Why systematic reviews in the disaster context

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Regional distribution of disasters by type
1991 - 2005
Influenza A(H1N1)2009 pandemic
Disruption of health services during the influenza A(H1N1)2009 pandemic
August 10, 2010 – WHO declares post-pandemic phase
Situation in Puducherry, India

Aug – Sept 2010

• Surge in flu activity
• Huge inflow of referrals for suspected H1N1
• Transfer-in confirmed H1N1
• Triage/Treat/Test services at JIPMER hospital
• Demand for mechanical ventilation, isolation beds
• Special 24×7 service manned by internists, anaesthetists, paramedics opened
  – Nearly 400 suspects tested & treated
  – 11 deaths; 8 confirmed
Evidence needs

- **How to prevent deaths**
  - Neuraminidase inhibitors (oseltamivir)

- **How best to prevent transmission in hospital**
  - Vaccine efficacy, safety; PPEs
  - Injectable (IIV) vs. nasal (LAIV)

- **How to reduce transmission in the community**
  - Travel restriction/Airport screening
  - Health camps/school closures/mass gathering
• Spread can be prevented by handwashing, especially around younger children

• Implementing barriers to transmission, isolation, and hygienic measures effective at containing epidemics

• Limited evidence that N95 respirators superior to simple surgical masks

_Cochrane Database of Systematic Reviews_ 2010;1:CD006207.
• **Good vaccine match**
  – 4% of unvaccinated vs. 1% of vaccinated people developed influenza symptoms (RD 3%, 95% CI 2% to 5%)

• **Poor vaccine match**
  – 2% vs. 1% (RD 1, 95% CI 0% to 3%)

• **Risk of GBS:** 1.6 additional cases per million

*Cochrane Database of Systematic Reviews* 2010;7:CD001269.
WHO Guidelines for Pharmacological Management of Pandemic Influenza A(H1N1) 2009 and other Influenza Viruses

Revised February 2010

Part I
Recommendations

World Health Organization

http://www.who.int/csr/resources/publications/swineflu/h1n1_use_antivirals_20090820/en/
Rec 01: Patients who have severe or progressive clinical illness should be treated with oseltamivir as soon as possible. (Strong recommendation, low quality evidence.)

Rec 03: Patients who have severe or progressive clinical illness should be treated with oseltamivir as soon as possible. Consideration should be given to the use of higher doses, such as 150 mg twice daily (for adults), and longer duration of treatment depending on clinical response. (Strong recommendation, low quality evidence.)

Rec 05: Patients who have uncomplicated illness due to confirmed or strongly suspected virus infection and are in a group known to be at higher risk of developing severe or complicated illness, should be treated with oseltamivir or zanamivir as soon as possible. (Strong recommendation, low quality evidence.)
Pharmacological Management of Pandemic Influenza A (H1N1) 2009
Part II: Review of Evidence

Author(s): P Whyte
Date: 2009-12-20
Question: Should oseltamivir be used for influenza?
Settings: Adults and children
Bibliography: Jefferson (2009), as well as articles by Hanshaoworakul (2009), Casscells (2009), and Piedra (2009).

Outcome: Complications (pneumonia, bronchitis, otitis media, and sinusitis)

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<tr>
<th>Quality assessment</th>
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<tr>
<td>No. of studies</td>
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<td>Design</td>
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<td>no serious indirectness</td>
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<td>serious¹¹</td>
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Summary of findings

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<tr>
<th>No. of patients</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
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<tr>
<td>Oseltamivir</td>
<td>Control</td>
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<td>14/402 (3.5%)</td>
<td>27/402 (6.7%)</td>
<td>RR 0.55 (0.22 to 1.35)</td>
<td>30 fewer per 1000 (from 52 fewer to 24 more)</td>
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WHO, February 2010
Outcome: Complications (pneumonia, bronchitis, otitis media, and sinusitis)

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Neuraminidase inhibitors for preventing and treating influenza in healthy adults (Review)

Jefferson T, Jones M, Doshi P, Del Mar C, Dooley L, Foxlee R

- Shorter time to alleviation of symptoms
  HR 1.20 (95% CI 1.06 to 1.35) for oseltamivir
  HR 1.24 (95% CI 1.13 to 1.36) for zanamivir

- Insufficient evidence on prevention of complications
  RR 0.57 (95% CI 0.23 to 1.37)

Cochrane Database of Systematic Reviews 2010;2:CD001265.
Neuraminidase inhibitors for preventing and treating influenza in healthy adults and children (Review)


- 107 clinical study reports from EMA, GSK and Roche

- Oseltamivir reduced time to first alleviation of symptoms by 16.8 hrs (i.e., 7 to 6.3 days)

- No significant effect on
  - Hospitalisations (RD 0.15%, 95% CI -0.78 to 0.91)
  - Complications classified as serious or those which led to study withdrawal (RD 0.07%, 95% CI -0.78 to 0.44)

Cochrane Database of Systematic Reviews 2014;4:CD008965.
Nearly $9 billion spent by governments worldwide on stockpiling

* sub-licenses for manufacturing oseltamivir

Adapted from REUTERS
Conclusion

• Disaster settings need quick, reliable evidence

• Everybody needs it, not just policymakers

• Often suffer from indirectness

• Relevant outcomes may not be addressed
Thank you
Dengue outbreak 2006

- October-November 2006
- 3,300 cases and 65 deaths in Delhi

BBC NEWS

Delhi raises dengue fever alert

By Sanjoy Majumder
BBC correspondent, Delhi

Indian health officials have launched a massive drive to contain an outbreak of dengue fever in the capital, Delhi.

Thousands of workers fanned out across the city spraying pesticides as part of a door-to-door campaign on Monday.

The mosquito-borne disease has claimed 11 lives over the past two weeks and more than 400 people have been affected in and around the capital.

Dengue fever can lead to high fever, with flu-like symptoms, and even to brain haemorrhage.

Hospital affected Delhi’s health minister, Yoganand Shastri, has said that if the outbreak is not contained within the next 24 hours, the authorities will be forced to declare an epidemic.

“We have also started random checks of homes, offices and places where there could be stagnant water,” city health official NK Yadav is quoted as saying by the AFP news agency.

What has alarmed many is the fact that one of the worst hit has been the country’s premier public hospital, Delhi’s All India Institute of Medical Sciences, where more than 30 people have been affected, including 18 medical staff.

One doctor has died.

Mosquito-bred diseases such as dengue and malaria are common in the monsoon season in India – the mosquitoes breed in stagnant water.
Evidence needs - Dengue

- Corticosteroids for dengue/DSS
- Crystalloids vs. colloids for resuscitation
- Prophylactic platelet transfusion to prevent bleeding
Corticosteroids for dengue/DSS

**Authors’ conclusions**

The evidence from trials using corticosteroids in dengue is inconclusive and the quality of evidence is low to very low. This applies to both the use of corticosteroids in dengue-related shock and for dengue at an early stage. There is insufficient evidence to evaluate the effects of corticosteroids in the treatment of early stage dengue fever and dengue-related shock outside of the context of a randomized controlled trial.

**Death in DSS:** RR 0.68 (0.42 to 1.11); 4 studies, very low quality

**Severe disease:** RR 1.30 (0.48 to 3.51); 2 studies, very low quality

*Cochrane Database of Systematic Reviews* 2014;7:CD003488.
Crystalloids vs. colloids for resuscitation

Colloids versus crystalloids for fluid resuscitation in critically ill patients (Review)

Perel P, Roberts I, Ker K

Cochrane Database of Systematic Reviews 2013;2:CD000567.

In consideration of the low quality of the evidence included in this review, the broader evidence for the lack of effectiveness of colloids compared to crystalloids in critically ill patients and the higher cost of colloids, there is no justification for the inclusion of colloids for volume replacement in Dengue patients in the WHO List of Essential Medicines.

19th WHO Expert Committee on The Selection and Use of Essential Medicines, 2013
Prophylactic platelet transfusion to prevent bleeding

190 (62%) respondents would only consider transfusing platelets in patients with signs of haemorrhage


Prophylactic platelet transfusion for prevention of bleeding in patients with haematological disorders after chemotherapy and stem cell transplantation (Review)

Estcourt L, Stanworth S, Doree C, Hopewell S, Murphy MF, Tinmouth A, Heddle N

Cochrane Database of Systematic Reviews 2012;5:CD004269.
How to halt an outbreak?

http://mpdd.punjab.gov.pk/
http://sikkimnow.blogspot.in/
Thanks, again