Evidence Aid: systematic reviews in humanitarian emergencies

14 December 2011

Professor Mike Clarke
Director, All-Ireland Hub for Trials Methodology Research, Queen’s University Belfast, Northern Ireland
“I look forward to such an organisation of the literary records of medicine that a puzzled worker in any part of the world shall in an hour be able to gain the knowledge pertaining to a subject of the experience of every other person in the world.”
Why is “evidence” needed

• Decisions in natural disasters and other humanitarian emergencies deserve the same rigour as those at other times.
• Differences in outcomes between the choices available might not be large, so these need to be assessed reliably to distinguish moderate benefits from moderate harms.
• Bias and the influence of vested interests need to be recognised and minimised.
• We all want to do more good than harm.
How systematic reviews can help

Systematic reviews

• avoid undue emphasis on individual studies or opinions
• seek to minimise bias
• maximise the power of existing research
• bring together the relevant evidence for a focused question in a single place; after careful searching, appraisal and analysis
• are becoming more common and accepted
The Cochrane Collaboration is an international organisation that aims to help people make well-informed decisions about healthcare by preparing, maintaining and promoting the accessibility of systematic reviews of the effects of healthcare interventions.
Evidence Aid is a coordinated, international initiative to improve effective and timely access to systematic reviews on the effects of interventions and actions of relevance before, during and after disasters and other humanitarian emergencies, to improve health-related outcomes. Evidence Aid is working with those who need and use this evidence and those who produce it.
• Established by The Cochrane Collaboration after the Indian Ocean tsunami of St Stephen’s Day 2004.

• Currently, providing and highlighting evidence for agencies and people making decisions about health care in the context of natural disasters and other humanitarian emergencies.
• Improving access to reliable information on the effects of relevant interventions to support well-informed choices, helping survivors receive the best care available and recover as quickly as possible.

• Expanding beyond healthcare interventions and actions, to include areas such as shelter, communication, construction, education, security, and support for displaced people.
Available free of charge, currently through special sections on The Cochrane Collaboration and The Cochrane Library websites.

Seeking to improve access through better use of the internet, paper and mobile phone technology.

The core sources of evidence within Evidence Aid will be systematic reviews, supplemented by contextual and other information to help decision makers and other users interpret this knowledge and apply it in their setting.
Evidence Aid Project

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- **Cochrane Evidence Aid: Resources for earthquakes**
- Cochrane Evidence Aid: Tranexamic acid in acute trauma
- Cochrane Evidence Aid: Resources for flooding and poor water sanitation
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The Cochrane Collaboration’s Evidence Aid project was established following the tsunami in the Indian Ocean in December 2004. It uses knowledge from Cochrane Reviews and other systematic reviews to provide reliable, up-to-date evidence on interventions that might be considered in the context of natural disasters and other major healthcare emergencies. Evidence Aid seeks to highlight which interventions work, which don’t work, which need more research, and which, no matter how well meaning, might be harmful; and to provide this information to agencies and people planning for, or responding to, disasters.
COCHRANE EVIDENCE AID: RESOURCES FOR EARTHQUAKES

A selection of Cochrane Reviews and their conclusions for healthcare topics that have been identified as important in the aftermath of a major earthquake. These are signposts to systematic reviews that might be helpful to decision-makers.

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Guidelines about making drug donations following disasters are available here from the World Health Organization (WHO), and details of the Interagency Emergency Medical Kit are available in English, French and Spanish from this webpage.

DIARRHOEA PREVENTION AND TREATMENT

See Cochrane Evidence Aid: resources for flooding and poor water sanitation, Water-related diseases caused by faecal pollution: general diarrhoea prevention, management, & treatment.

OTHER INFECTIOUS DISEASES

Azithromycin for treating uncomplicated typhoid and paratyphoid fever (enteric fever)

Azithromycin appears better than fluoroquinolone drugs in populations that included participants with drug-resistant strains. Azithromycin may perform better than ceftriaxone. [Download PDF] [Resumen en español]

WOUND MANAGEMENT

Water for wound cleansing

There is no evidence that using tap water to cleanse acute wounds in adults increases infection and some evidence that it reduces it. However there is not strong evidence that cleansing wounds per se increases healing or reduces infection. In the absence of potable tap water, boiled and cooled water as well as distilled water can be used as wound-cleansing agents... [Download PDF] [Resumen en español]
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**Cochrane Evidence Aid: Resources for flooding and poor water sanitation**

The Cochrane Collaboration’s Evidence Aid project was established following the tsunami in the Indian Ocean in December 2004. It uses knowledge from Cochrane Reviews and other systematic reviews to provide reliable, up-to-date evidence on interventions that might be considered in the context of natural disasters and other major healthcare emergencies. Evidence Aid seeks to highlight which interventions work, which don't work, which need more research, and which, no matter how well meaning, might be harmful; and to provide this information to agencies and people planning for, or responding to, disasters.
COCHRANE EVIDENCE AID: RESOURCES FOR FLOODING AND POOR WATER SANITATION

In times of natural disaster, having access to safe and clean water is essential. Water polluted by faecal matter can lead to the spread of diarrhoeal diseases such as cholera, and water polluted by animal waste can spread other diseases, such as leptospirosis. Natural disasters can also result in an increase in water-based insect vectors that can spread disease (such as malaria), and a lack of clean water for personal hygiene can result in an increase in diseases such as conjunctivitis and scabies. These outcomes are outlined in the World Health Organization’s field manual for ‘Communicable disease control in emergencies’, and have informed the preparation of this Special Collection.

The burden caused by natural disasters adds to the existing burden of morbidity and mortality from diarrhoeal diseases. According to the World Health Organization, diarrhoeal disease is the second leading cause of death in children under five years old and kills 1.5 million children each year.

Cochrane systematic reviews can contribute to the use of effective interventions to prevent and treat water-related diseases, and they have also examined interventions to improve sanitation and promote hand washing. This Special Collection presents the Cochrane Reviews that summarize the available evidence around water safety and water-related diseases. Where available, links to Evidence Update summaries are provided.

This Special Collection concludes with a list of additional resources and guidelines, recommended by the contributors to this Special Collection, likely to be of relevance and interest to those working in disaster relief.

New: Japanese translation prepared by Kyoto University School of Public Health.

Note from the publisher, Wiley-Blackwell: As part of our Evidence Aid programme, we have granted all people in Japan access to all databases in The Cochrane Library, including the Cochrane Database of Systematic Reviews.

- Water-related diseases caused by faecal pollution: general diarrhoea prevention, management, & treatment
- Water-related diseases caused by faecal pollution: sorted by disease
- Water-related diseases caused by water-based insect vectors
- Skin, eye, & louse-borne diseases that can occur when there is a lack of water for personal hygiene
- Skin diseases caused by long-term exposure to water
- Water-related diseases caused by urine of certain mammals

WATER-RELATED DISEASES CAUSED BY FAECAL POLLUTION: GENERAL DIARRHOEA PREVENTION, MANAGEMENT, & TREATMENT

Diarrhoea prevention: water quality & hand washing
WATER-RELATED DISEASES CAUSED BY FAECAL POLLUTION: GENERAL DIARRHOEA PREVENTION, MANAGEMENT, & TREATMENT

Diarrhoea prevention: water quality & hand washing

Diarrhoea is a common cause of morbidity and a leading cause of death among children aged less than five years, particularly in low- and middle-income countries. Persistent diarrhoea can also contribute to malnutrition, reduced resistance to infections, and sometimes impaired growth and development. Many of the infectious agents are transmitted by ingesting contaminated food or drink, by direct person-to-person contact, or from contaminated hands.

Interventions to improve water quality for preventing diarrhoea

“Interventions to improve water quality are generally effective in preventing diarrhoea, and interventions to improve water quality at the household level are more effective than those at the source.”

Diarrhoeal diseases are a leading cause of mortality and morbidity, especially among young children in developing countries. While many of the infectious agents associated with diarrhoeal disease are potentially waterborne, the evidence for reducing diarrhoea in settings where it is endemic by improving the microbiological quality of drinking water has been equivocal. This review assesses the effectiveness of interventions to improve water quality for preventing diarrhoea. These include conventional improvements at the water source (e.g., protected wells, bore holes, and stand posts) and point-of-use interventions (e.g., chlorination, filtration, solar disinfection, and combined flocculation and disinfection). [Download PDF] [Evidence Update summary]

Interventions to improve disposal of human excreta for preventing diarrhoea

“Interventions that promote hand washing can reduce diarrhoea episodes by about one-third. This significant reduction is comparable to the effect of providing clean water in low-income areas.”

Hand washing after defecation and handling faeces, and before preparing and eating food, is one of a range of hygiene promotion interventions that can interrupt the transmission of diarrhoea-causing pathogens. This review evaluates the effects of interventions to promote hand washing on diarrhoeal episodes in children and adults. [Download PDF] [Evidence Update summary]

Hand washing for preventing diarrhoea

Diarrhoea management: oral rehydration solution (ORS)

Reduced osmolality oral rehydration solution for treating dehydration caused by acute diarrhoea in children

“In children admitted to hospital with diarrhoea, reduced osmolality ORS [oral rehydration solution] [total osmolality ≤ 250 mmol/L with reduced sodium] when compared to WHO [World Health Organization] standard ORS [90 mmol/L sodium, 111 mmol/L glucose, total osmolality 311 mmol/L] is associated with fewer unscheduled intravenous fluid infusions, lower stool volume post randomization, and less vomiting. No additional risk of developing hyponatraemia when compared with WHO standard ORS was detected.”

Note: Since the publication of this review, the WHO standard has changed to a reduced osmolality ORS.

Children with diarrhoea lose body water and sometimes become dehydrated. A solution of sugar and salt dissolved in water (oral rehydration solution - ORS) is widely used to treat dehydration caused by diarrhoea. This review compares two formulations of ORS with different osmolalities in children with acute diarrhoea. [Download PDF] [Evidence Update summary]

Reduced osmolality oral rehydration solution for treating cholera
Evidence Update

Diarrhoea Series

In areas where diarrhoeal disease is common, do interventions that aim to improve the quality of drinking water prevent diarrhoea?

Researchers have tested a range of interventions applied at the water source, and at the point of use. Those tested all helped reduce diarrhoea in all age groups.
Evidence Update

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Researchers have tested a range of interventions applied at the water source, and at the point of use. Those tested all helped reduce diarrhoea in all age groups.

Inclusion criteria

Studies:
Randomized and quasi-randomized controlled trials.

Participants:
Children and adults living in areas where diarrhoeal disease is common.

Intervention:
Interventions to improve the microbiological quality of drinking water.
Control: usual practice in respect of drinking water, or another type of intervention.

Primary outcome:
Episodes of diarrhoea.

Results

- 19 randomized controlled trials and 11 quasi-randomized controlled trials, with over 33,000 participants. Interventions were at source (for example, wells) or at point of use (including improved storage or treatment by chlorination, solar treatment, filtration, or flocculation/disinfection).
- For all age groups, including children under five, the intervention groups generally had fewer episodes of diarrhoea.
- Effect sizes were greater with household interventions than with interventions targeted at the water source.
- Interventions appeared to work irrespective of whether the study area had improved water supply or sanitation.

Interventions to improve water quality versus control, results pooled using risk ratios:
episodes of diarrhoea in children under the age of five years

<table>
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<td>0.17 [0.07, 0.42]</td>
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<td>3.3</td>
<td>0.32 [0.13, 0.82]</td>
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Authors’ conclusions

Implications for practice:
Interventions to improve the microbiological quality of the drinking water, particularly at household level, are effective at preventing diarrhoea in areas where diarrhoea is common.

Implications for research:
Rigorously conducted randomized controlled trials are needed to compare various approaches to improving drinking water quality. There is a need to assess new technologies for improving water quality in remote and low-income settings where the burden of diarrhoea is highest. Approaches to optimize the take-up and long-term use of these interventions should also be investigated.


The Evidence Update is available from www.aidinfo.org, and free for eligible countries through www.healthimpact.org.
Evidence Aid Project

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COCHRANE EVIDENCE AID: RESOURCES FOR POST-TRAUMATIC STRESS DISORDER FOLLOWING NATURAL DISASTERS

As the people of Japan recover from yet another example of nature’s fury, those involved in disaster planning will need to consider the psychological consequences of the series of traumatic incidents associated with the earthquakes, the tsunami, and threats of nuclear devastation.

One such psychological consequence is post-traumatic stress disorder (PTSD), and this special collection brings together the summary conclusions of the evidence from Cochrane systematic reviews on the effects of interventions aimed at preventing and treating PTSD, with links to the full reviews (see below). These Cochrane Reviews have been prepared by the authors and editors of the Cochrane Depression, Anxiety and Neurosis Group.

PTSD develops in people who were exposed to traumatic events that involved an actual or perceived threat of death or serious injury to them, their loved ones or significant others. The symptoms develop usually within the first one to three months after the event. Sufferers from PTSD characteristically re-experience aspects of the traumatic event in the form of vivid experiences that the event is recurring (flashbacks), distressing and intrusive images of the event, or nightmares. Reminders of the traumatic event (people, situations or circumstances resembling or associated with the event) often arouse intense distress or physiological reactions. Attempts to avoid such reminders are another characteristic feature of PTSD. Many people develop symptoms of hyperarousal: being excessively vigilant, easily startled, irritable, or having difficulty concentrating and in sleeping. Many PTSD sufferers describe feeling detached from others, unable to experience feelings and losing interest in previously important activities. PTSD may be associated with depression, anxiety, or panic and may lead some to use harmful amounts of alcohol or other addictive substances.

Most survivors of catastrophic events will initially develop symptoms of PTSD of varying intensity, but the vast majority will recover within the following year, or years, without treatment, or with informal support from families and friends. However, up to a third may continue to have distressing symptoms many years after the event.

In partnership with Wiley-Blackwell and Evidence Aid, free one-click access to the whole contents of The Cochrane Library to everyone in Japan was made available on the day of the earthquake. A Japanese version of this collection has also been prepared by Kyoto University School of Public Health.

TREATMENT OF EARLY ACUTE TRAUMATIC STRESS SYNDROME
There is no evidence that single-session individual psychological debriefing is a useful treatment for the prevention of PTSD after traumatic incidents. Compulsory debriefing of victims of trauma should cease.

After the 2004 tsunami, this evidence was incorporated into the counsellor training for the Nagapattinam district in India; one of the worst hit areas of Tamil Nadu, the state with the largest number of casualties in India. “Brief debriefing” was not used.
• Do decision makers need this evidence?
• Do decision makers want this evidence?
• What are their priorities?

• Do relevant studies exist?
• Do relevant systematic reviews exist?
• How should we deliver this knowledge?

• Can we get the job done?
Do decision makers need this evidence?

- U. of Miami / Project Medishare field hospital in Haiti: 45 amputations / 500 patients
  (MMWR 2011; 59:1676)

- Swiss army surgical team: 1 amputation / 150 patients.
  (Major Gen. Stettbacher, Chief surgeon of the Swiss army)
Do decision makers want this evidence?

- Global survey of humanitarian workers, agencies and donors about to take place
- In Arabic, English, French, German and Spanish
- Two of the questions are ‘Have you used systematic reviews as a source of evidence in decision-making’ and ‘Do you think that improved access to systematic reviews could play a role in improving the response to natural disasters and other humanitarian crises’?
Evidence Aid survey: preliminary results

Have you used systematic reviews as a source of evidence in decision-making?

- Yes: 51%
- No: 25.5%
- Not sure: 23.5%

(N=51)
Evidence Aid survey: preliminary results

Do you think that improved access to systematic reviews could play a role in improving the response to natural disasters and other humanitarian crises?

Yes: 81.3%
No: 2.1%
Not sure: 16.7%
What are their priorities?

• Best way to achieve a comprehensive disaster database?
• Effects of targeted supplementary feeding programs
• Political management of potable water
• Mental health and psychosocial support interventions
• Evaluation to ensure greater accountability for expenditure
• Reproductive, maternal and newborn health care focus in acute emergencies (it is often not prioritized)
• Culture norms (e.g. food preservation)
• Value of various interventions in lowering mortality
• Impact of training during emergencies
• Best practices in the use of social media in disaster response (e.g. for warning and evacuation)
• Vaccination
• Logistics
Do relevant studies exist?

- Few trials have been done in disaster settings
- Onder et al randomized 103 adults to one of three different drugs to treat post traumatic stress disorder (PTSD) after the 1999 Turkish earthquake.
- Catani et al randomized 31 children with a preliminary diagnosis of PTSD in a refugee camp in north-eastern Sri Lanka to six sessions of Narrative Exposure Therapy for children, called KIDNET, or six sessions of meditation-relaxation after the Indian Ocean tsunami.
- Habib et al in Pakistan in 2006 allocated 200 children affected by an earthquake to take zinc in suspension form or as tablets as a treatment for diarrhoea.
- There are ethical challenges: DisasterBioethics.com
Disaster Bioethics Symposium 2011

On April 3-5, 2011, a symposium on Disaster Bioethics was held at the Brocher Foundation near Geneva, Switzerland. This Symposium brought together a distinguished group of international experts to examine bioethics in the context of disasters. One of the aims of the Symposium was to produce resources which would help to stimulate and promote further discussion of disaster bioethics. The materials are being developed into an edited volume called Disaster Bioethics which will be published by Springer in 2012.

We are grateful for the funding provided for the symposium by Brocher Foundation, Porticus UK, The Cochrane Collaboration and Dublin City University. For further information, contact donal.omathuna@dcu.ie

The presentations are listed in the order in which they were given. Clicking on the title will lead to a pdf of the PowerPoint slides. Note: some files are very large. Audio files of the presentations will be available here in the near future. The original
Do relevant systematic reviews exist?

After the Haiti earthquake in 2010, Cochrane reviews were identified of potential relevance in the following areas:

• Diarrhoea prevention and treatment (5 reviews)
• Wound management (3 reviews)
• Fracture management (21 reviews)
• Other physical trauma (7 reviews)
• Blood transfusion (6 reviews)
• Post traumatic stress disorder (2 reviews)
• Renal problems (2 reviews)
• Sickle cell disease (3 reviews)
If you needed to access the findings of systematic reviews, how would you like them to be presented to you?

- Whole review: 45.1% (23)
- Whole review plus comments from experts in the humanitarian sector: 56.9% (29)
- Review summary on its own: 21.6% (11)
- Summary and context specific information: 47.1% (24)

(N=51)
How should we deliver this knowledge?

- Bundles of related reviews
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How should we deliver this knowledge?

- Bundles of related reviews
- Short summaries of the overall findings
**Evidence Update**

Diarrhoea Series

In areas where diarrhoeal disease is common, do interventions that aim to improve the quality of drinking water prevent diarrhoea?

Researchers have tested a range of interventions applied at the water source, and at the point of use. Those tested all helped reduce diarrhoea in all age groups.

**Inclusion criteria**

**Studies:**
- Randomized and quasi-randomized controlled trials.

**Participants:**
- Children and adults living in areas where diarrhoeal disease is common.

**Intervention:**
- Interventions to improve the microbiological quality of drinking water.
- Modification in respect of drinking water, or another type of intervention.

**Primary outcome:**
- Episodes of diarrhoea.

**Results**
- 19 randomized controlled trials and 11 quasi-randomized controlled trials, with over 33,000 participants. Interventions were at source (for example, wells) or at point of use (including improved storage or treatment by chlorination, solar treatment, filtration, or flocculation/disinfection).
- For all age groups, including children under five, the intervention groups generally had fewer episodes of diarrhoea.
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<td>0.35</td>
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<td>25</td>
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<td>0.8</td>
</tr>
<tr>
<td>Study 5</td>
<td>-1.95</td>
<td>(0.1 - 0.8)</td>
<td>0.2</td>
<td>0.8</td>
</tr>
</tbody>
</table>

**Authors’ conclusions**

Implications for practice:
- Interventions to improve the microbiological quality of the drinking water, particularly at household level, are effective at preventing diarrhoea in areas where diarrhoea is common.

Implications for research:
- Rigorously conducted randomized controlled trials are needed to compare various approaches to improving drinking water quality. There is a need to assess new technologies for improving water quality in remote and low-income settings where the burden of diarrhoea is highest. Approaches to optimize the take-up and long-term use of these interventions should also be investigated.

**Adapted from:**
- Produced by the Effective Health Care Alliance Programme (www.shef.ac.uk/evidence), Liverpool School of Tropical Medicine, supported by the Department for International Development (DFID) and the Australian Cochrane Centre. Evidence Update can be distributed free of charge.
How should we deliver this knowledge?

- Bundles of related reviews
- Short summaries of the overall findings
- *Context specific summaries*
- Internet
- Paper (via the internet)
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Influenza A/H1N1
Essential information

Tips based on evidence from Cochrane reviews and BMJ’s Clinical Evidence
May 1 2009

Prepared by Tom Jefferson
Graphics by Luca De Fiore
(jefferson.tom@gmail.com)
The most effective preventive interventions are non-pharmacological.
Cubra a boca e o nariz ao espirrar.
坚持勤洗手，务必洗干净。
Do not touch your eyes, nose and mouth.
How should we deliver this knowledge?

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The Effect of Lay Health Worker Programmes on Mother and Child Health and Tuberculosis

Rosenbaum Sarah

The effect of lay health worker programmes on mother and child health and tuberculosis

Uploaded by RosenbaumSarah on 18 Mar 2011

This summary of evidence about the effect of lay health worker programmes

Uploaders' Comments (RosenbaumSarah)

We welcome any comments large and small to this video, as well as to this approach of presenting evidence. The captions can be automatically translated to other languages (through Google translate) by clicking the orange "cc" button on menu bar under the video and choosing "Translate captions". However, if you are interested in contributing to this project with a manual translation of the English captions to another language, please contact me.
How should we deliver this knowledge?

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• Guidelines
Can we get the job done?

• Bonnix Kayabu, Evidence Aid Co-ordinator
• Claire Allen, Evidence Aid Knowledge Manager
• Interest groups: infectious diseases, maternity care, mental health, nutrition, oral health, trauma

• Agencies, organisations, donors and individuals want evidence
• They want to help prepare and disseminate it

• Funding: The Cochrane Collaboration, Wiley-Blackwell, McCall MacBain Foundation, Porticus UK, TENALEA programme (EU)
“I look forward to such an organisation of the literary records of medicine that a puzzled worker in any part of the world shall in an hour be able to gain the knowledge pertaining to a subject of the experience of every other person in the world.”
“I look forward to such an organisation of the literary records of medicine that a puzzled worker in any part of the world shall in an hour be able to gain the knowledge pertaining to a subject of the experience of every other person in the world”

George Gould, First President of the Medical Libraries Association, USA (May 1898)
Expanding and strengthening Evidence Aid will help people in natural disasters and humanitarian emergencies to choose effective strategies and avoid those that are ineffective.

Aims to provide knowledge for resource poor settings more generally.

Aims to save lives, reduce morbidity and enable people and communities to recover more quickly and efficiently.