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A Comprehensive Review of the Effectiveness of Community-Based Primary Health Care in Improving Child Health

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Progress in Millennium Development Goals (MDG) 4

- Only 19 of 68 countries with 97% of under-five deaths are on track to achieve MDG 4
- Botswana, Eritrea, and Malawi are the only countries in Africa on track

Outline

- Describe the review and methods
- A few observations about specific interventions
- Evidence concerning integrated approaches
- Cross-cutting themes: scaling-up/CHWs
- Findings, recommendations, and conclusions



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Section A

Individual Specific Interventions

Sponsors

- The Working Group on CBPHC of the International Health Section of APHA
- In collaboration with:
 - UNICEF
 - WHO
 - The World Bank
- With support from Future Generations

Study Goals

- Study questions
 - How strong is the evidence that CBPHC can improve child health?
 - What are the conditions needed for community-based interventions to be effective?
 - What lessons have been learned?
 - What additional research is needed?
 - What are the policy implications?

Study Goals

- Study outcomes
 - Report to expert panel, journal supplement
 - Consensus statement of expert review panel
 - Summary publication of key findings in high-profile journal and possibly publication of book with details

Identification of Documents for the Review

- One or more interventions with outcome assessment
- Main outcome measures:
 - Change in mortality
 - Change in nutritional status
 - Change in coverage of a key child survival intervention

Sources and Selection Criteria

- Computerized database searches—Pubmed
- Broadcasts to global health list-serves
- Knowledgeable persons
- Reviews of studies also included where appropriate
- Documents from grey literature included

Document Review Process

- PUBMED search produced 3,224 documents
 - “Community health” *and*
 - “Infant/child morbidity or mortality” *and*
 - “Developing countries”
- Each document assessed for inclusion by two independent reviewers
- Each document which qualified for inclusion was reviewed by two independent reviewers
- Standardized data extraction forms used for single studies
- Each pair of reviews consolidated by a third senior reviewer into a single data sheet created as an EPI INFO questionnaire for further analysis
- Over 400 studies and 50 review articles

Study Personnel

- Directors: Henry Perry and Paul Freeman
- Coordinators: Sundeep Gupta and Bahie Rassekh
- 70 reviewers
 - Mostly volunteer
 - Including many Hopkins students

Members of the Expert Review Panel

- Dr. Carl Taylor, Chairperson, Johns Hopkins University, Baltimore, MD (now deceased)
- Dr. Raj Arole, Comprehensive Rural Health Project, Jamkhed, India
- Dr. Rajiv Bahl, World Health Organization, Geneva
- Dr. Abhay Bang, Society for Education, Action and Education (SEARCH), Gadchiroli, India
- Dr. Robert Black, Johns Hopkins University, Baltimore, MD, USA
- Dr. Anthony Costello, University College of London, London, UK

Members of the Expert Review Panel

- Betty Kirkwood, London School of Hygiene and Tropical Medicine, London, UK
- Rudolph Knippenberg, UNICEF, New York, NY
- Claudio Lanata, Institute of Nutritional Research, Lima, Peru
- Dr. Adetokumbo Lucas, Harvard University, Ibadan, Nigeria
- Dr. Pang Ruyan, WHO, Manila, Philippines
- Dr. David Sanders, University of Western Cape, Capetown, South Africa
- Dr. Agnes Soucat, World Bank, Washington, DC
- Dr. Mary Taylor, Gates Foundation

Community-Based Primary Health Care (CBPHC)

- How would *you* define community-based primary health care?

What Is *CBPHC*?

- Broad-based definition
- Any interventions outside of health facilities or in coordination with health facilities with a direct or indirect effect on health



Main findings



Specific interventions

CBPHC Interventions for Improving Child Health

- BCG, polio, diphtheria, pertussis, tetanus, measles, haemophilus influenza Type b (Hib), pneumococcus, and rotavirus immunizations for children and tetanus immunization for mothers and women of reproductive age
- Provision of preventative vitamin A supplements to all children 6-59 months of age and to post-partum mothers
- Provision of preventative zinc supplements to all children 6-59 months of age
- Promotion of breastfeeding immediately after birth, exclusive breastfeeding during the first six months of life, and continued breastfeeding after six months of age
- Promotion of appropriate complementary feeding beginning at six months of age
- Promotion of hygiene (including hand-washing), safe water, and sanitation

CBPHC Interventions for Improving Child Health

- Promotion of oral rehydration therapy (ORT) and zinc supplementation for children with diarrhea
- Promotion of clean delivery, especially in settings in which most births occur at home and hygiene is poor
- Community-based treatment of childhood pneumonia
- Home-based neonatal care, which includes promotion of immediate and exclusive breastfeeding, promotion of cleanliness, prevention of hypothermia, and diagnosis and treatment of neonatal sepsis by community health workers (CHWs)
- Community-based rehabilitation of children with protein-calorie malnutrition through provision of food supplementation (including rehabilitation of children with severe acute malnutrition through the provision of ready-to-use therapeutic foods)
- Insecticide-treated bednets (ITNs) in malaria-endemic areas
- Indoor residual spraying in malaria-endemic areas

CBPHC Interventions for Improving Child Health

- Community-based treatment of malaria
- Intermittent preventive treatment during pregnancy (IPTp) in malaria-endemic areas
- Intermittent preventive treatment during infancy (IPTi) of malaria in malaria-endemic areas
- Detection and treatment of syphilis in pregnant women in areas of high prevalence
- Prevention of mother-to-child transmission (PMTCT) of HIV infection
- Iodine supplementation in iodine-deficient areas where fortified salt is not consumed

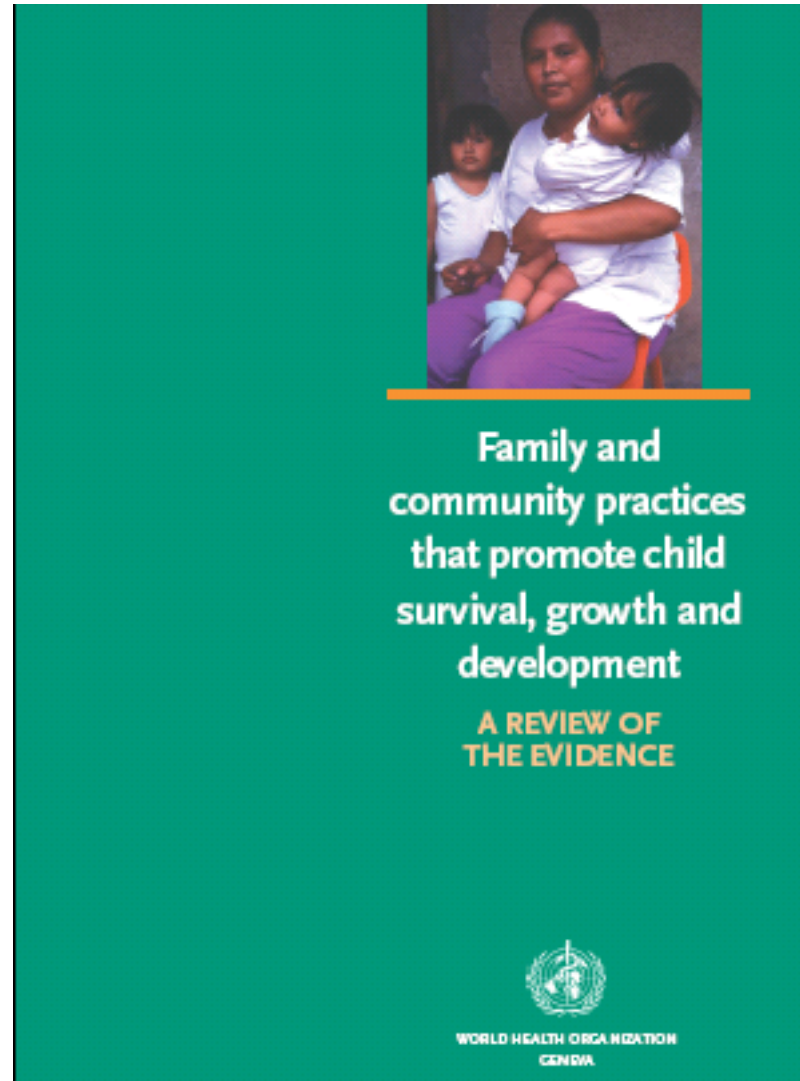
Contraception

Estimated Child Deaths that Could Be Averted in Six African Countries by Meeting Unmet Need for Contraception, 2005-2015

	Cumulative unintended pregnancies (2005-2015)	Unintended pregnancies averted if unmet need for contraception were met	Cumulative child deaths (under age 5) averted
Nigeria	29 million	3.5 million	1.0 million
Ethiopia	24 million	5.8 million	1.1 million
Kenya	15 million	3.9 million	0.4 million
Uganda	14 million	4.6 million	0.8 million
Tanzania	14 million	2.9 million	0.5 million
Ghana	8 million	1.4 million	0.2 million

Review of Child Survival, Growth, and Development

- <http://whqlibdoc.who.int/publications/2004/9241591501.pdf>



Select Review Findings: Effective CBPHC Interventions

- Community-based treatment of pneumonia is effective
 - Narangwal Project was one of the first to demonstrate this
- Water and sanitation interventions are effective
- Hand-washing reduces rates of childhood diarrhea *and* pneumonia
- Each of the following contributes to child health:
 - Family planning
 - Women's empowerment
 - Cash transfers
 - Micro-credit
 - Overall social/political environment

Community-Based Treatment of Childhood Pneumonia

Meta-Analysis of Community-Based Management of Childhood Pneumonia (Nine Studies)

Age period	Impact on pneumonia: specific mortality	Impact on overall mortality
Neonatal period	36%	24%
First year of life	36%	20%
Under-five	42%	24%

Meta-Analysis of Studies to Improve Drinking Water

- 33 studies
- Types
 - Household-based (chlorination, filtration, flocculation/disinfection, solar disinfection)
 - Source-based chlorination
- Overall, 39% reduced risk of childhood diarrhea
- Addition of other interventions—such as hygiene instruction, improved water vessel storage, improved sanitation, and improved water supply—does *not* increase effectiveness

Water, Sanitation, and Hygiene

- Review of the effect of water, sanitation, and hygiene for the prevention of diarrhea

“We propose diarrhoea risk reductions of 48, 17 and 36% associated respectively with hand-washing with soap, improved water quality and excreta disposal ... ”

—Cairncross et al.,
International Journal of Epidemiology
(2010)

Community-Based Management of Childhood Malaria

- Review of nine studies
- Two studies showed no health impact
- Two studies “suggested” a decreased progression to severe malaria
- Only one of four studies assessing mortality impact demonstrated an effect (but this was a randomized controlled trial published in *The Lancet*)

Nutrition Interventions

Review of Potential Effectiveness of Nutrition Interventions

Level of coverage of all interventions	Percentage of deaths averted by 36 months of age	Percentage of children with stunting averted by 36 months of age	Percentage of DALYs averted
70%	17.3%	23.6%	17.5%
90%	22.4%	32.4%	22.7%
99%	24.7%	35.8%	25.1%

- In the 36 countries with 90% of children with stunting
- All interventions are community-based

Review of Conditional Cash Transfers

- 10 studies
- Increased use of health services found (five studies)
- Unclear effect on use of immunizations services (four studies)
- Effects on growth found in subgroups of children (two studies)
- Unclear effects on health status (anemia, mothers' reports of child's health)