Evidence Summaries

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Professor Mike Clarke
m.clarke@QUB.ac.uk
Why do we need evidence?

- We are all consumers, providers, payers or carers in health and social care.
- We hope that what we take, what we are given or what we give will do more good than harm.
- We need reliable, robust, trustworthy information from the past to help us make good choices about the present and the future.
- We need evidence that answers the question: what is likely to happen to me in the future? or to you or to them
This should be no different in the humanitarian sector
What is a systematic review?
What do you think it is?
Uncertainties
March 2011: Japan hit by tsunami after massive earthquake

11 March 2011 Last updated at 02:34 ET

A massive earthquake has hit the north-east of Japan triggering a tsunami that has caused extensive damage.

Japan's TV showed cars, ships and even buildings being swept away in the Fukushima prefecture, after the 8.9 magnitude earthquake.

Officials said a wave as high as 6m (20ft) could strike the coast.

The quake struck about 250 miles (400km) from Tokyo at a depth of 20 miles, shaking buildings in the
One of the largest earthquakes ever recorded has struck off the coast of north-east Japan, causing widespread destruction. Many casualties are feared.
In pictures: Japan earthquake and tsunami

The worst affected areas are thought to be Miyagi, Fukushima and Iwate prefectures. In Iwaki, Fukushima, water swept through the town.
The 8.9 magnitude quake triggered a huge tsunami which has swept across the sea threatening countries all around the Pacific Ocean.
Stunned and shaken evacuees gathered in the open spaces of Tokyo’s Shinjuku Central Park until it was safe to attempt to travel home.
In Mito City vehicles were crushed in a car park. Geologists say the disaster was caused by a "megathrust" quake, when one tectonic plane is pushed beneath another.
The quake was felt in the capital Tokyo, where workers evacuated swaying buildings, trains and underground services were halted, plants closed and the international airport temporarily shut.
Helping
Millions of people are affected by disasters every year, and billions of dollars are spent by people and organisations involved in disaster risk reduction, resilience, planning, response and recovery.

They want to do things that will lead to:

- Better protection
- Less death, injury and damage
- Quicker recovery
• But, doing *something* is not enough.
• It needs to do more good than harm.
• Decision makers need to know what works (and by how much and for whom), what doesn’t work, what remains unproven and what, no matter how well meaning, might be harmful.
• They need to make well informed choices and decisions.
• They need access to reliable evidence.
Evidence-based decision making

- Is not just about randomised trials.
- Randomised trials, and systematic reviews of them, provide one component for evidence-based decision making: an estimate of the effects of interventions, actions and strategies.
- Reliable evidence on which interventions are beneficial (and by how much and for whom), which are harmful and which have little or no effect is vital to well informed decision making.
- Reliable evidence needs to minimise chance and bias.
Why decision makers need this evidence

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

- Swiss army surgical team: 1 amputation / 150 patients.
  \(\text{Major Gen. Stettbacher, Chief surgeon of the Swiss army}\)

21st Jan 2010
Access to reliable summaries
Effectiveness

- Systematic reviews
  - Avoid undue emphasis on single studies.
  - Identify relevant research, and appraise its quality.
  - Make best use of research already done.
  - Maximise the power of the conclusions.
  - Identify gaps and suggest how best to fill these.
  - Improve access to existing research.
Interpreting reliable summaries
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.
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.
Resources following Typhoon Haiyan in the Philippines

Following the devastation caused by Typhoon Haiyan in the Philippines, Evidence Aid worked with colleagues in the disaster community to compile the following evidence-based resources that might help.

Evidence Aid Special Collections: Cochrane Library

The following four systematic reviews discuss the health impacts of windstorms and flooding, and ways to reduce these impacts. Short summaries of these are available here.

Health impacts of windstorms: Public Health 2013

Flooding and mental health: PLoS Currents Disasters 2012 May 30 / PDF of article

Infectious diseases and flooding: Disaster Health 2013;1(2):1-11 / PDF of article

Secondary stressors and extreme events and disasters: PLoS Currents Disasters 2012 Oct 29 / PDF of article

Disaster evacuation and medication: PLoS Currents Disasters 2014 Jul 18 / PDF of article

Power outages and extreme events and health: PLoS Currents Disasters 2014 Jan 02 / PDF of article

Disaster risk management for health: Fact sheets

Disaster needs assessment: MIRA Approach: Process, Methodologies and Tools Download bundle of the PDFs

Website for the Philippines response: philippines.humanitarianresponse.info

WHO Regional Office for Europe: Floods in the WHO European Region: Health effects and their prevention

Download bundle of the PDFs

Search our Resources here

What we’re tweeting

Tweets

Evidence Aid @EvidenceAid
The State Of The Humanitarian System report - Stockholm launch via @ALNAP ow.ly/SXBRf

Evidence Aid @EvidenceAid
What’s needed?
Priorities for systematic reviews

- Before 2013, there had been no priority setting exercises for disaster-related questions that might be answered by systematic reviews.
- Few aid agencies had lists of research priorities. Most don’t have a research division and research projects and uncertainties tend to be scattered across the organization, often by country and sector.
- Transparency and independence is important when prioritizing research.
The task

• To identify 30 high priority research questions under 10 themes that could be addressed by systematic reviews, relevant to planning for or responding to natural disasters, humanitarian crises or other major healthcare emergencies.

• Focus on topics of particular relevance to low- and middle-income countries where the health impact of disasters may be greater than in high-income settings.
Sources

• 216 questions/potential questions had been collected from an Evidence Aid needs assessment survey (which asked survey participants to identify up to three priority questions) and other events including:
  • Discussions with aid agencies and NGOs.
  • Two Evidence Aid conferences (Oxford 2011 and Brussels 2012).
  • Reviewing published literature (for example, Lancet series on Maternal and Child Health).
  • Working with the International Rescue Committee.
Refining

- The 216 questions were developed further by facilitators, Evidence Aid and the Centers for Disease Control and Prevention (USA).
- 43 main themes were identified which would feed into an online survey, with the intervention questions attached to these themes.
- Every question (including non-healthcare questions) with potential health outcomes was included at this stage.
Prioritisation (online)

- 233 people ranked their top ten themes in an online survey. Rankings were aggregated to generate a list of ten themes for discussion at a face-to-face meeting:
  - Water and sanitation
  - Disaster preparedness
  - Disaster response
  - Nutrition and food security
  - Maternal and child health
  - Co-ordination
  - Quality of data / assessment tools / evaluation / impact
  - Shelter
  - Disaster recovery
  - Mental health
Prioritisation (face to face)

- Questions framed about the effects of interventions, actions or strategies and worded so that they would be suitable for answering through a systematic review.
- Questions circulated to workshop participants, who were asked to rank them in order of importance and comment on their rankings.
- They could liaise with colleagues in doing this, but had to be prepared to discuss the choices at the workshop.
Prioritisation (face to face)

- Workshop held on 3-4 June 2013 in London.
- 28 participants from aid agencies, funders, NGOs, academia and independent consultants from Europe, USA and Africa; with wide range of backgrounds and experience but all global and humanitarian.
- Consensus process used nominal group technique to prioritize.
- Participants initially worked in small groups, based on expertise or interest in the relevant topic area.
Priorities

- 30 priority questions were agreed.
- Further refinements to the questions are likely as they are worked on for systematic reviews.
- Published in *PLOS Currents: Disasters*
Table 2: Research questions prioritized for up to date systematic reviews at the Evidence Aid prioritization meeting on 3-4 June 2013

<table>
<thead>
<tr>
<th>Question</th>
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<tbody>
<tr>
<td>What are the effects of point-of-use treatments for water compared to point-of-collection treatments after a disaster or in other humanitarian emergencies?</td>
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<tr>
<td>What are the most effective sanitation and hygiene related personal behaviors after a disaster or in other humanitarian emergencies?</td>
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<tr>
<td>What are the effects of sanitation and hygiene interventions after a disaster or in other humanitarian emergencies?</td>
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<td>What are the most effective strategies for waste management in high density emergency settings?</td>
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<td>What are the effects and cost effectiveness of investing in disaster preparedness in low- and middle-income countries for reducing excess mortality during a disaster?</td>
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<td>What are the effects of community based preparedness on health outcomes after a disaster or in other humanitarian emergencies?</td>
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<tr>
<td>Which human resources and competencies are needed for each phase of disasters (in order to be prepared for future episodes and to have the right people in the right place at the right time)?</td>
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<tr>
<td>What are the effects of different models of co-ordination of humanitarian intervention after a disaster or in other humanitarian emergencies (including financing mechanisms, management mechanisms (e.g. clusters and leadership), information management (e.g. use of new media), communication to and from disaster affected communities)?</td>
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<tr>
<td>What are the effects of breastfeeding promotion interventions, including integrated breastfeeding, on breastfeeding rates and duration after a disaster or in other humanitarian emergencies?</td>
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<td>What are the effects of emergency feeding programs (including the provision of food, cash and vouchers) after a disaster or in other humanitarian emergencies?</td>
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<tr>
<td>What are the effects of targeted supplementary feeding after a disaster or in other humanitarian emergencies?</td>
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<tr>
<td>How can nutrition or food security information (including probability forecasting) be presented to ensure resource mobilization?</td>
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<tr>
<td>What are the most effective interventions to reduce childhood morbidity and mortality, and improve wellbeing after a disaster or in other humanitarian emergencies?</td>
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<tr>
<td>What are the most effective interventions to reduce maternal morbidity and mortality, and improve wellbeing after a disaster or in other humanitarian emergencies?</td>
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<tr>
<td>What strategies increase the uptake of maternal and neonatal healthcare services after a disaster or in other humanitarian emergencies?</td>
</tr>
<tr>
<td>Which are the most effective health and non-health indicators for measuring health outcomes of people affected by a disaster or in other humanitarian emergencies?</td>
</tr>
</tbody>
</table>
Participants in the workshop

Mathias Altmann (Action Contre La Faim); Stella Anyangwe (Independent consultant); Grazia M. Caleo (Medecins Sans Frontieres); Jess Camburn (ELRHA / Save the Children); Rudi Coninx (World Health Organization); Philip du Cros (Medecins Sans Frontieres); Kate Godden (Nutrition Works); Brendan Gormley (Independent consultant); Scott Green (UN Office for the Coordination of Humanitarian Affairs); Samuel Hauensteinswan (Action Contre La Faim); Chris Lewis (Department for International Development (DFID)); John Mitchell (ALNAP); Virginia Murray (Public Health England); Carlos Navarro-Colorado (Centres for Disease Control); Cecile Salpeter (Action Contre La Faim); David Sanderson (Oxford Brookes University); Kevin Savage (World Vision International); Andy Seal (University College London); Emma Sydenham (Cochrane Injuries Group); Ajay Tripathy (South Asian Cochrane Centre); Axel van de Veegaete (Red Cross, Brussels); Mark van Ommeren (World Health Organization); Vincent Virgo (IFRC and Red Crescent Societies); and Michelle Young (independent consultant).

Organisations who helped with the preparatory work

MSF Epicentre-Paris (Rebecca Grais); World Vision Kenya (Mesfin Teklu); WHO Somalia (Omar Saleh); Centres for Disease Control and Prevention (Richard Garfield); Centre for Global Health Trinity College Dublin (Mac MacLachlan and Susan Bradley); UNICEF (Franck Bouvet); Merlin (Fiona Campbell); World Vision Australia (Claire Beck); MSF Geneva (Caroline Abu-Sada); World Vision Ireland (Juliet Lang); and UNICEF (Heather Papowitz).
An international project to improve access to knowledge in disaster risk reduction, planning, response and recovery.

Available, needed and effective interventions
One of the largest earthquakes ever recorded has struck off the coast of north-east Japan, causing widespread destruction. Many casualties are feared.
In pictures: Japan earthquake and tsunami

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Systematic reviewing

- Formulating a clear question for the review
- Stating objectives and eligibility criteria
- Identifying (all) potentially eligible studies
- Applying eligibility criteria
- Assembling most complete dataset feasible
- Analysing the dataset, using statistical synthesis and sensitivity analyses, *if appropriate and possible*
- Preparing a structured report
- Updating the review
Formulating the question for a review
Choosing the studies to include in a review depends on the question to be answered.
Does drinking coffee raise people’s blood pressure?
Measuring the blood pressure of everyone who drank coffee this morning
Getting some of you to drink another cup of coffee and then measuring your blood pressure
Measuring the blood pressure of a random sample of those who drank this morning, and those who did not
Getting some of you to drink a cup of coffee and some of you not to, and then measuring your blood pressure
Does drinking coffee raise people’s blood pressure?
Does drinking coffee raise people’s blood pressure? compared to what?
Does drinking coffee raise people’s blood pressure?
Does drinking coffee raise people’s blood pressure?
Does drinking coffee raise people’s blood pressure?

\checkmark

compared to ....?
Does drinking coffee raise people’s blood pressure?
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Question formulation

- You need a clear question. It might change during the planning, but you hope it won’t change during conduct.
- Each word is important. Does it narrow or broaden your review? Will other people think each word or phrase means the same thing as you think it means (e.g. “obstetric emergency” or “humanitarian setting”)?
- Each word in the question can be expanded upon in the eligibility criteria for the review.
Formulating the question for a review
Setting the eligibility criteria
Participants
Interventions
Outcome measures
Study designs
Preparation for a Systematic Review

- Systematic reviews should seek and use studies that are most appropriate for the question.
- All reviews take short cuts. Will these lead to bias or the wrong answer?
- You will have choices. Make them wisely.
- Preparation avoids problems that are predictable and helps you to cope with unexpected problems.
- Would you like to begin narrow and focused and then broaden out if there are too few studies? Or begin broad, and then focus if there are too many studies?
- You are not designing a new study. You have to cope with what others did in the past. But you might plan a review by thinking about the design of the “perfect study”.

Eligibility criteria

• The eligibility criteria provide the rules for what should and should not be included in your review.
• Use a framework for setting the criteria, such as the types of participants, interventions, comparators, outcome measures and types of study.
• Think about the types of study that might have been done and decide if you would want them in your review.
• A study’s results must not influence your decision to include it.
• Clear eligibility criteria help you avoid having to make decisions about studies, after you know its results.
• The eligibility criteria don’t always have to match your question perfectly, you might be able to borrow from other areas.
Criteria for a good systematic review (1)

• Is the question clearly focused?
• Is the search for relevant studies thorough?
• Are the inclusion criteria appropriate?
• Is the validity of the included studies adequately addressed?
• Is missing information obtained from trialists?
• How sensitive are the results to changes in the way the review is done?
Criteria for a good systematic review (2)

- Are subgroup analyses interpreted cautiously?
- Do the conclusions flow from the evidence that is reviewed?
- Are recommendations linked to the strength of the evidence?
- Are judgements about preferences (values) valid?
- Is “evidence of no effect” confused with “no evidence of effect”?
SELECTED READING

**General textbooks / guidance**


Centre for Reviews and Dissemination. Systematic reviews: CRD’s guidance for undertaking reviews in health care. (www.york.ac.uk/inst/crd)

**Systematic reviews (history and ‘epidemiology’)**


**Searching**


**Forest plots**

**Heterogeneity**

**Chance effects**


**Reporting of systematic reviews**