Guidelines for treatment of childhood pneumonia

First Global Forum on Bacterial Infections

New Delhi, October 2011

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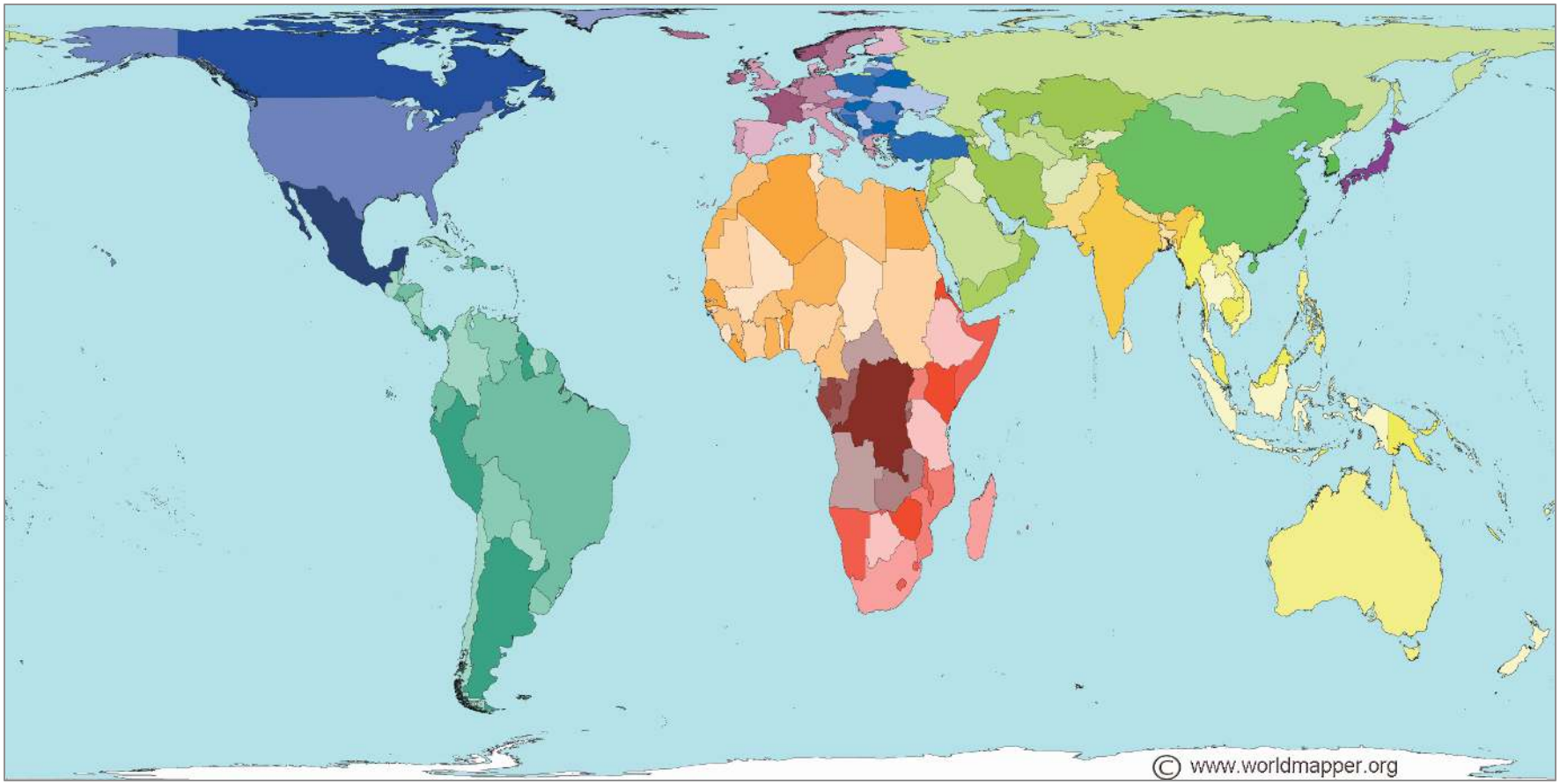
wellcome trust

Outline

- Introduction to childhood pneumonia
- Pneumonia case management guidelines
- Kenyan Child Health Evidence Week 2010
- Challenges to pneumonia case management
- Severe pneumonia RCT
- Questions
- Summary

Land area



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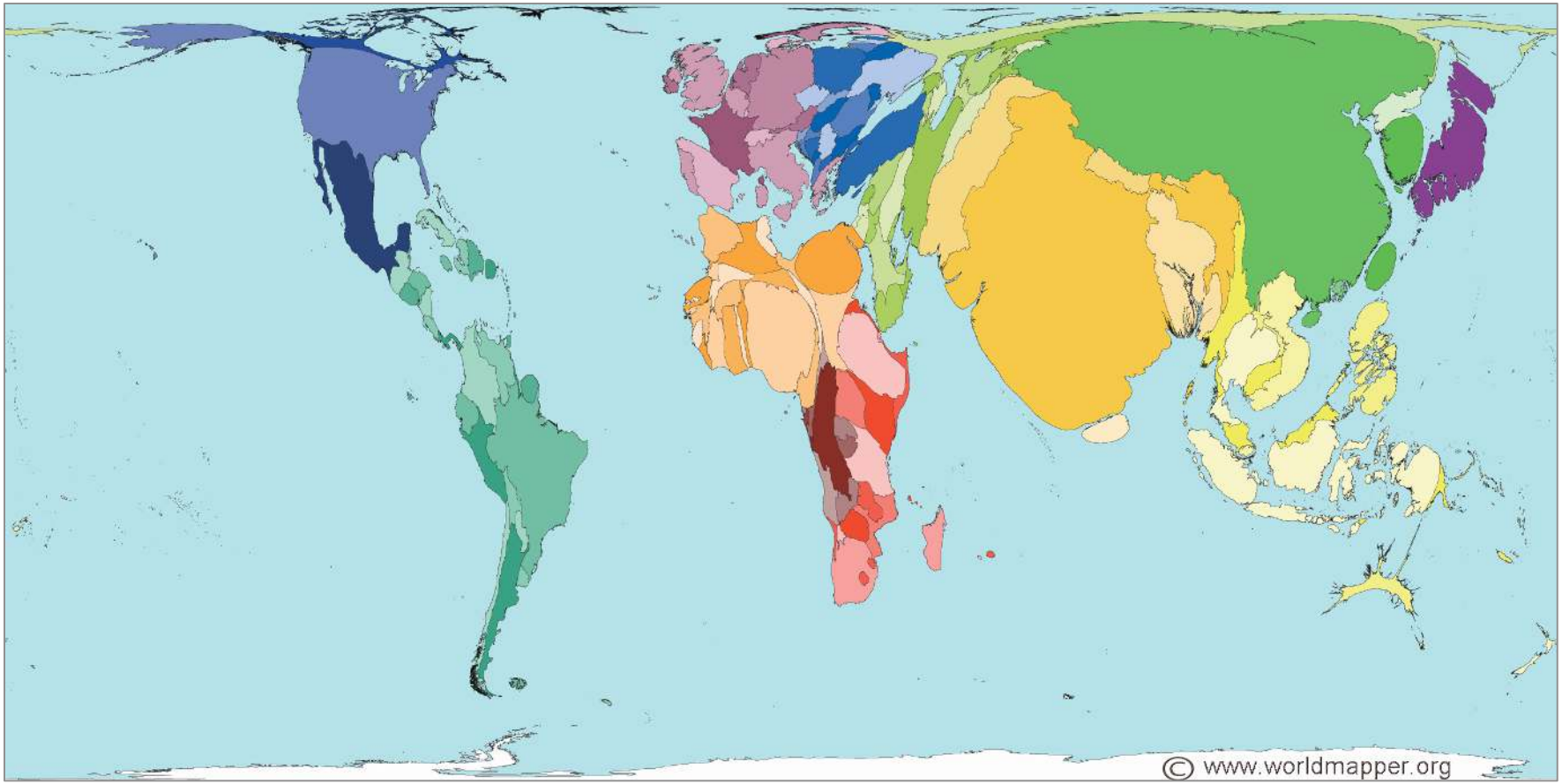
Population



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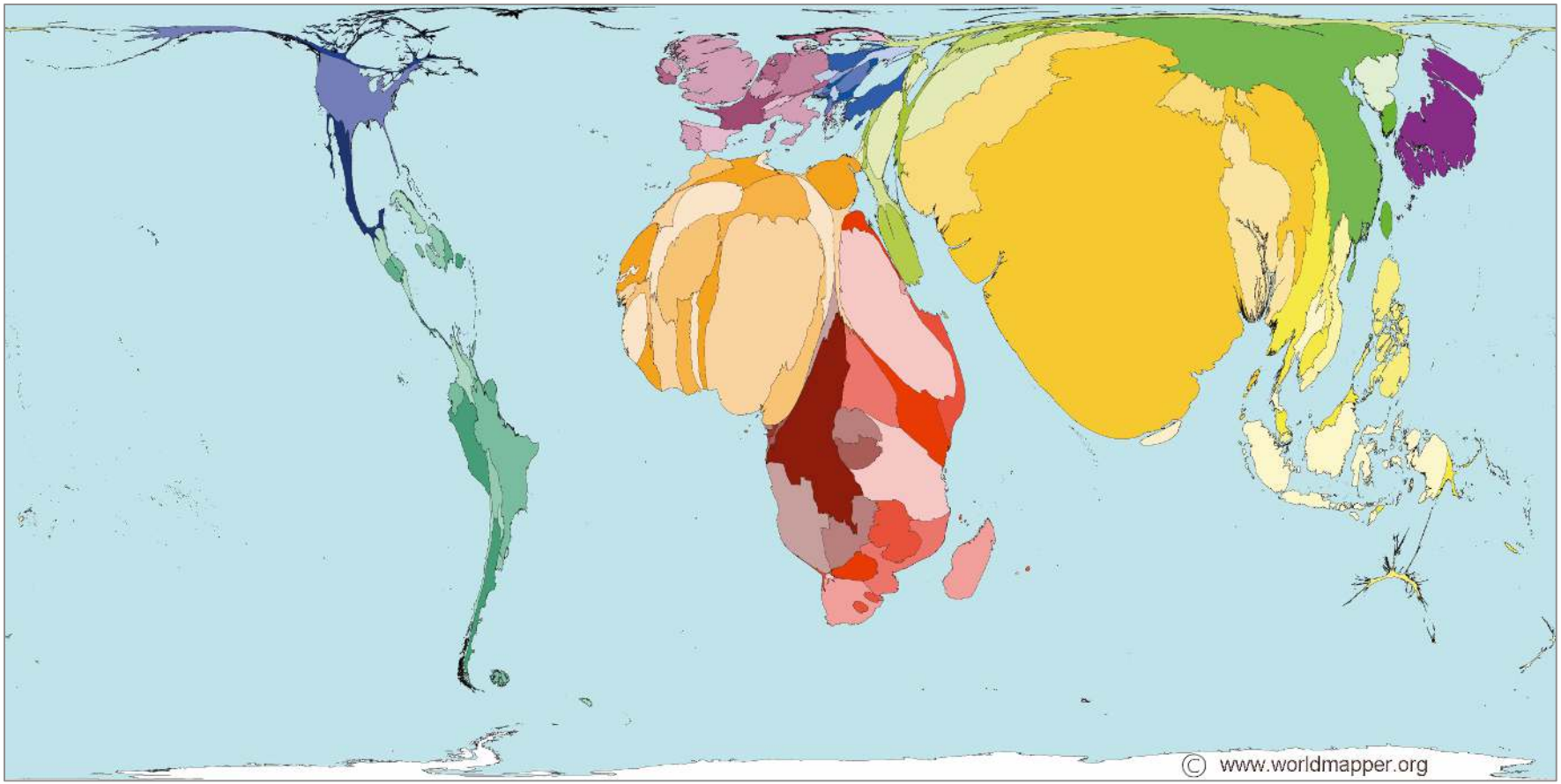
Pneumonia deaths



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Childhood pneumonia

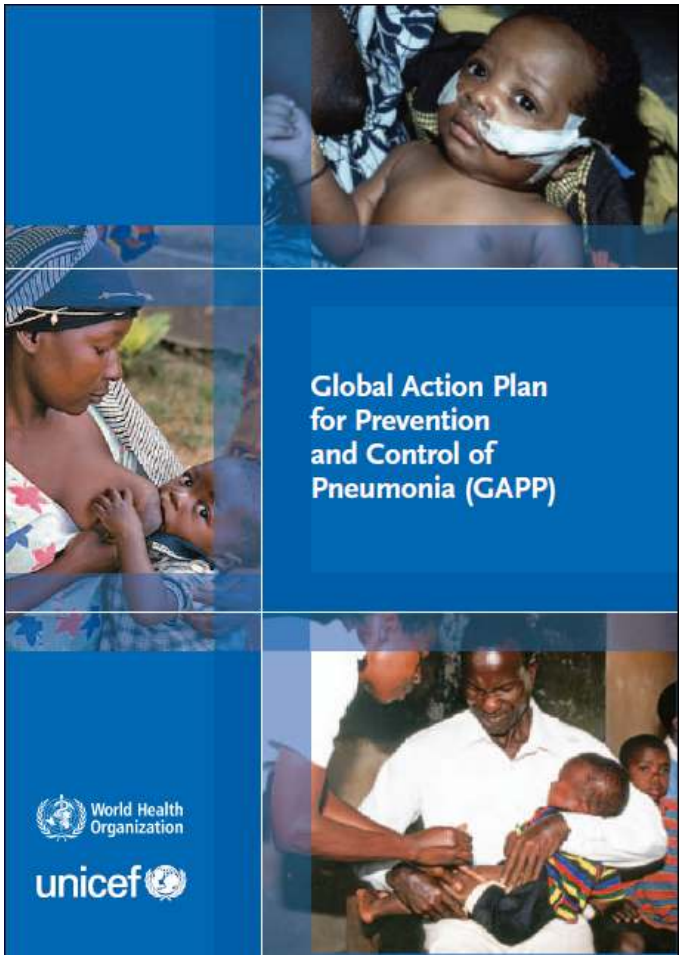
- Pneumonia: The leading cause of death in children under 5 globally‡
- 98 % of pneumonia deaths occur in children from low income countries†

‡Black R, Cousens S, Johnson H, et al. Global, regional, and national causes of child mortality in 2008: a systemic analysis. Lancet. 2010; 375:1969-87.

† World Health Organization. World health statistics 2006. Geneva: World Health Organization; 2006. http://www.who.int/whosis/whostat2006.pdf. Accessed September 6, 2009.

Strategies to tackle pneumonia

- **protect**
  - Exclusive breastfeeding
  - hand washing
  - reducing indoor air pollution
- **Prevent**
  - Immunization
- **Treat**
  - Case management
  - *(antibiotics and oxygen)*



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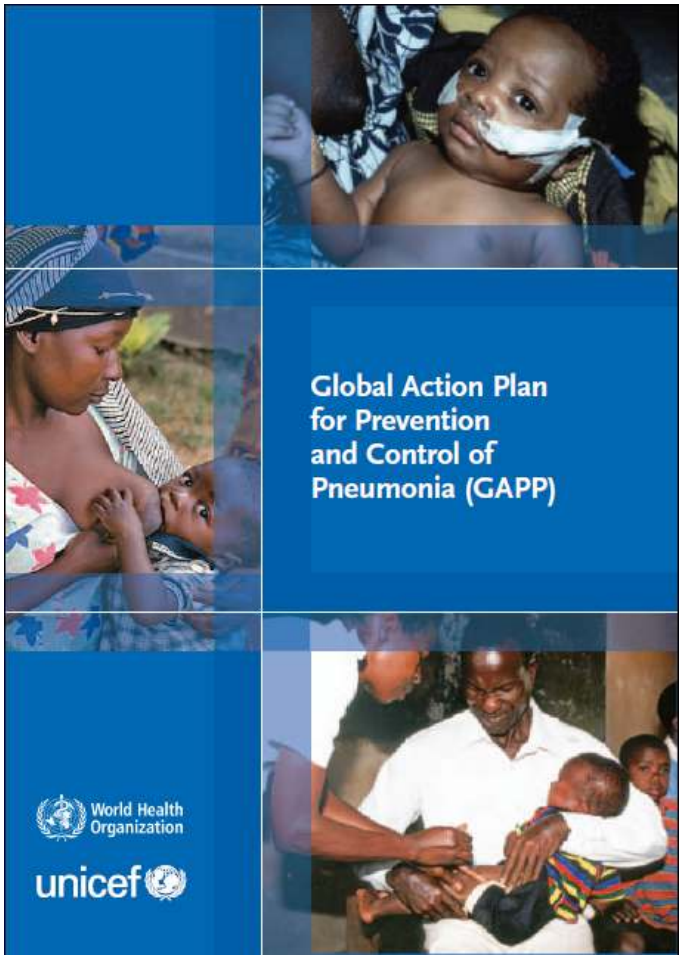

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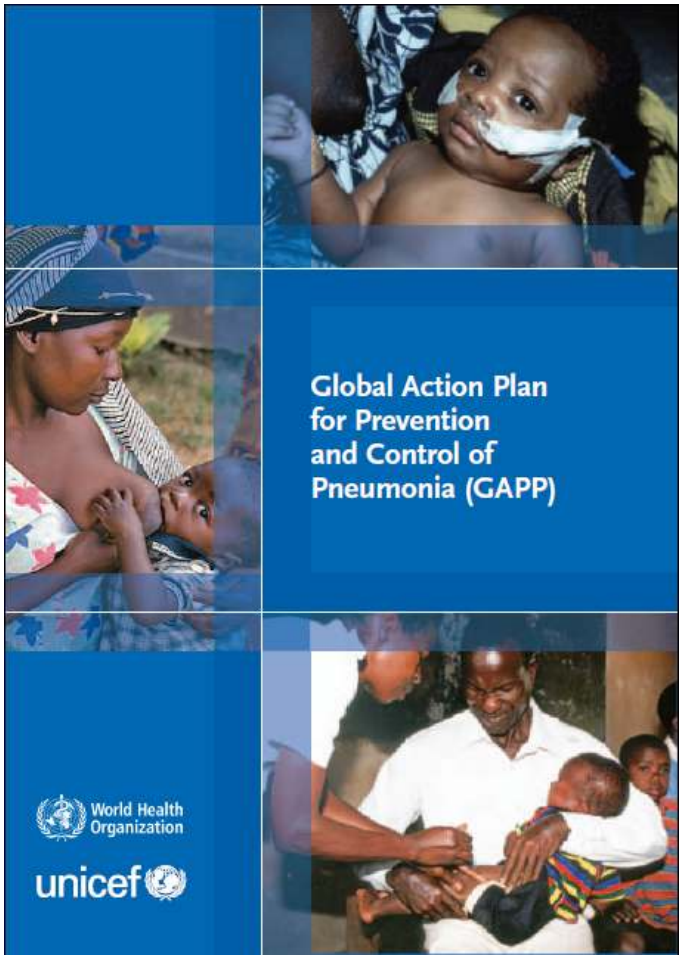
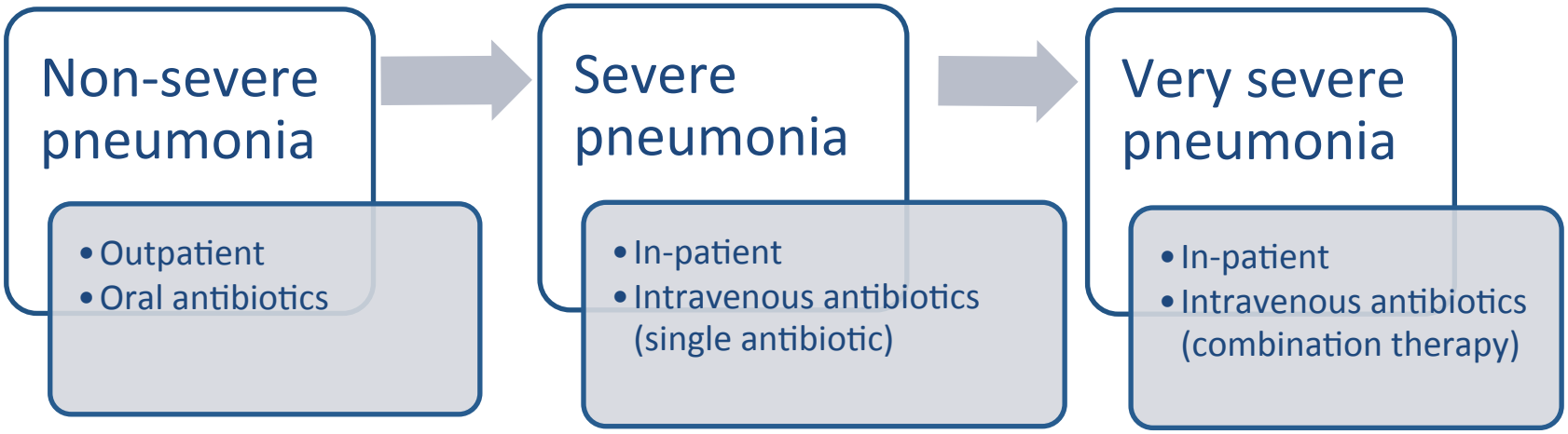


Case management of childhood pneumonia



Concerns with current pneumonia case management guidelines

- Fundamentally unchanged for over 20 years
- Developments since then include
  - Vaccines (HiB, PCV)
  - HIV
  - Misdiagnosed pneumonia in patients with wheeze
  - Increasing antibiotic resistance.

Child Health Evidence Week 2010

- Evidence on clinical questions reviewed by team of health professional
- Multi-disciplinary group of over 60 clinicians, other health workers, academicians and policy-makers.
- Generated recommendations based on the research evidence and locally-relevant contextual factors.
- Voting was conducted to generate final recommendations

Ministry of Health

Republic of Kenya.

Basic Paediatric Protocols

September 2010

Summary of guideline-relevant questions

Population		Intervention	Control	Outcomes
Children 2 – 59 months	Non-severe pneumonia	Amoxicillin	Co-trimoxazole	***Critical*** Mortality Treatment failure ***Important*** Cost
	Severe pneumonia	Amoxicillin	Benzyl penicillin	
		Penicillin and gentamicin	Penicillin	
	Very severe pneumonia	Penicillin and gentamicin	Chloramphenicol	
		Ceftriaxone	Penicillin and gentamicin	

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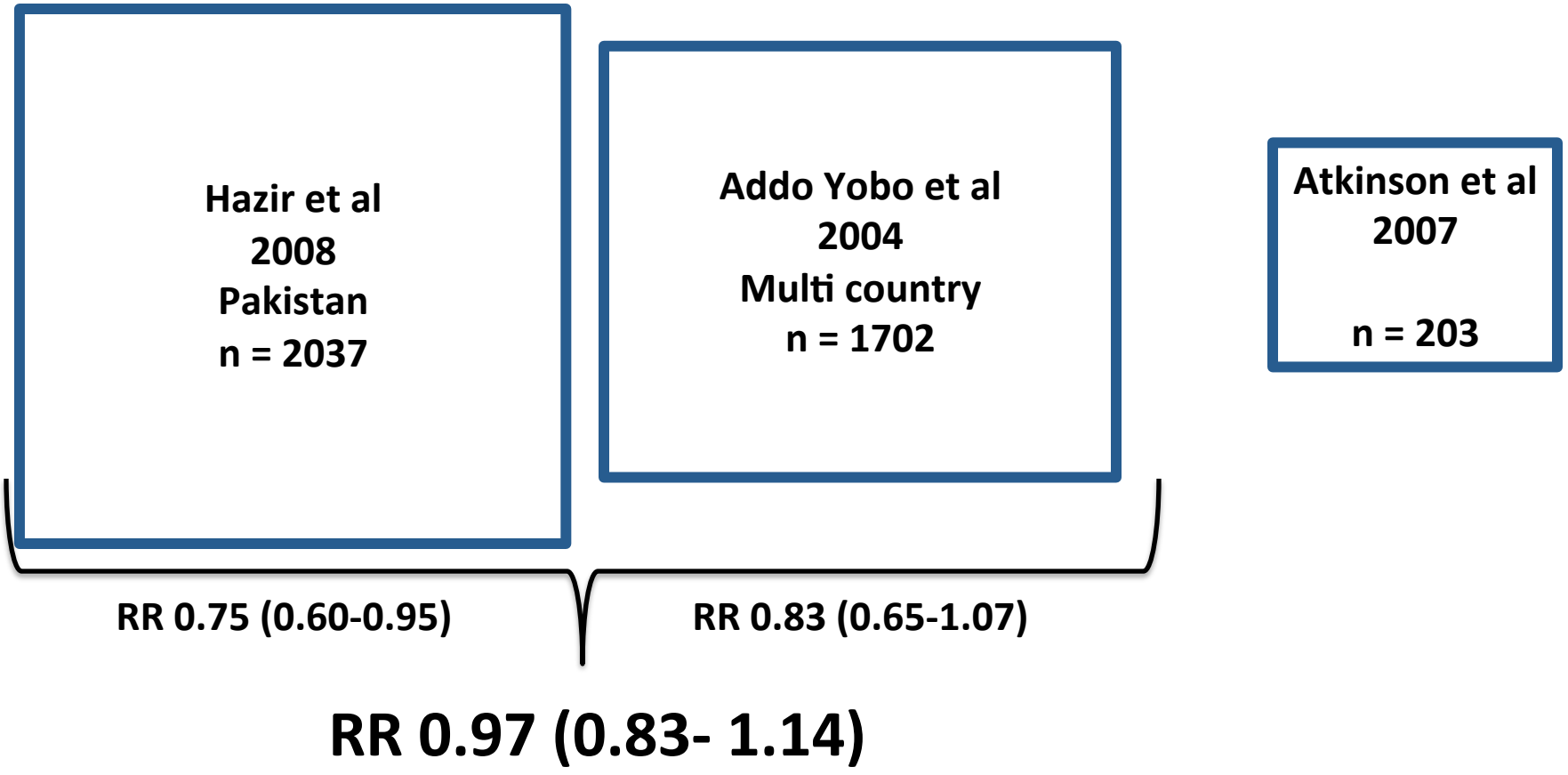
Primary Evidence



Children 2-59 months with Severe pneumonia	Amoxicillin	Benzyl penicillin / ampicilin	Treatment failure

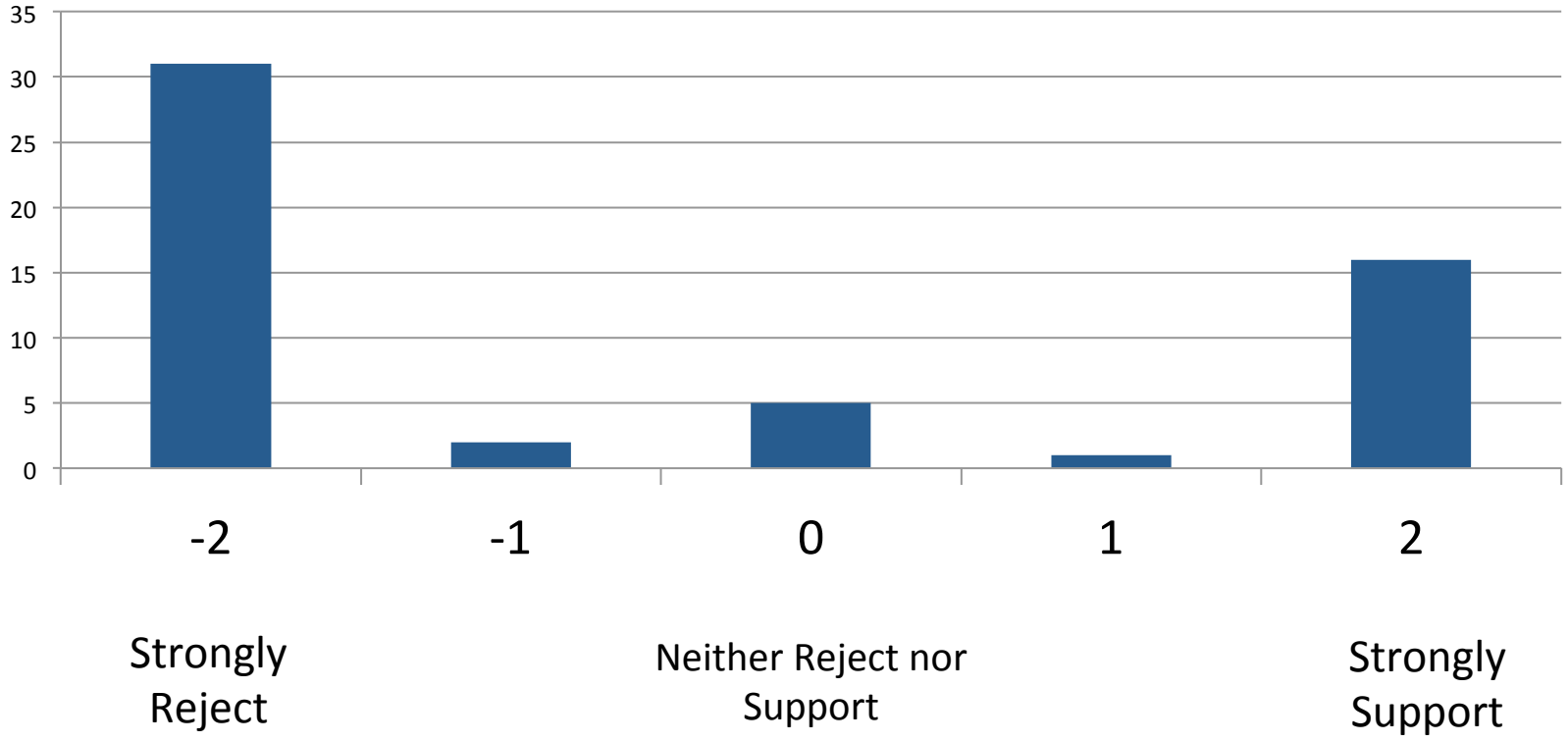
Quality assessment							Summary of Evidence Quality	Importance
Studies	Design	Limit'ns	Incons'	Indirect'	Imprec'	Other		
Outcome: Risk of treatment failure								
Intervention: as a result of treatment with amoxicillin								
3	RCT			Indirect evidence			⊕⊕⊕ MODERATE	Critical

Evidence shows both treatments to be equally effective

Additional factors?

- Painless administration
- Absence of risks associated with injectable treatment
- Twice daily dosing schedule *vs* four times daily for benzyl penicillin
- Lower cost (option for outpatient treatment)

Should benzyl penicillin should be replaced with amoxicillin for the treatment severe pneumonia?



Challenges to managing pneumonia in low-income countries

Challenges to managing pneumonia in low-income countries

1. Concerns on generalisability of available evidence
2. High quality clinical trials are costly and funding is biased to “priority” diseases
3. Poorly developed /absent surveillance and health information systems

Challenges to managing pneumonia in low-income countries

1. Technical demands of evidence-based guideline development processes e.g GRADE
2. Weak mechanisms for dissemination of guidelines / updates

Challenges to managing pneumonia in low-income countries

1. Staffing shortages
2. Poor adherence to available guidelines
3. Training gaps (pre-service / in-service)
4. Frequent commodity stock-outs

Amoxicillin versus benzyl penicillin for severe childhood pneumonia in inpatients

Severe pneumonia trial

- Multi-centre (6 Kenyan hospitals)
- Pragmatic randomized controlled non-inferiority trial
- Projected completion mid 2012
- 642 participants randomized to amoxicillin and benzyl penicillin
- Primary outcome: Treatment failure at 48 hours

Questions

Summary

- Pneumonia deaths remain unacceptably high despite available prevention / treatment strategies
- Challenges exist at 3 levels:
  - Generation of quality evidence
  - Development, updating and dissemination of policies
  - Clinical practice
- Needs:
  - Locally-generated quality data
  - Adaptation of guideline development review process
  - Investment in training and equipping health workers