

# A Systematic Review of the Effectiveness of Community-Based Primary Health Care in Improving Child Health: Purposes & Methods

Sponsored by the Working Group on CBPHC of the International Health Section of APHA in collaboration with UNICEF, WHO, the World Bank and with support from Future Generations

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# Study Personnel

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- Sixty Reviewers
- Six Part-time Data Entry Personnel

# Members of the Expert Review Panel

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- Dr. Rajiv Bahl, World Health Organization, Geneva
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# Members of the Expert Review Panel (cont.)

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- Dr. David Sanders, University of Western Cape, Capetown, South Africa
- Dr. Agnes Soucat, World Bank, Washington, DC
- Dr. Mary Taylor, Gates Foundation, Seattle, WA

# Current Problems

- Scale /access /distribution
- Key “proven” interventions not reaching those who need them
- Cost of “health” care too great for many
- Health personnel lacking in high-mortality areas

# How about sickness care?

From 70 – 90% of all sickness care takes place in the home

- Household members, especially mothers:
  - make the primary diagnoses of illnesses
  - assess the severity and likely outcomes
  - select among *available* providers and treatment options
  - procure and administer treatments

WHO, *World Health Report 2002.*  
*Reducing Risks, Promoting Healthy Life*

# Miriam Were – Esteemed Kenyan Proponent for CBPHC

- “We are convinced that if the development agenda had recognized the existing strengths in the African people and had built on them, we would have gotten much further than with the approach of treating African people as if all they have is ignorance to be gotten rid of and presenting them with solutions with no bridges to their reality.”

(2005 Gates Award Acceptance Speech on behalf of AMREF)

# What Is CBPHC?

- CBPHC is a process through which health programs and communities work together to improve health and control disease.
- CBPHC includes the promotion of key behaviors at the household level as well as the provision of health care and health services outside of static facilities at the community level.
- CBPHC can (and of course should) connect to existing health services, health programs, and health care provided at static facilities (including health centers and hospitals) and be closely integrated with them.

# What Is CBPHC? (cont.)

- CBPHC does not include health care provided at a static facility unless there is community involvement or outreach and services beyond the facility.
- CBPHC involves improving the health of a geographically defined population through outreach beyond the walls of static health facilities.

# What is CBPHC? (cont.)

- CBPHC also includes multi-sectoral approaches to health improvement beyond the provision of health services per se, including programs which seek to improve education, income, nutrition, living standards, and empowerment.
- CBPHC programs may or may not be in collaboration with governmental or private health care programs; they may be either comprehensive in scope or highly selective; and they may or may not be part of a program which includes the provision of services at fixed facilities.

# What Is CPBHC? (cont.)

- CBPHC includes the following three different types of activities:

(1) Communications with individuals, families and communities to improve key practices;

(2) Social mobilization and community involvement for planning, delivering and using health services;

(3) Provision of health care in the community, including preventive services (e.g., immunizations) or curative services (e.g., community-based treatment of pneumonia).

# Study Goals

- Strength of evidence of sustained improvement in health from CBPHC
- Conditions for community-based interventions to be effective
- Most effective community-based approaches for behavior change
- Lessons from both successful and unsuccessful experiences
- Additional research needed
- How can successful CBPHC be scaled up in resource poor circumstances
- Implications for regional, national and global health policy

# Identification of Documents for the Review

- One or more interventions using a CBPHC approach
- With a direct assessment of mortality, serious morbidity, or nutritional status
- Or with an assessment of a health process or outcome known to be closely associated with child health status (e.g., immunization coverage)
- Associated assessments which qualified for review included assessments of the equity of key health services and the cost-effectiveness of CBPHC approaches

# Database Search Terms Used

- child health or child mortality
- community-based -nutrition programs
- community-based primary health care
- community-based programs
- community health
- community health workers
- community involvement
- community participation
- community programs
- developing countries
- infant mortality
- neonatal mortality
- primary health care
- multiple combination of above

Pub Med, Cochrane, global health (University of Washington) databases

# Further Sources

- Broadcasts were sent on widely used global health listserves
- Knowledgeable persons were asked for their suggestions for documents to be included
- Documents which were not published in peer-reviewed scientific journals were included if the document provided an adequate description of the intervention and had a satisfactory form of evaluation.

## Excluded

- Studies with no specific programmatic intervention
- Studies with no clear assessment of effectiveness

# Document Review Process

- Search produced well over 1,000 documents
- Each document was assessed for inclusion by two independent reviewers
- Each document which qualified for inclusion was reviewed by 2 independent reviewers using standardized form
- Each pair of reviews from the previous step reviewed & consolidated by a third senior reviewer into a single data sheet created as an EPI INFO questionnaire for further analysis

# Current State of Review

- Review is still in progress
- Report will be sent to Expert Review Panel in early January
- Meeting of Expert Review Committee to examine report of the review and make recommendations set for late January 2008 – sponsored by UNICEF, WHO and the World Bank
- Public report and publications will follow shortly thereafter

# Current Status (Cont).

- 177 studies in our database
- Plus over 40 reviews
- Areas with advanced coverage
  - perinatal and neonatal health
  - diagnosis and treatment of childhood pneumonia
  - prevention and treatment of childhood diarrhea
  - prevention and rehabilitation of childhood malnutrition
  - integrated approaches to reducing childhood mortality.
- Much more work to do on cross-cutting approaches

# Recent Reviews of the Effectiveness of Individual Interventions

- 1993: Meta-analysis of vitamin A supplementation and child mortality (*Journal of the American Medical Association*)
- 2003: *Lancet* Child Survival Series
- 2003: Meta-analysis of effectiveness of community-based management of childhood pneumonia (*Lancet Infectious Diseases*)
- 2003: Systematic review of handwashing and diarrhea (*Lancet Infectious Diseases*)

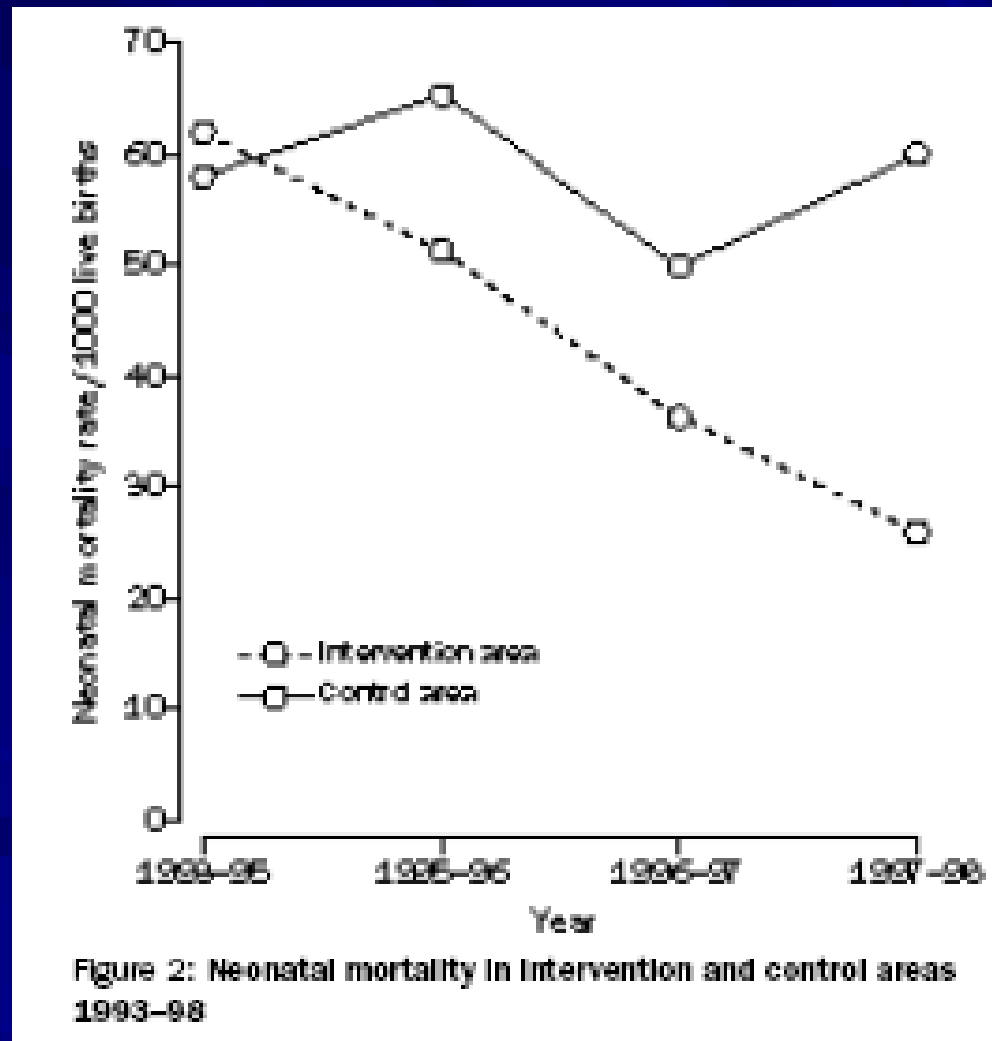
# Literature Reviews: In Journals

- 2004: *Cochrane Review* - Insecticide-treated bednets and curtains for preventing malaria
- 2004: Family and Community Practices that Promote Child Survival, Growth and Development (monograph)
- 2005: *Lancet* Neonatal Survival Series
- 2005: Effectiveness of water, sanitation and hygiene interventions in reducing diarrhea (*Lancet Infectious Diseases*)

# Literature Reviews: In Journals (cont.)

- 2005: *Cochrane Review* - Community-based supplementary feeding for promoting growth of young children
- 2005: Systematic review of community-based interventions for improving perinatal and neonatal health (*Pediatrics*)
- 2005: Intervention models for community case management of childhood pneumonia and malaria (*Health Policy and Planning*)
- 2007: Systematic review and meta-analysis of interventions to improve water quality for reducing diarrhea (*British Medical Journal*)

# Effectiveness of Home-Based Neonatal Care, Gadchiroli, India (SEARCH)



# Reductions in Infant Mortality in Gadchiroli, India (SEARCH)

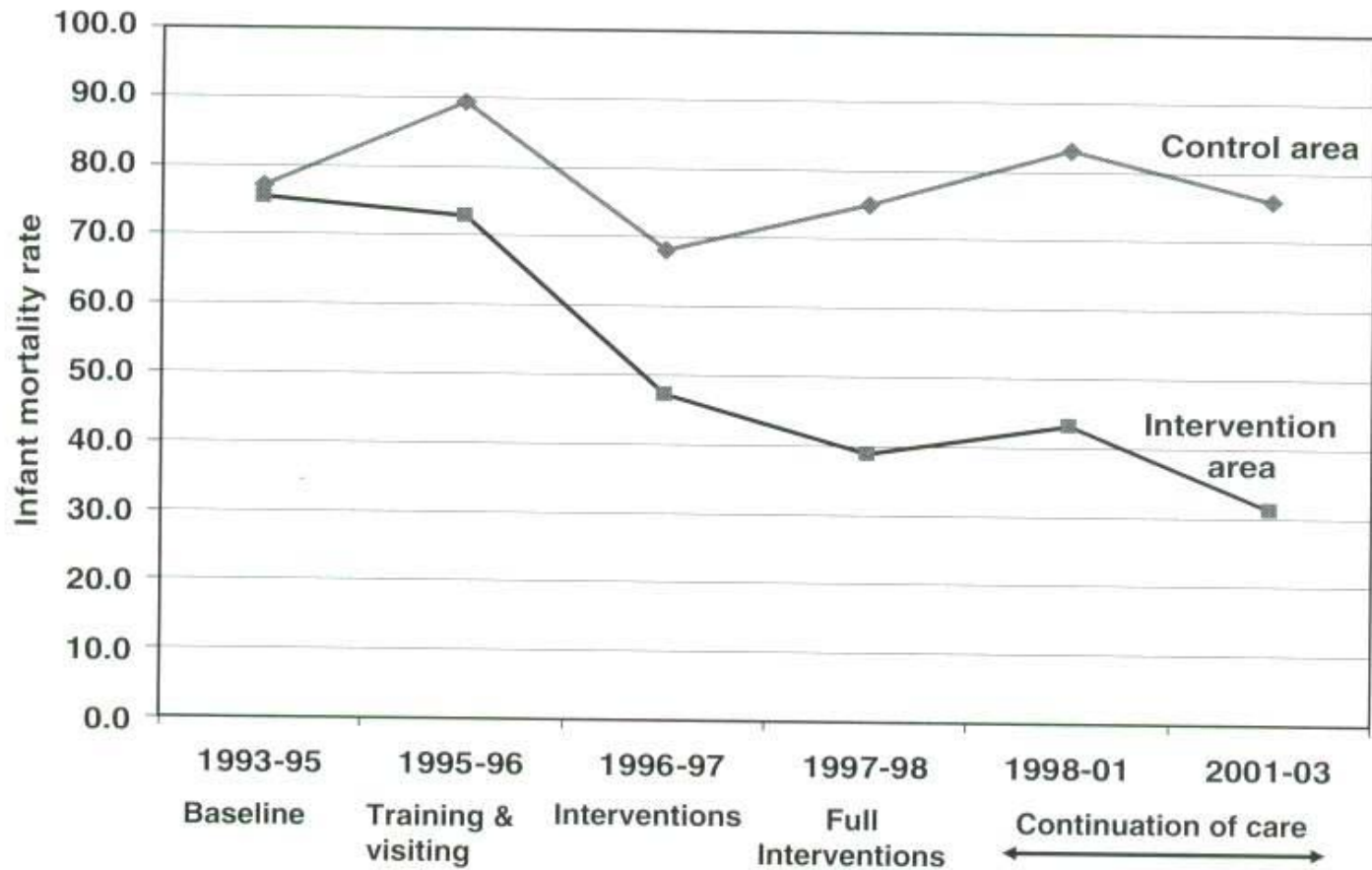
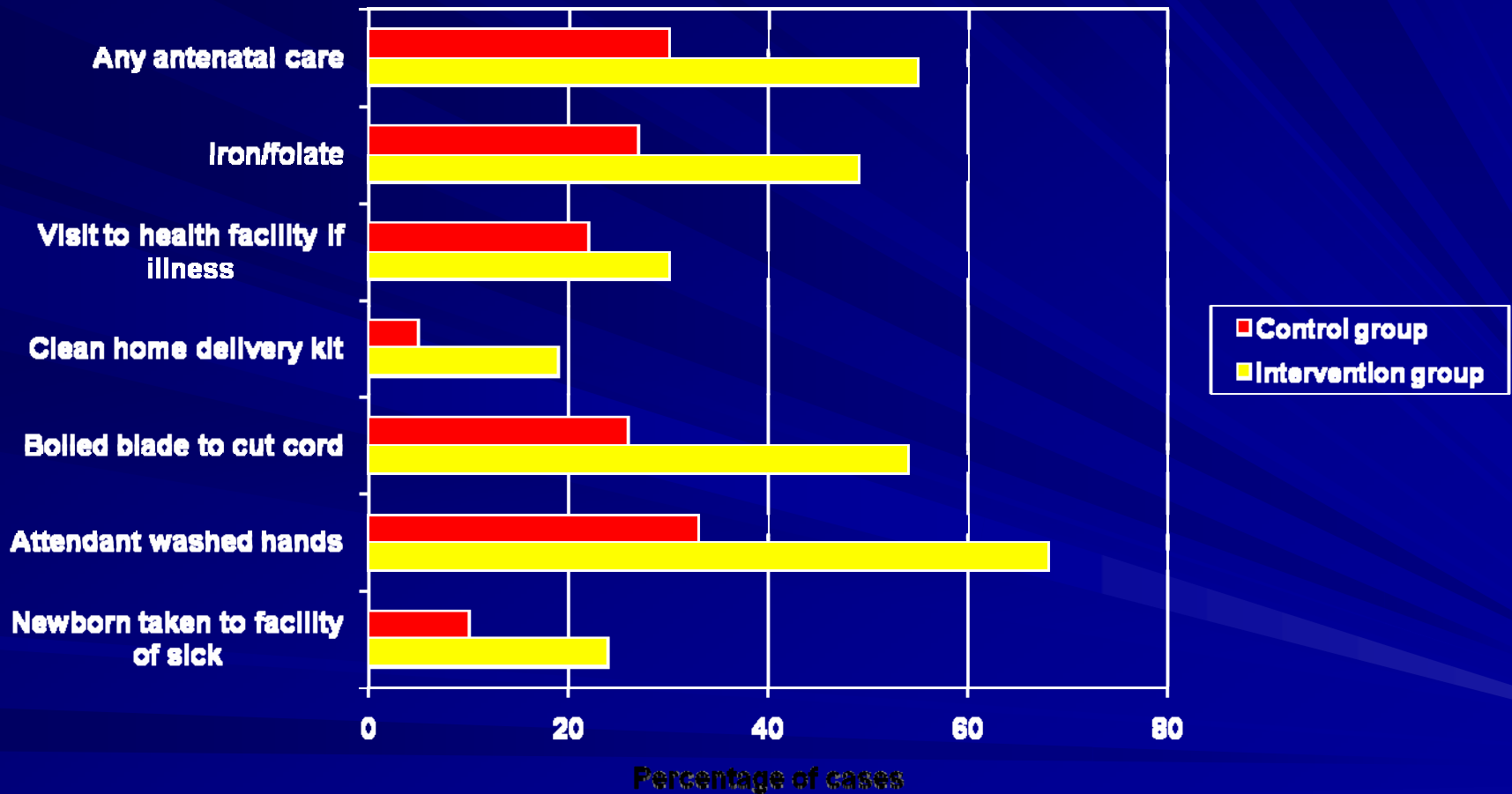


Figure 6. Infant mortality rate in intervention and control areas in Gadchiroli: 1993–1995 to 2001–2003.

# Formation of Women's Groups in Rural Nepal (Manandhar et al., *Lancet*, 2004)

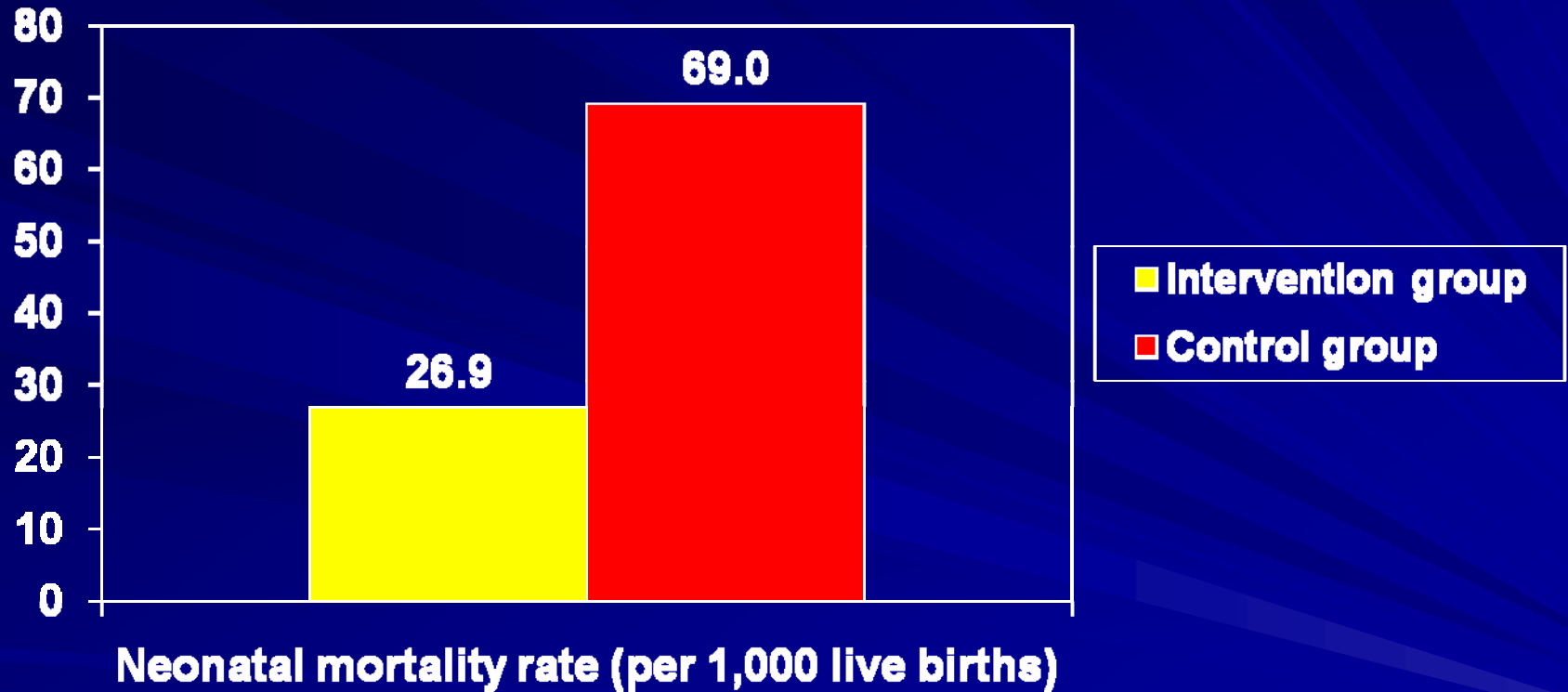
- A minimally trained villager served as a facilitator of a women's group in a village
- Met once a month to talk about their problems and formulate their own solutions and implemented their own strategies over a two-year period (2001 – 2003)
- Some minimal upgrading of health facilities and training of health staff in neonatal care (for both intervention and control groups)
- 12 pairs of clusters (each cluster had 9 wards of about 7,000 people each), with randomization of clusters to intervention and control groups (total population of intervention and control groups about 63,000 people)

# Changes in Behavior to Promote Maternal and Neonatal Health in Nepal



All differences statistically significant

# Mortality Impact of Intervention



# Maternal and Neonatal Outcomes

- 2 vs. 11 maternal deaths (statistically significant difference)
- 76 vs. 119 neonatal deaths
- Testing for reductions in neonatal mortality was the goal of the trial
- No significant difference in maternal mortality was expected because of the relatively small population size in the study

# HANDWASHING

- Meta-analysis 11 studies:  
37% reduction in diarrhoea (CI 23-48%)  
(*Fewtrell et al, Lancet Inf Dis 2005; 5: 42-52*)
- A randomised controlled trial of handwashing on child health in Karachi, Pakistan

	<b>Reduction compared to controls</b>	
<b>Intervention group</b>	<b>Pneumonia</b>	<b>Diarrhoea</b>
<b>Antibacterial soap</b>	45% (26%-64%)	50% (37%-64%)
<b>Plain soap</b>	50% (34%-65%)	53% (41%-65%)

*Luby et al, Lancet 2005; 366: 225–33*

Slide from Betty Kirkwood

# Lancet Child Survival Series

- Exclusive breastfeeding in the first 6 months of life and continued breastfeeding from 6-11 months of age is the single most effective preventive intervention in reducing child mortality, with the potential of saving 1.3 million lives annually

Jones et al., 2003

# EARLY INITIATION OF BREASTFEEDING

MODEL A	Newborn lives saved	Deaths prevented	
		Newborn	U5
99% babies BF 1st hour	1,117,032	31%	11%
90% babies BF 1st hour	972,917	27%	10%
MODEL B	Newborn lives saved	Deaths prevented	
		Newborn	U5
99% babies BF 1st day	866,857	24%	9%
90% babies BF 1st day	680,864	19%	7%

## 60 priority countries

Two intervention models:

A: BF initiated within 1st hour

B: BF initiated within 1st day  
(but not necessarily 1st hour)

Source: Betty Kirkwood

# Meta-analysis of Interventions to Reduce Diarrhea – 38 Studies

- Hygiene interventions (promotion of specific behaviors such as handwashing) – 37% reduction
- Sanitation interventions – 32% reduction
- Water quality interventions – 31% reduction
- Water supply interventions – 25% reduction

Also: “A water quality intervention at the point of use should be considered for any water supply programme that does not provide 24 h access to a safe source of water”

Fewtrell (2005)

# Meta-Analysis of Studies to Improve the Quality of Drinking Water – 33 Studies

- Overall, 39% reduced risk of childhood diarrhea
- Addition of other interventions (e.g., hygiene instruction, improved water vessel storage, improved sanitation, or improved water supply) did not increase effectiveness

(Clasen et al., 2007)

# Review of ITN Effectiveness

- Protective efficacy of ITNs in reducing child mortality:
    - 17% compared to no nets
    - 23% compared to untreated nets
    - 3 studies showed improved nutritional status in children
    - 370,000 deaths could be avoided annually if every child could be protected with an ITN
- (Lengeler 2004)

# Findings from Review of Large-Scale Nutrition Programs

- Few programs have been evaluated adequately
- Only 2 large-scale nutrition projects show improvement in growth of children (*Lancet*, forthcoming)
- However, in one of these, an independent analysis of one of these projects shows no improvement when compared with a control population without the program (and only 22% of severely malnourished children in the program population were enrolled in the program)  
(Hossain et al., 2005)

# Findings from Review of Large-Scale Nutrition Programs (cont.)

- UNICEF-sponsored nutrition large-scale projects in collaboration with Government of India showing promising results
- One Cochrane review of supplementary feeding in developing countries on physical growth identified 4 randomized trials, but the results were inconclusive (Sguassero et al., 2005)

# Lessons Learned from the BRAC National ORT Promotion Program

- Pilot everything
- Training should be based on active learning
- Use objective criteria to monitor program, and checks of quality should exist at each level
- Performance should influence pay
- Evaluate frequently, and modify program on the basis of evaluation results
- Build teamwork, reach out to me and opinion leaders as well as to mothers

# Lessons Learned from the BRAC National ORT Promotion Program (cont.)

- Going to scale does not necessarily result in a loss of quality because management systems can be devised to assure quality at any scale
- Lay workers are effective conveyers of health information to change behaviors
- Collaboration between NGOs and government enhance program effectiveness
- Through developing greater levels of trust at the community level, citizens can actively become involved in improving health practices  
(Zaman and Karim, 2005)

# Key Findings from the Review: Effective CBPHC Interventions

- Community-based diagnosis and treatment of childhood pneumonia and childhood malaria reduces child mortality
- The use of insecticide-treated bednets reduces childhood mortality
- Community-based approaches to the care of newborns – with emphasis on home visits after birth, cleanliness (especially clean cord care and clean handling), warmth, and immediate/exclusive breastfeeding reduces neonatal mortality
- Syphilis screening and treatment of pregnant women important for reducing perinatal and neonatal mortality – especially in Africa
- Handwashing reduces rates of childhood diarrhea AND pneumonia
- Cleanliness (including handwashing, keeping house and yard clear of human and animal feces, heating food before consumption) is important for reducing diarrhea and improving childhood nutritional status
- Exclusive breastfeeding, immunizations, vitamin A essential, and ORS essential

# The Real World

- While some diseases predominate and may be a priority, in the short-term children usually present with a variety of illnesses and underlying factors and so integrated programs are necessary.
- Mothers are not impressed when the health worker treats malaria but cannot prevent their child dying from pneumonia and diarrhea.