematic review and meta-analysis of hemodynamic-directed feedback during cardiopulmonary resuscitation in cardiac arrest. *Resuscitation* n.d.

[12] Chou R., Totten AM., Carney N., Dandy S., Fu RW., Grusing S., Pappas M., Wasson N., Newgard CD. Predictive Utility of the Total Glasgow Coma Scale Versus the Motor Component of the Glasgow Coma Scale for Identification of Patients With Serious Traumatic Injuries. *Ann Emerg Med* 2017; 70(2): 143–57. Doi: 10.1016/j.annemergmed.2016.11.032.

[13] Chowdhury MDS., Rathod J., Gernsheimer J. A Rapid Systematic Review of Clinical Trials Utilizing Chloroquine and Hydroxychloroquine as a Treatment for COVID-19. *Acad Emerg Med* 2020; 27(6): 493–504. Doi: 10.1111/acem.14005.

[14] Christodoulou VN., Varvarousis D., Theodorou A., Voulgaris S., Beris A., Doulgeri S., Gelalis I., Ploumis A. Rehabilitation of the multiple injured patient with spinal cord injury: A systematic review of the literature. *Injury* n.d.; 50.

[15] Chu K., Hann A., Greenslade J., Williams J., Brown A. Spectrophotometry or Visual Inspection to Most Reliably Detect Xanthochromia in Subarachnoid Hemorrhage: Systematic Review. *Ann Emerg Med* 2014; 64(3): 256–64. Doi: 10.1016/j.annemergmed.2014.01.023.

[16] Couper K., Laloo R., Field R., Perkins GD., Thomas M., Yeung J. Prophylactic antibiotic use following cardiac arrest: A systematic review and meta-analysis. *Resuscitation* n.d.

[17] Cournoyer A., Grand'Maison S., Lonergan AM., Lessard J., Chauny JM., Castonguay V., Marquis M., Fregeau A., Huard V., Garceau-Tremblay Z., et al. Oxygen Therapy and Risk of Infection for Health Care Workers Caring for Patients With Viral Severe Acute Respiratory Infection: A Systematic Review and Meta-analysis. *Ann Emerg Med* 2021; 77(1): 19–31. Doi: 10.1016/j.annemergmed.2020.06.037.

[18] Cubitt M., Downie E., Shakerian R., Lange PW., Cole E. Timing and methods of frailty assessments in geriatric trauma patients: A systematic review. *Injury* n.d.; 50.

[19] Debaty G., Babaz V., Durand M., Gaide-Chevronnay L., Fournel E., Blancher M., Bouvaist H., Chavanon O., Maignan M., Bouzat P., et al. Prognostic factors for extracorporeal cardiopulmonary resuscitation recipients following out-of-hospital refractory cardiac arrest. A systematic review and meta-analysis. *Resuscitation* n.d.

[20] Delcourt T., Bégué T., Saintyves G., Mebtouche N., Cottin P. Management of upper cervical spine fractures in elderly patients: current trends and outcomes. *Injury* n.d.; 46.

[21] Descatha A., Dagrenat C., Cassan P., Jost D., Loeb T., Baer M. Cardiac arrest in the workplace and its outcome: A systematic review and meta-analysis. *Resuscitation* n.d.

[22] deSouza IS., Tadrous M., Sexton T., Benabbas R., Carmelli G., Sinert R. Pharmacologic Cardioversion of Recent-Onset Atrial Fibrillation and Flutter in the Emergency Department: A Systematic Review and Network Meta-analysis. *Ann Emerg Med* 2020;

76(Annual Consensus Meeting of the Society-for-Academic-Emergency-Medicine (SAEM)): 14–30. Doi: 10.1016/j.annemergmed.2020.01.013.

[23] Diao M., Huang F., Guan J., Zhang Z., Xiao Y., Shan Y., Lin Z., Ding L. Prehospital therapeutic hypothermia after cardiac arrest: A systematic review and meta-analysis of randomized controlled trials. *Resuscitation* n.d.

[24] Du F., Jiang P., He S., Song D., Xu F. Antiplatelet Therapy for Critically Ill Patients: A Pairwise and Bayesian Network Meta-Analysis. *Shock* n.d.

[25] Duhem H., Viglino D., Bellier A., Tanguy S., Descombe V., Boucher F., Chaffanjon P., Debaty G. Cadaver models for cardiac arrest: A systematic review and perspectives. *Resuscitation* n.d.

[26] e Silva LOJ., Scherber K., Cabrera D., Motov S., West CP., Murad MH., Bellolio MF. 234 Safety and Efficacy of Intravenous Lidocaine for Pain Management in the Emergency Department: A Systematic Review and Meta-Analysis. *Ann Emerg Med* 2017; 70(4, Supplement): S93. Doi: https://doi.org/10.1016/j.annemergmed.2017.07.456.

[27] Flynn D., Knoedler MA., Hess EP., Murad MH., Erwin PJ., Montori VM., Thomson RG. Engaging Patients in Health Care Decisions in the Emergency Department Through Shared Decision-making: A Systematic Review. *Acad Emerg Med* 2012; 19(8): 959–67. Doi: 10.1111/j.1553-2712.2012.01414.x.

[28] Freedman SB., Uleryk E., Rumantir M., Finkelstein Y. Ondansetron and the Risk of Cardiac Arrhythmias: A Systematic Review and Postmarketing Analysis. *Ann Emerg Med* 2014; 64(1): 19–25. Doi: 10.1016/j.annemergmed.2013.10.026.

[29] Frei C., Darocha T., Debaty G., Dami F., Blancher M., Carron PN., Oddo M., Pasquier M. Clinical characteristics and outcomes of witnessed hypothermic cardiac arrest: A systematic review on rescue collapse. *Resuscitation* n.d.

[30] Gottlieb M., Dyer S., Peksa GD. Beta-blockade for the treatment of cardiac arrest due to ventricular fibrillation or pulseless ventricular tachycardia: A systematic review and meta-analysis. *Resuscitation* n.d.

[31] Gottlieb M., Palter J., Westrick J., Peksa GD. Effect of Medical Scribes on Throughput, Revenue, and Patient and Provider Satisfaction: A Systematic Review and Meta-analysis. *Ann Emerg Med* 2021; 77(2): 180–9. Doi: 10.1016/j.annemergmed.2020.07.031.

[32] Gottlieb M., Holladay D., Peksa GD. Point-of-Care Ocular Ultrasound for the Diagnosis of Retinal Detachment: A Systematic Review and Meta-Analysis. *Acad Emerg Med* 2019; 26(8): 931–9. Doi: https://doi.org/10.1111/acem.13682.

[33] Granfeldt A., Avis SR., Lind PC., Holmberg MJ., Kleinman M., Maconochie I., Hsu CH., Fernanda de Almeida M., Wang T-L., Neumar RW., et al. Intravenous vs. intraosseous administration of drugs during cardiac arrest: A systematic review. *Resuscitation* n.d.

[34] Granfeldt A., Avis SR., Nicholson TC., Holmberg MJ., Moskowitz A., Coker A., Berg KM., Parr MJ., Donnino MW., Soar J., et al. Advanced airway management during adult cardiac arrest: A systematic review. *Resuscitation* n.d.

[35] Granfeldt A., Holmberg MJ., Nolan JP., Soar J., Andersen LW., Force for the ILC on R (ILCOR) ALST. Targeted temperature management in adult cardiac arrest: Systematic review and meta-analysis. *Resuscitation* n.d.

[36] Harhash AA., Huang JJ., Howe CL., Hsu C-H., Kern KB. Coronary angiography and percutaneous coronary intervention in cardiac arrest survivors with non-shockable rhythms and no STEMI: A systematic review. *Resuscitation* n.d.

[37] Hassanipour S., Ghaem H., Arab-Zozani M., Seif M., Fararouei M., Abdzadeh E., Sabetian G., Paydar S. Comparison of artificial neural network and logistic regression models for prediction of outcomes in trauma patients: A systematic review and meta-analysis. *Injury* n.d.; 50.

[38] Haywood KL., Pearson N., Morrison LJ., Castrén M., Lilja G., Perkins GD. Assessing health-related quality of life (HRQoL) in survivors of out-of-hospital cardiac arrest: A systematic review of patient-reported outcome measures. *Resuscitation* n.d.

[39] Hoek AE., Anker SCP., van Beeck EF., Burdorf A., Rood PPM., Haagsma JA. Patient Discharge Instructions in the Emergency Department and Their Effects on Comprehension and Recall of Discharge Instructions: A Systematic Review and Meta-analysis. *Ann Emerg Med* 2020; 75(3): 435–44. Doi: 10.1016/j.annemergmed.2019.06.008.

[40] Ilgen JS., Sherbino J., Cook DA. Technology-enhanced Simulation in Emergency Medicine: A Systematic Review and Meta-Analysis. *Acad Emerg Med* 2013; 20(2): 117–27. Doi: https://doi.org/10.1111/acem.12076.

[41] Johnson NA., Stirling ERB., Divall P., Thompson JR., Ullah AS., Dias JJ. Risk of hip fracture following a wrist fracture—A meta-analysis. *Injury* n.d.; 48.

[42] Kao Y., Loh E-W., Hsu C-C., Lin H-J., Huang C-C., Chou Y-Y., Lien C-C., Tam K-W. Fluid Resuscitation in Patients With Severe Burns: A Meta-analysis of Randomized Controlled Trials. *Acad Emerg Med* 2018; 25(3): 320–9. Doi: https://doi.org/10.1111/acem.13333.

[43] Kareemi H., Vaillancourt C., Rosenberg H., Fournier K., Yadav K. Machine Learning Versus Usual Care for Diagnostic and Prognostic Prediction in the Emergency Department: A Systematic Review. *Acad Emerg Med* 2021; 28(2): 184–96. Doi: https://doi.org/10.1111/acem.14190.

[44] Kim JG., Ahn C., Shin H., Kim W., Lim TH., Jang B-H., Cho Y., Choi K-S., Lee J., Na MK. Efficacy of the cooling method for targeted temperature management in post-cardiac arrest patients: A systematic review and meta-analysis. *Resuscitation* n.d.

[45] Kim S-J., Park H-S., Lee D-W. Iliacus hematoma syndrome: A systematic review of recent literature and case report. *Injury* n.d.; 51.

[46] Kirkland S., Stiell I., AlShawabkeh T., Campbell S., Dickinson G., Rowe BH. The Efficacy of Pad Placement for Electrical Cardioversion of Atrial Fibrillation/Flutter: A Systematic Review. *Acad Emerg Med* 2014; 21(7): 717–26. Doi: https://doi.org/10.1111/acem.12407.

[47] Koehler RM., Okoroafor UC., Cannada LK. A systematic review of opioid use after extremity trauma in orthopedic surgery. *Injury* n.d.; 49.

[48] Komaru Y., Inokuchi R., Iwagami M., Hamasaki Y., Nangaku M., Doi K. INVERSE CORRELATION BETWEEN INCIDENCE AND MORTALITY OF ACUTE KIDNEY INJURY IN CRITICALLY ILL PATIENTS: A SYSTEMATIC REVIEW. *SHOCK* n.d.

[49] Lalande E., Burwash-Brennan T., Burns K., Atkinson P., Lambert M., Jarman B., Lamprecht H., Banerjee A., Woo MY., Investigators the Sh. Is point-of-care ultrasound a reliable predictor of outcome during atraumatic, non-shockable cardiac arrest? A systematic review and meta-analysis from the SHoC investigators. *Resuscitation* n.d.

[50] Lamb CM., Garner JP. Selective non-operative management of civilian gunshot wounds to the abdomen: A systematic review of the evidence. *Injury* n.d.; 45.

[51] Larsen JM., Ravkilde J. Acute coronary angiography in patients resuscitated from out-of-hospital cardiac arrest-A systematic review and meta-analysis. *Resuscitation* n.d.

[52] Layek A., Maitra S., Pal S., Bhattacharjee S., Baidya DK. Efficacy of vasopressin during cardio-pulmonary resuscitation in adult patients: A meta-analysis. *Resuscitation* n.d.

[53] Li B., Zhao H., Zhang J., Yan Q., Li T., Liu L. Resuscitation Fluids in Septic Shock: A Network Meta-Analysis of Randomized Controlled Trials. *Shock* n.d.

[54] Lin S., Callaway CW., Shah PS., Wagner JD., Beyene J., Ziegler CP., Morrison LJ. Adrenaline for out-of-hospital cardiac arrest resuscitation: A systematic review and meta-analysis of randomized controlled trials. *Resuscitation* n.d.

[55] Lin S., Yokoyama H., Rac VE., Brooks SC. Novel biomarkers in diagnosing cardiac ischemia in the emergency department: A systematic review. *Resuscitation* n.d.

[56] Liu C., Desai S., Krebs LD., Kirkland SW., Keto-Lambert D., Rowe BH., Team the P-2 CW. Effectiveness of Interventions to Decrease Image Ordering for Low Back Pain Presentations in the Emergency Department: A Systematic Review. *Acad Emerg Med* 2018; 25(6): 614–26. Doi: https://doi.org/10.1111/acem.13376.

[57] Lockey A., Lin Y., Cheng A. Impact of adult advanced cardiac life support course participation on patient outcomes—A systematic review and meta-analysis. *Resuscitation* n.d.

[58] Luo S., Zhang Y., Zhang W., Zheng R., Tao J., Xiong Y. Prognostic significance of spontaneous shockable rhythm conversion in adult out-of-hospital cardiac arrest patients with initial non-shockable heart rhythms: A systematic review and meta-analysis. *Resuscitation* n.d.

[59] Mckechnie PS., John A. Anxiety and depression following traumatic limb amputation: A systematic review. *Injury* n.d.; 45.

[60] McLeod SL., Brignardello-Petersen R., Worster A., You J., Iansavichene A., Guyatt G., Cheskes S. Comparative effectiveness of antiarrhythmics for out-of-hospital cardiac arrest: A systematic review and network meta-analysis. *Resuscitation* n.d.

[61] McMahon SE., Little ZE., Smith TO., Trompeter A., Hing CB. The management of segmental tibial shaft fractures: A systematic review. *Injury* n.d.; 47.

[62] McNeill G., Bryden D. Do either early warning systems or emergency response teams improve hospital patient survival? A systematic review. *Resuscitation* n.d.

[63] McQueen C., Smyth M., Fisher J., Perkins G. Does the use of dedicated dispatch criteria by Emergency Medical Services optimise appropriate allocation of advanced care resources in cases of high severity trauma? A systematic review. *Injury* n.d.; 46.

[64] Medford-Davis LN., Eswaran V., Shah RM., Dark C. The Patient Protection and Affordable Care Act's Effect on Emergency Medicine: A Synthesis of the Data. *Ann Emerg Med* 2015; 66(5): 496–506. Doi: 10.1016/j.annemergmed.2015.04.007.

[65] Millar SC., Arnold JB., Thewlis D., Fraysse F., Solomon LB. A systematic literature review of tibial plateau fractures: What classifications are used and how reliable and useful are they? *Injury* n.d.; 49.

[66] Miller AC., Rosati SF., Suffredini AF., Schrump DS. A systematic review and pooled analysis of CPR-associated cardiovascular and thoracic injuries. *Resuscitation* n.d.

[67] Mitchell IC., Norat BJ., Auerbach M., Bressler CJ., Como JJ., Escobar Jr. MA., Flynn-O'Brien KT., Lindberg DM., Nickoles T., Rosado N., et al. Identifying Maltreatment in Infants and Young Children Presenting With Fractures: Does Age Matter? *Acad Emerg Med* 2021; 28(1): 5–18. Doi: https://doi.org/10.1111/acem.14122.

[68] Morris R., Pallister I., Trickett RW. Measuring outcomes following tibial fracture. *Injury* n.d.; 50.

[69] Newgard CD., Cheney TP., Chou RG., Fu RW., Daya MR., O'Neil ME., Wasson N., Hart EL., Totten AM. Out-of-hospital Circulatory Measures to Identify Patients With Serious Injury: A Systematic Review. *Acad Emerg Med* 2020; 27(12): 1323–39. Doi: 10.1111/acem.14056.

[70] Nikolaou NI., Netherton S., Welsford M., Drennan IR., Nation K., Belley-Cote E., Torabi N., Morrison LJ., Drennan I., Soar J., et al. A systematic review and meta-analysis of

the effect of routine early angiography in patients with return of spontaneous circulation after Out-of-Hospital Cardiac Arrest. *Resuscitation* n.d.

[71] O'Dochartaigh D., Douma M. Prehospital ultrasound of the abdomen and thorax changes trauma patient management: A systematic review. *Injury* n.d.; 46.

[72] Ohle R., Montpellier R-A., Marchadier V., Wharton A., McIsaac S., Anderson M., Savage D. Can Emergency Physicians Accurately Rule Out a Central Cause of Vertigo Using the HINTS Examination? A Systematic Review and Meta-analysis. *Acad Emerg Med* 2020; 27(9): 887–96. Doi: https://doi.org/10.1111/acem.13960.

[73] Oliver GJ., Walter DP. A Call for Consensus on Methodology and Terminology to Improve Comparability in the Study of Preventable Prehospital Trauma Deaths: A Systematic Literature Review. *Acad Emerg Med* 2016; 23(4): 503–10. Doi: https://doi.org/10.1111/acem.12932.

[74] Pape H-C., Halvachizadeh S., Leenen L., Velmahos GD., Buckley R., Giannoudis P V. Timing of major fracture care in polytrauma patients – An update on principles, parameters and strategies for 2020. *Injury* n.d.; 50.

[75] Patel JK., Kataya A., Parikh PB. Association between intra- and post-arrest hyperoxia on mortality in adults with cardiac arrest: A systematic review and meta-analysis. *Resuscitation* n.d.

[76] Patel S V., Kidane B., Klingel M., Parry N. Risks associated with red blood cell transfusion in the trauma population, a meta-analysis. *Injury* n.d.; 45.

[77] Raven MC., Kushel M., Ko MJ., Penko J., Bindman AB. The Effectiveness of Emergency Department Visit Reduction Programs: A Systematic Review. *Ann Emerg Med* 2016; 68(4): 467–83. Doi: 10.1016/j.annemergmed.2016.04.015.

[78] Reynolds JC., Issa MS., Nicholson TC., Drennan IR., Berg KM., O'Neil BJ., Welsford M. Prognostication with point-of-care echocardiography during cardiac arrest: A systematic review. *Resuscitation* n.d.

[79] Ruff J., Wang TL., Quatman-Yates CC., Phieffer LS., Quatman CE. Commercially available gaming systems as clinical assessment tools to improve value in the orthopaedic setting: A systematic review. *Injury* n.d.; 46.

[80] Saczkowski RS., Brown DJA., Abu-Laban RB., Fradet G., Schulze CJ., Kuzak ND. Prediction and risk stratification of survival in accidental hypothermia requiring extracorporeal life support: An individual patient data meta-analysis. *Resuscitation* n.d.

[81] Sakamoto JT., Ward HB., Vissoci JRN., Eucker SA. Are Nonpharmacologic Pain Interventions Effective at Reducing Pain in Adult Patients Visiting the Emergency Department? A Systematic Review and Meta-analysis. *Acad Emerg Med* 2018; 25(8): 940–57. Doi: https://doi.org/10.1111/acem.13411.

[82] Salhi BA., White MH., Pitts SR., Wright DW. Homelessness and Emergency Medicine: A Review of the Literature. *Acad Emerg Med* 2018; 25(5): 577–93. Doi: 10.1111/acem.13358.

[83] Savino PB., Reichelderfer S., Mercer MP., Wang RC., Sporer KA. Direct Versus Video Laryngoscopy for Prehospital Intubation: A Systematic Review and Meta-analysis. *Acad Emerg Med* 2017; 24(8): 1018–26. Doi: https://doi.org/10.1111/acem.13193.

[84] Schenone AL., Cohen A., Patarroyo G., Harper L., Wang X., Shishehbor MH., Menon V., Duggal A. Therapeutic hypothermia after cardiac arrest: A systematic review/meta-analysis exploring the impact of expanded criteria and targeted temperature. *Resuscitation* n.d.

[85] Schimmer JAG., Van Der Steeg AFW., Zuidema WP. Splenic function after angioembolization for splenic trauma in children and adults: A systematic review. *Injury* n.d.; 47.

[86] Shivasabesan G., Mitra B., O'Reilly GM. Missing data in trauma registries: A systematic review. *Injury* n.d.; 49.

[87] Si X., Song XD., Lin QW., Nie Y., Zhang GR., Xu HL., Chen MY., Wu JF., Guan XD. Does End-Expiratory Occlusion Test Predict Fluid Responsiveness in Mechanically Ventilated Patients? A Systematic Review and Meta-Analysis. *SHOCK* n.d.

[88] Srinivasan L., Pisapia JM., Shah SS., Halpern CH., Harris MC. Can Broad-Range 16S Ribosomal Ribonucleic Acid Gene Polymerase Chain Reactions Improve the Diagnosis of Bacterial Meningitis? A Systematic Review and Meta-analysis. *Ann Emerg Med* 2012; 60(5): 609–20. Doi: 10.1016/j.annemergmed.2012.05.040.

[89] Staub LJ., Biscaro RRM., Kaszubowski E., Maurici R. Chest ultrasonography for the emergency diagnosis of traumatic pneumothorax and haemothorax: A systematic review and meta-analysis. *Injury* n.d.; 49.

[90] Touma O., Davies M. The prognostic value of end tidal carbon dioxide during cardiac arrest: A systematic review. *Resuscitation* n.d.

[91] van Trigt J., Schep N., Peters R., Goslings C., Schepers T., Halm J. Routine pelvic X-rays in asymptomatic hemodynamically stable blunt trauma patients: A meta-analysis (vol 49, pg 2024, 2018). *Inj J CARE Inj* n.d.; 50.

[92] Wang C-H., Chang W-T., Huang C-H., Tsai M-S., Yu P-H., Wang A-Y., Chen N-C., Chen W-J. The effect of hyperoxia on survival following adult cardiac arrest: A systematic review and meta-analysis of observational studies. *Resuscitation* n.d.

[93] Wen Y., Zhu Y., Jiang Q., Guo N., Cai Y., Shen X. The Effectiveness and Safety of Corticosteroids Therapy in Adult Critical Ill Patients with Septic Shock: A Meta-Analysis of Randomized Controlled Trials. *Shock* n.d.

[94] West S., Soar J., Callaway CW. The viability of transplanting organs from donors who underwent cardiopulmonary resuscitation: A systematic review. *Resuscitation* n.d.

[95] Williams TA., Tohira H., Finn J., Perkins GD., Ho KM. The ability of early warning scores (EWS) to detect critical illness in the prehospital setting: A systematic review. *Resuscitation* n.d.

[96] Wong CK., O'Rielly CM., Teitge BD., Sutherland RL., Farquharson S., Ghosh M., Robertson HL., Lang E. The Characteristics and Effectiveness of Interventions for Frequent Emergency Department Utilizing Patients With Chronic Noncancer Pain: A Systematic Review. *Acad Emerg Med Off J Soc Acad Emerg Med* 2020; 27(8): 742–52. Doi: 10.1111/acem.13934.

[97] Wu Z., Zhang S., Xu J., Xie J., Huang L., Huang Y., Yang Y., Qiu H. Norepinephrine vs Vasopressin: Which Vasopressor Should Be Discontinued First in Septic Shock? A Meta-Analysis. *Shock* n.d.

[98] Yo CH., Hsieh PS., Lee SH., Wu JY., Chang SS., Tasi KC., Lee CC. Comparison of the Test Characteristics of Procalcitonin to C-Reactive Protein and Leukocytosis for the Detection of Serious Bacterial Infections in Children Presenting With Fever Without Source: A Systematic Review and Meta-analysis. *Ann Emerg Med* 2012; 60(5): 591–600. Doi: 10.1016/j.annemergmed.2012.05.027.

[99] Young KD., Korotzer NC. Weight Estimation Methods in Children: A Systematic Review. *Ann Emerg Med* 2016; 68(4): 441–51. Doi: 10.1016/j.annemergmed.2016.02.043.

[100] Zhang Y-W., Rui Y-F. A systematic review of the "Logsplitter" injury: how much do we know? *Injury* n.d.; 52.

### *2.1.6 Appendix F: Reporting Checklist*

| **Table 1 Proposed items to be used for reporting methodology research, adapted from the PRISMA Checklist (http://prisma-statement.org/PRISMAStatement/Checklist.aspx)** | | |
|---|---|---|
| Section/topic | Proposed item to be used in methodology research | Locations(s) reported |
| **Title** | | |
| Title | Identify the report as a meta-epidemiologic study | No |
| **Abstract** | | |
| Structured summary | Provide a structured summary that includes the background of the topic, goal of the study, data sources, method of data selection, appraisal and synthesis methods, results, limitations, conclusions and implications of key findings | Abstract |
| **Introduction** | | |
| Rationale | Describe the rationale for the meta-epidemiological study in the context of what is already known | Introduction |
| Objectives | Provide an explicit statement of the goal of the meta-epidemiological study and the hypothesis being empirically tested | Introduction |
| **Methods** | | |
| Protocol | Indicate if a protocol exists, if and where it can be accessed (eg, Web address). Registration of a protocol is not mandatory | Methods: paragraph 1 |
| Eligibility criteria | Specify study characteristics used as criteria for eligibility with a rationale | Methods: Eligible Studies |
| Information sources | Describe all information sources (eg, databases with dates of coverage, contact with experts to identify additional studies, Internet searches) and search date | Methods: Identifying systematic reviews for inclusion and Appendix C1: Search Strategy |
| Search | Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated. Search is commonly not driven by a clinical question | Appendix C1: Search Strategy |
| Study selection | Describe the process for selecting studies for inclusion (ie, how many reviewers selected studies, reviewing in duplicate or by single individuals) | Methods: Screening systematic reviews |
| Data collection process | Describe method of data extraction from reports (eg, piloted forms, independently, in duplicate) and any processes used for manipulating data or obtaining and confirming data from investigators | Methods: Data extraction and Appendix B: Protocol |

| | | |
|---|---|---|
| Data items | List and define all variables for which data were sought and any assumptions and imputations made | Methods: Data extraction Appendix B: Protocol |
| Risk of bias in individual studies | If risk of bias assessment of individual studies was relevant to the analysis, describe the items used and how this information is to be used during data synthesis | N/A |
| Summary measures | State the principal summary measures (eg, ratio of risk ratios, difference in means) and explain its meaning and direction to readers | Methods: Data analysis |
| Synthesis of results | Describe the statistical or descriptive methods of synthesis including measures of consistency if relevant. If applicable, describe the development of statistical or simulation modelling based on theoretical background. Describe and justify assumptions and computational approximations. Describe methods of additional analyses (eg, sensitivity or subgroup analyses, meta-regression), if done, indicating which were prespecified | N/A |
| **Results** | | |
| Study selection | Give numbers of studies assessed for eligibility and included in the study, with reasons for exclusions at each stage, ideally with a flow diagram. Present a measure of inter-reviewer agreement (eg, kappa statistic) | Results: paragraph 1 and Figure 1 |
| Study characteristics | For each study, present characteristics for which data were extracted and provide the citations. Clinical characteristics may not always be relevant | Table 1.1 and 1.2<br><br>Appendix E |
| Risk of bias within studies | If risk of bias assessment of individual studies was used in the meta-epidemiological analysis, report risk of bias indicators of each study to allow replication of findings | N/A |
| Results of individual studies | Present data elements used in the meta-epidemiological analysis from each study (results of clinical outcomes may not be relevant) | Figure 2 – aggregated results |
| Synthesis of results | Present results of statistical analysis done, including measures of precision and measures of consistency. Present validity of assumptions and fit of statistical or simulation modelling, if applicable | N/A |
| Additional analysis | Give results of additional analyses, if done (eg, sensitivity or subgroup analyses, meta- regression) | N/A |
| **Discussion** | | |
| Summary of evidence | Summarise the main findings and compare them with existing knowledge about the topic. The quality of evidence may not be relevant; however, investigators should describe their certainty in the results to readers | Discussion |
| Limitations | Discuss limitations at research methodology level (eg, likelihood of reporting or publication bias) | Discussion: paragraph 6 |

| | | |
|---|---|---|
| Conclusions | Provide general interpretation of the results and implications for future research. Provide any plausible impact on clinical practice | Conclusion |
| **Funding** | | |
| Funding | Describe sources of funding for the methodology research and role of funders | Funding Sources |

Checklist adapted from Murad et al 2017 [24].

### 2.1.8 *Appendix G: Conflict of interest form*


African Journal of Emergency Medicine

Conflict of interest declaration and author agreement form

It is important that you return this form upon submission. We will not publish your article without completion, signature and return of this form.

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Assessing the methodological quality of systematic reviews in African emergency medicine: a methodological study

2. Please select:

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3. Describe conflict of interest:

None

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(…continued on next page)

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# 3 Part B – Appendices

## 3.1 Journal Instructions to Authors

### *3.1.1 Author information pack*

# AFRICAN JOURNAL OF EMERGENCY MEDICINE

**AUTHOR INFORMATION PACK**

## TABLE OF CONTENTS




**ISSN:** 2211-419X

## DESCRIPTION

The *African Journal of Emergency Medicine* (*AfJEM*) is the official journal of the African Federation for Emergency Medicine. It is an Africa-centric, peer-reviewed journal aimed in particular at supporting emergency care across, you guessed it, Africa. *AfJEM* publishes original research, reviews, brief reports of scientific investigations, case reports as well as commentary and correspondence related to topics of scientific, ethical, social and economic importance to emergency care in Africa. Articles will be of direct importance to African emergency care, but may have originated from elsewhere in the world.

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c. All other studies: http://www.equator-network.org/

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It is important that the file be saved in the native format of the word processor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the word processor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way

very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. See also the section on Electronic artwork.
To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

**Article Structure**

Please use our manuscript template to structure your manuscript:
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**Subdivision**

Divide your article into clearly defined sections as per the guidance given in Types of Articles above. Numbers are not to be used for sections or subsections. Section headings should be in **bold**. Subsection headings should be in italics. Each heading should appear on its own separate line. Subsections in addition to the sections described in Types of Articles above should be used sparingly.

**Clinical trial results**

In line with the position of the International Committee of Medical Journal Editors, the journal will not consider results posted in the same clinical trials registry in which primary registration resides to be prior publication if the results posted are presented in the form of a brief structured (less than 500 words) abstract or table. However, divulging results in other circumstances (e.g., investors' meetings) is discouraged and may jeopardise consideration of the manuscript. Authors should fully disclose all posting in registries of results of the same or closely related work.

**Discussion**

This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

**Conclusions**

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

**Appendices**

If there is more than one appendix, it should be identified starting with Appendix B, C, etc. Do not use Appendix A. Formulae and equations in appendices should be given separate numbering: Eq. (B.1), Eq. (B.2), etc.; in a subsequent appendix, Eq. (C.1) and so on. Similarly for tables and figures: Table B.1; Fig. B.1, etc. All appendices will be considered online material only.

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- ***Corresponding author.*** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. **Ensure that phone numbers (with country and area code) are provided in addition to the e-mail address and the complete postal address. Contact details must be kept up to date by the corresponding author.**
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**Abstract**

A concise and factual abstract of no more than 300 words is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. Non-standard or uncommon abbreviations should be avoided, but if essential, it must be defined at the first mention. With the exception of a submission for Editorials, Correspondence and Erratum, structured abstracts are required for all article types
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Types of abstracts include:*Research abstracts* should adhere to the following format: Introduction, Methods, Results and Conclusion.*Narrative abstracts* are acceptable for non-research abstracts (concepts and commentary)*French abstracts:* English abstracts are required for all French language submissions, in addition to the French abstract.

**Keywords**

The submission system will prompt authors to provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, "and", "of"). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

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**Acknowledgements**

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proofreading the article, etc.).

**Statistics**

Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. References for the design of the study and complex or unusual statistical methods should be to standard works when possible (with pages stated). Commonly used methods such as the chi-square test, t-test, ANOVA, linear and logistic regression need not be referenced. Define statistical terms, www.afjem.com abbreviations, and most symbols. Technical statistical terms should ideally be replaced by simpler terms where possible and referenced if not. Specify the computer software used. The results section must be written so the average reader can understand the findings. The methods section is allowed to be more complex if unavoidable. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). For normally distributed data give means and confidence intervals and for data that is not normally distributed give the median and interquartile range. Avoid relying solely on statistical hypothesis testing, such as p-values. If p-values are used, include 2 digits of precision (i.e. p=0.65) for values greater than 0.01. Give 3 digits for values between 0.01 and 0.001 and report values smaller than 0.001 as $p < 0.001$. Describing non-significant p-values as NS is not acceptable and a numerical value should be given. When using tables consider including counts and percentages. In general, including the chi-square statistic, t statistic, F statistic and degrees of freedom is not useful. Regression output should be limited to the most important findings. Estimates of variance explained (R2, correlation coefficients, and standardised regression coefficients or effect size) should not be presented as the main result of the analysis.

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Present simple formulae in the line of normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text). Bear in mind that complex formulae, such as log likelihood expressions or symbolic expressions for regression models are often beyond the grasp of the average reader. Consider making this available as an online only appendix.

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Mandatory inclusions will be included in the final manuscript and will be added by the technical editor after acceptance. It will be placed just before the acknowledgments. The documents listed below should be included for the relevant article types as e-component. Failure to include these will result in the submission being returned to include.

*1. Signed conflict of interest document:*
Required for all article types. Download document here

*2. Reporting checklist*
Required for Original articles, Review Articles and Abbreviated papers. Please provide a copy of the reporting checklist clearly indicating which elements of the reporting format has been adhered to and which not. Provide a brief explanation for deviations from a reporting checklist a. For randomised control trials: http://www.consort-statement.org

b. For cohort, case-control, and cross-sectional studies: http://www.strobe-statement.org/
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**References**

*Citation in text*

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the

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*Web references*
As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

*Data references*
This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

*Preprint references*
Where a preprint has subsequently become available as a peer-reviewed publication, the formal publication should be used as the reference. If there are preprints that are central to your work or that cover crucial developments in the topic, but are not yet formally published, these may be referenced. Preprints should be clearly marked as such, for example by including the word preprint, or the name of the preprint server, as part of the reference. The preprint DOI should also be provided.

*References in a special issue*
Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

*Reference style*
*Text:* Indicate references by number(s) in square brackets in line with the text. The actual authors can be referred to, but the reference number(s) must always be given.
*List:* Number the references (numbers in square brackets) in the list in the order in which they appear in the text.
*Examples:*
Reference to a journal publication:
[1] Van der Geer J, Hanraads JAJ, Lupton RA. The art of writing a scientific article. J Sci Commun2010;163:51–9. https://doi.org/10.1016/j.Sc.2010.00372.
Reference to a journal publication with an article number:
[2] Van der Geer J, Hanraads JAJ, Lupton RA. The art of writing a scientific article. Heliyon.2018;19:e00205. https://doi.org/10.1016/j.heliyon.2018.e00205 Reference to a book:
[3] Strunk Jr W, White EB. The elements of style. 4th ed. New York: Longman; 2000.
Reference to a chapter in an edited book:
[4] Mettam GR, Adams LB. How to prepare an electronic version of your article. In: Jones BS, SmithRZ, editors. Introduction to the electronic age, New York: E-Publishing Inc; 2009, p. 281–304. Reference to a website:

[5] Cancer Research UK. Cancer statistics reports for the UK, http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/; 2003 [accessed 13 March 2003].

Reference to a dataset:

[dataset] [6] Oguro M, Imahiro S, Saito S, Nakashizuka T. Mortality data for Japanese oak wilt disease and surrounding forest compositions, Mendeley Data, v1; 2015. https://doi.org/10.17632/ xwj98nb39r.1.

Note shortened form for last page number. e.g., 51–9, and that for more than 6 authors the first 6 should be listed followed by 'et al.' For further details you are referred to 'Uniform Requirements for Manuscripts submitted to Biomedical Journals' (J Am Med Assoc 1997;277:927–34) (see also Samples of Formatted References).

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Journal names should be abbreviated according to the List of Title Word Abbreviations: http://www.issn.org/services/online-services/access-to-the-ltwa/. The correct abbreviation for AfJEM is: Afr J Emerg Med

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## AFTER ACCEPTANCE

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### *3.1.2 Submission template*

Please structure your **manuscript** using the text and headings below for submission.

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**<Insert your article**

**title> Abstract**

<insert your abstract here>

**Keywords**
<insert 3-5 keywords here>

New page

---

**African relevance**
<insert 3-5 concise bullet points that convey the relevance of your work within the African context>

New page

---

<Reinsert your article title>

<Insert your article (including Microsoft Office generated tables and figures)>

**Dissemination of results**
<Provide a brief statement on how findings of this research were disseminated to the community from, or within which it was collected>

*Example:* Results from this study (research/ trail/ etc.) was shared with staff members at the data collection site through an informal presentation. The results were also published in the service's newsletter.

**Authors' contribution**
<Use the text in the example below to describe the proportional author contribution as per your author statement:>

Authors contributed as follow to the conception or design of the work; the acquisition, analysis, or interpretation of data for the work; and drafting the work or revising it critically for important intellectual content:

Use this text as is

*GM contributed 50%; WM 25%; and JR, RAR, RV, KP and DC contributed 5% each.* Use authors' initials only. Proportions must tally 100%

Use this text as is

All authors approved the version to be published and agreed to be accountable for all aspects of the work.

**Declaration of Competing Interest**

<If no conflict, insert: “The authors declared no conflicts of interest.”>

<If conflict, insert: “[describe conflicts]. The authors declared no further conflict of interest.”>

New page

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**References**

<Insert all references in Vancouver style>

## 3.2 Forms: Data collection

### *3.2.1 Form 1: Article Screening*

| **Title and Abstract screening (to identify eligible reviews)** | |
|---|---|
| **Question** | **Response** |
| 1. Was the article published in one of the selected journals? | Y/N |
| 2. Was it published between January 2012 and December 2021 (inclusive)? | Y/N |
| 3. Language: English or Francophone | Y/N |
| 4. Is it a report of a secondary/review study? | Y/N |
| 5. Is the topic within the field of emergency medicine? | Y/N |
| 6. Does the report represent a completed, original study (not a protocol or an update)? | Y/N |
| | |
| **Full text screening (to identify eligible systematic reviews)** | |
| 1. Is the full text available? | Y/N |
| 2. Does the full text contain a description of methods? | Y/N |
| 3. If YES for 2, are the methods in keeping with that of a systematic review? | Y/N |
| 4. If YES for 2, but not a systematic review, study can be better described as: | Scoping review<br>Narrative review<br>Topic overview/summary |

### *3.2.2 Form 2: Data extraction*

| **Question** | **Response** |
|---|---|
| Study ID | |
| Author | |
| Study title | |
| Year of publication | |
| Journal name | |
| Journal impact factor (H-index) | |
| Journal country (of publisher) | |
| Number of authors | |
| Primary author's nationality (of affiliated institution) | |
| Author with methodological expertise or affiliation with an epidemiology/statistics department | Y/N |
| Librarian author or assistance | Y/N |
| Does study title contain "systematic review" and/or "meta-analysis" | Y/N |
| Focus of review | Prevalence<br>Diagnostic<br>Prognostic<br>Effectiveness<br>Other |
| Does study report state following a reporting guideline? | Y/N |
| If YES to above, name of reporting guideline | |
| Synthesis type | Narrative synthesis (NS)<br>Meta-analysis (MA) |
| Was a protocol or methods established *a prior*? | Y/N |
| If YES: | |
| Was the protocol registered? | Y/N |
| If YES: Name of registry | PROSPERO<br>Other |
| Registration number | |
| Does study specify whether funding was received? | Y/N |
| If YES, choose: | Not funded<br>Non-profit funding<br>Commercial funding |
| If applicable, name of funder | |
| GRADE approach used | Y/N |
| Number of studies included in the review | |
| For guideline? (Review commissioned as part of guideline development process or authors stated intent to produce guidelines on the topic) | Y/N |
| Does study report reference a scoping review on the review topic? | Y/N |

| **AMSTAR 2 - Methodological Quality Assessment** | |
|---|---|
| 1. Did the research questions and inclusion criteria for the review include the components of PICO? | Yes/No |
| 2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol? | Yes/Partial Yes/No |
| 3. Did the review authors explain their selection of the study designs for inclusion in the review? | Yes/No |
| 4. Did the review authors use a comprehensive literature search strategy? | Yes/Partial Yes/No |
| 5. Did the review authors perform study selection in duplicate? | Yes/No |
| 6. Did the review authors perform data extraction in duplicate? | Yes/No |
| 7. Did the review authors provide a list of excluded studies and justify the exclusions? | Yes/Partial Yes/No |
| 8. Did the review authors describe the included studies in adequate detail? | Yes/Partial Yes/No |
| 9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review? | Yes/Partial Yes/No |
| 10. Did the review authors report on the sources of funding for the studies included in the review? | Yes/No |
| 11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results? | Yes / No / No MA |
| 12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis? | Yes / No / No MA |
| 13. Did the review authors account for RoB in individual studies when interpreting/discussing the results of the review? | Yes |
| | No |
| 14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review? | Yes/No |
| 15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review? | Yes / No / No MA |

| | |
|---|---|
| 16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review? | Yes/No |

## 3.3 HREC approval

Stellenbosch UNIVERSITY IYUNIVESITHI UNIVERSITEIT
forward together sonke siya phambili saam vorentoe

**Approval Notice**

**New Application**

08/11/2022

**Project ID :**22905

**HREC Reference No:** X22/10/028

**Project Title:** Methodological quality of systematic reviews in emergency medicine

Dear Dr HJ Van Niekerk

The **New Application** received on 31/10/2022 was reviewed and **approved** by members of the **Health Research Ethics Committee** via **expedited** review procedures on 08/11/2022.

Please note the following information about your approved research protocol:

**Approval Date: 08 November 2022**

**Expiry Date: 07 November 2023**

Please remember to use your Project ID 22905 and Ethics Reference Number X22/10/028 on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

**After Ethical Review**

Translation of the informed consent document(s) to the language(s) applicable to your study participants should now be submitted to the HREC.

Please note you can submit your progress report through the online ethics application process, and the application should be submitted to the HREC before the year has expired. Please see *Forms and Instructions* on our HREC website (www.sun.ac.za/healthresearchethics) for guidance on how to submit a progress report.

The HREC will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

Please note that for studies involving the use of questionnaires, the final copy should be uploaded on Infonetica.

**Provincial and City of Cape Town Approval**

Please note that for research at a primary or secondary healthcare facility, permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Please consult the Western Cape Government website for access to the online Health Research Approval Process, see: https://www.westerncape.gov.za/general-publication/health-research-approval-process. Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

For standard HREC forms and instructions, please visit: Forms and Instructions on our HREC website https://applyethics.sun.ac.za/ProjectView/Index/22905

If you have any questions or need further assistance, please contact the HREC office at 021 938 9677.

Yours sincerely,

Melody Shana
Coordinator: health research Ethics Committee1

*National Health Research Ethics Council (NHREC) Registration Number:*

*REC-130408-012 (HREC1)•REC-230208-010 (HREC2)*

*Federal Wide Assurance Number: 00001372*

*The Health Research Ethics Committee (HREC) complies with the SA National Health Act No. 61 of 2003 as it pertains to health research. The HREC abides by the ethical norms and principles for research, established by the World Medical Association (2013). Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects; the South African Department of Health (2006). Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa (2nd edition); as well as the Department of Health (2015). Ethics in Health Research: Principles, Processes and Structures (2nd edition).*

*The Health Research Ethics Committee reviews research involving human subjects conducted or supported by the Department of Health and Human Services, or other federal departments or agencies that apply the Federal Policy for the Protection of Human Subjects to such research (United States Code of Federal Regulations Title 45 Part 46); and/or clinical investigations regulated by the Food and Drug Administration (FDA) of the Department of Health and Human Services.*

## 3.4 Turnitin report

# MSc Project_MQ SR_JvN

*by* HENDRIK JACQUES Van Niekerk

**Submission date:** 08-Dec-2022 09:36PM (UTC+0200)
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**File name:** 48249_HENDRIK_JACQUES_Van_Niekerk_MSc_Project_MQ_SR_JvN_994291_418185451.docx (65.54K)
**Word count:** 3773
**Character count:** 23230

25

**Quality of systematic reviews in African emergency medicine: a cross-sectional methodological study**

**Abstract**

*Introduction*: Systematic reviews are increasingly important in emergency medicine. Reliable systematic reviews are essential to inform local clinical practice guidelines, policies and further research priorities. For systematic review findings to be trustworthy, they need to be conducted with methodological rigour and reported transparently. We aimed to describe published African emergency medicine review literature, assess the methodological quality of African systematic reviews and compare them to internationally published systematic reviews.

*Methods*: We performed a cross-sectional methodological study of emergency medicine systematic reviews published in selected African journals from 2012 to 2021. Studies were eligible for inclusion if they were i) published in one of the top five emergency medicine journals in the African region or internationally, ii) a review article on an emergency medicine topic and iii) published between January 2012 and December 2021 in English or French. We searched PubMed, Web of Science and Scopus reference lists and hand-searched selected journals. Two authors screened titles, abstracts and full texts independently and in duplicate to select reviews for inclusion. We described the characteristics of systematic reviews and assessed methodological quality using AMSTAR II.

*Results*: We identified 34 (37%) African and 511 (54%) international systematic reviews from 92 and 948 review articles respectively across 10 journals. We included all 34 African and a random sample of 100 international systematic reviews. Other review types among African journals included 8 (9%) scoping reviews, 18 (20%) narrative reviews and 32 (35%) traditional literature reviews. Methodological quality was low or critically low for all the African systematic reviews and all but three international systematic reviews. The median number of critical domain weaknesses was 4 (IQR 4;5) and 2 (IQR 2;4) for African and international systematic reviews respectively. Compared to African systematic reviews, international systematic reviews scored better in all individual AMSTAR II domains. The most common weaknesses across both African and international systematic reviews were i) not establishing *a priori* review protocols, ii) unclear selection of study designs iii) not providing a list of excluded studies and iv) unclear reporting on funding sources for included studies.

*Conclusion*: Emergency medicine systematic reviews published in African and international journals are lacking in methodological quality. Reporting of an a priori protocol, developing a comprehensive search strategy, adequate assessment of risk of bias and evidence certainty and appropriate evidence synthesis and heterogeneity assessment will improve quality of systematic reviews. To improve quality, future review authors are encouraged to collaborate with methodologists and existing evidence-synthesis networks and initiatives, enabling the transfer of skills and ultimately improving patient care.

**Keywords**

Emergency medicine, systematic review, methodological quality, AMSTAR II

**African relevance**

- The unique and developing field of African emergency medicine needs reliable systematic reviews to effectively inform practices and policies
- The review landscape and quality of systematic reviews in African emergency medicine has not previously been investigated
- Consumers and producers of the increasing number of emergency medicine review articles should be aware of what constitutes a high quality review
- The methodological quality of emergency medicine systematic reviews in African journals is lacking
- Researchers are encouraged to collaborate with individuals or organisations with methodological expertise to facilitate skills transfer, increase awareness of the importance of evidence synthesis and improve review quality

**Introduction**

Systematic reviews are often used to answer clinical questions and to inform practice guidelines and healthcare policy due to their ability to reflect the totality of evidence on a topic in a transparent, comprehensive and rigorous manner [1]. In low- and middle-income countries (LMICs) where healthcare systems face unique and complex challenges, evidence synthesis is especially important to support governments' decisions regarding equitable healthcare delivery [2] [3]. The increased recognition of the need for policy and practice to be informed by rigorous evidence is driving evidence synthesis activities across Africa [4]. Similarly, African emergency medicine literature is expanding rapidly, necessitating robust evidence synthesis [5].

Published evidence syntheses consists of various types of designs including systematic reviews, scoping reviews, narrative or traditional literature reviews, mixed methods reviews, umbrella reviews and rapid reviews [6]. Traditional literature reviews vary in their methodology and often do not report on their methods. Correctly identifying review types are important for knowledge users, as each has its purpose and is not to be confused with systematic reviews which have authority in informing practice and policy [7].

Systematic reviews are only reliable if their methods are sound. The absence of rigorous methods or incomplete reporting may result in confusion, inappropriate guidance and conflicting practice [8] [9]. A distinction can be made between methodological quality and reporting quality. Methodological quality addresses how well a systematic review was designed and conducted (e.g. literature search, selection criteria, pooling of data) [10] and is synonymous with internal validity, while reporting quality evaluates the description of the methodology and findings [11], affecting transparency and reproducibility of reviews. Various tools exist to appraise the methodological quality of systematic reviews, the most recent and widely accepted being A MeaSurement Tool to Assess systematic Reviews (AMSTAR) [10] [12]. The current updated AMSTAR II enables the appraisal of systematic reviews of randomised and non-randomised studies of healthcare intervention [13]. For reporting, The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) is the most commonly used checklist [11].

The quality of systematic reviews across various fields has been investigated in previous methodological cross-sectional studies, exploring differences and the association of quality with certain study characteristics [14][15] towards improving future reviews [16]. Some of these characteristics include factors related to the journal, region, authors, funding and year of publication [17] [18] [19] [20]. The use of the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) system of rating certainty of evidence is gaining traction and might be a useful tool in improving the overall quality and utility of systematic reviews [21].

The conduct and reporting quality of emergency medicine systematic reviews has been examined in previous methodological reviews [22] and many had major flaws, limiting their validity [23]. Currently, no literature exists assessing the methodological quality of emergency medicine systematic reviews published in African journals, comparing it to the international body of systematic reviews.

In this study, we aimed to describe the review types published in African emergency medicine journals and assess the methodological quality of systematic reviews. We compared the quality of African systematic reviews to those published in international emergency medicine journals. Lastly, we explored possible predictors of methodological quality among African systematic reviews.

**Methods**

We conducted a methodological cross-sectional study of existing systematic reviews published in emergency medicine journals between 2012 and 2021 to determine their methodological quality. Selected African and international emergency medicine journals were searched for eligible systematic reviews. We sampled systematic reviews from African and international journals for data extraction and appraisal. We were guided by methods suggested for methodological studies and followed the reporting framework for meta-epidemiological studies [17] [24]. We followed an *a priori* protocol (Appendix B) available in SUNScholarData [25]. Ethical approval was obtained from Stellenbosch University (X22/10/028).

*Eligible studies*

We included systematic reviews on emergency medicine topics published in English or French. A published study was considered a systematic review if it followed systematic methods, including, at least, pre-specified eligibility criteria, transparent searching, explicit screening and a transparent data synthesis plan – similar to the definition used in previous methodological reviews [16]. Relevant emergency medicine topics were considered eligible if it included the initial evaluation, diagnosis, treatment, and coordination of care for unforeseen illness or injury [26]. We excluded studies available only as abstracts, primary research and non-systematic reviews or related papers such as scoping reviews, narrative reviews, guidelines and editorials.

*Eligible journals*

We identified journals for searching through the SCImago Journal & Country Rank website, a publicly available portal that includes journal and country scientific indicators, and used the emergency medicine subject category filter [27]. SCImago determines regions according to the location of the publisher. Only two African journals were available, the African Journal of Emergency Medicine (AFJEM) and Emergency Medicine International (EMI). To supplement these, we searched the African Journals Online (AJOL) database and identified three additional relevant journals: South African Medical Journal (SAMJ), South African Journal of Critical Care (SAJCC) and the African Journal of Anaesthesia and Intensive Care (AJAIC) [28]. For international journals the top five journals according to H-index were selected: Annals of Emergency Medicine (AoEM), Resuscitation, Academic Emergency Medicine (AEM), Injury and Shock. The journal H-index is the number of papers (h) published in a journal that has been cited at least h times.

*Identifying systematic reviews for inclusion*

One author (JvN) searched online databases including PubMed, Web of Science and Scopus with filters for selected journals. The search string was developed using keywords proven to be sensitive for identifying systematic reviews, including "search", "review", "systematic review" and "meta-analysis" [29]. For African journals, we supplemented the online search

with hand searching, as these journals are not always indexed in databases. Appendix C contains the complete search strategy (Appendix C1), reported according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses literature search extension (PRISMA-S) guidelines, where applicable (Appendix C2) [30].

*Screening systematic reviews*

After deduplication, independent title and abstract screening was done by two reviewers (JvN and TF) in duplicate, using Systematic Review Accelerator [31]. Full texts of potentially eligible studies were retrieved and reviewed independently and in duplicate (JvN and TF). Disagreements were resolved by consensus between reviewers. Disputes were adjudicated by a senior author (MM or AR). Reasons for full-text exclusions were recorded as: no methods section, non-systematic review methods or full text not available (Appendix D).

*Sample size estimation and sampling*

We calculated an ideal sample size of 95 systematic reviews per group to determine a minimal important difference of 20% for critically low or low AMSTAR II scores between systematic reviews from African compared to International journals with 80% power, similar to previous studies [15].

We sampled 100 systematic reviews per region using proportional stratified random sampling, stratifying by journal. We used an online random number sequence generator [32]. Each journal's contribution was proportional to the total number of systematic reviews it contributed to the group. We did not reach the minimum estimated sample size for the African journals group and therefore included all eligible systematic reviews.

*Data extraction*

Calibration was done with two reviewers in which a 10% sample was extracted until 80% agreement was reached. One author (JvN) then extracted data using a standardised extraction form. Data was captured in Microsoft Excel. We extracted general characteristics (such as study and journal title, journal H-index, nationality of primary author's institution, year of publication and study focus) and methodological characteristics (relating to the authors, protocol, study methods, use of reporting guidelines, funding and use of the GRADE approach)

*Assessment of methodological quality*

We used AMSTAR II to assess the methodological quality of included systematic reviews [13]. AMSTAR II consists of 16 domains, of which seven are considered critical domains. The overall score translates into one of four global quality ratings: high (no or one non-critical domain weakness), moderate (more than one non-critical weakness), low (one critical flaw with or without non-critical weaknesses) and critically low (more than one critical flaw with or without non-critical weaknesses). The methodological quality was assessed by the primary investigator (JvN) after calibration with a co-reviewer (TF). Uncertainties were discussed with a senior author (MM or AR) until consensus was achieved.

*Data analysis*

Analysis was conducted in STATA 17 [33]. Review types were described using frequencies and percentages. Study characteristics were described using simple descriptive statistics

using frequencies and 95% CI, when appropriate, for categorical data. Continuous data was described using means with standard deviations or medians and interquartile ranges (IQR), depending on the distribution. We planned multivariate logistic regression analysis to determine quality predictors, but this is not reported as there were too few events for meaningful interpretation.

**Results**

We identified 10 861 records, and after deduplication and screening, 545 eligible systematic reviews. Of the 92 review articles published in African journals, 34 (37%) were systematic reviews, 8 (9%) scoping reviews, 18 (20%) narrative reviews with methods (systematic style) and 32 (35%) were traditional literature reviews without reported methods. The final sample for analysis comprised 34 systematic reviews from African journals and 100 systematic reviews from international journals (Figure 1). A reference list for studies excluded at full text (Appendix D) and studies included in the analysis (Appendix E) is provided as supplemental material.

*Characteristics of included systematic reviews*

The general and methodological characteristics of the included systematic reviews are summarized in Table 1.1 and Table 1.2. Systematic reviews in African journals increased from 9 to 25 when comparing 2017-2021 to 2012-2016. African systematic reviews commonly had primary authors affiliated with African and Northern American institutions, while international systematic review authors were mostly from North America. Most systematic reviews addressed questions on the effectiveness of interventions, although more than a third of African systematic reviews had a focus other than diagnosis, prognosis, prevalence or effectiveness. This was a diverse group, including systematic reviews combining multiple research questions or answering a very specific question, for example regarding service delivery or healthcare systems.

Regarding methodological characteristics, very few African systematic reviews included an author with methodological expertise, had librarian assistance, developed an *a priori* protocol, reported on or had funding, or referenced a scoping review. The GRADE approach was rarely used. More than two-thirds of African systematic reviews did not identify themselves as such in the title.

*Methodological quality*

The majority of included systematic reviews scored poorly when assessed for methodological quality. Overall, all African and all but three international systematic reviews had a global quality score of either low or critically low (Table 2). Systematic reviews published in African journals had a median of four (IQR: 4, 5) critical domain weaknesses compared to a median of two (IQR: 2, 4) in systematic reviews published in international journals.

Systematic reviews published in international journals had better scores for all individual AMSTAR II domains, compared to systematic reviews published in African journals (Figure 2). We observed similar scores for some domains and notable differences for others. Seventy-four percent of African, compared to 99% of international journals had an adequate research question and inclusion criteria (domain 1). Only 6% of African systematic reviews developed an *a priori* protocol, compared to 41% of international ones (domain 2). Less than 10% of both African and international systematic reviews adequately explained the selection of study designs for inclusion (domain 3). The literature search strategy was judged to be comprehensive in none of the African and 30% of the international systematic reviews (domain 4). Duplicate study selection was performed in 62% and 89% of African and international systematic reviews respectively, and duplicate data extraction in 41% and 63% respectively (domain 5 and 6). A list of excluded studies with justifications was rarely provided, only in 3% of African and 5% of international systematic reviews (domain 7). Included studies were described adequately in 24% and 36% of African compared to international systematic reviews (domain 8). Satisfactory risk of bias assessment was done in only 9% of African, compared to 56% of international, systematic reviews (domain 9). Reporting of funding for included studies was never done in African systematic reviews and only done in 5% of international systematic reviews (domain 10). Appropriate methods for statistical combination of results when meta-analysis was performed was used in 7% of African and 47% of international systematic reviews (domain 11). Assessment of the potential impact of risk of bias in individual studies on the results of the meta-analysis was done in 18% of African and 26% of international systematic reviews (domain 12). When interpreting results, only 15% of the African and 57% of the international systematic reviews accounted for risk of bias in individual studies (domain 13). A satisfactory discussion and explanation of observed heterogeneity in the results was present in 21% of African, compared to 62% of international, systematic reviews (domain 14). Twenty-nine percent of African and 34% of international systematic reviews carried out an adequate investigation of publication bias when performing quantitative synthesis (domain 15). Both African and international systematic reviews did well in reporting sources of conflict of interest, 85% and 98% respectively (domain 16).

*Characteristics associated with methodological weakness in African systematic reviews*

We were unable to statistically analyse predictors of methodological quality. However, during appraisal we observed that systematic reviews with a protocol and those following a reporting guideline were more transparent. Reviews using the assistance of a librarian or information specialists generally had more complete search strategies and the impact of the risk of bias and other factors was better explored in reviews using the GRADE framework.

**Discussion**

Our study determined and compared the quality of systematic reviews in African and leading international emergency medicine journals and found both to be lacking. However, systematic reviews in international journals scored better in all individual AMSTAR II domains. Our results may have been affected by the limited number of African systematic reviews available, compared to the large pool of international systematic reviews from which we sampled. Although we were unable to analyse quality predictors, greater reviewer capacity and evidence-synthesis skills among international author teams may account for the discrepancies.

In order to reduce research waste and prevent duplication of effort, identifying and appraising existing reviews on a topic is one of the first steps in evidence synthesis and guideline development [1]. Paramount to this is easily identifiable, transparent and robust systematic reviews. We encountered various reviews without an appropriate description or reporting of methods. This may lead to clinicians or policymakers inappropriately using a review to inform policy and practice, resulting in misleading or conflicting treatment options. Reviews were also classified as systematic reviews or reported as such without adherence to appropriate standards and methods of what constitutes a systematic review – such as appropriate risk of bias assessment and synthesis. This issue is multifocal, where responsibility lies with the authors, peer-reviewers and journals in emergency medicine. However a good start to the solution lies in the use of systematic review reporting checklists and authors appraising their own work before submission [11] [13] [34].

Trustworthy and reliable healthcare policies and practice guidelines in African emergency medicine should be based on high-quality, relevant and transparent systematic reviews, with sufficient systematic review author capacity and evidence literacy [35]. Despite significant growth in resources and capacity building in evidence synthesis and guideline development in recent years, renewed efforts and action is warranted for emergency medicine journal editors, systematic review authors and peer-reviewers to improve systematic review reporting and quality [4] [36] [1]. Improving the quality of systematic review reporting and conduct will require increased collaboration and capacity building among local and international review authors. The development of evidence-based healthcare initiatives in Africa is a welcome step in the right direction, and has been associated with an increased research output, especially from South African authors [4] [37]. Cochrane South Africa has played an instrumental role in building local capacity for evidence synthesis and connecting African researchers to the global network of reviewers [38]. Collaboration of new reviewers with Cochrane-trained methodologists has the potential to increase review quality significantly. In Africa, such collaboration has been shown to be impacted by personal and working relationships [39] and the importance of social networks, extramural collaboration and communication across disciplines will be essential to further increase research productivity [40]. Collaborative efforts will also lead to capacity building through mentorship, skills transfer and the exposure to tools such as reporting checklists and the Cochrane Handbook for Systematic Reviews [41]. Authors can further improve review capacity by joining local evidence-based initiatives and attending courses on evidence synthesis [4] [42].

Based on our review, critical indicators for consideration by systematic review authors, journals and peer-reviewers to improve the quality and reporting of systematic reviews are i) reporting of an *a priori* protocol, ii) appropriate support to develop a comprehensive search strategy, iii) adequate risk of bias assessment per study design across outcomes, iv) incorporating an assessment of certainty of evidence and v) appropriate evidence synthesis and heterogeneity assessment. For review authors, who are typically busy clinicians in emergency medicine, collaboration with evidence synthesis methodologists will be key, including advanced applications such as GRADE and populating Summary of Findings Tables. For journal editors, we suggest requiring transparent reporting through stricter adherence of studies to reporting guidelines and facilitating author training by connecting authors to local evidence-based initiatives and individuals with expertise in evidence synthesis.

The absence of these methodological characteristics points towards the limited capacity for conducting systematic reviews which is prevalent in LMICs [35]. Oliver *et al* (2015) found that capacity is often constrained at the individual, team, organisation and system level and that training without practice had limited impact [35]. To facilitate systematic review skills development they suggest overcoming language barriers, increasing academic institutional support and integrating skills development into academic programmes and traditional career progression pathways. Improving systematic review quality will have the additional benefit of facilitating more relevant, higher quality primary research [43].

To our knowledge, this is the first study to assess the methodological quality of systematic reviews in African emergency medicine. We followed methods established *a priori*, used an evidence based search strategy, performed duplicate screening, used a valid and reliable appraisal tool and reported our methods transparently [44]. The language restriction is unlikely to have excluded any relevant studies [5]. Our study may have limited generalisability since we only searched selected journals and did not reach the estimated sample size in the African group. In addition we only used information in the study report, protocol (if available) and supplementary data, and did not contact authors. We recognise that unblinded quality assessment might have introduced bias. However, we are confident that our findings are robust since ≥80% of African systematic reviews contained more than 4 critical domain weaknesses, making it unlikely for the overall ratings to change significantly even if a different reviewer were to conduct the assessment. Lastly, we have reported our methods transparently, making our results reproducible.

**Conclusion**

Systematic reviews on emergency medicine topics published in African and international journals are of poor methodological quality. Reporting of an *a priori* protocol, developing a comprehensive search strategy, adequate assessment of risk of bias and evidence certainty and appropriate evidence synthesis and heterogeneity assessment will improve the quality of systematic reviews. For future review authors, collaboration with evidence synthesis methodologists will be key. Future research should investigate barriers to systematic review authorship and enablers of institutional collaboration, providing insight into how evidence synthesis networks can be developed. A unified effort by reviewers, authors and journal editors to improve the quality of reviews will enable valuable skills transfer and ultimately improve patient care.

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| | in the results of systematic reviews on exercise therapy for chronic low back pain: a cross-sectional analysis using the Assessing the Methodological Quality of Systematic Reviews (AMSTAR) 2 tool", Brazilian Journal of Physical Therapy, 2019<br>Publication | |
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## 3.5 Selected tables and figure

### *3.5.1 Data extraction sheet: AMSTAR II domains*

| id | author | year | journal | am_1 | am_2 | am_3 | am_4 | am_5 | am_6 | am_7 | am_8 | am_9 | am_10 | am_11 | am_12 | am_13 | am_14 | am_15 | am_16 | am_weak_cd | am_weak_ncd | am_globrat |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Ngaruiya | 2021 | AFJEM | 0 | 1 | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 2 | 4 | critically low |
| 2 | Dixon | 2020 | AFJEM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 5 | 6 | critically low |
| 3 | Rybarczyk | 2017 | AFJEM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 5 | 6 | critically low |
| 4 | Nutbeam | 2015 | AFJEM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 5 | 7 | critically low |
| 5 | Flores | 2015 | AFJEM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 5 | 5 | critically low |
| 6 | Lourens | 2014 | AFJEM | 1 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | low |
| 7 | Barbosa | 2020 | AFJEM | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 4 | critically low |
| 8 | Endalamaw | 2019 | AFJEM | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 3 | 3 | critically low |
| 9 | Willett | 2019 | AFJEM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 7 | critically low |
| 10 | Broadis | 2017 | AFJEM | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 6 | critically low |
| 11 | Wells | 2017 | AFJEM | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 4 | 4 | critically low |
| 12 | Wachira | 2021 | AFJEM | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 5 | critically low |
| 13 | Abujaber | 2016 | AFJEM | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 3 | 1 | 3 | 5 | critically low |
| 14 | Roy | 2019 | EMI | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 4 | critically low |
| 15 | Beatty | 2013 | EMI | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 | 4 | 6 | critically low |
| 16 | Chiarini | 2020 | EMI | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 6 | critically low |
| 17 | Rodriguez | 2020 | EMI | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 5 | 4 | critically low |
| 18 | Tsao | 2021 | EMI | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 5 | critically low |
| 19 | Salehi | 2021 | EMI | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 3 | critically low |
| 20 | Wu | 2020 | EMI | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | critically low |
| 21 | Cao | 2020 | EMI | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 4 | 2 | critically low |
| 22 | Guo | 2020 | EMI | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 5 | critically low |
| 23 | Huang | 2019 | EMI | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 3 | 3 | critically low |
| 24 | Chen | 2019 | EMI | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | critically low |
| 25 | Ebrahimi | 2020 | EMI | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | 5 | critically low |
| 26 | Pourmand | 2018 | EMI | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 5 | critically low |
| 27 | Jordan | 2015 | SAJCC | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 | 4 | 6 | critically low |
| 28 | Miller | 2013 | SAJCC | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | critically low |
| 29 | Saunders | 2018 | SAMJ | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 5 | 5 | critically low |
| 30 | Schafer | 2019 | SAMJ | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 4 | 4 | critically low |
| 31 | De Clercq | 2017 | SAMJ | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 4 | critically low |
| 32 | Gilfillan | 2018 | SAMJ | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 6 | critically low |
| 33 | Hardcastle | 2013 | SAMJ | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 | 5 | 7 | critically low |
| 34 | Visser Kift | 2014 | SAMJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 | 5 | 8 | critically low |
| 35 | Freedman SB,I | 2014 | AoEM | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 3 | critically low |
| 36 | Hoek AE,Anke | 2020 | AoEM | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 5 | critically low |
| 37 | Raven MC,Kus | 2016 | AoEM | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 2 | 0 | 3 | 3 | 1 | 0 | 3 | 1 | 0 | 4 | moderate |
| 38 | Chou R,Totten | 2017 | AoEM | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | low |
| 39 | Srinivasan L,Pi | 2012 | AoEM | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | critically low |
| 40 | Yo CH,Hsieh P! | 2012 | AoEM | 1 | 0 | 1 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | critically low |
| 41 | deSouza IS,Tac | 2020 | AoEM | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 2 | critically low |
| 42 | Gottlieb M,Pal | 2021 | AoEM | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | low |
| 43 | Medford-Davi: | 2015 | AoEM | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 6 | critically low |
| 44 | Cournoyer A,G | 2021 | AoEM | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | low |
| 45 | e Silva LO,Sch | 2018 | AoEM | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 3 | 3 | 1 | 0 | 3 | 1 | 2 | 3 | critically low |
| 46 | Chu K,Hann A,I | 2014 | AoEM | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 4 | 3 | critically low |
| 47 | Young KD,Korc | 2016 | AoEM | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 1 | 3 | 1 | 4 | 3 | critically low |
| 48 | Luo S,Zhang Y, | 2017 | RESUS | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | low |
| 49 | Reynolds JC,Is: | 2020 | RESUS | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 3 | 3 | 1 | 0 | 3 | 1 | 1 | 3 | low |
| 50 | West S,Soar J,I | 2016 | RESUS | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 3 | 3 | 1 | 0 | 3 | 1 | 2 | 5 | critically low |
| 51 | McNeill G,Bry( | 2013 | RESUS | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 2 | 0 | 3 | 3 | 1 | 0 | 3 | 1 | 2 | 4 | critically low |
| 52 | Buick JE,Walln | 2019 | RESUS | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 2 | critically low |
| 53 | Chopra AS,Wo | 2016 | RESUS | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 5 | 4 | critically low |
| 54 | Granfeldt A,Hc | 2021 | RESUS | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 3 | critically low |
| 55 | Kim JG,Ahn C,! | 2020 | RESUS | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | high |
| 56 | Larsen JM,Rav | 2012 | RESUS | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 5 | 5 | critically low |
| 57 | Nikolaou NI,N | 2021 | RESUS | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | low |
| 58 | Duhem H,Vigli | 2019 | RESUS | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 3 | 3 | 1 | 0 | 3 | 1 | 2 | 4 | critically low |
| 59 | Wang CH,Char | 2014 | RESUS | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | critically low |
| 60 | Miller AC,Rosa | 2014 | RESUS | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 6 | critically low |
| 61 | Granfeldt A,Av | 2019 | RESUS | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 3 | 3 | 1 | 1 | 3 | 1 | 1 | 2 | low |
| 62 | Touma O,Davi | 2013 | RESUS | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 5 | critically low |
| 63 | Schenone AL,C | 2016 | RESUS | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | critically low |
| 64 | Debaty G,Baba | 2017 | RESUS | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | low |
| 65 | Bartlett ES,Val | 2020 | RESUS | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 3 | critically low |
| 66 | Harhash AA,H | 2019 | RESUS | 1 | 0 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 4 | critically low |

0=No, 1=Yes, 2=Partial Yes, 3=N/A

Continued…

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 67 | Frei C,Darocha | 2019 | RESUS | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 3 | 5 | critically low |
| 68 | Couper K,Laloc | 2019 | RESUS | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | low |
| 69 | Granfeldt A,Av | 2020 | RESUS | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | low |
| 70 | Lockey A,Lin Y, | 2018 | RESUS | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | low |
| 71 | Haywood KL,P | 2018 | RESUS | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 3 | 1 | 1 | 3 | 1 | 2 | 4 | critically low |
| 72 | Saczkowski RS | 2018 | RESUS | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | 5 | critically low |
| 73 | Layek A,Maitra | 2014 | RESUS | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | critically low |
| 74 | Patel JK,Katay | 2018 | RESUS | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 3 | 4 | critically low |
| 75 | Williams TA,Te | 2016 | RESUS | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 5 | critically low |
| 76 | Lin S,Callaway | 2014 | RESUS | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | low |
| 77 | Lalande E,Burv | 2019 | RESUS | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 4 | critically low |
| 78 | Diao M,Huang | 2013 | RESUS | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 3 | 2 | critically low |
| 79 | An M,Kim Y,Ch | 2019 | RESUS | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 3 | 3 | 1 | 1 | 3 | 1 | 2 | 2 | critically low |
| 80 | McLeod SL,Bria | 2017 | RESUS | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 3 | 4 | critically low |
| 81 | Descatha A,Da | 2015 | RESUS | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 4 | 4 | critically low |
| 82 | Lin S,Yokoyam | 2012 | RESUS | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 1 | 3 | 1 | 4 | 3 | critically low |
| 83 | Gottlieb M,Dy | 2020 | RESUS | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | low |
| 84 | Carpenter CR,F | 2014 | AEM | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 3 | critically low |
| 85 | Savino PB,Reic | 2017 | AEM | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 4 | critically low |
| 86 | Ohle R,Montpe | 2020 | AEM | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 3 | 3 | 1 | 1 | 3 | 1 | 2 | 2 | critically low |
| 87 | Kao Y,Loh EW, | 2018 | AEM | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 3 | 3 | critically low |
| 88 | Mitchell IC,Noi | 2021 | AEM | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 5 | 6 | critically low |
| 89 | Salhi BA,White | 2018 | AEM | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 5 | critically low |
| 90 | Liu C,Desai S,K | 2018 | AEM | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 1 | 3 | 1 | 2 | 2 | critically low |
| 91 | Gottlieb M,Hol | 2019 | AEM | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | low |
| 92 | Sakamoto JT,V | 2018 | AEM | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 3 | critically low |
| 93 | Kareemi H,Vai | 2021 | AEM | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 3 | 3 | 1 | 1 | 3 | 1 | 1 | 2 | low |
| 94 | Blyth L,Atkinso | 2015 | AEM | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 3 | critically low |
| 95 | Newgard CD,C | 2020 | AEM | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 4 | critically low |
| 96 | Wong CK,O'Rie | 2020 | AEM | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 | 3 | 3 | 1 | 1 | 3 | 1 | 1 | 3 | low |
| 97 | Chowdhury MI | 2020 | AEM | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 3 | 3 | 1 | 1 | 3 | 1 | 2 | 3 | critically low |
| 98 | Oliver GJ,Walt | 2016 | AEM | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 1 | 0 | 3 | 1 | 3 | 5 | critically low |
| 99 | Kirkland S,Stie | 2014 | AEM | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | low |
| 100 | Ilgen JS,Sherbi | 2013 | AEM | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 3 | 2 | critically low |
| 101 | Alshehri A,Abu | 2017 | AEM | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 3 | 3 | critically low |
| 102 | Flynn D,Knoed | 2012 | AEM | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 1 | 3 | 1 | 3 | 2 | critically low |
| 103 | Al Deeb M,Bar | 2014 | AEM | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 3 | critically low |
| 104 | Lamb CM,Garr | 2014 | INJURY | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 1 | 3 | 0 | 4 | 5 | critically low |
| 105 | Christodoulou ' | 2019 | INJURY | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 3 | 3 | 1 | 1 | 3 | 1 | 2 | 2 | critically low |
| 106 | McQueen C,Sn | 2015 | INJURY | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 1 | 3 | 1 | 2 | 2 | critically low |
| 107 | Hassanipour S, | 2019 | INJURY | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 3 | 5 | critically low |
| 108 | Johnson NA,Sti | 2017 | INJURY | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 4 | 4 | critically low |
| 109 | O'Dochartaigh | 2015 | INJURY | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 1 | 1 | 3 | 1 | 0 | 1 | high |
| 110 | Staub LJ,Biscai | 2018 | INJURY | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 3 | 3 | critically low |
| 111 | Delcourt T,Bég | 2015 | INJURY | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 6 | critically low |
| 112 | Chen H,Ma J,Li | 2020 | INJURY | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 4 | critically low |
| 113 | Millar SC,Arnol | 2018 | INJURY | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 2 | 4 | critically low |
| 114 | Koehler RM,Ol | 2018 | INJURY | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 5 | 4 | critically low |
| 115 | van Trigt J,Sch | 2018 | INJURY | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 4 | critically low |
| 116 | Kim SJ,Park H! | 2020 | INJURY | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 3 | critically low |
| 117 | McMahon SE,L | 2016 | INJURY | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 3 | 3 | 1 | 0 | 3 | 1 | 2 | 3 | critically low |
| 118 | Schimmer JA,V | 2016 | INJURY | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 3 | 4 | critically low |
| 119 | Bergmans SF,S | 2020 | INJURY | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 3 | low |
| 120 | Cubitt M,Dowr | 2019 | INJURY | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 2 | 0 | 3 | 3 | 0 | 1 | 3 | 1 | 2 | 2 | critically low |
| 121 | Pape HC,Halva | 2019 | INJURY | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 4 | critically low |
| 122 | Ruff J,Wang TI | 2015 | INJURY | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 3 | 1 | 4 | 4 | critically low |
| 123 | Shivasabesan ( | 2018 | INJURY | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 3 | 5 | critically low |
| 124 | Morris R,Pallis | 2019 | INJURY | 1 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 | 4 | 4 | critically low |
| 125 | Zhang YW,Rui | 2021 | INJURY | 1 | 0 | 1 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 2 | critically low |
| 126 | Mckechnie PS, | 2014 | INJURY | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 3 | 3 | 1 | 1 | 3 | 1 | 3 | 2 | critically low |
| 127 | Patel SV,Kidan | 2014 | INJURY | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 3 | 2 | critically low |
| 128 | Barquet A,Gia | 2017 | INJURY | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 4 | 4 | critically low |
| 129 | Wu Z,Zhang S, | 2020 | Shock | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 3 | 4 | critically low |
| 130 | Du F,Jiang P,H | 2018 | Shock | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 3 | 2 | critically low |
| 131 | Li B,Zhao H,Zh | 2020 | Shock | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 2 | 4 | critically low |
| 132 | Wen Y,Zhu Y,Ji | 2019 | Shock | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 3 | 3 | critically low |
| 133 | Si X,Song XD,L | 2020 | Shock | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 3 | critically low |
| 134 | Komaru Y,Inok | 2020 | Shock | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 3 | 3 | 0 | 1 | 3 | 1 | 2 | 4 | critically low |

0=No, 1=Yes, 2=Partial Yes, 3=N/A

### *3.5.2 Results: summarised AMSTAR II domains*

| Domains | African n=34, (%) | International n=100, (%) |
|---|---|---|
| D1 – Research question and inclusion criteria | | |
| No | 9 (26.5) | 1 (1) |
| Yes | 25 (73.55) | 99 (99) |
| *D2 – Protocol | | |
| No | 32 (94.1) | 58 (58) |
| Yes | 2 (5.9) | 41 (41) |
| Partial | 0 (0) | 1 (1) |
| D3 – Study designs for inclusions explained | | |
| No | 34 (100) | 96 (96) |
| Yes | 0 (0) | 4 (4) |
| *D4 – Search strategy | | |
| No | 8 (23.5) | 1 (1) |
| Yes | 0 | 30 (30) |
| Partial Yes | 26 (76.5) | 69 (69) |
| D5 – Study selection in duplicate | | |
| No | 13 (38.2) | 11 (11) |
| Yes | 21 (61.8) | 89 (89) |
| D6 – Data extraction in duplicate | | |
| No | 20 (58.8) | 37 (37) |
| Yes | 14 (41.2) | 63 (63) |
| *D7 – List of excluded studies and justification | | |
| No | 33 (97.1) | 95 (95) |
| Yes | 1 (2.9) | 5 (5) |
| Partial Yes | 0 (0) | 0 (0) |
| D8 – Included studies described | | |
| No | 16 (47.1) | 12 (12) |
| Yes | 8 (23.5) | 36 (36) |
| Partial Yes | 10 (29.4) | 52 (52) |
| *D9 – Risk of bias assessment | | |
| No | 26 (76.5) | 25 (25) |
| Yes | 3 (8.8) | 56 (56) |
| Partial Yes | 5 (14.7) | 19 (19) |
| D10 – Sources of funding for included studies | | |
| No | 34 (100) | 95 (95) |
| Yes | 0 (0) | 5 (5) |
| *D11 – MA appropriate methods | | |
| No | 5 (14.7) | 10 (10) |
| Yes | 7 (20.6) | 47 (47) |
| N/A – no meta-analysis | 22 (64.7) | 43 (43) |
| D12 – MA individual studies RoB impact | | |
| No | 6 (17.7) | 31 (31) |
| Yes | 6 (17.7) | 26 (26) |

| | | |
|---|---|---|
| N/A – no meta-analysis | 22 (64.7) | 43 (43) |
| *D13 – Account for RoB in individual studies when interpreting results | | |
| No | 29 (85.3) | 43 (43) |
| Yes | 5 (14.7) | 57 (57) |
| D14 – Heterogeneity discussed/explained | | |
| No | 27 (79.4) | 38 (38) |
| Yes | 7 (20.6) | 62 (62) |
| *D15 – Publication bias investigated | | |
| No | 2 (5.9) | 23 (23) |
| Yes | 10 (29.4) | 34 (34) |
| N/A – no meta-analysis | 22 (64.7) | 43 (43) |
| D16 – Conflict of interest/funding reported | | |
| No | 5 (14.7) | 2 (2) |
| Yes | 29 (85.3) | 98 (98) |

## 3.6 Technical appendices

### *3.6.1 AMSTAR II Tool*

**AMSTAR 2**

**1. Did the research questions and inclusion criteria for the review include the components of PICO?**

| For Yes: | Optional (recommended) | |
|---|---|---|
| ☐ Population | ☐ Timeframe for follow-up | ☐ Yes |
| ☐ Intervention | | ☐ No |
| ☐ Comparator group | | |
| ☐ Outcome | | |

**2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?**

| For Partial Yes: The authors state that they had a written protocol or guide that included ALL the following: | For Yes: As for partial yes, plus the protocol should be registered and should also have specified: | |
|---|---|---|
| | | ☐ Yes |
| ☐ review question(s) | ☐ a meta-analysis/synthesis plan, if appropriate, *and* | ☐ Partial Yes |
| ☐ a search strategy | ☐ a plan for investigating causes of heterogeneity | ☐ No |
| ☐ inclusion/exclusion criteria | ☐ justification for any deviations from the protocol | |
| ☐ a risk of bias assessment | | |

**3. Did the review authors explain their selection of the study designs for inclusion in the review?**

| For Yes, the review should satisfy ONE of the following: | |
|---|---|
| ☐ *Explanation for* including only RCTs | ☐ Yes |
| ☐ OR *Explanation for* including only NRSI | ☐ No |
| ☐ OR *Explanation for* including both RCTs and NRSI | |

**4. Did the review authors use a comprehensive literature search strategy?**

| For Partial Yes (all the following): | For Yes, should also have (all the following): | |
|---|---|---|
| | | ☐ Yes |
| ☐ searched at least 2 databases (relevant to research question) | ☐ searched the reference lists/bibliographies of included studies | ☐ Partial Yes |
| ☐ provided key word and/or search strategy | ☐ searched trial/study registries | ☐ No |
| ☐ justified publication restrictions (eg, language) | ☐ included/consulted content experts in the field | |
| | ☐ where relevant, searched for grey literature | |
| | ☐ conducted search within 24 months of completion of the review | |

**5. Did the review authors perform study selection in duplicate?**

| For Yes, either ONE of the following: | |
|---|---|
| ☐ at least two reviewers independently agreed on selection of eligible studies and achieved consensus on which studies to include | ☐ Yes |
| ☐ OR two reviewers selected a sample of eligible studies and achieved good agreement (at least 80 per cent), with the remainder selected by one reviewer | ☐ No |

**6. Did the review authors perform data extraction in duplicate?**

| For Yes, either ONE of the following: | |
|---|---|
| ☐ at least two reviewers achieved consensus on which data to extract | ☐ Yes |

from included studies
- ☐ OR two reviewers extracted data from a sample of eligible studies and achieved good agreement (at least 80 per cent), with the remainder extracted by one reviewer

☐ No

**7. Did the review authors provide a list of excluded studies and justify the exclusions?**

For Partial Yes:
- ☐ provided a list of all potentially relevant studies that were read in full text form but excluded from the review

For Yes, must also have:
- ☐ Justified the exclusion from the review of each potentially relevant study

☐ Yes
☐ Partial Yes
☐ No

**8. Did the review authors describe the included studies in adequate detail?**

For Partial Yes (ALL the following):
- ☐ described populations
- ☐ described interventions
- ☐ described comparators
- ☐ described outcomes
- ☐ described research designs

For Yes, should also have ALL the following:
- ☐ described population in detail
- ☐ described intervention and comparator in detail (including doses where relevant)
- ☐ described study's setting
- ☐ timeframe for follow-up

☐ Yes
☐ Partial Yes
☐ No

**9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?**

**RCTs**

For Partial Yes, must have assessed RoB from
- ☐ unconcealed allocation, *and*
- ☐ lack of blinding of patients and assessors when assessing outcomes (unnecessary for objective outcomes such as all cause mortality)

For Yes, must also have assessed RoB from:
- ☐ allocation sequence that was not truly random, *and*
- ☐ selection of the reported result from among multiple measurements or analyses of a specified outcome

☐ Yes
☐ Partial Yes
☐ No
☐ Includes only NRSI

**NRSI**

For Partial Yes, must have assessed RoB:
- ☐ from confounding, *and*
- ☐ from selection bias

For Yes, must also have assessed RoB:
- ☐ methods used to ascertain exposures and outcomes, *and*
- ☐ selection of the reported result from among multiple measurements or analyses of a specified outcome

☐ Yes
☐ Partial Yes
☐ No
☐ Includes only RCTs

**10. Did the review authors report on the sources of funding for the studies included in the review?**

For Yes
- ☐ Must have reported on the sources of funding for individual studies included in the review. Note: Reporting that the reviewers looked for this information but it was not reported by study authors also qualifies

☐ Yes
☐ No

**11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?**

**RCTs**

For Yes:
- ☐ The authors justified combining the data in a meta-analysis
  - ☐ AND they used an appropriate weighted technique to combine study results and adjusted for heterogeneity if present

☐ Yes
☐ No
☐ No meta-analysis

| | |
|---|---|
| ☐ AND investigated the causes of any heterogeneity | conducted |
| **For NRSI**<br>For Yes:<br>☐ The authors justified combining the data in a meta-analysis<br>☐ AND they used an appropriate weighted technique to combine study results, adjusting for heterogeneity if present<br>☐ AND they statistically combined effect estimates from NRSI that were adjusted for confounding, rather than combining raw data, or justified combining raw data when adjusted effect estimates were not available<br>☐ AND they reported separate summary estimates for RCTs and NRSI separately when both were included in the review | ☐ Yes<br>☐ No<br>☐ No meta-analysis conducted |

**12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?**

| | |
|---|---|
| For Yes:<br>☐ included only low risk of bias RCTs<br>☐ OR, if the pooled estimate was based on RCTs and/or NRSI at variable RoB, the authors performed analyses to investigate possible impact of RoB on summary estimates of effect | ☐ Yes<br>☐ No<br>☐ No meta-analysis conducted |

**13. Did the review authors account for RoB in individual studies when interpreting/discussing the results of the review?**

| | |
|---|---|
| For Yes:<br>☐ included only low risk of bias RCTs<br>☐ OR, if RCTs with moderate or high RoB, or NRSI were included the review provided a discussion of the likely impact of RoB on the results | ☐ Yes<br>☐ No |

**14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?**

| | |
|---|---|
| For Yes:<br>☐ There was no significant heterogeneity in the results<br>☐ OR if heterogeneity was present the authors performed an investigation of sources of any heterogeneity in the results and discussed the impact of this on the results of the review | ☐ Yes<br>☐ No |

**15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?**

| | |
|---|---|
| For Yes:<br>☐ performed graphical or statistical tests for publication bias and discussed the likelihood and magnitude of impact of publication bias | ☐ Yes<br>☐ No<br>☐ No meta-analysis conducted |

**16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?**

| | |
|---|---|
| For Yes:<br>☐ The authors reported no competing interests OR<br>☐ The authors described their funding sources and how they managed potential conflicts of interest | ☐ Yes<br>☐ No |

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