Knowledge Synthesis Unit or Expert Systematic Reviewer Process-Roles, Deliverables, Time Frames, Responsibilities and Interaction with Task Force

1. Task Force (TF) and Domain Lead (DL) and Continuous Evidence Evaluation (CEE) subcommittee (ILCOR Science Advisory Committee- eventually) confirm priority question written as Population, Intervention, Comparator, Outcome (PICO) to be done by expert systematic reviewer (Knowledge Synthesis Unit (KSU) or Expert Systematic Reviewer (ESR)
2. Task force appoints 2 Content Experts for each PICO. When a PICO cross nodes involving other task forces, one of the Task Forces will be labeled the primary Task Force and will provide 2 Content Experts. In addition, a single content expert from any interested non-primary Task Force(s) will be appointed by those Task Force(s). It is advisable to consider the timeline (Appendix B) to ensure the content experts have sufficient time to commit to the process. It is advisable to appoint back up content experts should availability of the initially appointed content experts change.
3. 'ILCOR priority team' consists of ESR, content experts, domain lead (at their discretion), ILCOR systematic review mentee (SR mentee only with ESR NOT KSU), CEE representative and ILCOR selected information specialist (ESR only as KSU have a dedicated search team) who conducted the search (Appendix A, Tables 1 – 4).
4. 'local KSU or ESR team' consists of the KSU lead or ESR and his or her local team who work under the direction of the KSU lead or ESR. They may be paid or unpaid participants on the local team. Participants on the local team should not be guaranteed authorship.
5. All members of the ILCOR priority team, the KSU lead or ESR and the local team need to complete the ILCOR conflict of interest policy prior to launch of the team.
6. The domain leads (Table 4), the ESRs (Table 2), the SR mentees (Table 3) and the CEE Working group liaisons (Table 1) are listed in the appendices (Appendix A).
7. Content Experts will provide the following role:
    a. Contribute high quality work to the SR as requested and this may include but is not limited to: selection of articles, quality review, data abstraction, GRADE evidence profile tables built within the GRADE Pro GTD online resource (www.gradepro.org) so as to allow seamless integration into the Evidence to Decision Table for formulating recommendations and interpretation of the meta-analysis when applicable.
    b. Iteratively seek Task Force(s) input as required during the systematic review (SR) at each step of the workflow process adhering to the timelines as pre-specified in the KSU or ESR contract. The Task Force chair(s) may wish to suggest when they and the Task Force want to be involved with their core content experts and this involvement will be unique to that Task Force. It is important to note that the SR or KSU do not have the capacity to go back and repeat work so the involvement of the Task Force(s) iteratively is highly recommended such that all members are informed and in full agreement with the process and the decisions being made throughout the SR.
    c. Will establish drop dead dates for deliverables to enable TF input for each step. The content experts will ensure the TF chair(s) and members are aware of every conference call with the KSU or ESR and the local team such that the TF chair(s) and members can listen in as they wish to stay informed on the progress.
8. Task Force Chair(s) and members will fulfill the following requirements:
    a. Ensure they are aligning the work of the TF to support the content expert at every step of the SR. The timelines document Appendix E provides a template for planning. It is important to recognize that the TF must be informed and assisting the content expert in advance of the deadline for the KSU or ESR.
    b. Providing input in a timely way when asked by the content expert.
    c. TF chair(s) will ensure the content experts representing the TF are fulfilling their role and provide a backup expert if the primary expert does not fulfill their role.
    d. The TF chair(s) are encouraged to listen in on any of the KSU or ESR conference calls with the content experts however it is not advisable to interrupt or contribute to the conversation unless related to workflow and process. Instead we encourage TF chair discussions pre-and post-call with the Domain Lead and/or Content experts to ensure that all are comfortable with the decisions that are being made by the content expert(s) representing the TF.

e. The TF chair(s) will document participation and level of participation of each TF member such that they can justify level of contribution for acknowledgment of the SR publication and contribution to the COSTR when posted on the ILCOR website.

f. Once the GRADE evidence profile tables have been completed by the KSU / ESR, the TF should meet by webinar to review the EtD framework as a method for arriving at and explicitly tracing the path from evidence to recommendations. The components of the EtD should be addressed and populated as draft content by the KSU or ESR ahead of that webinar.

9. The CEE representative (Appendix A; Table 1) will provide the oversight to ensure the SR is conducted as anticipated with rigorous scientific methodology and within timelines prescribed by the contract. The CEE rep also reports back to CEE on performance of the domain lead, the KSU or ESR, all members of the ILCOR priority team and KSU or ESR local team members.

10. The domain lead (Appendix A; Table 4) oversees the ILCOR priority team and the communication with the participating TF and CEE. The domain lead will monitor the conference calls and the performance as logged on the dashboard. The domain lead monitor, give feedback, encourage and support each and every member of the ILCOR priority team. The domain lead will actively communicate with the TF chair(s) and TF membership and monitor, report and encourage the TF is providing appropriate support to the CEE process and the KSU or ESR is delivering on time and high-quality output. The domain lead reports to CEE updating the dashboard and providing updates to CEE regularly.

11. The ILCOR SR mentee is dependent upon this process to shine in the eyes of the domain lead and the ESR such that if they perform well the ESR and DL will recommend to the CEE working group that they be promoted to ESR. Thus, it is important that the ILCOR SR mentee play a lead role mentored by the ESR directly.

12. ILCOR TF prepares the draft PICOST from its priority list of PICOs and submits for approval to CEE. CEE sends approved draft PICOST to KSU or ESR Team. The KSU and ESR team revises the draft PICOST with input from the ILCOR priority team at the first webinar. Core content experts confirm with Task Force that the revised PICOST is approved. KSU or ESR submits the revised PICOST to CEE WG for approval.

13. PICOST modified/approved by CEE WG and submits for information only to Task Force and ILCOR Board.

14. Task Force and ILCOR Board acknowledge receipt of PICOST. **This is time zero on the timeline workflow document in appendix B.**

15. AHA staff will send the approved PICOST to the domain lead, the KSU lead or ESR, and the information specialist. Time zero will be inserted in the timeline workflow document appendix B and this is conveyed to the KSU or ESR by the AHA staff assigned to monitor the PICO.

16. The lead Information Specialists (IS) under contract to ILCOR will assign an information specialist to the PICOST literature search and provide contact information.

17. (ESR only) Within 5 days of receipt of this affirmed PICOST the information specialist will lead a webinar (preferred) or conference call with the ESR prior to developing the search strategy. The ESR is responsible for ensuring that the strategy covers all concepts in the PICOST and the IS decides how to translate those concepts into a search strategy that works.

18. The KSU lead or ESR or designate is responsible for conducting doodle polls and scheduling/management of all conference calls. Use of "local" resources is encouraged. All webinars will be conducted through the AHA web interface using their preferred provider.

19. All Questions related to process or performance matters or conflict resolution are to be referred to the ILCOR Coordinator (bmont28@gmail.com) and CEE working group chair (morrisonl@smh.ca)

20. The AHA staff coordinator assigned to each SR and KSU PICOST will monitor progress and report to the CEE committee at their regular meetings. A performance dashboard will be shared across domain leads, ESR, KSU teams, CEE WG and ILCOR Board.

21. In step 8 below the KSU or ESR prepares their submission for peer review and publication and a comprehensive report including executive summary brief for TF and CEE WG. The Task Force(s) uses the evidence profile tables and executive summary brief to complete the COS, Values and Preference, Evidence to Decision Framework and TR and submit to CEE

WG for approval. The TF chair(s) should adhere to the COSTR guidance document when preparing the COSTR. (Appendix C) CEE WG submits the approved COSTR to ILCOR Board for approval prior to posting. An ILCOR approved COSTR is posted on ilcor.org website for public comments for two weeks. The ETD tables are also posted with the COSTR on Ilcor.org website. The TF chair reviews the public comments and makes changes to the COSTR as required and submits to CEE WG for reapproval prior to reposting. A summary of changes made or not made in response to public comments would be helpful to the public and is encouraged. This would also be posted on the COSTR site.

22. Work Flow begins by ESR or KSU with "ILCOR priority team" as outlined below (also fillable Table can be found in Appendix B). Systematic Reviewer or KSU will perform Services and provide Deliverables according to the below schedule contingent on an executed contract with AHA/ILCOR. This is a preliminary schedule. Dates will be inserted once the PICOST is finalized.

22.A Knowledge Synthesis Unit or Expert Systematic Reviewer provides the following Deliverables.

Deliverables	***Weeks***
1. Develop Search Strategy a. Finalize the Population, Intervention, Comparator, Outcomes, in Consultation (PIC) with the ILCOR priority team which is comprised of the Domain Lead, content expert(s), CEE working group member and assigned SR mentee (ESR only,) IS (Designate for ESR – KSU uses their own IS team) develops the search strategy in consultation with the KSU team or ESR. The search strategy should include Medline, Embase and Cochrane at a minimum and all years; ERIC and CINAHL may be searched if applicable and stated in the PICOST. The KSU and ESR are responsible for ensuring that the strategy covers all concepts in the PICOST. IS/KSU decides how to translate those concepts into a search strategy that works. ESR and KSU will search research registries for recently completed or unpublished or incomplete studies. i. International Clinical Trials Registry Platform (www.who.int/ictrp/en/) ii. US clinical trials registry (www.clinicaltrials.gov) iii. Cochrane CENTRAL (http://www.cochranelibrary.com/about/central-landing-page.html) iv. EU Clinical Trials Register (https://www.clinicaltrialsregister.eu) v. Australian New Zealand Clinical Trials Registry (http://www.anzctr.org.au/) b. IS will search for related and potentially contributing published systematic reviews or scoping reviews c. IS will remove as many duplicates as possible using the automated process across search engines d. At this point, 3 weeks into the process – ESR or KSU lead should confirm with CEE WG chair and Bill Montgomery (ILCOR coordinator and AHA liaison) the timelines. If schedule needs adjustment based on the total number of articles at each level of review (titles, abstracts, full text) this is the time to ask for this adjustment.	*3 weeks*

2. Title and abstract screening completed in duplication and full text completed in duplication; a. Title and abstract screening and full text screening completed in duplication; *b.* Hierarchical screening is done by two reviewers (provided by the Systematic Reviewer or utilize Mentee) independently and a kappa is reported for titles; Abstracts and full manuscripts.	*3 weeks*
3. Review and discuss studies at Full Text Level to identify relevant outcomes; a. Work with the relevant Task Force (TF) to prioritize the outcomes as per GRADE based on what is found by the search strategy and what is important to the relevant TFs proposed recommendation and approve the proposal for the registration in PROSPERO; b. Work with the relevant groups and Task Force (TF) to prioritize the outcomes as per GRADE based on what is found by the search strategy and what is important to the relevant TFs proposed recommendation; c. Approve the proposal for registration in PROSPERO. *d. If in the unusual circumstance that no important outcomes are found the review may not continue at this point;* *e.* Register the protocol in PROSPERO.	*3 weeks*
4. **Data extraction, verification and cleaning and prep of draft meta-analyses (where appropriate***)* and a priori sub-group analysis (Tables and Figures), including contacting authors for missing data or incomplete data (if appropriate);	*6 weeks*
5**. Review of data abstraction tables** with Domain Lead, content experts and approval by the relevant TFs	*1 week*
6. **Completion of Evidence Profile Tables** using GRADE PRO GTD online resource (www.gradepro.org) so as to allow seamless integration into the Taskforce preparation of the Evidence to Decision Table for formulating recommendations	*3 weeks*
7. **Review of Evidence Profile Tables using GRADE PRO GTD online resource (www.gradepro.org)** with Domain Leads (DLs), content experts and relevant TFs and obtain approval. Give the link from www.gradepro.org to the relevant TFs.	*1 week*
8**. Preparation of SR manuscript and draft COSTR** a. With comprehensive appendices for submission for Peer Review compliant with PRISMA (checklist required) after CEE WG review and approval. b. Prepare the comprehensive GRADE tables and evidence profile as well as draft COSTR (in accordance with Appendix C) for TF and CEE WG (Science Advisory Committee). c. The SMH IS will update the search just prior to submission for peer review.	*3 weeks*
9. **Presentation of Draft Consensus on Science (COS) with Treatment Recommendations (TR)** to ILCOR priority team and relevant Task Forces. The components of the EtD framework should be	*1 week for KSU or ESR to deliver ** **please note the Task Force will have much longer to review COSTR, and prepare all the ETD Tables that will be posted as a*

addressed and populated as draft content by the KSU or ESR using GRADE PRO GTD online resource (**www.gradepro.org**).	*supplement to the ILCOR.org posting of the COSTR.*
10**. Completion of Systematic Review manuscript** responding to feedback from relevant TFs and CEE WG a. Manuscript Completion Submission of SR manuscript for peer review. b. Publication in an appropriate journal (e.g., Resuscitation) i. Submission for peer review to be completed within 9 months from original search for the above review	*5 weeks*

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22 B Parties Responsibilities:

a. KSU or ESR will be responsible for:
   i. Performing Services and providing Deliverables provided herein;
   ii. Working with AHA/ILCOR team for review, input, and revisions as required;
   iii. Conducting weekly meetings for the first three (3) weeks;
   iv. Maintain continuous communication with AHA/ILCOR through updates;
   v. Notify and schedule meetings to discuss items in deliverables as required;
   vi. Timely communication: 24-48-hour response time to email and voicemail during working hours (working hours 8:00AM-5:00PM CST Monday-Friday):
      a. Normal: 24-48 hours response to normal emails and voicemails;
      b. Urgent: Same day response for urgent emails or voicemails;
   vii. If the KSU or ESR will be delayed in providing Deliverables: AHA/ILCOR requires five (5) business days written notification of delays in delivery of Deliverables or as soon as known by Systematic Reviewer if less than five (5) days' notice is not possible;
   viii. All schedule changes must be followed up with delivery of an updated schedule along with the change order to AHA/ILCOR;

b. AHA will be responsible for:
   i. Reviewing, approving and reimbursing Deliverables in a timely manner;
   ii. AHA/ILCOR team members will be accessible during normal business hours to provide clarification and guidance related to AHA/ILCOR reviews and feedback.

22 C Performance Standards:

a. KSU or ESR will perform Services and provide Deliverables meeting or exceeding the following standards:
   i. Services require ongoing consultation with and approval of AHA/ILCOR;
   ii. Consistently meet the timelines on the assigned task. Please note this is subject to receiving AHA/ILCOR feedback and inputs as and when required at each stage of the "Project";
   iii. Deliverables require AHA's/ILCOR's acceptance upon completion;
   iv. The KSU or ESR's performance will be assessed throughout the duration of the SOW. All actions will be documented accordingly. It is expected that the Systematic Reviewer will successfully fulfill its obligations in accordance with the SOW.
   v. Failure to deliver the deliverable on time without consulting with CEE WG and AHA may result in a 10% reduction in compensation.

23. Investigator Roles and Authorship

Authorship is assigned based on contribution and compliance with international authorship guidelines. It is anticipated the KSU lead or ESR and SR mentee will be first or last author or first or last co-author. The ESR may choose to discuss authorship and

responsibilities at the outset with the ILCOR priority team and local team members. The decision to do this or to defer this discussion until the SR is completed is deferred to the ESR.

Since the search strategy on a SR is essential to the success of an SR, typically Information Specialists are integral and therefore granted authorship. They are expected to write or review the methods section (or a part thereof) of the paper and to ensure that the search strategy is properly reproduced in the paper or appendix. They are also responsible for ensuring the search strategy is subjected to Peer Review (PRESS) by another expert Information Specialist. If they do not review the paper and/or write the methods section (especially as it pertains to the search strategy) they should at least be granted an acknowledgment. For the ESRs the dedicated IS team at SMH would like to be asked about authorship. For the KSU we defer to them for their approach to IS authorship as per their standard operating procedure.

Prior to submission of the completed SR for peer review it is anticipated that the KSU lead or ESR will provide a preliminary author order list and justification for discussion with the domain lead and primary TF chair. When both are in agreement, the KSU lead and ESR will pre-circulate author order and acknowledgement with justification and obtain approval from all authors prior to submitting his/her final recommendations to the domain lead. It is anticipated that the KSU lead or ESR will resolve any conflicts with co-authors prior to submitting her/her recommendations to the domain lead.

Ultimately the ILCOR domain lead submits author list and order and confirms acknowledgements to the CEE for review and the CEE will submit the final list to ILCOR Exec. This is based on KSU lead or ESR recommendations and justification as the SR nears completion and is ready for submission for peer review.

Any unresolved conflicts authorship and order can be appealed to the domain lead and then to the CEE working group.

a. The ESR timeline and deliverables are set by contract (see section 22 A).
   It is important in the SR process to promote and enable contribution fully by the ILCOR priority team members as authors i.e. the ILCOR core content experts appointed by the Task Force Chair(s), the ILCOR SR mentee, the domain lead (if they have chosen to participate) and the CEE representative. Otherwise there is no opportunity for academic growth or capacity building or value added for those who volunteer for these ILCOR roles. Thus, most of the SR will be accomplished by engaging the ILCOR priority team members as investigators and eventually authors.

b. It is anticipated that the KSU or ESR will have a local team to support the SR. This may include hired staff such as PhD or post docs or research coordinators. However, it is important to remember that these individuals are supplemental to the ILCOR priority team members in terms of completing the work and authorship. If an ILCOR priority member fails to deliver on time, this will be reported to the domain lead and the ESR will be approved to pull from the ILCOR team or his or her local team to complete the work in an adjusted timeline and authorship adjusted accordingly. The ESR role is to balance responsibilities carefully across the ILCOR priority team members and the local ESR team to manage authorship expectations, compliance with timelines and ensuring high quality deliverables.

Is there a role for the local SR team members in terms of authorship?

c. The KSU team member of the ESR local team may be comprised of paid or unpaid contributors to the SR. It is hard to guide the ESR on how many of the local team will be authors.

d. It is anticipated the KSU or ESR may wish to acknowledge paid or unpaid contributions by his or her local ESR team through the acknowledgement section. This includes summer or elective students, residents or fellows.

e. The size of the local team supporting the KSU or ESR will depend on the complexity of the question and the search strategy results. We anticipate that 3-4 members of the local team will merit authorship in a routine simple PICOST however a larger search and more complex analysis may increase this to a number of authors greater than four.

f. It is anticipated that the KSU or ESR may wish to advocate for authorship based on contribution and performance for members of the local SR team. This is allowed as long as their contribution does not take away from the role of the ILCOR priority members of the team i.e. tasks delegated to the local team that the priority members are capable of completing on time.

g. Most importantly it would be inappropriate to promote a local team member to first author instead of an ILCOR priority member so the roles and responsibilities of the team need to be allocated accordingly to ensure first authorship for an ILCOR priority member may be possible and is justifiable. For example it is anticipated that the ILCOR appointed mentee is fully capable of completing an SR and requires supervision of the ESR to do so thus it would appropriate for the ESR to decide at the end that they will be last author and the ILCOR assigned mentee will be first author or alternatively the ESR and the mentee are co first authors and another member of the ILCOR priority team who played a significant role will be the last author. It would not be appropriate for the KSU lead or ESR to promise a local fellow or young investigator a first author role on an ILCOR SR.

Acknowledgement on the published SR

a. It is anticipated that TF member involvement in each systematic review will vary but it is unlikely that a TF member that is not a content expert will merit authorship based on international standards. The TF chairs will be asked by the domain lead and KSU or ESR to specify if their TF members merit acknowledgement on the published SR and then which members contributed significantly to the support of the content expert to merit acknowledgement in the SR publication. It is acknowledged that the TF members are indeed volunteers and they may not be able to contribute to each and every ILCOR TF output in a way that merits acknowledgement. The TF chair will be responsible to document participation and contribution of each TF member.

b. Members of the local SR team may merit acknowledgment at the discretion of the KSU lead or ESR.

c. Written approval (email confirmation is sufficient) is required to include an individual in the acknowledgement section of the publication.

APPENDIX A.

Table 1. CEE WG Liaison and AHA Staff Representatives for respective Task Forces

Task Force	Task Force Chair Task Force Vice-Chair	CEE WG Liaison	AHA Staff Representative
Basic Life Support (BLS)	Theresa Olasveegen, Mary Beth Mancini	Peter Morley, Jerry Nolan,	Noelle Hutchins
Advanced Life Support (ALS)	Jasmeet Soar, Michael Donnino	Jerry Nolan, Peter Morley, Laurie Morrison	Noelle Hutchins
Education, Implementation and Teams (EIT)	Robert Greif, Farhan Bhanji	Eddy Lang, Nici Singletary	Noelle Hutchins
First Aid (FA)	Nici Singletary, David Zideman	Nici Singletary, Eddy Lang	Matt Buchanan
Neonatal Life Support (NRP)	Myra Wyckoff, Johnathan Wylie	Laurie Morrison Ian Maconochie,	Matt Buchanan
Pediatric Life Support (Peds)	Ian Maconochie, Richard Aickin	Ian Maconochie, Laurie Morrison	Matt Buchanan

Table 2. List of Expert Systematic Reviewers

Expert Systematic Reviewers	Country of Origin
Ian Drennan	Canada
Arno Zaritsky	USA
Tetsuya Isayama	Japan
Laurie Morrison	Canada
Jen Jensen	Canada
Steve Lin	Canada
Nikolaos Nikolaou	Greece
Joyce Yeung	United Kingdom
Emmy Debuck	Belgium
Michelle Welsford	Canada
Eric Lavonas	USA
Lars Andersen	Denmark

Table 3. List of Systematic Reviewer (SR) Mentees

Systematic Review Mentee	Country of Origin
Chihung Wang	Taiwan
Luis Furuya Kanamori	Australia
Tasuku Matsuyama	Japan
Stuart Netherton	Canada
Masanori Tamuri	Japan
Kate Dainty	Canada
Guillame Geri	France
Adam Cheng	Canada
Theresa Dharv	Sweden
Chika Nishiyama	Japan

Shinichiro Ohshimo	Japan

Table 4. List of Domain Leads, Domains and Subdomains

Domain Lead	Country of Origin	Domain	Subdomains
Charles Deakin	United Kingdom	Defibrillation	Miscellaneous
Allan de Caen	Canada	CPR	Compressions
Keith Couper	United Kingdom	CPR	Bystander CPR, Monitoring/feedback, Miscellaneous
Jonathan Epstein	United States	Emergency Care	Altered level of responsiveness, Anaphylaxis, Burns, Bleeding and wounds, Environmental injury, and Heat/dehydration
Catherine Patocka	Canada	Emergency Care	Cold/frostbite, Shock, Toxic substances/Toxicity
Jack Rabi	Canada	Airway and Ventilation	Gas concentrations/volume monitoring, Supplemental oxygen, Ventilation rate
Guiseppe Ristagno	Italy	Drugs and Fluids	Antiarrythmics, Platelet aggregator inhibitor, Bronchodilators, Buffering agents, Corticosteroids, Fluids, Fibrinolytics,
Monica Kleinman	USA	Drugs and Fluids	Vasoconstrictors, Drug delivery, Tachycardia, Miscellaneous
Adam Cheng	Canada	Education	Simulation, Evaluation, Miscellaneous
Andrew Lockey	United Kingdom	Education	Teaching Methods and Models
Barney Scholefield	United Kingdom	Screening and Diagnosis	ECG/EKG, Imaging, Risk Factors and Assessment
Kevin Nation	New Zealand	Airway and Ventilation	Advanced airway management, Basic airway management
Markus Skifvars	Finland	Post Arrest Care	Fever, Glucose Control, Therapeutic Hypothermia, Miscellaneous

APPENDIX B. Systematic Reviewer Workflow

This fillable table (with an example start date of: Friday, November 3rd, 2017) can be used a guide to track progress and deliverables within the timeframe allotted upon the appropriate launch of a systematic review.

PICOST	
TF	
ESR	
ESR Mentee	
Content Expert	
DL	
AHA Staff	
CEE WG Liaison	

Deliverables		Time (weeks)		Start Date	Completion Date	ETA	Actual Completion	Contact & Work			
								DL	CE	TF	CEE
1	Develop Search Strategy	a. Finalize the Population, Intervention, Comparator, Outcomes, in Consultation (PIC) with the ILCOR priority team which is comprised of the Domain Lead, content expert(s), CEE working group member and assigned SR mentee (ESR only,) IS (Designate for ESR – KSU uses their own IS team) develops the search strategy in consultation with the KSU team or ESR. The search strategy should include Ovid Medline, Embase, and Cochrane at a minimum and all years; ERIC and CINHAL may be searched if applicable and stated in the PICOST. The KSU and ESR are responsible for ensuring that the strategy covers all concepts in the PICOST. IS/KSU decides how to translate those concepts into a search strategy that works. ESR will search research registries for recently completed or unpublished or incomplete studies. i. International Clinical Trials Registry Platform (www.who.int/ictrp/en/) ii. US clinical trials registry (www.clinicaltrials.gov) iii. Cochrane CENTRAL (http://www.cochranelibrary.com/about/central-landing-page.html) iv. EU Clinical Trials Register (https://www.clinicaltrialsregister.eu) v. Australian New Zealand Clinical Trials Registry (http://www.anzctr.org.au/) b. IS will search for related and potentially contributing published systematic reviews or scoping reviews c. IS will remove all duplicates across search engines d. At this point, 3 weeks into the process – confirm with CEE WG chair and Bill Montgomery (ILCOR coordinator and AHA liaison) the timelines. If schedule needs adjustment based on the total number of articles at each level of review (titles, abstracts, full text) this is the time to ask for this adjustment.	3	3-Nov-17	24-Nov-17			Y	Y	Y	
2	Title and abstract screening completed in duplication and full text completed in duplication;	a. Title and abstract screening and full text screening completed in duplication b. Hierarchical screening is done by two reviewers (provided by the Systematic Reviewer or utilize Mentee) independently and a kappa is reported for titles; Abstracts and full manuscripts	3	25-Nov-17	16-Dec-17						
3	Review and discuss studies at Full Text Level to identify relevant outcomes	**a.** Work with the relevant Task Force (TF) to prioritize the outcomes as per GRADE based on what is found by the search strategy and what is important to the relevant TFs proposed recommendation and approve the proposal for the registration in PROSPERO; **b.** Work with the relevant groups and Task Force (TF) to prioritize the outcomes as per GRADE based on what is found by the search strategy and what is important to the relevant TFs proposed recommendation; **c.** Approve the proposal for registration in PROSPERO. d. If in the unusual circumstance that no important outcomes are found the review may not continue at this point; e. Register the protocol in PROSPERO.	3	16-Dec-17	6-Jan-18					Y	
4	Data extraction, verification and cleaning and prep of draft meta-analyses (where appropriate)	Data extraction, verification and cleaning and prep of draft meta- analyses (where appropriate) and a priori sub-group analysis (Tables and Figures), including contacting authors for missing data or incomplete data (if appropriate)	6	6-Jan-18	17-Feb-18						
5	Review of tables with Domain Lead, content experts and approval by the relevant TFs		1	17-Feb-18	24-Feb-18			Y	Y	Y	
6	Completion of Evidence Profile Tables	**Completion of Evidence Profile Tables** using GRADE PRO GTD online resource (www.gradepro.org) so as to allow seamless integration into the Taskforce preparation of the Evidence to Decision Table for formulating recommendations	3	25-Feb-18	18-Mar-18						
7	7. **Review of Evidence Profile Tables using GRADE PRO GTD online resource**	**Review of Evidence Profile Tables using GRADE PRO GTD online resource (www.gradepro.org)** with Domain Leads (DLs), content experts and relevant TFs and obtain approval. Give the link from www.gradepro.org to the relevant TFs.	1	19-Mar-18	26-Mar-18			Y	Y	Y	
8	Preparation of SR manuscript and draft COSTR	a. With comprehensive appendices for submission for Peer Review compliant with PRISMA (checklist required) after CEE WG review and approval. b. Prepare the comprehensive GRADE tables and evidence profile as well as draft COSTR (in accordance with Appendix C) for TF and CEE WG (Science Advisory Committee). c. The SMH IS will update the search just prior to submission for peer review.	3	26-Mar-18	16-Apr-18					Y	Y
9	Presentation of Draft Consensus on Science (COS) with Treatment Recommendations (TR) to ILCOR priority team and relevant Task Forces	The components of the EtD framework should be addressed and populated as draft content by the KSU or ESR using GRADE PRO GTD online resource (**www.gradepro.org**) *1 week for KSU or ESR to deliver ** **please note the Task Force will have much longer to review COSTR, and prepare all the ETD Tables that will be posted as a supplement to the ILCOR.org posting of the COSTR.*	1	16-Apr-18	23-Apr-18			Y	Y	Y	

10	Completion of Systematic Review manuscript responding to feedback from relevant TFs and CEE WG	**a.** Manuscript Completion Submission of SR manuscript for peer review. **b.** Publication in an appropriate journal (e.g., Resuscitation) i. Submission for peer review to be completed within 9 months from original search for the above review	5	24-Apr-18	15-May-18					Y	Y

APPENDIX C.

CoSTR Guidance Document

Continuous Evidence Evaluation Working Group guidance on how to write Consensus on Science statements, Treatment Recommendations (COSTR), Values and Preferences and Knowledge Gaps statements.

This process is the final one in our systematic reviews of the published evidence as it relates to our prioritised topics. This final process follows after the:

- development of the relevant PICO question, including allocation of importance to outcomes
- development of the detailed search strategy
- application of inclusion and exclusion criteria to create the list of included studies
- bias assessment of the included studies, and
- development of the GRADE evidence profile tables for each key outcome.

Creation of Consensus on Science statements

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 quality 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 quality of the evidence (high, moderate, low, or very low)
- the inclusion of reasons for quality 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).

The recommended standard Consensus on Science format for questions that relate to interventions is as follows:

For the important outcome (O) (e.g., return of spontaneous circulation), we have identified very-low-quality evidence (downgraded for risk of bias and imprecision) from 2 observational studies (#1, #2) enrolling 421 adult out-of-hospital cardiac arrests (P), which showed no benefit from the use of the intervention (I) when compare with standard care (C) (RR, 2.12; 95%CI, 0.75–6.02; P = 0.16; absolute risk reduction [ARR], 2.14%; 95% CI, −0.91% to 5.38%, or 21 more patients/1000 survived with the intervention [95% CI, 9 fewer patients/1000 to 54 more patients/1000 survived with the intervention])

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

It is expected that all treatment recommendations be accompanied by an Evidence to Decision framework *(vide infra)*.
The recommended standard treatment recommendation format is as follows:

We suggest/recommend for/against (I) in comparison with (C) for out-of-hospital cardiac arrest (P) (weak/strong recommendation, very low/low/moderate/high quality of evidence).

The GRADE Evidence to Decision Framework – more than just values and preferences

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 and 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 online software generates a summary of these judgements in a single table and are designed to support decision-making by the task forces and can be embedded into the COSTR.

Resources

1. Evidence to Decision in GRADE Handbook
   http://gdt.guidelinedevelopment.org/app/handbook/handbook.html#h.33qgws879zw
2. EtD experience in 15 guideline groups
   https://implementationscience.biomedcentral.com/articles/10.1186/s13012-016-0462-y
3. GRADE guidance articles
   https://www.ncbi.nlm.nih.gov/pubmed/26931285

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

Knowledge Gaps

The instigators working on the individual PICO questions should list deficiencies in the published literature as they are identified. 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).

The statements regarding the knowledge gaps could include wording such as:

There were no studies identified that evaluated this question in the paediatric/in-hospital setting.
No RCTs compared intervention I with standard care in any patient population
Only short term/surrogate outcomes were evaluated, future studies should document survival/neurologically intact survival to hospital discharge/30days.

References

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 (quality 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

Morley PT, Lang E, Aickin R, Billi JE, Eigel B, Ferrer JM, et al. Part 2: Evidence Evaluation and Management of Conflicts of Interest: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Circulation. 2015;132(16 Suppl 1):S40-50.