



THE **MDG** Health Alliance



JOHNS HOPKINS
BLOOMBERG
SCHOOL of PUBLIC HEALTH

Protecting Health, Saving Lives—*Millions at a Time*

Literature review summary: “How effective are community health workers?”

October 2012

INTRODUCTION

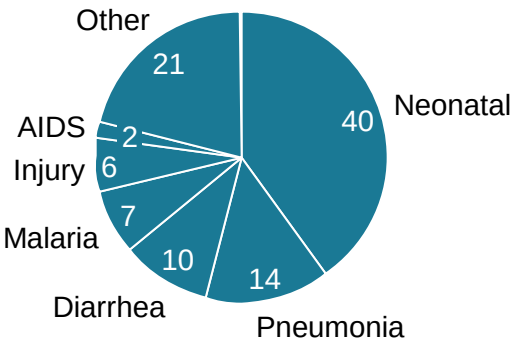
- This document is the summary of a literature review that John Hopkins University prepared on the topic of: “How effective are community health workers?”
 - Information is complemented by information and a framework on CHW effectiveness that the MDG Health Alliance prepared with Dalberg Global Development Advisors
 - This piece of work is meant to complement the extensive CHW review carried out by Bhutta and colleagues under the auspices of the WHO and GHWA in 2010
 - The full academic references and information is available in the original publication on the literature review and can be obtained from Henry Perry at JHU or Phyllis Heydt at the MDG Health Alliance
-

WHY THERE ARE CHWs?

In response to a need that cannot be addressed through the existing systems . . .

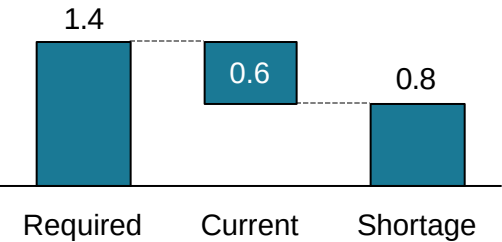
“Preventable deaths” ~7.6m children under 5 dying each year ²

Under5 deaths by cause, in %



“HRH crisis”

million, doctors/nurses/midwives – Africa region¹



Shortage for Africa and Asia estimated at 4m workers³

. . . many countries have established different forms of Community Health Workers



Ranges of outlook

Overall

- Usually women
- From the community
- Often first and only point of care

Training

- 3 weeks (e.g., India) to 2 years (e.g., HEW)

Salary

- Paid (salary or incentives) to not paid at all
- Full-time workers to just a few hours per week

Coverage

- 1:600 (e.g., Nepal) to 1:1,200 (Pakistan)

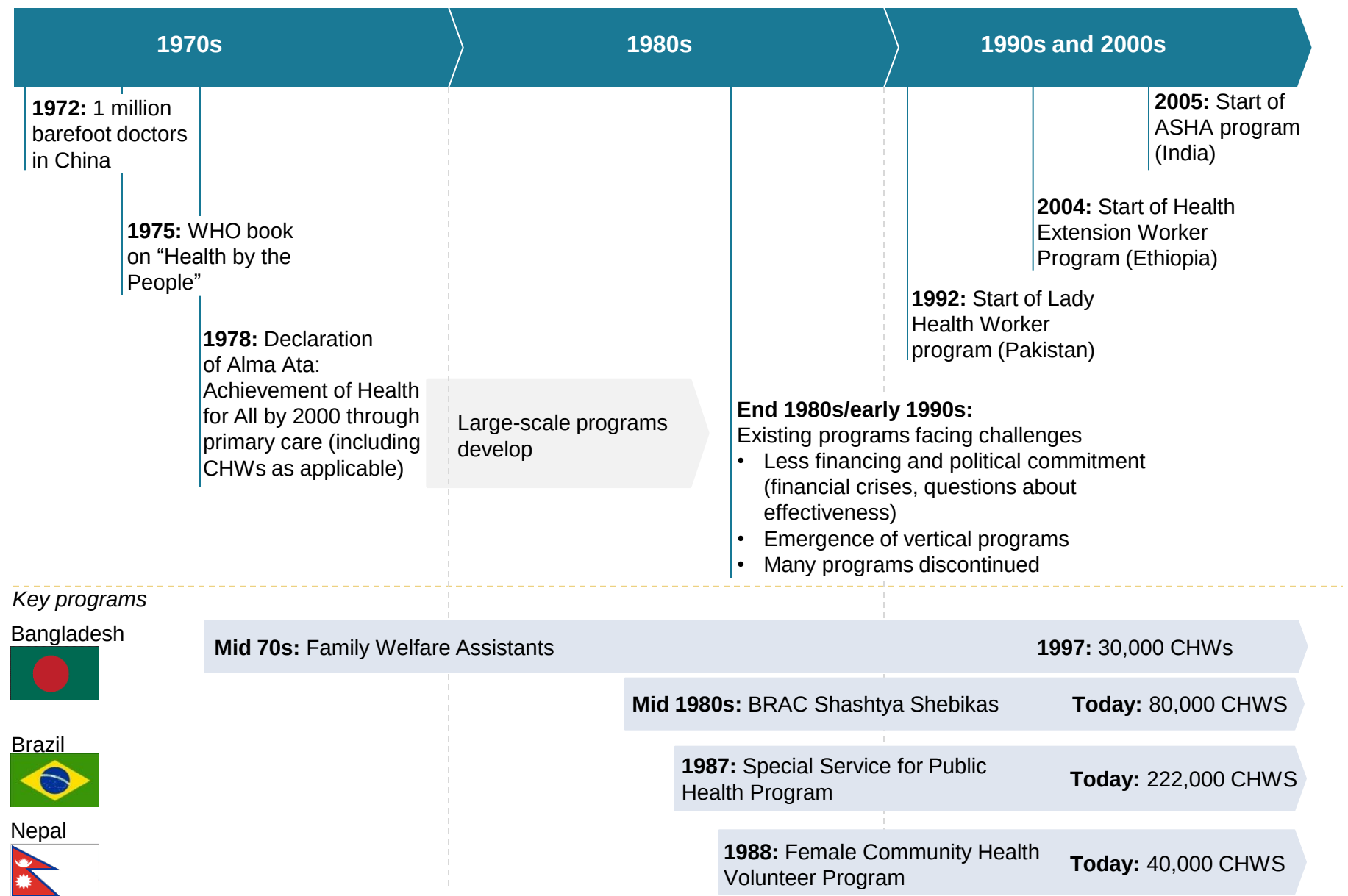
No formal professional or paraprofessional certificate

1 WHO statistics (2011)

2 2012 countdown report

3 WHO fact sheet 302 (2006)

CHW MODELS OVER TIME



SOURCE: Literature review JHU: “How effective are community health workers”



CHW EFFECTIVENESS: STRONG EVIDENCE FOR A SIGNIFICANT REDUCTION IN CHILD MORTALITY

Area		Reduction in Mortality, U5 %		Other relevant outcomes/comments
MDG 4  “At least a 25 % reduction for main drivers of mortality”	Community case management of pneumonia	All children ²	24	- Cost per death prevented as low as \$2.64³ - Recent study shows a reduction as high as 70%⁴
		Children with disease	36	
	Diarrhea treatment		n/a	- ORS may reduce mortality up to 93%¹⁰ - Zinc is estimated to reduce diarrhea mortality by 23%¹² - BRAC Bangladesh increased ORS coverage up to 81% through CHWs/Oral Rehydration Extension Program Worker⁹
	Community case treatment of malaria ⁸	All children	40	In recent Madagascar trial with RDTs, 98% of all childhood cases were cured⁷
		Children with disease	60	
		Severe malaria	53	
	Home-based newborn care		29	- Includes range of services: Umbilical cord care, initiation of breast feeding etc.⁶ - Participatory women’s groups facilitated through CHWs have shown ~30% reduction in neonatal mortality⁵
	Stillbirths ¹		16	
MDG 5  “Much less evidence”	Training of TBAs		Inconclusive	
	Maternal mortality ¹	Not statistically significant	23	
	Family planning		n/a	- Strong evidence that CHW can effectively provide family planning services (including injectibles) - In Afghanistan, CPR increased by 24-27% after CHWs provided services¹¹

1 Lassi ZS (2010); 2 Sazawal S (2003); 3 Bang AT (1990); 4 Theodaratou E (2010); 5 Manandhar DS (2004), Tripathy P (2010); 6 Lassi ZS (2010)
 7 Ratsimbaoa (2012); 8 Kidane G (2000), Sirima SB (2003); 9 NIPORT (2012); 10 Munos MK (2010); 11 Huber D (2010); 12 Walker CL (2010)

WITHIN MDG 6 MOST EVIDENCE SUPPORTING MALARIA IMPACT ON CHILDREN AND COST-EFFECTIVENESS OF COMMUNITY-BASED DOTS TREATMENT

CHW role/effectiveness

MDG 6



Highly effective for Malaria and TB, little evidence for HIV/AIDS

HIV/AIDS

- WHO recommends that 115 of 313 tasks for prevention and treatment of HIV can be carried out by CHWs¹
- CHWs clearly essential in service delivery for HIV/AIDS
- Little evidence of impact on MDG target or mortality²

Malaria

- 40–60% reduction in U5 mortality through CHW community case management²

TB

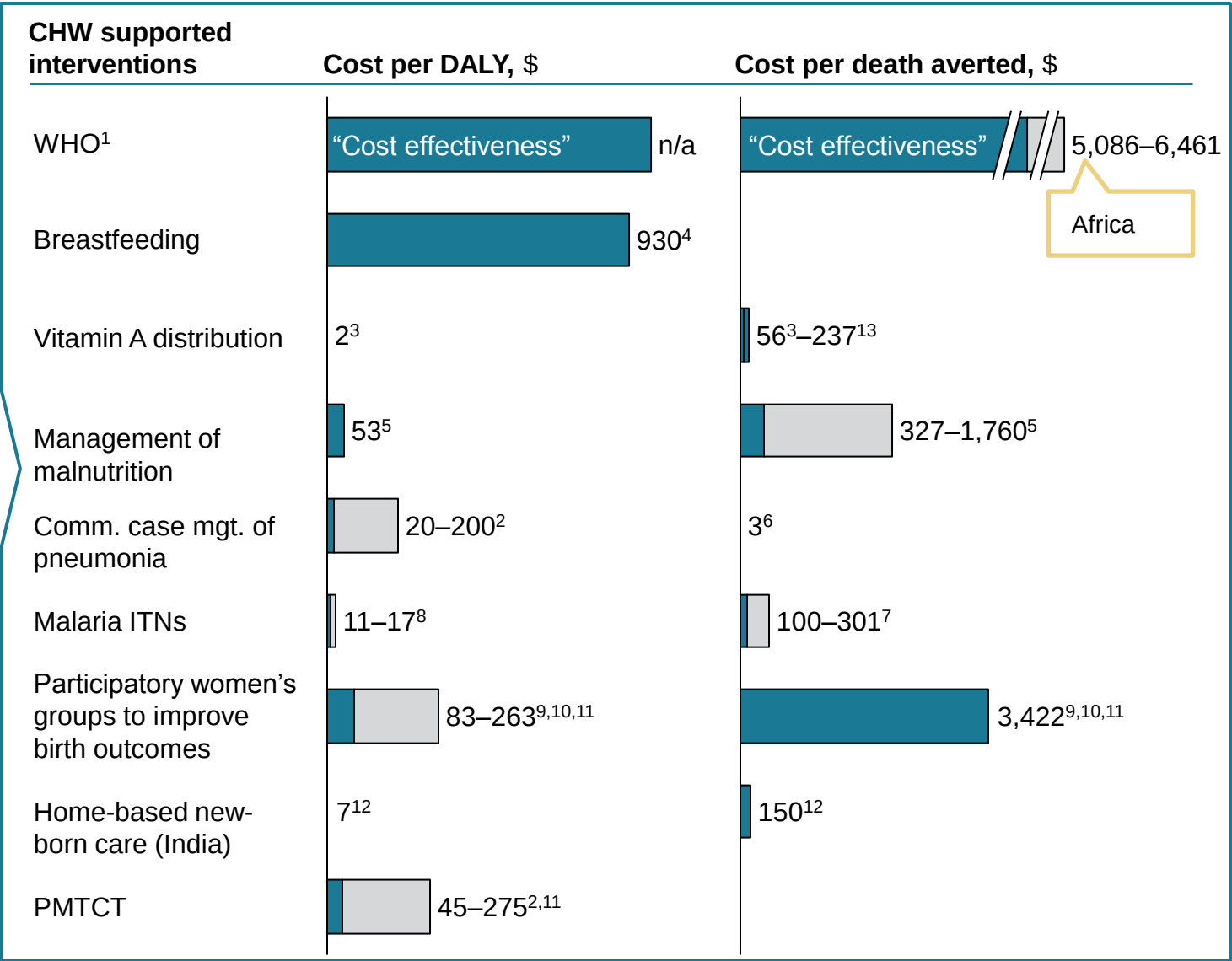
- CHWs are playing a central role in TB programs, particularly in Directly Observed Therapy, Short-Course (DOTS)
- Highly cost effective - 35% lower than cost of facility-based treatment^{3,4,5} (Tanzania, Ethiopia, Bangladesh)

1 WHO on task shifting (2008); 2 Sazawal S (2003); 3 Wandwalo E (2005); 4 Islam MA (2002); 5 Datiko DG (2010)
2 Also true for other areas

EVIDENCE ON COST-EFFECTIVENESS OF OVERALL CHW MODELS LACKING

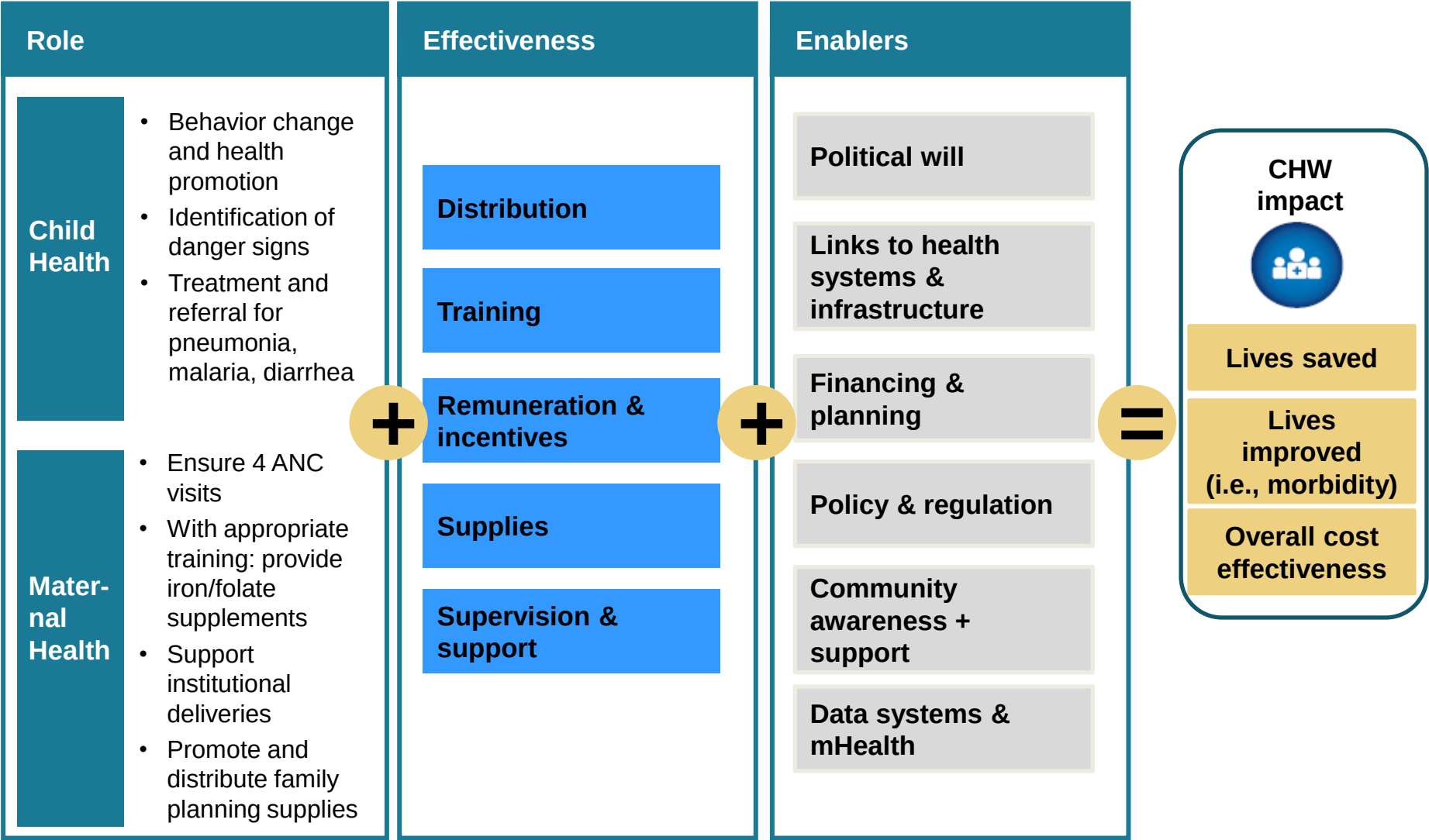
• There **have been no evaluations of the cost-effectiveness of large-scale CHW programs**

• Existing research just looks at individual interventions



1 WHO-CHOICE; 2 Jamison DT (2006); 3 Fiedler JL (2008); 4 Laxminarayan R (2006); 5 Bachmann MO (2009); 6 Bang AT (1990); 7 Hutton G (2009); 8 Breman JG (2006); 9 Manandhar DS (2004); 10 Borghi J (2005); 11 Morrison J (2005); 12 Bang AT (2005); 13 Loevinsohn BP (1997)

FACTORS THAT DRIVE THE EFFECTIVENESS OF CHW PROGRAMS



REQUIREMENTS TO BUILD AN EFFECTIVE CHW MODEL

Required

Role	- Well designed and clear - Limited to high-priority tasks and not overburdening CHWs
Effectiveness	
Distribution	Adequate coverage and distribution
Training	- Appropriate pre-service training - Continuing in service education - Regular checking of knowledge
Remuneration and incentives	- Wages/salaries commensurate with the workload and time spent - Incentives/performance-based pay - Non-financial incentives
Supplies	Appropriate and adequate supplies
Supervision and support	- Supervisory systems where supervisors are responsible for no more than 20–25 CHWs - Special training for supervisors

Enablers

Political will

- Ownership of national CHW program to ensure long-term effectiveness
- Recognition that CHW models are long-term

Links to health systems

- Formal role in the health system
- Partnerships with other cadres
- Professional growth and career advancement for CHWs

Financing & planning

- Financial support for training and engagement in planning etc at all levels (in particular decentralized levels)

Policy & regulation

- Adequate policy and regulatory framework
- Policy support for community case management (CCM)

Community awareness & support

- Communities are involved in selection and support of CHWs

Data systems + mHealth

- Systematic monitoring and evaluation
- Use of mobile technology

THE OVERALL STATUS OF EVIDENCE

Effectiveness

- In spite of growing enthusiasm for expanding CHW programs (also evidenced by the Earth Institute's report calling for 1 million new CHWs in Africa) **knowledge of the effectiveness** of large scale CHW programs **remains limited**
- This is in part due to the fact that **assessing the effectiveness of health programs on the health of populations in general is a challenging methodological task** – and CHWs have to be looked at as part of a larger system

Cost-Effectiveness

- Up to now there have been **no evaluations that the authors are aware of that have assessed the cost-effectiveness** of large-scale CHW programs
- The existing research, however, includes **evidence on the cost and benefit of implementing individual interventions** provided by CHWs
- Nonetheless the limited cost-effectiveness evidence it is quite clear that CHWs **can deliver highly cost-effective interventions of various types**

Areas where evidence is particularly weak

- View/voice of CHWs
- Evidence and drivers of effectiveness for large-scale CHW programs and what it takes to scale-up

APPENDIX

EFFECTIVENESS: CHW-BASED TREATMENT CAN REDUCE PNEUMONIA MORTALITY IN UNDER-5'S BY UP TO 70%, BUT GAPS IN COVERAGE REMAIN

Context

- Globally, pneumonia is the leading cause of under-5 mortality, responsible for 18 percent of deaths¹

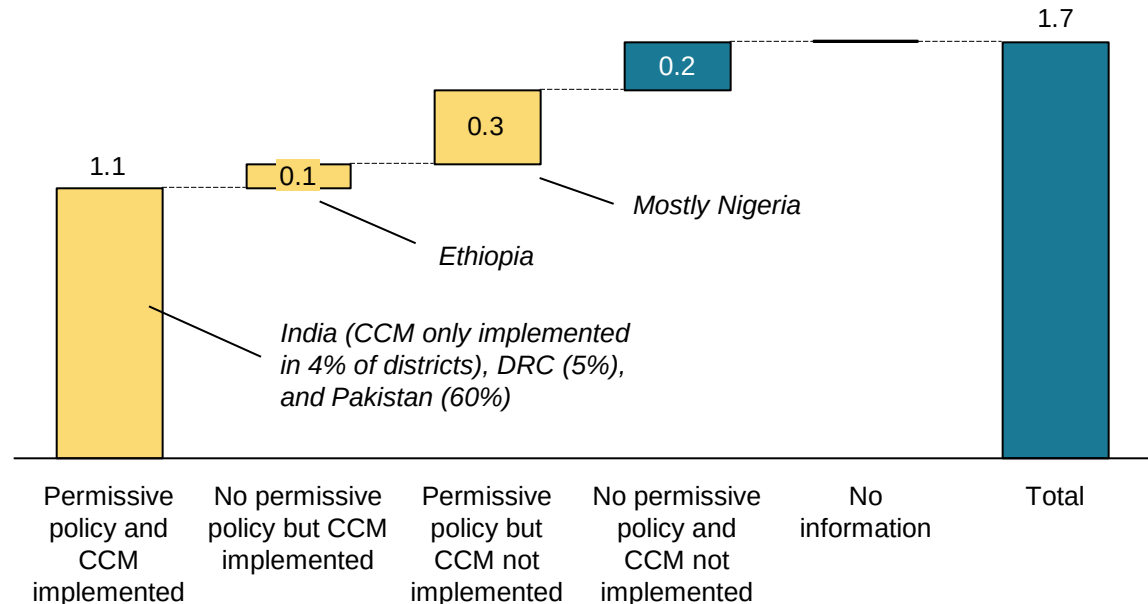
Role of CHWs

- Overall, studies suggest that community case management (CCM) can reduce pneumonia-related mortality by up to 70%²
- Until recently, the global consensus was that severe pneumonia should not be treated by CHWs but rather referred to a facility
- However, a recent RCT showed CHWs to be just as effective as formal facilities – in part because 30% of patients never actually sought referral care at the facility³

Current state

- The WHO and UNICEF have now endorsed training and supporting CHWs to diagnose and treat childhood pneumonia⁴
- However, there are still significant gaps in national policies:

Annual pneumonia child deaths/year, by country policies on CCM⁵
(Million deaths/year; 35 countries surveyed)



1 Black, 2010; 2 Theodoratou, 2010; 3; Soofi, 2012; 4 World Health Organization, UNICEF, 2004; 5 Marsh, 2008

EFFECTIVENESS: BRAC HAS SUCCESSFULLY LEVERGED CHWs IN BANGLADESH TO REACH 81% COVERAGE OF ORS FOR DIARRHEA

Context

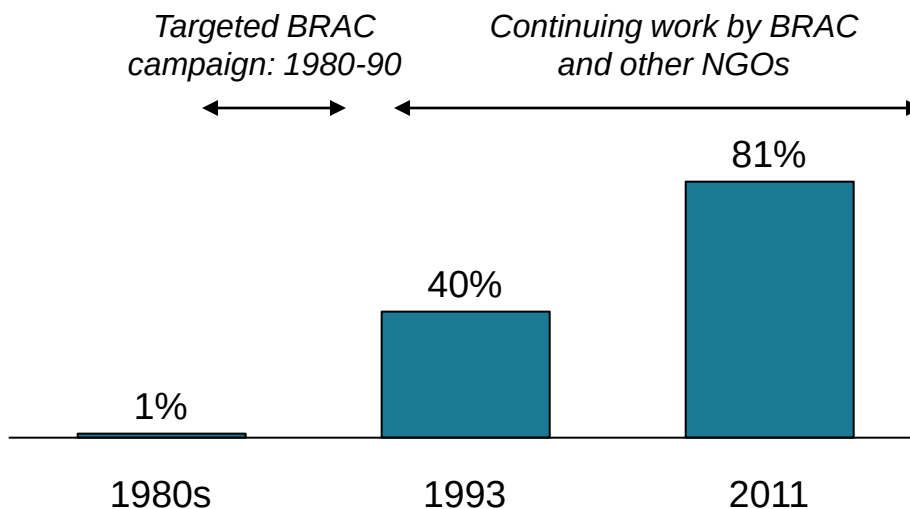
- Diarrhea is the second leading cause of under-5 mortality globally, accounting for 15% of deaths¹
- Treatment using oral rehydration salts (ORS) could reduce diarrhea mortality by up to 93%²
- However, in developing countries, only 32% of children under 5 receive ORS, and this proportion has remained static for a decade³



Evidence from the experience of Bangladesh⁴⁻⁶

- In Bangladesh, the NGO BRAC used CHWs to carry out a campaign to reduce diarrhea mortality during 1980-90
- BRAC trained 1,200 CHWs to visit 12.5million households nationwide to, in turn, train women on how to make and administer homemade ORS
- ORS usage skyrocketed and has continued to grow; Bangladesh now has the highest percentage in the developing world of childhood diarrhea cases treated with ORS

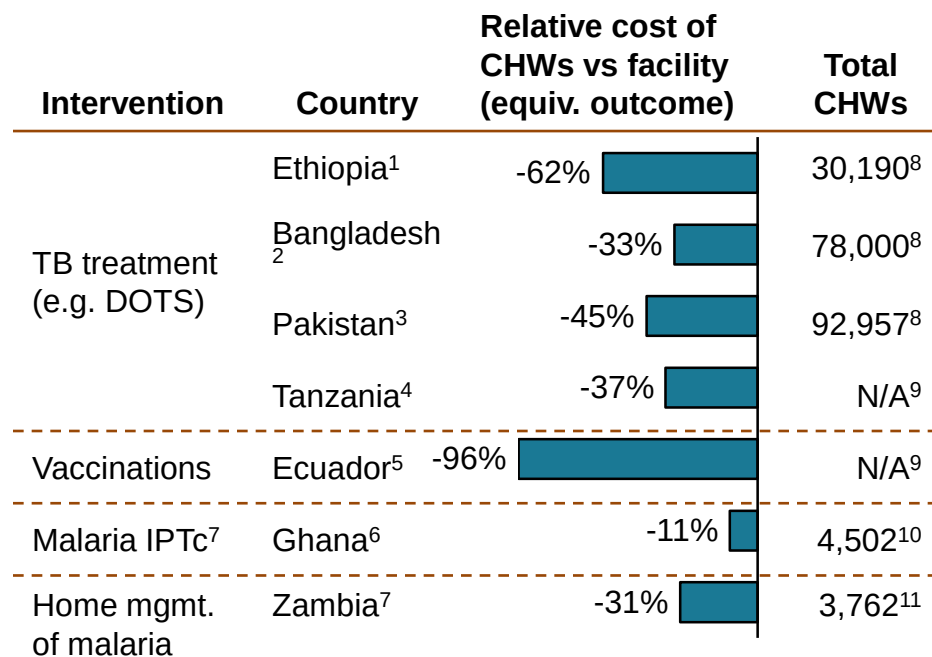
% diarrhea cases in Bangladesh treated with ORS



Sources: 1 Black, Lancet 2010. 2 Munos 2010. 3 UNICEF Pneumonia and Diarrhea 2012. 4 Luby, Lancet 2005. 5 WHO/UNICEF Joint Statement 2004. 6 Chowdhury 1996

COST-EFFECTIVENESS: DESPITE A LACK OF DATA, THERE ARE GROUNDS TO BELIEVE CHW PROGRAMS DELIVER EXCELLENT VALUE

Some studies suggest that CHW programs may be highly cost effective . . .



. . . though the overall evidence base for the cost-effectiveness of CHWs is weak

“Services provided by CHWs are expected to be more appropriate to the health needs of populations than those of clinic-based services [and] to be less expensive... However, there is a dearth of data... to confirm these views.” (Lehman and Sanders, 2007)

“There are few analyses of the cost-effectiveness of community health worker programmes... probably due to lack of information and difficulties in measuring outcomes” (Earth Institute, 2011)

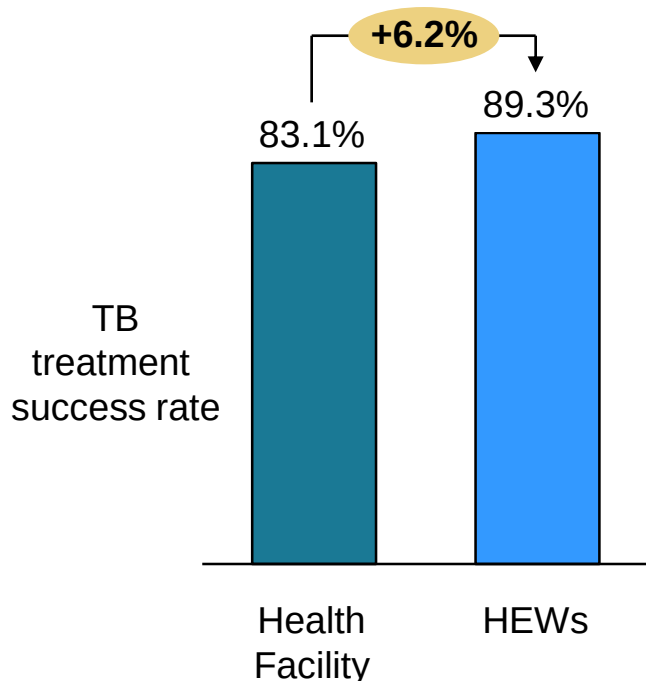
Sources: 1. Datiko, 2010; 2. Islam, 2002; 3. Kahn 2002; 4. Wandwalo, 2005; 5. San Sebastian, 2001 6. Patouillard, 2011; 7. Chanda, 2011. 8. GHWA 2010. 9. Reliable national data unavailable. 10. WHO World Health Statistics 2012. 11. WHO AFRO Africa Health Workforce Observatory: Human Resources for Health - Zambia Country Profile 2010 7 Intermittent Preventive Treatment of *Malaria* in Children (IPTc)

COST-EFFECTIVENESS: FOR EXAMPLE, A RANDOMIZED TRIAL IN ETHIOPIA PROVIDES COMPELLING SUPPORT FOR CHWS

Experiment

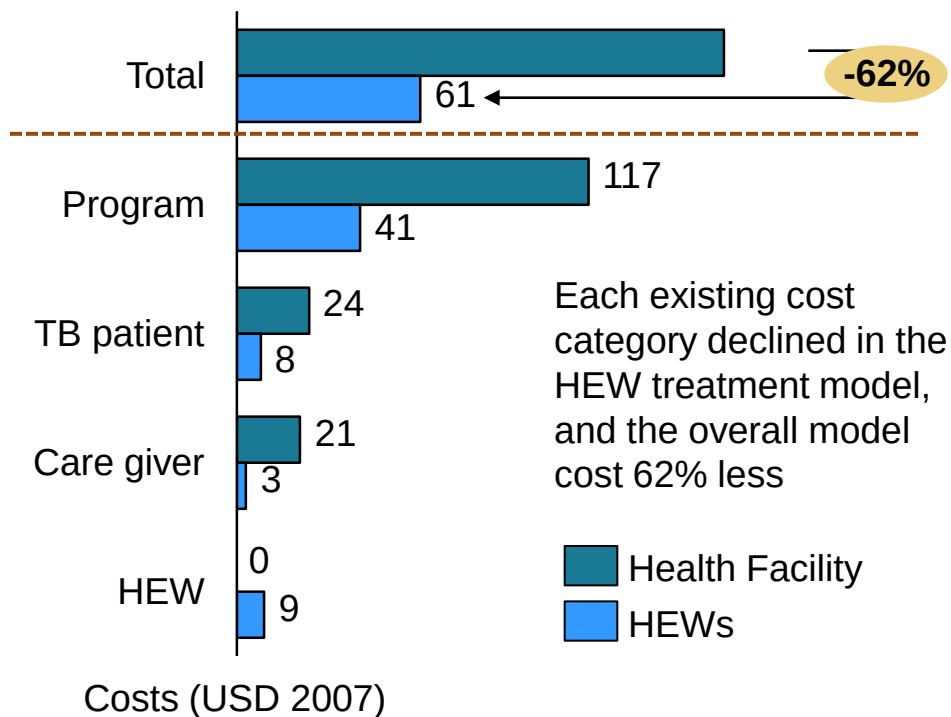
A community randomized trial compared the cost per successfully treated TB patient between health facility workers and Health Extension Workers (HEWs) in Ethiopia

HEWs had higher treatment success rates than health facility workers...



Difference in success rates was statistically significant with over 98% confidence

...and at significantly reduced cost per successfully treated patient



Sources: Datiko & Lindtjørn. "Cost and Cost-Effectiveness of Smear-Positive Tuberculosis Treatment by Health Extension Workers in Southern Ethiopia: A Community Randomized Trial" PLoS One 2010

COST-EFFECTIVENESS: SEARCH IN INDIA FOUND CHW-BASED NEONATAL CARE TO COST ONLY \$7 PER DALY AVERTED

Context

The Society for Education, Action, and Research (SEARCH), an NGO in India, conducted a 10-year field study on CHW-based support for neonatal care in a rural district of Maharashtra, India

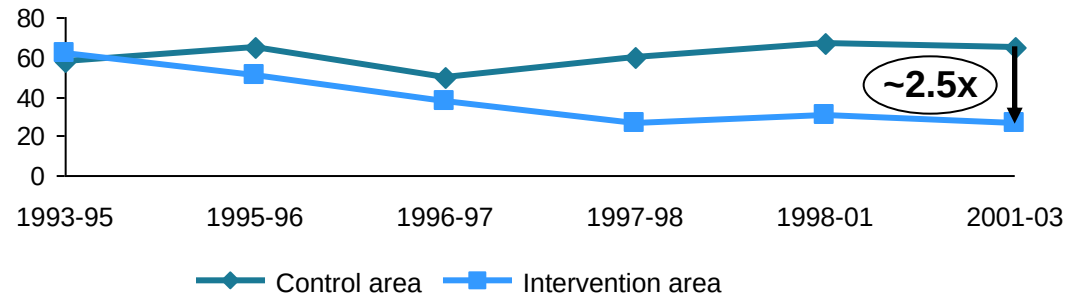
Intervention package

Outcomes were compared between intervention and control areas with ~40,000 people each. The home-based neonatal care intervention package included:

- Selection and training of CHWs
- Health education for mothers
- CHW-attended deliveries
- Repeated CHW home visits during neonatal period
- Diagnosis & treatment of neonates with sepsis
- Referral of severely ill children to the formal health system

Current state

Villages receiving CHW care had a 2.5x drop in neonatal mortality rate...



...at a remarkably low \$7 per disability-adjusted life year (DALY) averted

