Instructions for completion of the RECOVER 2011 CPCR evidence evaluation worksheet

Introduction

Welcome to the RECOVER evidence evaluation process for the science related to veterinary CPCR. The process of evaluation has built on the strengths of the International Liaison Committee on Resuscitation (ILCOR) C2005 and C2010 processes (www.ilcor.org), which led to the 2010 AHA CPR Guidelines for humans (Morley 2010). The objective of the RECOVER 2011 initiative is to develop a similar evidence-based set of CPR guidelines for domestic animals. The evidence-evaluation worksheet instructions reside in this document (which may be updated as required) and associated appendices. The purpose of the instructions that follow is to maximize the quality of the literature review (Murphy 2007; Holmes 2007; Scott 2006). As the material provided by the literature reviewers (=”worksheet authors”) will be the brick and mortar of the guidelines, the contribution of the worksheet authors is invaluable and the quality of the literature reviews of critical importance. At the same time we aim to achieve with this process the greatest possible transparency and reproducibility of both the searching process and the evidence evaluation process.

The type of information that should be provided in various sections (especially the Discussion, Conclusions and Citation list) can be found in the example worksheets that have been placed on the Basecamp site (https://acvecc.basecamphq.com).

The content of these instructions were modified from the ILCOR C2010 process authored by Peter Morley MD, Evidence Evaluation Expert C2010 (Morley 2010).

Getting Started

The specific questions to be addressed are allocated to individual worksheet authors. The submission process will be entirely electronic via the ACVECC Basecamp site.

The worksheet requires 9 separate sections to be completed:

1. Basic demographics of the worksheet author
2. Clinical Question
3. Declaration regarding conflict of interest
4. Search strategy and results
5. Summary of the evidence
6. Reviewer’s final comments
7. Conclusion
8. Acknowledgements
9. Citation list

The worksheet template provided is formatted to aid with completion of all the above sections. Furthermore, each section within the template contains an example of a completed worksheet to help with the process. Elements of the example should be overwritten/deleted when progressing through the worksheet.

1. Basic Demographics


WORKSHEET for Evidence-Based Review of Science for Emergency Cardiac Care

Worksheet author(s)

	Date Submitted for review:

Please insert the worksheet author name(s), and the date that the worksheet was submitted for review, as well as contact information.

WORKSHEET for Evidence-Based Review of Science for Emergency Cardiac Care

Worksheet author(s)

Peter Morley, Jerry Nolan	Date Submitted for review: 4 April 2007

2. Clinical Question

Clinical question.

Is this question addressing an intervention/therapy, prognosis or diagnosis:
State if this is a proposed new topic or revision of existing worksheet:

The specific question that is being addressed needs to be in the standardized **PICO** format (Patient/population Intervention Comparison Outcome; http://www.cebm.net/index.aspx?o=1036 and Murphy 2007), and will have been provided to you already. The generic format for questions related to therapeutic interventions is:

In (**P**)atients does the (**I**)ntervention, when compared with (**C**)omparator, improve (**O**)utcome.

(In studies related to diagnosis or prediction the question would read:

*In **P**atients does the **I**ntervention, when compared with **C**omparator, improve the diagnosis/prediction of the **O**utcome (or clinical state etc)?)*

The specific clinical question that is being addressed and the type of question (intervention/therapy, prognosis, diagnosis) will already be entered into the worksheet. The final question (once you accept the question) should not be altered without consultation with the Domain Chair.

3. Declaration regarding Conflict of Interest

Conflict of interest specific to this question
Do any of the authors listed above have conflict of interest disclosures relevant to this worksheet?

A brief declaration regarding any relevant conflicts is required for each worksheet on behalf of all authors. Check the box (yes/no) and if yes, provide a list of specific conflicts.

Conflict of interest specific to this question
Do any of the authors listed above have conflict of interest disclosures relevant to this worksheet? No

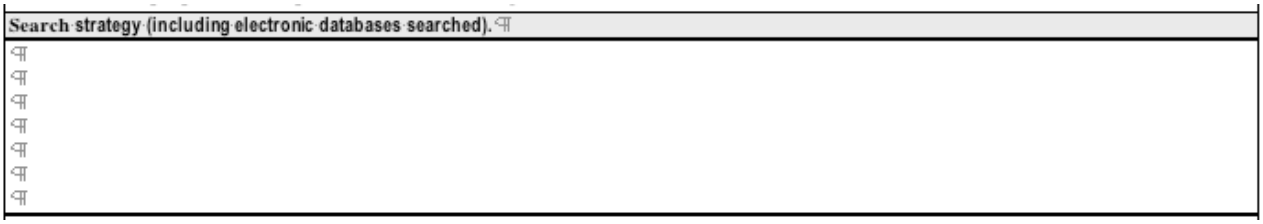
4. Search strategy and results

Two of the most important factors that are related to the final quality of a systematic literature review are:

1. a clearly enunciated (and valid) search strategy, and
2. clearly defined inclusion and exclusion criteria for the studies to be included in the final evaluation phase.

This is effectively the "methodology section" of the worksheet based systematic review.

Searching for the relevant articles



Worksheet authors will be expected to explore various databases to detect all the appropriate publications.

Primary databases used for RECOVER:

The use of these two data bases is **mandatory**:

1. **Medline** (eg. via PubMed, OVID or Scopus),
2. **CAB Abstracts** (e.g. via OVID)

The following is a brief description of the process. You can also consult Murphy 2007 for further information. The article is uploaded on *MENDELEY,* the online reference management system that RECOVER 2011 is using (see MENDELEY.doc on https://acvecc.basecamphq.com for more information on this reference management software).

Medline

The first port of call should be Medline. The most widely used mechanism to search the Medline database is PubMed (www.pubmed.gov), a freely available resource.
-On PubMed the search can be performed using textwords or MeSH, but can also be narrowed down using the "filtering" search strategies provided using "Clinical Queries".
-The results of all of these searches can be exported into the MENDELEY library. A facility known as "My NCBI" (National Centre for Biotechnology Information) can be set up to save searches, and to set up e-mail alerts for new studies.

CAB

CAB is a bibliographic database compiled by CAB INTERNATIONAL and requires a subscription. It covers the significant research and development literature in the fields of agriculture, forestry, human health and nutrition, animal health, and the management and conservation of natural resources (Murphy 2007). CAB offers the most comprehensive indexing and abstracting of the veterinary literature. Searching can be performed by using textwords, which searches for the occurrence of any given word in title or abstract (but not body of the manuscript). A detailed hierarchical thesaurus, which allows refinement of searches by suggesting broader and narrower terms is part of CAB. Citations can be exported directly to Mendeley, or via email.
If you do not have access to this tool, please contact your Domain Chair who can facilitate a broad search for you.

Other search engines

Other search engines (which may require a subscription) have additional features that may be useful. One such feature is the **"cited by"** option used by Scopus, Google Scholar (http://scholar.google.com) or Web of Science. These "cited by" searches offer a good initial approach to find literature on unusual topics or those that don't have an intuitive search strategy. To

use this approach, early relevant or "classic" papers are used as the starting point, and literature that cites those papers can be identified and then reviewed (for relevance, alternative search terms etc). Google scholar can also be used as additional search tool. The advanced setting allows refining the search (e.g. years, limit to medical/veterinary field, and choice of operators). Only peer reviewed articles should be included!

Additional strategies to complete the search

In addition to the databases listed above, additional specific search strategies are required to ensure that all the relevant manuscripts are obtained. These include options such as:

- Review of references of articles (or reviews) of relevance
- Use of forward searching (eg. "cited by" in Scopus, Google Scholar or Web of Science)
- Hand searching (manual reviewing) of specific journals (eg. Resuscitation)

For every search strategy chosen, it is important that it is described in sufficient detail (including data base, year, MeSH and textword search terms, number of total hits, and number of selected hits), and to allow a worksheet reviewer to reproduce the search. An example for how this will look is inserted in the worksheet template.

Please insert your "Search Strategy", including the databases searched into the worksheet.

Search strategy (including electronic databases searched).
PubMed "heart arrest" or "cardiopulmonary resusctitation" as MESH (headings) AND "Hypothermia" textword in abstract. EMBASE search using text words (all fields) hypothermia AND (cardiac arrest OR resuscitation) AHA EndNote 7 Master library, Cochrane database for systematic reviews, Central Register of Controlled Trials, Review of references from articles, Forward search using SCOPUS and Google scholar.

Retrieving the relevant articles

A *review of the title and abstract of each study identified* will assist in identifying articles which need to be obtained for further review. Most of the articles that you find will be accessible in an electronic format (via either individual journal or institutional subscription). Articles that are not available electronically should be requested from your institution. If there are specific articles that have been identified on your search, and confirmed to be important after review of the abstract, and you are not able to obtain them, please let your Domain Chair know so that the article can be obtained for you. The article will then be uploaded to your RECOVER Domain group on MENDELEY for you to access.

Selecting the articles

• State inclusion and exclusion criteria

A crucial part of the maintenance of the validity of the evidence-based review is a ***clear description of the inclusion and exclusion criteria*** for articles to be considered for further review. Some of these criteria are generic, and others are specific to the individual topic being reviewed. Some generic criteria for inclusion or exclusion relate to the study design (eg. randomized controlled trials, human studies [included or excluded], species limitations [cats included or dogs included], exclusion of review articles etc.). As a rule ***only articles in the peer reviewed literature*** are included (no abstract-only studies). There may also be a number of more specific exclusion criteria depending on the individual topic (e.g., exclusion of studies using devices not available in

veterinary medicine), or studies that do not specifically answer the question (e.g., using a GDV model, or generic critically ill patients). These latter studies can either be excluded or listed as "Level 6" evidence (see below).

Please insert your inclusion and exclusion criteria into the worksheet.

- State inclusion and exclusion criteria

The following studies were excluded: Not true cardiac arrest models (eg, exsanguinations, great vessel occlusion [5], carotid artery occlusion [7]), pre-arrest [6] or during arrest cooling [4], resuscitation with cardiopulmonary bypass instead of CPR [9].

After search strategy and inclusion/exclusion criteria have been completed, these need to be **reviewed and approved by the Domain Chair** prior to beginning detailed appraisal of the articles selected for further analysis. Please submit the WS to your Domain Chair for this purpose when you have completed your initial search.

Summarising the search results

- Number of articles/sources meeting criteria for further review:

After your search (and the application of inclusion and exclusion criteria) has identified articles for further review, and these have been reviewed and approved by your RECOVER Domain Chair, you are ready to begin the detailed review of the individual studies.

Please insert the number of studies that met criteria for further review into the worksheet.

- Number of articles/sources meeting criteria for further review:

29 studies met criteria for further review. Of these six were LOE 1, one LOE 2, two LOE 3, nine LOE 4, and eleven LOE 5.

5. Summary of the evidence

Evidence Supporting Clinical Question

Good					
Fair					
Poor					
	1	**2**	**3**	**4**	**5**
Level of evidence					

Each individual study now needs to be reviewed ***in detail***. The critical information to be obtained in this process includes:

1. Level of Evidence
2. Methodological quality
3. Magnitude of any observed effect
4. Direction of support or otherwise for the question asked, according to the specific outcomes that have been assessed
5. Outcome(s) assessed
6. Relevance to the question asked

This evidence is then represented graphically (according to the tables that represent the various directions of support), and in the text of the "Reviewer's Final Comments" section.
This is effectively the results section of the worksheet based systematic review.

Level of Evidence

The Level of Evidence (LOE) for any study is allocated according the type of study, and its inherent likelihood to exclude bias. LOE 1, 2, 4, and 5 involve clinical studies in the target species (cats or dogs) and LOE 3 adds experimental laboratory studies.
Levels of Evidence are as follows:

Levels of Evidence	
LOE 1	**Randomized Controlled Clinical Trials (RCTs) in target species or meta-analyses of RCTs**
LOE 2	**Prospective clinical studies in target species with concurrent controls, but without randomization**
LOE 3	**Experimental laboratory studies in target species**
LOE 4	**Retrospective clinical studies in target species**
LOE 5	**Case series and case reports in target species**
LOE 6	**Studies not directly related to the specific patient/population (eg. different patient population, different species, (e.g. humans), mechanical models etc.)**

Further explanation of LOE categories:

LOE 1

Randomized Controlled Trials in target species:
Clinical studies that prospectively collect data and randomly allocate the animals to intervention or control groups.

LOE 2

Clinical studies in target species using concurrent controls (i.e., controls recruited at the same time as experimental subjects) without randomization:
These studies can be:

1. Experimental clinical: Include animals that are allocated to intervention or control groups concurrently, but in a non-random fashion

OR

2. Observational clinical: Include cohort and case control studies

LOE 3

Experimental laboratory study in target species:
These studies can be randomized, blinded, and controlled but don't have to be. The study design needs to be reported and the study will be categorized according to methodological quality as described below within LOE 3.

LOE 4

Clinical retrospective studies in target species:
The study and control groups have been selected from a previous period in time.

LOE 5

Case series and Case reports in target species:
A single group of animals exposed to the intervention (or factor under study), but without a control group.

LOE 6

Studies, experimental or clinical, that are not directly related to the specific target species (i.e., not dogs or cats) or target population (e.g., not cardiac arrest). These could be different species/populations, including experimental models in non-target species, and includes **high quality studies in humans only** (such as meta-analyses, RCTs, and clinical studies with concurrent controls, including observational studies; these are the human equivalents to our LOE 1 & 2).

Table to help with LOE determination in RECOVER:

	LOE Criteria present (● mandatory/ ○ optional)				
	Target Species	Clinical	Randomized	Controlled	Concurrent
LOE 1	●	●	●	●	●
LOE 2	●	●		●	●
LOE 3	●		○	○	○
LOE 4	●	●		●	
LOE 5	●	●			
LOE 6		○	○	○	○

Quality of study within each LOE

There is no uniformly agreed upon way of defining methodological quality. A number of numerical systems have been proposed but all have their limitations. Instead of a strict criterion based assessment, we ask the worksheet reviewer to allocate the quality of each study (within each level of evidence) into Good, Fair and Poor.
Good studies would be expected to have **most/all of the quality items** suggested to assess the type of study (see below).
Fair studies would be expected to have **some of the quality items** suggested to assess the type of study (see below).
Poor studies would be expected to have **few of the quality items** suggested to assess the type of study (see below), but to be of sufficient vale to include for further review.

Specific quality items are listed below for each type of intervention study. For further information, including quality for diagnosis and prognosis questions, see the Critical Appraisal Sheets on: http://www.cebm.net/index.aspx?o=1157

Randomized Controlled Trials (LOE 1)

- Was the assignment of patients to treatment randomized?
- Was the randomization list concealed?
- Were all patients who entered the trial accounted for at its conclusion?
- Were the patients analyzed in the groups to which they were randomized (which is enhancing study quality)?
- Were owners, clinicians and evaluators "blinded" to which treatment was being received?
- Aside from the experimental treatment, were the groups treated equally?
- Were the groups similar at the start of the trial?
- Is the relevance to the question being posed high?
- High likelihood that the size of the effect of the intervention will have clinical relevance?

Clinical studies using concurrent controls without randomization (LOE 2)

- Were comparison groups clearly defined?
- Were outcomes measured in the same (preferably blinded) objective way in both groups?
- Were known confounders identified and appropriately controlled for?
- Was follow-up of animals sufficiently long and complete?
- Is the relevance to the question being posed high?
- High likelihood that the size of the effect of the intervention will have clinical relevance?

Experimental (laboratory) studies in target species (LOE 3)

- Randomized Controlled Trials (RCTs) = good,
- Studies without randomized controls = fair, and
- Studies without controls = poor
- Is the relevance to the question being posed high?
- High likelihood that the size of the effect of the intervention will have clinical relevance?

Retrospective clinical studies using controls without randomization (LOE 4)

- Were comparison groups clearly defined?
- Were outcomes measured in the same objective way in both groups?
- Were known confounders identified and appropriately controlled for?
- Was follow-up of animals sufficiently long available and complete?
- Were criteria used to include animals in or exclude animals from the study clearly stated?
- Is the relevance to the question being posed high?
- High likelihood that the size of the effect of the intervention will have clinical relevance?

Clinical studies without controls, e.g. case series (LOE 5)

- Were outcomes measured in an objective way?
- Were known confounders identified and appropriately controlled for?
- Was follow-up of animals sufficiently long and complete?
- Is the relevance to the question being posed high?
- High likelihood that the size of the effect of the intervention will have clinical relevance?

Studies not directly related to the specific patient/population (LOE 6)

Studies not directly related to the specific patient/population (e.g., different patient/population, non-target species animal models, mechanical models etc.) should have their methodological quality allocated to the type of study (e.g. RCTs = good, studies without randomized controls = fair, and studies without controls = poor). Studies involving **species other than the target species** should also be designated using ***italics***. In reality, these will be mostly clinical human studies and experimental studies using swine.
Specifically for human clinical studies: Only RCTs (good), clinical studies using concurrent controls without randomization (fair), and studies using retrospective controls and large retrospective studies (e.g., registries) (poor) need to be considered. Studies without controls do not need to be considered.

Note: The allocation of a grade for methodological quality helps graphical representation but is relatively simplistic. What is probably more important is the discussion of the relevant factors for the individual studies, which is expected in the "Reviewer's Final Comments" section.

Direction of support for the question asked

Evidence Supporting Clinical Question

Evidence Neutral to Clinical question

Evidence Opposing Clinical Question

The outcomes of each study need to be classified according to their direction of support for the original question. Studies can be supportive, neutral (not supportive or opposing) or opposing for their various endpoints. One table is provided for each of these directions, and studies should be listed in the table representing the direction of support.

Outcome(s) assessed

A = Return of spontaneous circulation	C = Survival to hospital discharge	E = Other endpoint
B = Survival of event	D = Intact neurological survival	*Italics = Animal studies*

The relevant outcomes that were assessed by the studies should be designated in the table along with the study citation. The choice of outcome designations include:

- A = Return of spontaneous circulation
- B = Survival of event
- C = Survival to hospital discharge
- D = Intact neurological survival
- E = Other endpoint

These outcomes should be those that were decided on when the question was asked, though during the course of the literature review it may become apparent that other outcomes should be included (e.g., decreased "hands-off" time with a new compression:ventilation ratio).

The various qualities of the individual studies (LOE, Quality grade, Direction of Support, Outcome assessed) should be inserted into the relevant table of the worksheet, with appended outcome letters as appropriate (RECOVER uses 6 LOE not 5 LOE as ILCOR; be aware of this difference when examining the tables below).

Evidence Supporting Clinical Question

Good					
Fair	Hypothermia After Cardiac Arrest Study Group, 2002 CD				
Poor	Bernard, 2002 CD Hachimi-Idrissi, 2001 E Tiainen, 2003 DE		Bernard, 1997 D	Bernard, 2003 E	*Agnew, 2003 DE* *Cruz, 2002 E* *Hicks, 2000 DE* *Horn, 1991 E*
	1	**2**	**3**	**4**	**5**
Level of evidence					

A = Return of spontaneous circulation
B = Survival of event
C = Survival to hospital discharge
D = Intact neurological survival
E = Other endpoint
Italics = Animal studies

6. Reviewer's Final Comments

This section is probably ***the most important part of the whole worksheet***. This is where the worksheet author, who now has the most intricate understanding of the literature, can succinctly describe the results of their review (including reference to individual studies where relevant), and start to synthesize the information. The author can tease out the contradictions, make observations, and propose solutions.

This is effectively the discussion section of the worksheet based systematic review.

REVIEWER'S FINAL COMMENTS AND ASSESSMENT OF BENEFIT / RISK:
DISCUSSION: Initial human case series and human studies were promising but not continued. Subsequent animal studies involved complex combinations of induction of arrest models, and attempts to resuscitate, followed by a variety of techniques to induce hypothermia for a variable period of time. • Animal models were not uniform in their outcomes and almost invariably did not provide a consistently high level of care (eg. sedation/paralysis/ventilation/ICU care) which would be necessary in a human study. Human studies were initially feasibility in nature, followed by some controlled studies, and finally two landmark prospective multicentre studies. • The definitive study to date is that performed by the Hypothermia After Cardiac Arrest Study Group which performed a methodologically good prospective randomized study, and confirmed that the induction of hypothermia in comatose survivors of out-of-hospital cardiac arrest due to ventricular fibrillation improves neurological outcome and mortality at 6 months. . Hypothermia patients were sedated, paralysed, ventilated and cooled with surface cooling to 32-34ºC for 24 hours. Major limiting factors include the inability of the investigators to blind the treating team to the study group, the limited proportion of patients finally included (8% of those assessed; limiting extrapolations), and the relative hyperthermia in the control group. There were more complications in the hypothermia group but these (individually or collectively) were not statistically significant.

7. Conclusion

Conclusion
CONSENSUS ON SCIENCE: TREATMENT RECOMMENDATION:

This section represents the conclusion of the worksheet based systematic review.

Consensus on Science statement

In this section the author should try and create a summary statement that encompasses the body of evidence. The generic format for the Consensus on science statement is as follows:

> *Evidence from X# type of study in dogs {{insert study design and highest quality design}} and X# type of study in cats {{insert study design and highest quality design}}, in addition to additional studies in non-target species {{insert range of LOE}} document consistent improvement in {{insert relevant clinical outcome}} when {{insert treatment}} is administered by {{insert provider}} to patients with {{insert clinical condition}} in the {{insert prehospital, hospital, etc}} setting.*

Two examples of these are included below from the 2005 CoSTR publication (hence they use the C2005 Levels of Evidence):

> *"Ten studies (LOE 2[20,21]; LOE 4[22–26]; LOE 5[27]; LOE 6[28,29]) show that lay rescuers[23,25,30] and healthcare providers[20,21,24,26–29] are often unable to accurately determine the presence of a pulse within 10 seconds. Two studies in infants (LOE 5)[31,32] reported that rescuers rapidly detected cardiac activity by direct chest auscultation but were biased because they knew that the infants were healthy."*

> *"One RCT (LOE 2),[115] 1 prospective controlled cohort study (LOE 3),[116] 2 cohort and case studies (LOE 4),[117,118] supported by 27 cohort and case studies (LOE 5[119–138]; LOE 7[139–145]) indicate hesitancy or unwillingness to perform CPR, particularly mouth-to-mouth ventilation, on adult patients in and out of hospital, even after CPR training. Reasons for the hesitancy or unwillingness to perform CPR include, but are not limited to, fear of contracting a disease while performing mouth-to-mouth ventilations, fear of performing the skills incorrectly, and fear of hurting the patient".*

Treatment recommendation

Whenever possible a treatment recommendation will be developed. Obviously a number of complex factors must be considered when finally creating a consensus statement. Some of these factors include the magnitude of the effect, the outcome affected, the generalisability from the specific population studied, and the potential barriers to implementation (including cost, education, logistics, etc). For these and many other reasons, the treatment recommendation suggested by the worksheet author may be significantly modified before final publication in a consensus document. The generic format for the treatment recommendation statement is as follows:

> *Therefore, administration of {{therapy}} for patients with {{condition, setting by personnel}} is recommended/should be considered.*

Two of these are included below from the ILCOR 2005 CoSTR publication:

> *"It is reasonable for laypeople and healthcare professionals to be taught to position the heel of their dominant hand in the center of the chest of an adult victim, with the nondominant hand on top."*

"Introduction of a MET system for adult hospital in-patients should be considered, with special attention to details of implementation (eg, composition and availability of the team, calling criteria, education and awareness of hospital staff, and method of activation of the team). Introduction of an EWS system for adult in-hospital patients may be considered."

Conclusion

CONSENSUS ON SCIENCE:
Evidence from one fair randomized trial (LOE 1) and supportive evidence from nine other studies (LOE 2 to 6) document consistent improvement in neurological outcome after discharge from hospital in patients who had experienced an out-of-hospital cardiac arrest where the initial rhythm was ventricular fibrillation and were still comatose, and who were cooled within minutes to hours after return of spontaneous circulation to 32-34°C for 12-24 hours.

TREATMENT RECOMMENDATION:
Unconscious adult patients with spontaneous circulation after out-of-hospital cardiac arrest should be cooled to 32-34°C for 12-24 hrs when the initial rhythm was ventricular fibrillation (VF) (Level 1).
Unconscious adult patients with spontaneous circulation after out-of-hospital cardiac arrest, as a result of any other rhythm, or cardiac arrest in hospital, cooling to 32-34°C for 12-24 hrs may also be beneficial (Level 4).
Cooling should be started as soon as possible.
Rapid infusion of 30 ml kg^{-1} of 4ºC saline is a simple method of achieving a decrease in core temperature of approximately 1.5ºC (Level 5).

We will **NOT** include levels of recommendation (as in the above example), so do not worry about these!

8. Acknowledgements

Acknowledgements:

As with any publication that undergoes peer review, the worksheet author(s) are required to acknowledge any significant contributions to their work.
Please insert any acknowledgements into the worksheet.

Acknowledgements:
Nil

9. Citation list

The final part of the worksheet is also extremely important. In the section entitled "Citation list" we request the authors paste their references in alphabetical order. This can be easily done from the reference management program used, where the reviewed studies can be selected, and then a bibliography generated containing these references. The output should be Harvard style, with abstracts and notes fields included. Before pasting, please put citations into alphabetical order. Please also include comments with each of the citations:

- LOE,
- Quality,
- Supportive/Neutral/Opposing, and
- Brief summary statement(s), including comment about industry funding.

There is accumulating data that industry funding of RCTs and meta-analyses can result in an increased estimate of effect size, so some statement should be made for each study about industry funding or otherwise.
Please paste your citations, with accompanying abstract and notes/comments, into the worksheet.

Citation List

Benson, D. W., G. R. Williams, et al. (1959). "The use of hypothermia after cardiac arrest." Anesth Analg 38: 423-28.
No abstract available.
Level 3. Neutral (underpowered).
27 in-hospital arrests at Johns Hopkins University (Baltimore), excluded 2 failed resuscitations and 6 good neurological outcome. 19 patients with neurological insult after successful resuscitation (internal cardiac massage) were either cooled or not. Concurrent controls. Not randomised. 12 cooled to 30-32°C within 1 to 6 hours (for 3hrs to 8 days). 7 not cooled. Survival in 1/7 vs 6/12 (FE, P=0.17). Included all four cases reported in Williams and Spencer Ann Surg 1958. No comment about industry funding.

Summary

You should now have completed your worksheet ready for submission. **CONGRATULATIONS**!! You should be proud of the work that you have done, but now the peer review process begins. As with any manuscript submission, a number of questions or suggestions may result from the review of your worksheet by the domain chairs or other leaders within the RECOVER 2011 process. Please accept any feedback as constructive comments, which are provided to try and optimize the process.

Daniel J. Fletcher and Manuel Boller,
Co-Chairs, RECOVER Committee

References

Holmes, MA. Evluation of the Evidence. Vet Clin N Am Small Anim Pract. 2007; 37(3):447-462

Morley, PT, Atkins DL, et al. Part 3: Evidence Evaluation Process : 2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Circulation 2010; 122:S283-290.

Murphy, SA. Searching for Veterinary Evidence: Strategies and Resources for Locating Clinical Research. Vet Clin N Am Small Anim Pract. 2007; 37(3):433-445.

Scott I, Greenberg P, Poole P, et al. Cautionary tales in the interpretation of systematic reviews of therapy trials. Intern Med J. 2006 Sep;36(9):587-99.

http://www.cebm.net
http://www.cochrane.org