

Recommendations for Methods of Evidence Evaluation and Reporting in NAEMSP Position Statements

Background

Guidelines, position statements, and other publications providing recommendations for clinical care or operations are increasingly being published in the medical literature to inform the EMS community and related medical subspecialties. Improving guidelines development has been a specific interest of NAEMSP and partner organizations over the past decade.¹ A prior systematic review by the Prehospital Guidelines Consortium (PGC) identified 71 prehospital evidence-based guidelines published before September 2018² and an updated review for 2018-2021 identified 75 additional guidelines relevant to EMS.³ The quality of evidence evaluation and reporting, as well as the way recommendations are developed is highly variable across these publications.

Position statements by medical associations provide a unique contribution to the medical literature. Position statements may be informed by a systematic review of the literature and meet the criteria of high-quality evidence-based guidelines. However, more often position statements are written based on a more limited review of the available literature or may be created specifically to provide recommendations guided by expert consensus where scientific evidence is limited or altogether absent. Furthermore, position statements are often written by volunteer committee members of a professional organization, with limited or no funding for a systematic review of the literature, and often with the goal of quickly providing actionable guidance to the organization and related community.

While position statements may be purposefully based on varying levels of review of scientific literature due to the subject matter, available resources, or timeliness, there exists an opportunity to provide consistency and improve the overall quality of position statements. By considering a spectrum of evidence evaluation and a standardized process for developing and reporting recommendations, writing groups can improve the quality of their work, provide greater consistency in the quality of resource documents, and improve the guidance afforded to the organization, its members, and the community. When position statements meet the characteristics of evidence-based guidelines, ensuring the correct reporting of those guidelines will maximize the quality and impact of these documents.

About Evidence-Based Guidelines

The Prehospital Guidelines Consortium has defined a prehospital evidence-based guideline as a document that:^{2,3}

1. Is relevant to prehospital care or operations,
2. Is based on an organized review of the literature (e.g., narrative, scoping, or systematic review), and
3. Provides recommendations for clinical care or operations.

The National Academy of Medicine (NAM; formerly the Institutes of Medicine) along with the Agency for Healthcare Research and Quality (AHRQ) have provided specific criteria for the performance and reporting of high-quality clinical guidelines, previously summarized by Turner et al. for the PGC (Table 1).^{2,4}

Table 1. NAM/AHRQ Criteria for Clinical Guidelines

Criteria	Description
1. Systematically Developed Recommendations	The clinical practice guideline contains systematically developed statements including recommendations intended to optimize patient care and assist physicians and/or other health care practitioners and patients to make decisions about appropriate health care for specific clinical circumstances.
2. By an Association or Similar Organization	The clinical practice guideline was produced under the auspices of a medical specialty association; relevant professional society; public or private organization; government agency at the Federal, State, or local level; or health care organization or plan. A clinical practice guideline developed and issued by an individual(s) not officially sponsored or supported by one of the above types of organizations does not meet the criteria.
3. Systematic Review	The clinical practice guideline is based on a systematic review of evidence as demonstrated by documentation of each of the following features in the clinical practice guideline or its supporting documents.
a. Statement	An explicit statement that the clinical practice guideline was based on a systematic review.
b. Search Strategy	A description of the search strategy that includes: <ul style="list-style-type: none"> - A listing of database(s) searched, - A summary of search terms used, and - The specific time period covered by the literature search including the beginning date (month/year) and end date (month/year)
c. Study Selection	A description of the study selection that includes: <ul style="list-style-type: none"> - The number of studies identified, - The number of studies included, and - A summary of inclusion and exclusion criteria.
d. Synthesis of Evidence	A synthesis of evidence from the selected studies, e.g., a detailed description or evidence tables.
e. Summary of Evidence Synthesis	A summary of the evidence synthesis (see 3d above) included in the guideline that relates the evidence to the recommendations, e.g., a descriptive summary or summary tables.
4. Assessment of Benefits/Harms and Alternative Care Options	The clinical practice guideline or its supporting documents contain an assessment of the benefits and harms of recommended care and alternative care options.
5. English and to the Public	The full text guideline is available in English to the public upon request (for free, or for a fee).
6. Current	The guideline is current and the most recent version.

In addition to the qualitative NAM/AHRQ criteria for clinical guidelines, the international AGREE Collaboration has developed a 23-item instrument that can assist guideline developers and researchers to assess the quality of guidelines (Table 2).^{5,6} This validated tool has been cited in over 600 publications and supported by multiple international organizations. These items are structured across 6 domains that can inform guideline developers on specific items that should be incorporated to strengthen the quality of guidelines and their recommendations (Table 2).

The full AGREE II Checklist is available at: <https://www.agreetrust.org/wp-content/uploads/2016/02/AGREE-Reporting-Checklist-2016.pdf>.

Table 2. Appraisal of Guidelines for Research and Evaluation (AGREE) II instrument Domains

Domain	No.	Item
1. Scope and Purpose	1	The overall objective(s) of the guideline is (are) specifically described.
	2	The health question(s) covered by the guideline is (are) specifically described.
	3	The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.
2. Stakeholder Involvement	1	The guideline development group includes individuals from all relevant professional groups.
	2	The views and preferences of the target population (patients, public, etc.) have been sought.
	3	The target users of the guideline are clearly defined.
3. Rigor of Development	1	Systematic methods were used to search for evidence.
	2	The criteria for selecting the evidence are clearly described.
	3	The strengths and limitations of the body of evidence are clearly described.
	4	The methods for formulating the recommendations are clearly described.
	5	The health benefits, side effects, and risks have been considered in formulating the recommendations.
	6	There is an explicit link between the recommendations and the supporting evidence.
	7	The guideline has been externally reviewed by experts prior to its publication.
	8	A procedure for updating the guideline is provided.
4. Clarity of Presentation	1	The recommendations are specific and unambiguous.
	2	The different options for management of the condition or health issue are clearly presented.
	3	Key recommendations are easily identifiable.
5. Applicability	1	The guideline describes facilitators and barriers to its application.
	2	The guideline provides advice and/or tools on how the recommendations can be put into practice.
	3	The potential resource implications of applying the recommendations have been considered.
	4	The guideline presents monitoring and/or auditing criteria.
6. Editorial Independence	1	The views of the funding body have not influenced the content of the guideline.
	2	Competing interests of guideline development group members have been recorded and addressed.

Meeting all these criteria within the typical position statement and resource document is challenging and rarely found among NAEMSP position statements. This is often due to position statements not being based on a systematic review of the literature, given limited time and resource constraints. However, NAEMSP has previously published position statements that do meet either all⁷ or most⁸ of the NAM/AHRQ criteria for high-quality evidence-based guidelines. Other resource documents for position statements have typically been written with varying methods of evidence evaluation. This spectrum spans from the use of individual citations already familiar to the authors who are experts in the content area to performing a full systematic review of the literature.

Strategies for Evidence Evaluation, Developing Recommendations, and Reporting in Position Statements

The following sections provide guidance to authors of NAEMSP position statements written with or without resource documents to optimally plan, perform, and report these efforts. This guidance was adapted using the 23 items of the [AGREE II reporting checklist](#) for clinical practice guidelines. Specific reporting elements for resource documents may be contained within supplementary (online) documents as needed in consideration of the length of the manuscript.

Authors should select their strategy for development of the position statement based on the intended scope of the topic, the technical resources, and the timeline available for completion. Authors may seek further guidance on their strategy from an editorial board, the NAEMSP Standards and Practice Committee, and/or NAEMSP Board of Directors. By following this guidance, writing groups can develop a strategy that ensures a consistent approach for developing and reporting the organization’s recommendations and maximize the quality of position statements and accompanying resource documents for NAEMSP.

Based on the selected strategy, position statements and accompanying resource documents may generally be described within the following categories:

1. Consensus recommendations with or without a basic literature search
2. Consensus recommendations based on a structured literature search
3. Systematic recommendations based on a structured literature search and a structured review of the literature <ul style="list-style-type: none"> Meets National Academy of Medicine reporting criteria for a high-quality evidence-based guideline
4. Systematic recommendations based on a systematic literature search and a graded review of the literature <ul style="list-style-type: none"> Meets National Academy of Medicine reporting criteria for a high-quality evidence-based guideline Allows for grading the quality of the evidence and providing a strength of recommendations

SCOPE AND PURPOSE

STRATEGY		
☐ Consensus Statement Without a Resource Document	☐ Consensus Statement With a Resource Document	☐ Systematically Developed Recommendations Within a Resource Document
DESCRIPTION		
The position statement aims to provide expert opinion and consensus regarding a topic of special interest. Supporting literature may or may not be cited within the position statement, without use of a resource document.	The position statement aims to provide expert opinion and consensus regarding a topic of special interest. Supporting literature may be cited within a resource document based on a narrative review of available literature.	The position statement aims to provide systematically developed evidence-based recommendations supplemented by expert opinion and consensus. Supporting literature are cited within a resource document based on a structured review of the literature.
KEY REPORTING ELEMENTS FOR RESOURCE DOCUMENTS		
<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Objectives: Report the overall objective(s) of the position statement, specific to the topic being addressed. Questions: Report the question(s) covered by the position statement, particularly for the key recommendations. Population: Describe the population (i.e., patients or personnel) to whom the position statement is meant to apply. 	

STAKEHOLDER INVOLVEMENT

STRATEGY	
<input type="checkbox"/> Single Organization	<input type="checkbox"/> Multiple Organizations
DESCRIPTION	
The position statement will be developed and supported only by NAEMSP.	The position statement will be developed and supported by multiple organizations.
KEY REPORTING ELEMENTS FOR RESOURCE DOCUMENTS	
<ul style="list-style-type: none"> • Group Membership: Report all individuals who were involved in development of the position statement, including: <ul style="list-style-type: none"> ○ Authors and members of any steering group or expert panel involved in selecting, reviewing, or rating the evidence, or in development of final recommendations. ○ Organization(s) represented and method of involvement (e.g., representatives as authors/panel or by endorsement). • Target Population Preferences and Views: Report how the views and preferences of the target population were sought/considered and what the resulting outcomes were. • Target Users: Report the target (or intended) users of the position statement. 	

LITERATURE SEARCH

STRATEGY	
<input type="checkbox"/> Unstructured Literature Search	<input type="checkbox"/> Structured Literature Search
DESCRIPTION	
<ul style="list-style-type: none"> • Literature search using a non-structured search of individual journals or article repositories (e.g., Google, Bing, or Pubmed website). • May be used in a scoping review of the literature to provide a preliminary assessment of potential size and scope of available research literature. • Aims to identify nature and extent of research evidence. 	<ul style="list-style-type: none"> • Literature search using a structured keyword search of scientific database(s) (e.g., Ovid Medline, EMBASE, Google Scholar). • Used in systematic reviews of the literature and rapid systematic reviews (where some elements of a systematic review are adapted). • Aimed at identifying the full extent of available literature to answer specific questions.
KEY REPORTING ELEMENTS FOR RESOURCE DOCUMENTS	
<ul style="list-style-type: none"> • General description of methods used to identify relevant articles 	<ul style="list-style-type: none"> • Search Methods, including: <ul style="list-style-type: none"> ○ A listing of database(s) searched ○ Summary of search terms used ○ The specific time period covered by the literature search including the beginning date (month/year) and end date (month/year) • Evidence Selection Criteria, including: <ul style="list-style-type: none"> ○ The number of studies identified ○ The number of studies included ○ A summary of inclusion and exclusion criteria.

EVIDENCE EVALUATION

STRATEGY		
□ Narrative Review	□ Structured Review	□ Graded Review
DESCRIPTION		
Identified articles are described; often used to provide context and describe the extent of literature on a given topic.	Identified articles are individually reviewed with details reported including study characteristics and outcomes; provides more detailed information on the potential impact of specific interventions.	In addition to reporting study details, identified articles are systematically evaluated using GRADE ⁹ to assign a quality of evidence rating and provide a strength of recommendations.
KEY REPORTING ELEMENTS FOR RESOURCE DOCUMENTS		
<ul style="list-style-type: none"> Articles may be described in narrative form, individually or in aggregate. 	<ul style="list-style-type: none"> Strengths & Limitations of the Evidence: Describe the strengths and limitations of the evidence, preferably using: <ul style="list-style-type: none"> Synthesis of Evidence (e.g., a detailed description of individual studies or evidence tables). Summary of Evidence Synthesis (e.g., a descriptive summary of aggregated studies or summary tables). 	Structured Review elements AND: <ul style="list-style-type: none"> Rating of the Quality of the Evidence using GRADE to assign a quality of evidence rating, including consideration of: <ul style="list-style-type: none"> Factors that reduce the quality of the evidence (e.g., risk of bias tables) Factors that increase the quality of the evidence (e.g., measurements of effect size and/or dose-response).

DEVELOPMENT OF RECOMMENDATIONS

STRATEGY	
□ Consensus Recommendations	□ Systematic Recommendations
DESCRIPTION	
Recommendations are primarily based on the consensus of a panel of experts (e.g., author group or technical expert panel). May or may not include performance of a Delphi approach to gain consensus. Evidence identified through an unstructured approach may be cited in support of the recommendations.	Recommendations are primarily based on a structured or systematic review of the available evidence. Where there is no available evidence, recommendations may be informed by expert consensus, or no recommendation may be provided.
KEY REPORTING ELEMENTS FOR RESOURCE DOCUMENTS	
<ul style="list-style-type: none"> Formulation of Recommendations: Describe the methods used to formulate the recommendations and how final decisions were reached. Specify any areas of disagreement and the methods used to resolve them. Consideration of Benefits and Harms: Report the health benefits, side effects, and risks that were considered when formulating the recommendations. Link Between Recommendations and Evidence: When relevant to making a recommendation, describe the explicit link between the recommendations and the evidence on which they are based. 	

ADDITIONAL CONTENT RELEVANT TO INDIVIDUAL POSITION STATEMENTS / RECOMMENDATIONS

KEY REPORTING ELEMENTS FOR RESOURCE DOCUMENTS

- **External Review:** If external review was undertaken to create the final position statement or resource document (e.g., open call for comments outside of the named participating organizations), describe:
 - Purpose and intent of the external review.
 - Methods taken to undertake the external review (e.g., survey containing rating scale or open-ended questions).
 - Description of the external reviewers (e.g., number, type of reviewers, affiliations).
 - Outcomes/information gathered from the external review (e.g., summary of key findings).
 - How the information gathered was used to inform the guideline development process and/or formation of the recommendations (e.g., guideline panel considered results of review in forming final recommendations).
- **Updating Procedure:** Describe the procedure for updating the position statement.
 - A statement that the position statement will be updated.
 - Explicit time interval or explicit criteria to guide decisions about when an update will occur.
 - Methodology for the updating procedure.
- **Facilitators and Barriers to Application:** Describe the facilitators and barriers to implementing the recommendations.
- **Implementation Advice/Tools:** Provide advice and/or tools on how the recommendations can be applied in practice.
- **Resource Implications:** Describe any potential resource implications of applying the recommendations.
- **Monitoring/Auditing Criteria:** Provide monitoring and/or auditing criteria to measure the application of the recommendations.
- **Funding Body:** If the position statement was developed using specific funding:
 - Identify the funding body.
 - Report the funding body's influence on the content of the position statement.
- **Competing Interests:** Provide an explicit statement that all group members have declared whether they have any competing interests.

ENSURING CLARITY OF RECOMMENDATIONS

- **Specific and Unambiguous Recommendations:** Describe which options are appropriate in which situations and in which population groups, as informed by the body of evidence.
- **Management Options:** Describe the different options for managing the condition, health issue, or operational topic.
- **Identifiable Key Recommendations:** Present the key recommendations so that they are easy to identify.

CHECKLISTS FOR EVIDENCE-BASED GUIDELINES

Position statements with resource documents meeting criteria for evidence-based guidelines should ensure reporting of:

- **National Academy of Medicine Criteria** (refer to Table 1).^{2,4}
- **AGREE Reporting Checklist** (refer to Table 2 and the [AGREE Reporting Checklist](#)).^{2,5,6}

References

1. Martin-Gill C, Gaither JB, Bigham BL, Myers JB, Kupas DF, Spaite DW. National Prehospital Evidence-Based Guidelines Strategy: A summary for EMS stakeholders. *Prehosp Emerg Care* 2016;20:175-183.
2. Turner S, Lang ES, Brown K, Franke J, Workun-Hill M, Jackson C, Roberts L, Leyton C, Bulger EM, Censullo EM, Martin-Gill C. Systematic review of evidence-based guidelines for prehospital care. *Prehosp Emerg Med* 2021;25:221-234.
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6. Brouwers MC, Kerkvliet K, Spithoff K, on behalf of the AGREE Next Steps Consortium. The AGREE Reporting Checklist: a tool to improve reporting of clinical practice guidelines. *BMJ* 2016;352:i1152.
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9. Guyatt GH, Oxman AD, Vist GE, Kunz R, Falck-Ytter Y, Alonso-Coello P, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ*. 2008;336(7650):924-6