This template guides the Task Force (TF) chair or TF member or expert systematic reviewer or the knowledge synthesis lead on how to draft the first consensus on science with treatment recommendation (CoSTR) for their respective task force(s) based on the derived evidence profile tables and discussion with the writing group. This template is used for all CoSTRs derived from classic systematic reviews and adolopment of published systematic reviews. The draft CoSTR based on this template is submitted to the TF chair.. With the help of the TF members the TF chair or delegate creates a final draft for review for approval of the SAC representative on the TF. It is recommended that all CoSTRs are independently peer reviewed by a SAC member not on the TF prior to posting on ILCOR.org.

User Instructions:

Please maintain header size (14) and font calibri size (10) and bolded as per the template and the references should be formatted as per the ILCOR pre-specifications. Examples are italicized in the template however it not necessary to italicize when completing the sections in the template

## Consensus on Science with Treatment Recommendations (COSTR) Template for [www.ilcor.org](http://www.ilcor.org) posting

## FA 517 Recovery Position FA TFSR

Insert disclaimer for why the CoSTR is marked ‘DRAFT’  *Note to Webmaster – this preamble about draft can be removed when you are notified by ILCOR that the CoSTR label of draft is no longer required.*

*This CoSTR is a final version prepared by ILCOR and is labelled “draft” to allow for public comments and to comply with copyright rules of journals. The ‘draft label’ will be removed from this website once a summary article has been published in a scientific journal.*

## Conflict of Interest Declaration

The ILCOR Continuous Evidence Evaluation process is guided by a rigorous ILCOR Conflict of Interest policy. The following Task Force members and other authors were recused from the discussion as they declared a conflict of interest: (none applicable)

The following Task Force members and other authors declared an intellectual conflict of interest and this was acknowledged and managed by the Task Force Chairs and Conflict of Interest committees: (none applicable)

## CoSTR Citation

Douma MJ, Hanldey AJ, MacKenzie E, Raitt J, Orkin A, Berry DC, Bendall J, ODochartaigh D, Picard C, Zideman D, Singletary EM – on behalf of the International Liaison Committee on Resuscitation First Aid Task Force.

*The Recovery Position for Maintenance of Adequate Ventilation and the Prevention of Cardiac Arrest Consensus on Science with Treatment Recommendations [Internet] Brussels, Belgium: International Liaison Committee on Resuscitation (ILCOR) First Aid and Basic Life Support Task Forces, 2022 XXX XX.  Available from:*[*http://ilcor.org*](http://ilcor.org/)

**Methodological Preamble and Link to Published Systematic Review**

Insert this methodological brief overview and TF chair will adjust specific for the TF and ILCOR priority team that did the work:

Example:

*The continuous evidence evaluation process for the production of Consensus on Science with Treatment Recommendations (CoSTR) started with an ILCOR systematic review originally published in 2005, updated in 2015 and supplemented by a scoping review in 2020. In 2021 a new systematic review and search strategy was undertaken (Douma, 2020, PROSPERO 2021 CRD42021248358) conducted by the Karolinksa Institutet, Stockholm Sweden and supported by the University of Alberta, Edmonton Canada with involvement of clinical content experts. Evidence was sought and considered by the First Aid and Basic Life Support Task Forces groups respectively. This review includes recent scientific literature published after the completion of the prior systematic reviews and is described before the justifications and evidence to decision highlights section of this CoSTR. The updated search performed in 2021 identified 3 prospective observational studies (n= 1003) (Adnet 1999 745; Julliand 2016 521; Wagner 2020 e037676), and 4 case series (n=251) (Freire-Tellado 2016 e1; Kloster 1999 439; Ryvlin 2013 966; Verducci 2019 e227). These data were taken into account when formulating the Treatment Recommendations.*

## Systematic Review

Webmaster to insert the Systematic Review citation and link to Pubmed using this format when it is available if published

## PICOST

**The PICOST (Population, Intervention, Comparator, Outcome, Study Designs and Timeframe)**

***Population:*** Adults and children in the first aid setting, with a reduced level of responsiveness of non-traumatic aetiology, who do not require resuscitative interventions).

***Intervention:*** Specific positioning (recovery positioning i.e. various semi-prone, lateral recumbent, side-lying or three-quarters prone positions of the body).

***Comparators:***  Compared with supine or other position.

***Outcomes:***

Critical

* survival
* incidence of cardiac arrest
* delayed detection of apnoea and cardiac arrest

Important

* need for airway management
* incidence of aspiration
* hypoxia
* likelihood of cervical spine injury
* complications (venous occlusion, arterial insufficiency, arm discomfort/pain, discomfort/pain, aspiration pneumonia)

***Study Designs:***  Randomised controlled trials (RCTs) and non-randomized studies (non-randomized controlled trials, interrupted time series, controlled before-and-after studies, cohort studies) and case series. Reports including a minimum of five cases were eligible for inclusion. Animal, healthy volunteer and cadaver research was ineligible for inclusion. Unpublished studies (e.g., conference abstracts, trial protocols) and editorials were excluded, although case reports published in letter form were included. Scoping reviews and systematic reviews were included for discussion and to assure no primary papers were missed, but data were not extracted from these reviews.

***Timeframe:***All years and all languages are included as long as there is an English abstract. Literature search updated to November 17, 2021.

PROSPERO 2021 CRD42021248358

## Consensus on Science

The review identified a lack of comparative studies of positional interventions (including the recovery position) examining critical outcomes such as survival, incidence of cardiac arrest or delayed detection of apnoea and cardiac arrest, which precluded comparisons or meta-analyses. In total, 3 prospective observational studies (n= 1003) {Adnet 1999 745; Julliand 2016 521; Wagner 2020 e037676}, 4 case series (n=251) {Freire-Tellado 2016 e1; Kloster 1999 439; Ryvlin 2013 966; Verducci 2019 e227} were included.

***Observational studies***

The observational studies enrolled a total of 450 adults and 553 children experiencing poisoning, febrile seizures, non-febrile seizure, vasovagal symptoms or out of hospital cardiac arrest resulting in activation of emergency medical services. {Adnet 1999 745; Julliand 2016 521; Wagner 2020 e037676}

In an observational descriptive study of body position and suspected aspiration pneumonia in 205 acutely poisoned patients, 112 patients (54%) were found supine, 30 (15%) left lateral decubitus, 25 (12%) prone group, 20 (10%) right lateral decubitus, and 18 (9%) in a semi-recumbent position. The prone position and semi-recumbent positions were associated with a decreased rate of suspected aspiration pneumonia (p<0.05); whereas there was no significant difference between left lateral decubitus, right lateral decubitus, and supine groups with respect to the incidence of pulmonary infiltrates. {Adnet 1999 745}

The use of the recovery position in 145 of 553 (26.2%) paediatric patients with a decreased level of responsiveness, cared for at European emergency departments, was associated with deceased admission rate (adjusted odds ratio (aOR= 0.28; 95% CI 0.17 to 0.48, p<0.0001). {Julliand 2016 521}

In a prospective observational study of 200 cases of out-of-hospital cardiac arrest attended by bystanders, only 64 (32%) patients were found by the emergency services to have been placed in a supine position suitable for the performance of chest compressions. Of the remainder, 37 (18.5%) were found to be in the recovery position, which was more likely to have been the case if bystanders had recently attended a CPR course. Although there was no statistically significant difference in favourable neurological outcome between patients placed in the recovery position compared with those placed in a position suitable for chest compression (p>0.05), it was suggested that knowledge of the recovery position might distract bystanders from performing CPR. { Wagner 2020 e037676}

***Case series and case reports***

Three included case series (n=244) described the position of persons with sudden unexpected death in epilepsy {Freire-Tellado 2016 e1; Kloster 1999 439; Ryvlin 2013 966; Verducci 2019 e227}, one case series, in the form of a research letter, identified seven cases believed to be missed out-of-hospital cardiac arrest {Freire-Tellado 2016 e1}, were included.

A retrospective analysis of deaths in an outpatient population of a tertiary referral centre identified 140 patients with epilepsy who died between 1965 and 1996, of which 24 patients experienced sudden unexpected death in epilepsy. Of these, 17 (71%) were in the prone position, 1 was supine position (4%) and 6 (25%) were in unclassified positions. When an equal likelihood of prone or the supine positioning is assumed, the difference was found to be statistically significant (p=0.001; two tailed test) {Kloster 1999 439}.

In a systematic retrospective survey of international epilepsy monitoring units 29 cardiorespiratory arrests were reported by 27 units from 11 countries. Among the 16 sudden unexpected deaths in epilepsy and fatal near sudden unexpected death in epilepsy cases in which the position of the patient could be assessed, 14 were prone at the time of cardiorespiratory arrest, often with the face partly tilted to one side. {Ryvlin 2013 966}

A retrospective review including death scene investigation, autopsy and next of kin interviews identified 237 definite and probable cases of sudden unexpected death in epilepsy. The majority (128/186, 69%) were found in the prone position (p < 0.05). {Verducci 2019 e227}.

Meta-analysis Not Possible Option:

*For the critical outcomes of survival, incidence of cardiac arrest and delayed detection of apnoea and cardiac arrest, no comparative evidence were identified that met inclusion criteria. The overall quality of evidence was rated as very low for all outcomes primarily due to a very serious risk of bias. The individual studies were all at a critical risk of bias due to confounding, indirectness and imprecision. Because of this and a high degree of heterogeneity, no meta-analyses could be performed, and individual studies are difficult to interpret.*

**Treatment Recommendations**

*When providing first aid to a person with a decreased level of responsiveness of non-traumatic etiology and who does not require immediate resuscitative interventions, we suggest the use of the recovery position. (Weak recommendation, very low certainty evidence)*

*When the recovery position is used, monitoring should continue for signs of airway occlusion, inadequate or agonal breathing and unresponsiveness.  (Good Practice Statement)*

*If body position, including the recovery position, is a factor impairing the first aid provider’s ability to determine the presence or absence of signs of life, the person should be immediately positioned supine and re-assessed. (Good practice statement)*

*Persons found in positions associated with aspiration and positional asphyxia such as face down, prone, or in neck and torso flexion positions should be repositioned supine for reassessment. (Good practice statement)*

*Technical remarks:*

*Resuscitative interventions may include opening and maintaining an open airway, rescue breathing, chest compressions and the application of an automated external defibrillator.*

*Various recovery positions have been described and there remains little evidence to suggest an optimal position. The recommended recovery position, (lateral recumbent positioning with arm nearest the first aid provider at right angle to the body and elbow bent with palm up and far knee flexed), remains unchanged from the 2015 CoSTR).*

## Justification and Evidence to Decision Framework Highlights

The task force discussed that normally we would not generate treatment recommendations based on so few studies and a level of evidence of low certainty. However, the opioid crisis and the large increase in the number of individuals requiring first aid, and being treated with the recovery position, has made this an important question for review. Furthermore, this PICOST was prioritized by the ILCOR First Aid Task Force because of concerns citing evidence from healthy volunteers simulating apnea using breath holding to suggest that placing individuals in the recovery position may impair the detection of cardiac arrest and that supine positioning with a head-tilt-chin-lift should be adopted instead {Freire-Tellado 2017 173; Navarro-Paton 2019 104}. However, these studies did not meet inclusion criteria for this review, and it remains unknown, how well the head-tilt-chin-lift is performed or whether it can be maintained for prolonged periods by first aid providers, including lay persons. Moreover, the observation of the subject may be more complete when they are supine, but a patent airway and unencumbered breathing may be easier to obtain in the recovery position.

The task force discussed weighing the possible risk of abandoning the recovery position in favour of the supine position and application of the head-tilt-chin-lift; however, but the result of such a change was unclear and not justified by the evidence identified.

In situations where a sole first aid responder is unable to remain at the side of a casualty and monitor their responsiveness and breathing, the task force agreed that the use of a recovery position is appropriate. Likewise, if a sole responder finds it necessary to maintain an open airway while in a supine position and is unable to call for help or perform other immediate first aid, such as administering naloxone for suspected opioid overdose, a recovery position may be useful.

The task force discussed the importance of first aid provider safety when accessing and changing the position of an individual. The difficulty and risk of physically turning the individual may vary based on provider and subject size, depth of unresponsiveness, additional first aid providers immediately available, and settings such as an enclosed space, private and public settings. First aid provider safety was seen as a priority by the task force.

The task force discussed how individual body habitus as well as head, face, spine, and other structural characteristics may determine the suitability and effectiveness of different individual positions for the maintenance of airway patency and adequate ventilation. For example, the supine position in an obese person with a decreased level of responsiveness may be associated with airway obstruction and inadequate ventilation, whereas it may be more suitable for a person of lean body habitus. In the balance of these considerations, recommending the recovery position is believed to have the potential to benefit most individuals with a decreased responsiveness in the first aid setting.

Patient deterioration including cardiac arrest can occur after the patient has been put in recovery position (possibly because of the ongoing pathophysiological process). Therefore, continuous monitoring or reassessment at fixed interval (e.g. every 2 minutes if continuous monitoring is not possible) after putting the patient in recovery position should be emphasized and included in the education and training.

## Knowledge Gaps

*The Task Force discussed that additional studies would be very useful. These could include randomized controlled trials, prospective cohort studies or even larger case series representing the total experience of a center or centers, or even case reports that report airway patency and ventilation adequacy in persons experiencing opioid toxicity or emergency call takers randomizing callers to place individuals with non-traumatic decreased level of responsiveness to either the recovery position or the supine position. Future studies are also required to understand the role of positioning in patient assessment, how best to monitor for deterioration and what position is best relative to individual characteristics.*

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**Attachment:**

## [Header – References](#_heading=h.3dy6vkm)

**References listed alphabetically by first author last name in this citation format (Circulation)**

References

Adnet F, Borron SW, Finot M-A, Minadeo J, Baud FJ. Relation of body position at the time of discovery with suspected aspiration pneumonia in poisoned comatose patients: Crit Care Med. 1999;27:745–748

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## Detailed Instructions to Chairs and Webmaster by superscript reference in template

## 1 Creation of Consensus on Science (COS) Statement

Guidance to Task force Chairs

The completed GRADE evidence profile tables are used to create a written summary of evidence for each outcome: the Consensus on Science statements.

The structure of the Consensus on Science statement was developed as a means of providing an explicit narrative to communicate the evidence synthesis and certainty judgments found in the evidence profile tables.

These statements are made for each of the key outcomes, and are supported by the inclusion of:

* a categorization of the overall certainty of the evidence (high, moderate, low, or very low)
* the inclusion of reasons for certainty downgrading or upgrading,
* the specific population (P)
* the specific intervention (I) and comparison (C), and
* an estimate of the magnitude of effect (ideally as mean difference or risk difference) and certainty around that estimate (95% CI).

## 2 Creation of Treatment Recommendations

Guidance to Task force Chairs

Consensus-based treatment recommendations are created whenever possible. These recommendations are to be accompanied by an overall assessment of the evidence as well as a statement from the task force about the values and preferences that underlie their recommendations (see next section: Evidence to Decision framework).

These Treatment Recommendations are supported by the inclusion of:

* wording that reflects the strength of the recommendation (recommend/suggest)
* the direction of the recommendation (for/against)
* the specific population (P)
* the specific intervention (I)
* a statement of the strength of recommendation (strong or weak), and
* a categorization of the overall certainty of the evidence (high, moderate, low, or very low).

The GRADE process encourages organizations to commit to making a recommendation by using “we recommend” for strong recommendations and “we suggest” for weak recommendations in either a positive or negative direction (ie, “suggest/recommend,” “for/against”).

In the unusual circumstances in which task forces chose not to make recommendations, they were encouraged to specify whether this was because they had very low confidence in effect estimates (very limited data), because they felt that the balance between desirable and undesirable consequences was so close they could not make a recommendation (data exists, but no clear benefits), or because the two management options had very different undesirable consequences (and local values and preferences would decide which direction to take).

In some situations, the task forces may wish to make a strong recommendation, based on critical outcomes that are supported by low or very low levels of evidence (confidence in estimate of effect). In general, GRADE discourages guideline panels from making these discordant recommendations, but has identified 5 situations where this may be reasonable:

* When low certainty evidence suggests benefit in a life threatening situation (evidence regarding harms can be low or high)
* When low certainty evidence suggests benefit and high certainty evidence suggests harm or a very high cost
* When low certainty evidence suggests equivalence of two alternatives, but high certainty evidence of less harm for one of the competing alternatives
* When high certainty evidence suggests equivalence of two alternatives and low certainty evidence suggests harm in one alternative
* When high certainty evidence suggests modest benefits and low/very low certainty evidence suggests possibility of catastrophic harm

[It is expected that all treatment recommendations be accompanied by an Evidence to Decision framework *(vide infra)*.](#_heading=h.tyjcwt)

## 3Creation of the Justification and Evidence to Decision Framework Highlights Section of the CoSTR

Guidance to Task force Chairs

In 2015 ILCOR task forces were encouraged to create standardized “values and preferences” statements to capture perspectives related to the prioritization of outcomes in justifying Consensus on Science with Treatment Recommendations (CoSTR). Recently the GRADE working group has expanded this approach and developed a formalized framework designed to transparently and explicitly capture most if not all of the considerations a guideline panel would take into account when formulating a recommendation. This approach, called the Evidence to Decision (EtD) Framework captures concepts as diverse as feasibility, acceptability, resource utilization and even cost-effectiveness when possible. Context-specific guidance can be provided as well. The EtD is embedded into the online software that creates evidence profiles and generates distinct tables that capture the judgments and when possible, the evidence-based insights and justifications that support a recommendation. The ESR or KSU lead enters all the evidence profile tables into the online software and the EtD tables are generated by the software. The Task Force chair leads the discussion with the task force based on the EtD tables and enters the summary of judgements into the EtD tables. The online software generates the summary ETD tables. The summary ETD tables are designed to support decision-making by the task forces and the task force chair uses this information to generate the section on values and preferences in the CoSTR. The Task Force Chair provides the ETD summary tables as a separate document.

## Additional Resources for Task Force Chairs on how to generate and use a EtD framework

1. Evidence to Decision in GRADE Handbook

http://gdt.guidelinedevelopment.org/app/handbook/handbook.html#h.33qgws879zw

1. EtD experience in 15 guideline groups

<https://implementationscience.biomedcentral.com/articles/10.1186/s13012-016-0462-y>

1. GRADE guidance articles

<https://www.ncbi.nlm.nih.gov/pubmed/26931285>

https://www.ncbi.nlm.nih.gov/pubmed/27713072

## 4 Creation of Knowledge Gaps

Guidance to Task force Chairs

The ILCOR priority team members that are content experts and the liaison to the participating task forces should list deficiencies in the published literature as they are identified during the preparation of the Evidence Profile tables and the systematic review manuscript. This can occur at any stage during the process, but commonly occurs during the assessment for inclusion/exclusion of articles identified by the initial search.

These gaps may be related to any of the elements of the PICO framework (population, intervention, comparison and outcome). The gaps may also include specific methodology or study types, or relate to time of assessment of outcomes (eg. duration of follow up).

## General References for TF chairs

Alexander PE, Bero L, Montori VM, et al. World Health Organization recommendations are often strong based on low confidence in effect estimates. J Clin Epidemiol 2014;67:629–34

Andrews JC, Schünemann HJ, Oxman AD, et al. GRADE guidelines: 15. Going from evidence to recommendation-determinants of a recommendation’s direction and strength. J Clin Epidemiol 2013;66:726–35.29.

GRADE handbook: 6.3.2 Confidence in best estimates of magnitude of effects (certainty of evidence). https://gdt.gradepro.org/app/handbook/handbook.html#h.1yd7iwhn8pxp

GRADE handbook: 6.3.3 Confidence in values and preferences. <https://gdt.gradepro.org/app/handbook/handbook.html#h.i5hfweocv3qs>