



Incorporating economic considerations into guidelines

Systematic review of economic evaluations of interventions against influenza pandemics

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Outline

- Background
- Objectives
- Methods
- Results
- Discussion
- Implications for guideline developers and users

Background

- In 2009, A H1N1 become 1st pandemic of century
- WHO pandemic preparedness and response guidance in 1999, revisions in 2005 and 2009
- Recommended WHO and national actions according to pandemic phases
- Some recommendations based on observations, epidemiological models, or inferences from other infections
- Although guidelines have implications for resource allocation, economic issues not explicit in previous WHO guidance
- To inform guidance revision after the 2009 pandemic, a systematic review of economic evaluations (EE) of interventions against influenza pandemics was commissioned to HITAP



Objectives

- To systematically review EEs on preparedness and interventions against human influenza pandemics
- To provide recommendations on future research on pandemic influenza interventions



Methods

- **Search strategy:**
 - MEDLINE, NHS EED, HEED, CEA Registry, EURONHEED, HTA, HEN, EconLit, RePEc, SSCI
 - Google, Scirus
 - Thesaurus & free-text terms: pandemic, H1N1, influenza, cost benefit, cost(s), cost effective and economic(s)
 - 5 languages
 - References
 - Correspondence
- **Abstract scanning:** 2 independent reviewers; 3rd reviewer
- **Data extraction:** standardized form
- **Quality assessment:** methodology/evidence used



Methods

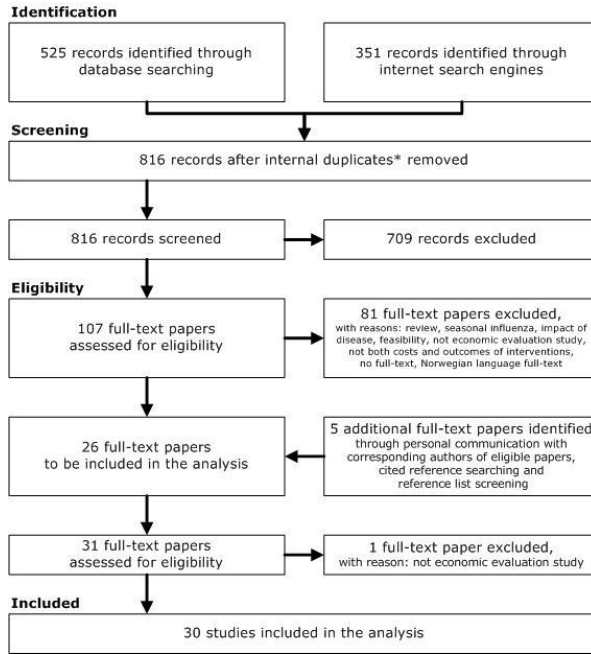
- Costs in I\$ using GDP deflator and PPP conversion rates (IMF, 2010)
- Exchange rates when costs in foreign currencies (OANDA, 2010)
- World Bank's GNI per capita bands as WTP ceiling thresholds

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> • Original EEs of prevention/control of 2009 human influenza pandemic or potential influenza pandemics • Partial EEs if both costs and outcomes of 1 intervention • Full EEs if costs and outcomes of >1 intervention 	<ul style="list-style-type: none"> • Reviews or editorials • Studies not including both costs and outcomes of interventions • Studies of economic impact of influenza pandemics • Economic evaluations of interventions for influenza pandemics complications • No full text in eligible languages



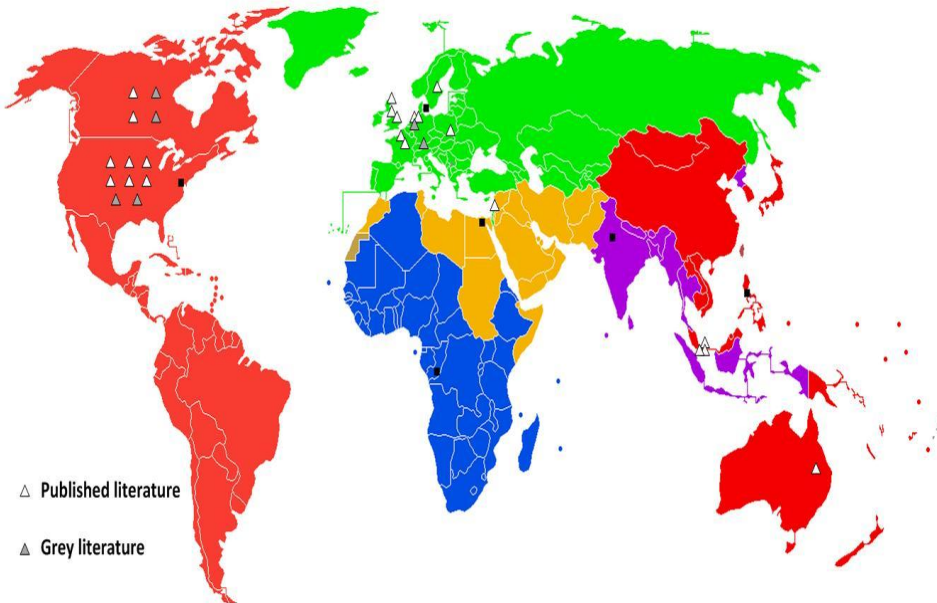
Methods

Flowchart of study selection



Results

WHO regions map of study settings



Results

Classification of studies by type of intervention (Dutta, 2008; WHO, 2009)

Interventions	National			International
	Community	Targeted	Broad-based	
Quarantine	1			
Travel restriction				
Public Communications & Advisories	2			
Social distancing	1		1	
Public Hygiene and disinfection				
Personal protective equipment	1			
Vaccination		6	11	
Antiviral Drug		8	9	

* Categories highlighted in grey are not relevant categories for each intervention

Results

Adherence of studies to methodological standards for EEs (Drummond et al, 2005)

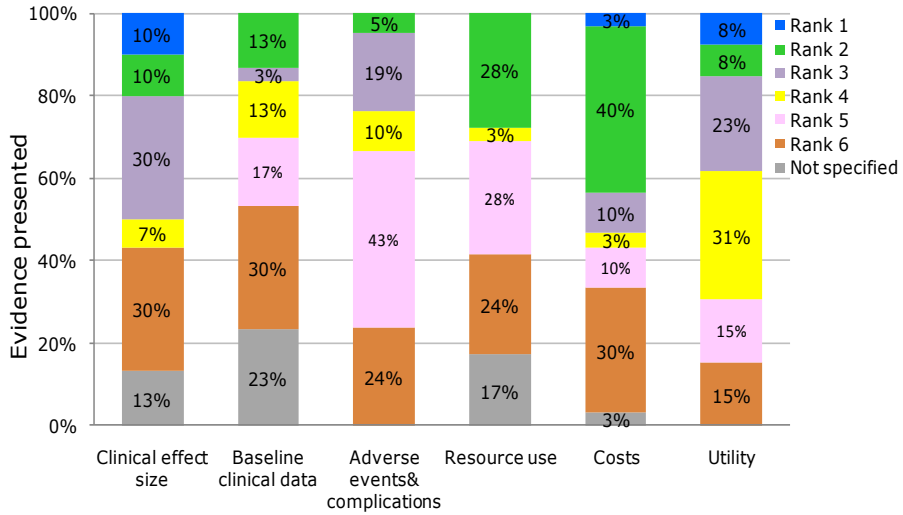
Recommendations	Number of studies fulfilling recommendation*	Percentage (%)
Perspective specified	27/30	90
Description of comparator(s)	29/30	97
Used discounting for costs or/and outcomes if study period was > 1 year	13/13	100
Calculated and reported ICER	24/28	86
Performed uncertainty analysis	28/30	93
Disclosed funding sources	20/30	67

*Number of studies the recommendation is applicable
ICER: Incremental cost-effectiveness ratio

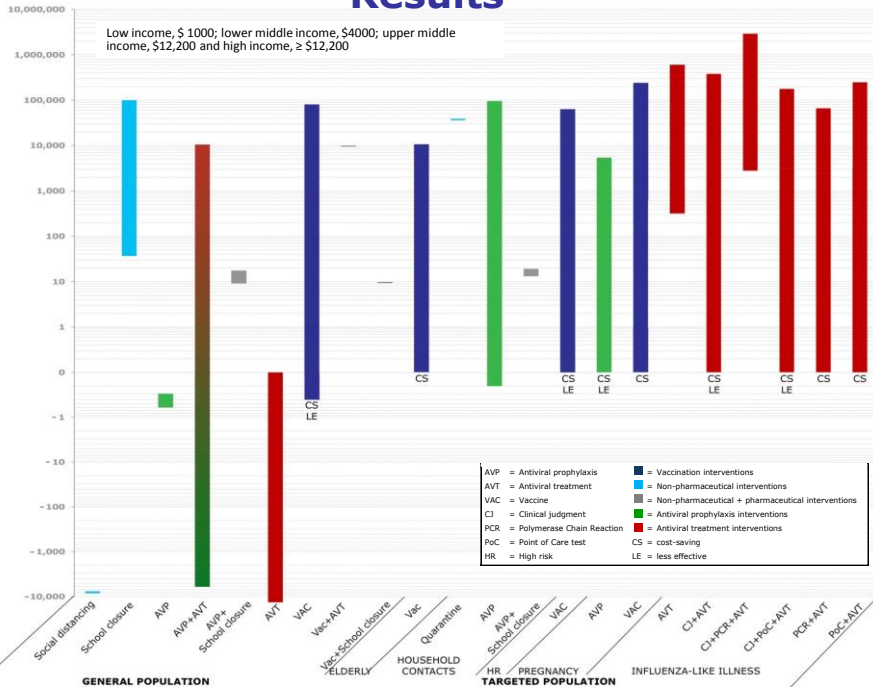


Results

Rank of evidence used in included studies (Cooper et al, 2005)



Results



Discussion

Limitations:

- Synthesis dominated by 3 studies (n=13), assessing a wide range of PIs and NPIs and presenting cost-utility ratios
- All studies with cost-utility ratios synthesized, due to paucity of data, regardless of quality of evidence and methodology
- Inherent to evidence used:
 - Lack of effectiveness/cost-effectiveness studies of NPIs
 - Variation in vaccination protocols/drug regimens in PIs
 - Few studies of value for money across interventions



Discussion

Recommendations:

- Evidence inconclusive
- Updated review in 2 years, with more publications
- Consensus on certain parameters
- Studies on interventions implemented in forthcoming events, involving the developing world
- Guidelines for assessing impact of disease and interventions



Implications for guidelines developers/users

- Limited evidence and caveats in universal cost-effectiveness recommendations
- Yet, important to raise awareness on resource implications by considering state-of-the-art economic evidence
- Correspondence with authors effective to identify unpublished literature, especially when reviews are conducted during or just after rare events
- Evidence-based guidance with effective communication strategies often stand as the most important public health tools



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