# Systematic Review of the Effectiveness of Community-Based Primary Health Care in Improving Child Health: Findings from Integrated Approaches

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# Outline

- Limitations of facility-based approaches
- Reviews of integrated approaches
- Case studies of integrated approaches
- Cross-cutting theme: CHWs
- Contextual factors
- Methodological issues

# The Challenge

- "We have the bullets but not the guns" for reducing child mortality and initiating a second child survival revolution

  (Cesar Victora, Global Forum for Health Research, Mexico City, 2004)
- Translation: We know a lot more about the efficacy of specific interventions than we do about how to integrate them and scale them up
- Formulating the right attack involves – in part – consolidating and interpreting the available evidence

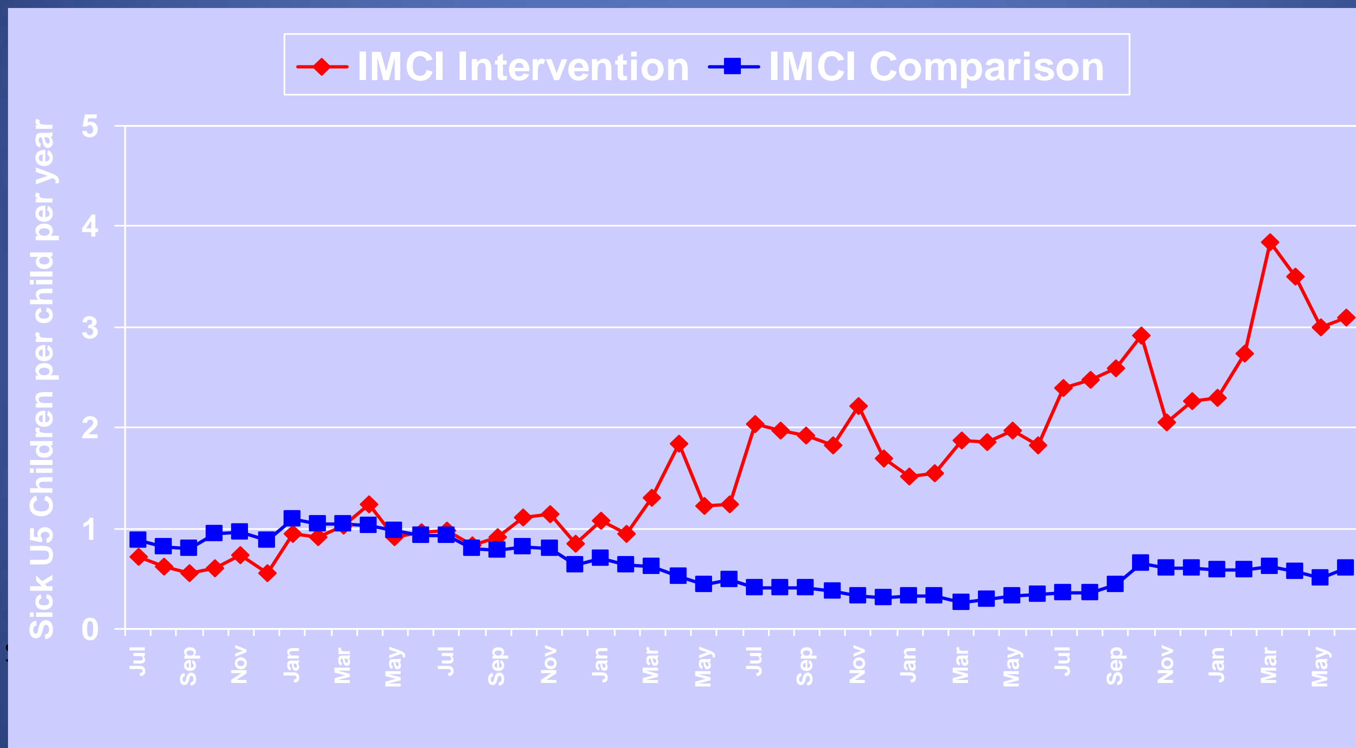
- Theoretical potential of facility and facility-centric approaches are limited
- Findings from the Integrated Management of Childhood Illness (IMCI) Multi-Country Evaluation are instructive

# Low Utilization of Health Facilities

Source: Arifeen S, Paryio G, Schellenberg J et al

# Only in Bangladesh Was IMCI Associated with Increases in Health Facility Utilization

Data




But no other site was able to replicate this effect……

Source: S. El Arifeen, 2006

# By location of intervention

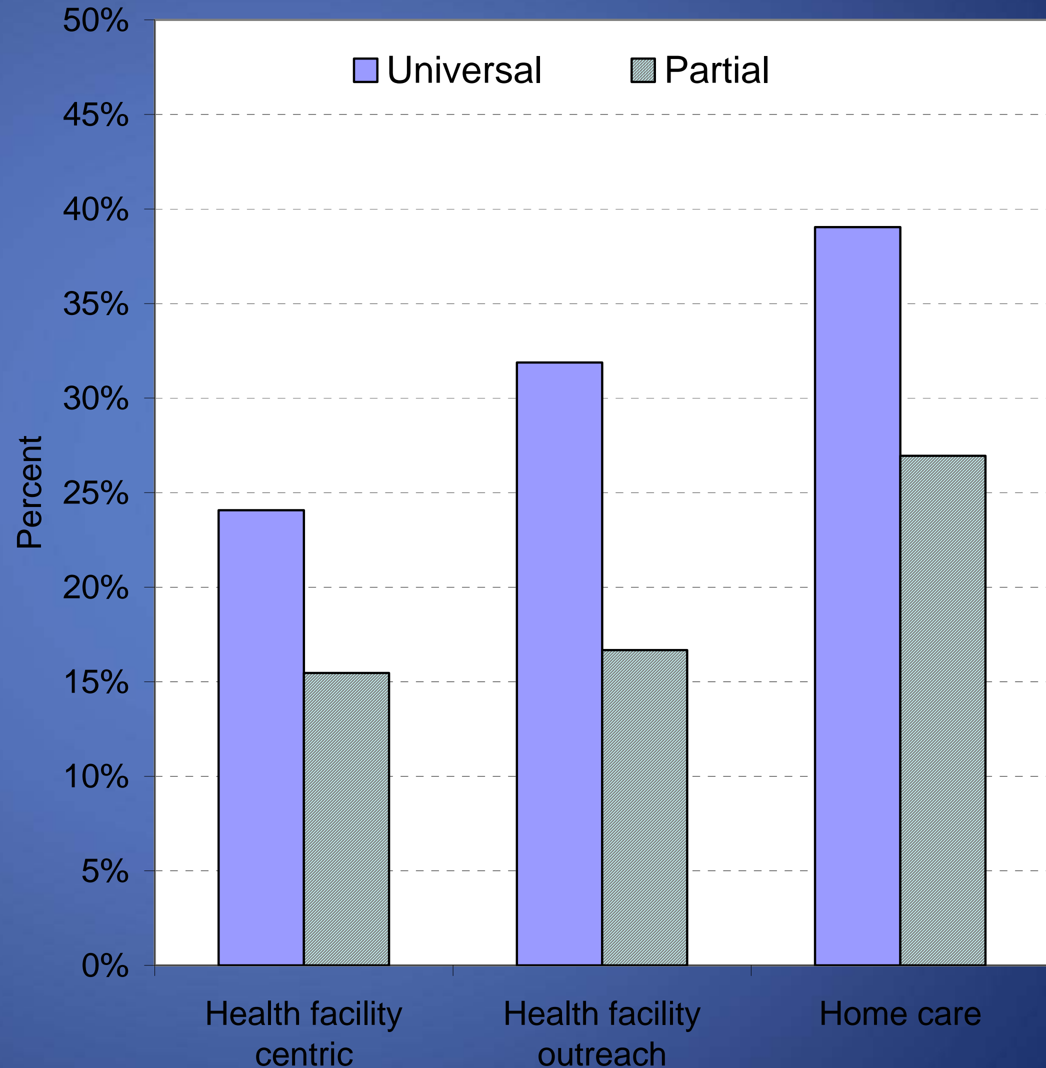
Health facility outreach includes: zinc, hib vaccine, vitA, tetanus toxoid, nivirapine, clean delivery, measles, IPT and antimalarials

Home care includes: breastfeeding, complementary feeding, ITM, WASH and ORT

# Partial coverage

60% malaria interventions (Abuja target)

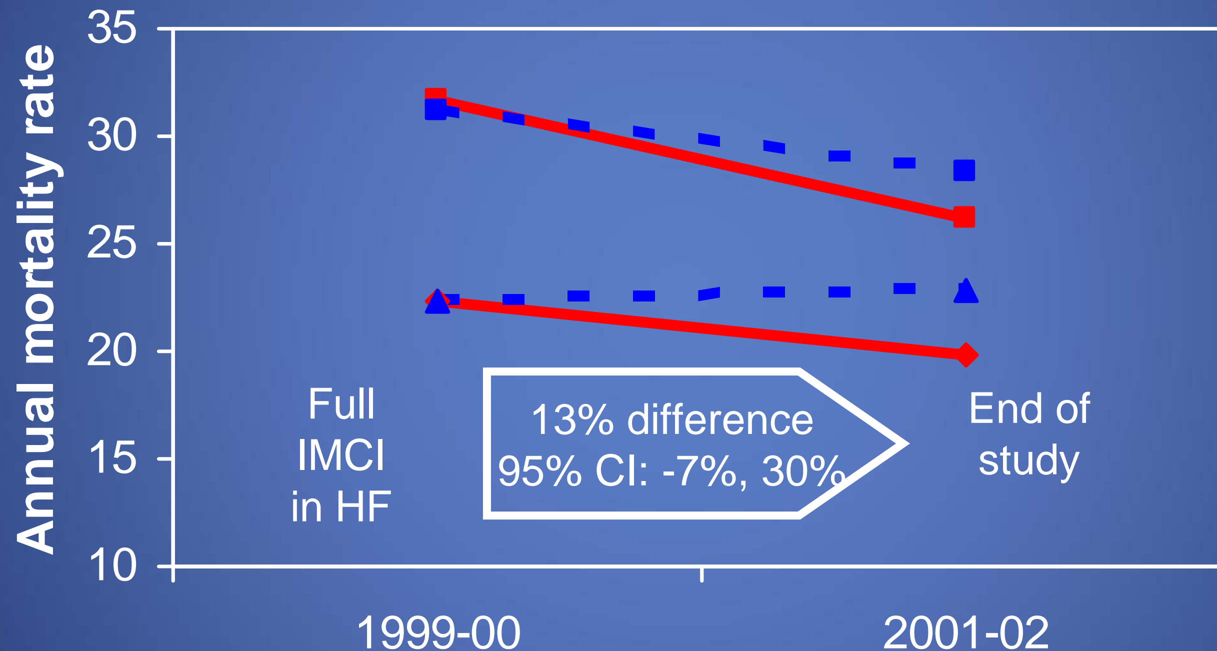
70% excl. breastfeeding and all others

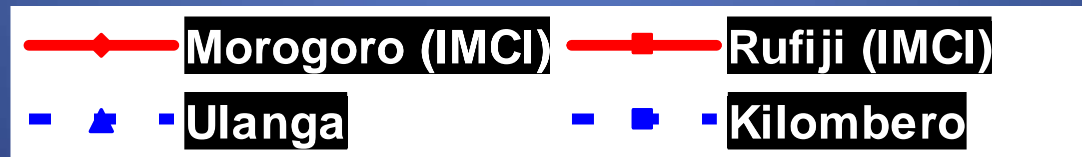



Source: G. Jones 2006

# Did facility-based IMCI have an impact on mortality?

# Tanzania: Under-5 Mortality Lower in the Two of Four IMCI districts, but Overall Mortality Impact Insignificant

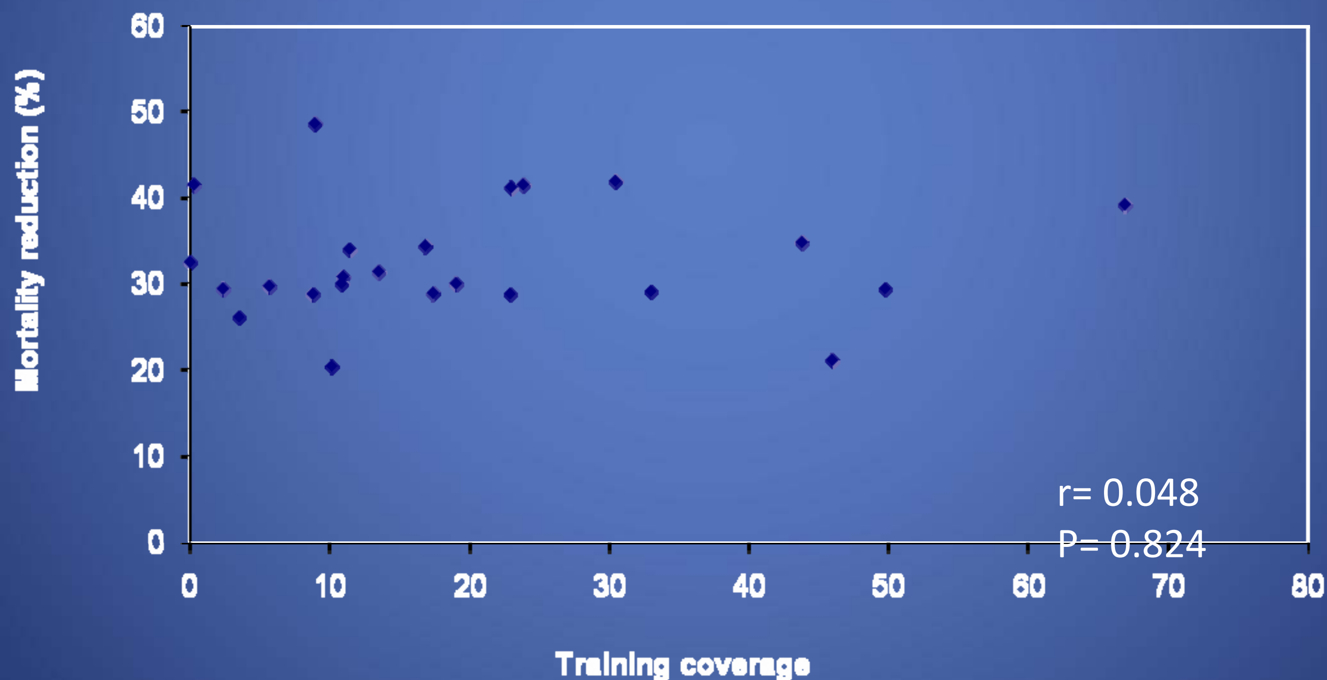



Significant impact on stunting

Source: Schellenberg J et al

# IMCI: No Apparent Mortality Impact in Peru (Similar Results in Brazil and Uganda)



# Overall Conclusions of Facility-Based IMCI Evaluation

- IMCI improves quality of care
- IMCI does not increase overall costs
  - Either for providers or out-of-pocket
- IMCI dramatically reduces cost per child managed correctly
- IMCI is the gold standard for facility care of children aged 7 days – 5 years

# Overall Conclusions of Facility-Based IMCI Evaluation (cont.)

- IMCI can have an impact on mortality and nutrition
- But this requires:
  - Strengthening health systems
  - Reaching out to the community
- IMCI was least likely to be implemented well where it was needed most
- IMCI did not expand to areas of greatest need and there was no prioritization given to these areas

# Reviews of Integrated Approaches

- 1980: Can Health and Nutrition Interventions Make a Difference? (monograph)
- 1993 : Effects of Health Programs on Child Mortality in Sub-Saharan Africa (book)
- 1997 : Prospective Community Studies in Developing Countries (book)
- 2000: Health for All in Bangladesh: Lesson in Primary Health Care for the 20$^{th}$ Century (book)

# Reviews of Integrated Approaches (cont.)

- 2006: Strategies for Integrating Primary Health Services in Middle- and Low-Income Countries at the Point of Delivery (*Cochran Review*)
- 2006: Estimation of Impact of USAID PVO Child Survival Projects (USAID website)
- 2007 : Impact of Packaged  Interventions on Neonatal Health (*Health Policy and Planning*)

# Can Health and Nutrition Interventions Make a Difference? (1980)

- 10 projects that had measured their impact on under-5 mortality (Imesi, Nigeria, only project in Africa)
- All in populations of 60-70,000 people
- All had strong outreach down to the household, outside of health facilities
- Overall, mortality declined by one-third to one-half in five years
- Need to test similar approaches in populations of 100,000 – 500,000 people
- Issues of scaling up critical

# The Importance of Outreach to Those at Greatest Risk

"Unless services reach those in need, even the best-conceived primary health care and nutrition programs can obviously have little impact on mortality. Thus, as the experience of these projects demonstrates, the development of plans for getting services to the people is as important as are decisions concerning which services should be offered."

# Effects of Health Programs on Child Mortality in Sub-Saharan Africa (1993)

- Almost all studies examined single interventions in carefully controlled settings
- We need to go beyond measuring single intervention efficacy in carefully controlled settings
- We need to measure the effectiveness of programs in more routine settings, where potential mortality impact can be affected by poor quality, low compliance rates, and low coverage
- We need evaluations of various packages of interventions
- We know very little about the overall effectiveness of integrated health programs
- We need for more long-term studies that include regular collection of vital statistics and routine surveys of service utilization and quality of care
- Declines in mortality rates should remain the ultimate indicator of the effectiveness of child survival programs in Africa

# Review of USAID CS Projects

- Indirect estimation of numbers of lives saved through community-based child survival programming by USAID PVOs/NGOs implementing “proven” child survival interventions
- Uses “Bellagio calculator” to predict number of lives saved by assessing changes in coverage of key child survival interventions and knowledge of baseline mortality rates (estimated from regional DHS data)

# Findings

- For 6 projects with integrated interventions in a total population of 6.7 million people, an estimated 16,000 lives saved over 3 -5 years
- For 15 projects, the estimated decline in mortality was at a greater rate than the national rate of decline

# Prospective Community Studies in Developing Countries (1997)

Description of the following projects:

- The Matlab Project (Bangladesh)
- The Khanna Study (India)
- The Narangwal Project (India)
- The INCAP Three Village Projects (Guatemala)
- The Hospital Albert Schweitzer and Petit Goave Projects (Haiti)
- The Machakos Project (Kenya)
- Pholela Health Center (South Africa)
- Rural Senegal Studies (French Institute for Scientific Research Overseas – ORSTOM)
- Bandafassi (Senegal)
- Bandim (Guine-Bisseau)

# Conclusions

- Many of the fundamental principles for improving child survival have arisen from these studies (e.g., vaccine effectiveness, oral rehydration fluid effectiveness, effectiveness of antibiotic treatment of childhood pneumonia, the effectiveness of programs in reducing child mortality, etc., etc.)
- "A lesson from all these studies is the importance of working closely together with the population in order to improve its health. Community participation is seen by all the authors as a key factor in the success of their projects and the interventions as opposed to the more classic vertical programmes."

# Conclusions (cont.)

- The Narangwal Study provided part of the inspiration and vision for John Grant and his leadership at UNICEF for the First Child Survival Revolution
- The origins of most of these prospective longitudinal studies can be traced back to John Grant (father of James Grant) and his work with the Rockefeller Foundation in China working with CC Chen in the early 1930s in Ding Xian
- This line of influence can be traced directly down to more recent noteworthy projects as well including the Navrongo Project in Northern Ghana

# Significance of the Narangwal Project

- Home visits (with one-on-one education of mothers) and building trust with the community are key interventions for achieving effective programs
- Interventions were iterative and evolved based on feedback from staff, the community, and locally collected data
- One of the few field research projects which treated the community as a partner and resource rather than a “target” and placed rights of villagers over scientific objectives
- First use of rapid breathing and chest in-drawing as a community-based method for diagnosing childhood pneumonia (suggested by the villagers)
-

# Significance of the Narangwal Project (cont.)

- First demonstration of the effectiveness of antibiotics in reducing mortality from childhood pneumonia
- One of the first 10 projects in the world to demonstrate an impact on under-5 mortality (with a comparison control area)
- One of the few studies systematically comparing sets of integrated packages of services and integrating family planning, nutrition and health interventions, and clearly showing synergism (increased program effectiveness and cost-effectiveness) arising from integration

# Significance of the Narangwal Project (cont.)

- "Delegation of activities as far as possible to the periphery improves coverage and effectiveness."
- "The most important changes in primary health care are in the routine health practices in the home, backed up by acceptable village-level auxiliary health care and only then by referral to professionals."

# Matlab MCH-FP Program in Bangladesh

- Longest continuously functioning demographic surveillance site in the world
- Just celebrated its $40^{th}$ anniversary
- Khanna Study was an important predecessor
- Built around routine systematic home visitation of CHWs, prospective registration of vital events, integration of MCH and FP, and linkage to referral health care
- Unsurpassed field site for testing specific interventions

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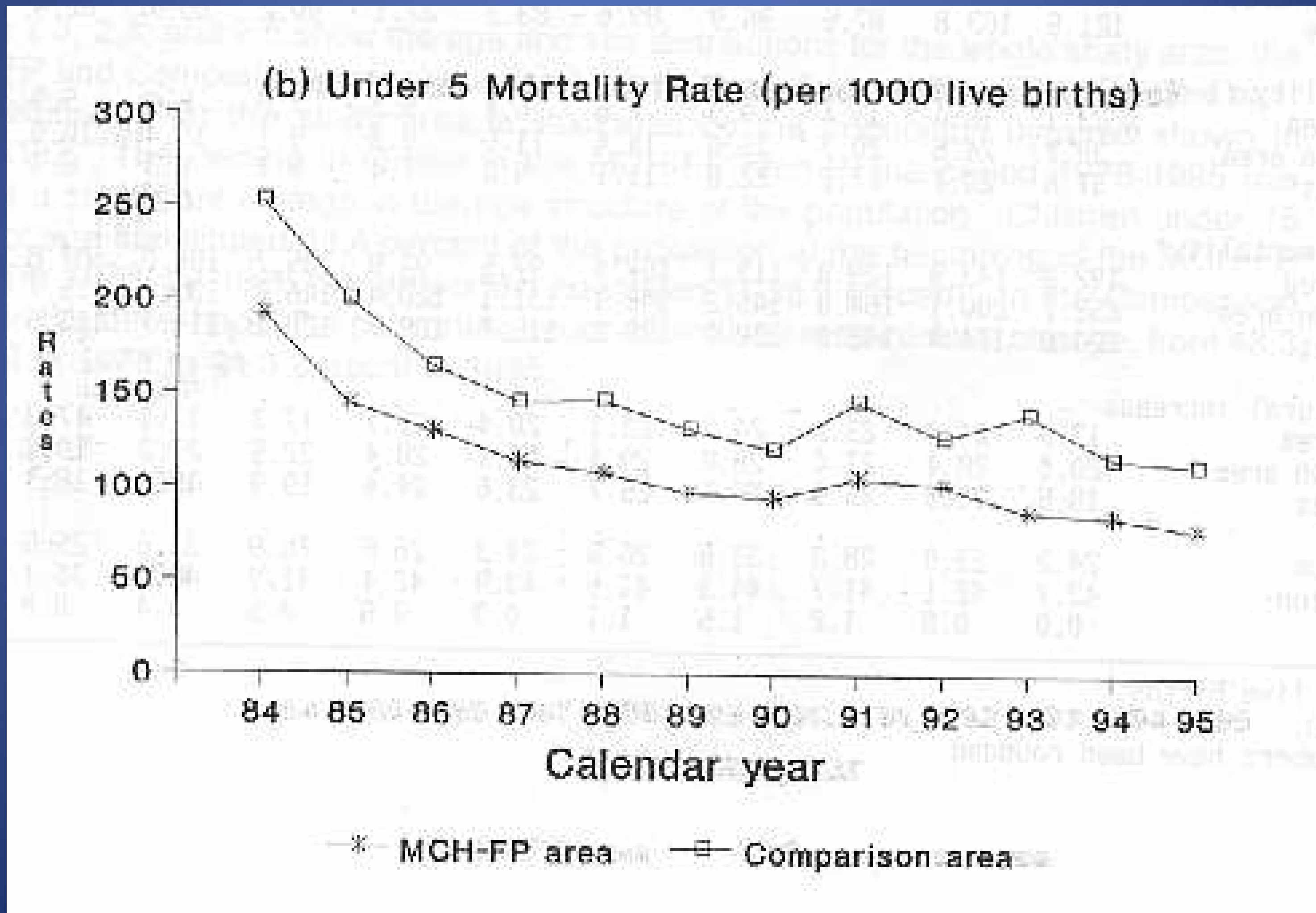
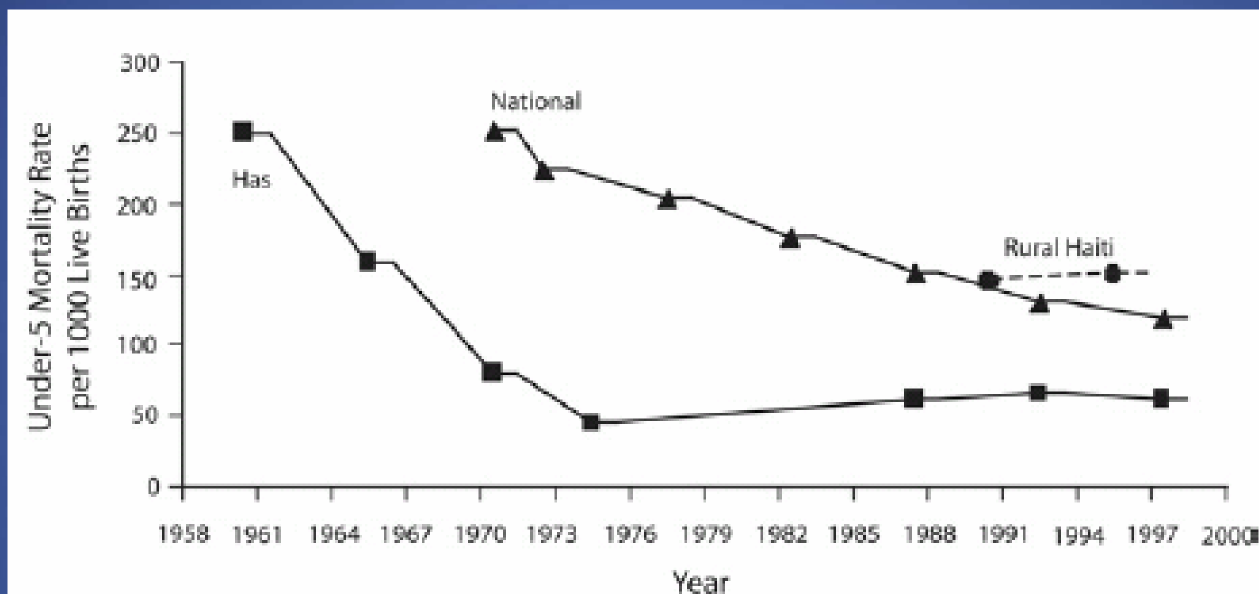
# Long-term Mortality Impact



# Hospital Albert Schweitzer (HAS) in Haiti

- Integrated system of CBPHC, facility-based PHC, hospital referral care, and community development (similar to Jamkhed)
- The community health program established in 1967 by Warren and Gretchen Berggren with John Wyon as their mentor
- Program has been in operation now for 50 years
- HAS model of *Agents de Sante* who visit all households has been adopted by virtually all heath NGOs throughout Haiti

# Longest Sustained Mortality Impact of an Integrated Program in a Non-Research Setting

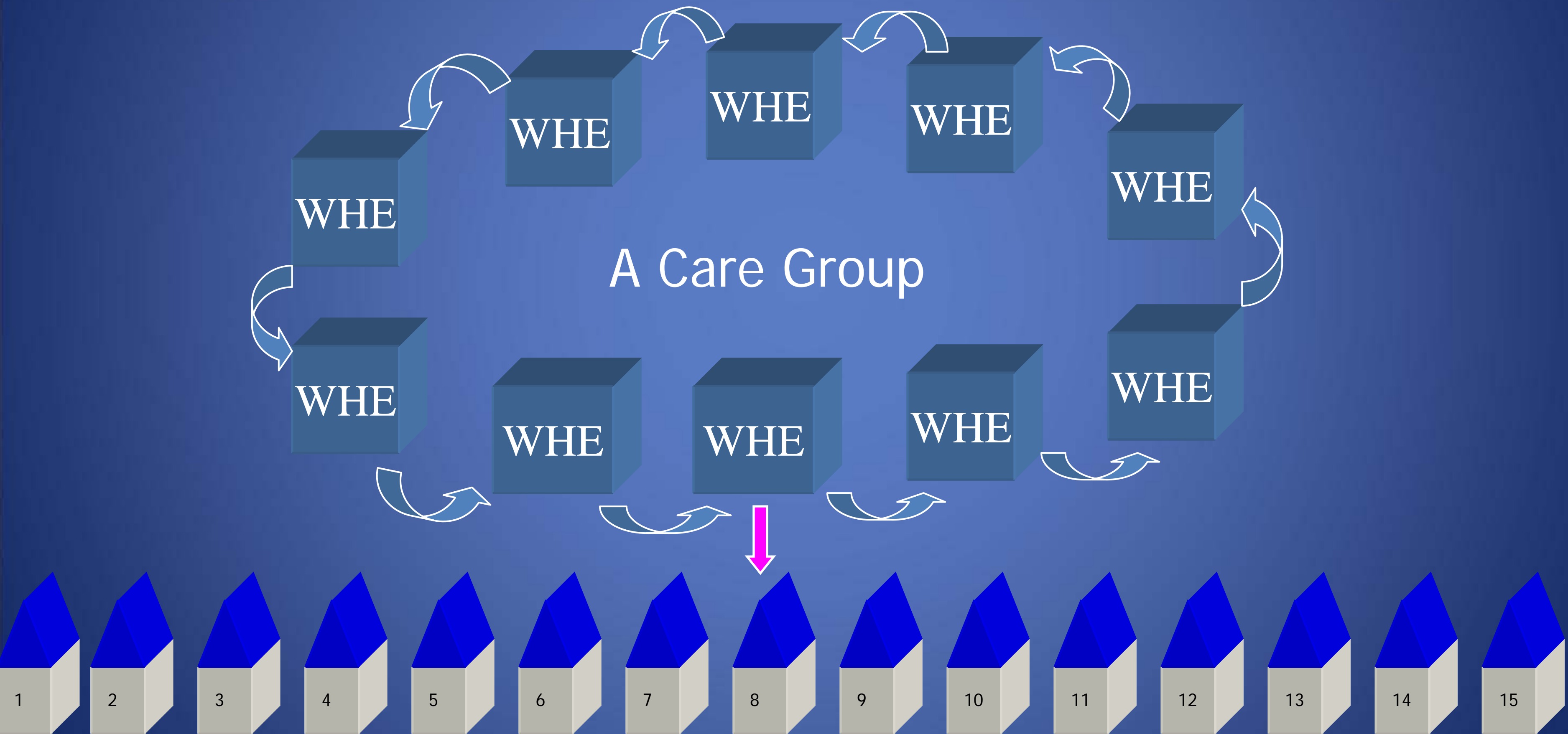



*Source.* HAS birth history survey, 2000, and Cayemittes et al.[12,18]
*Note.* Rates refer to the total risk of death over a 5-year period, from birth to 59 months of age. Mortality rates for rural Haiti were not available before 1985.

**FIGURE 2—Long-term trends in under-5 mortality rates in Haiti and in the primary health care service area of the Hôpital Albert Schweitzer, 1958–1999.**

American Journal of Public Health, 2007

# Care Group Model (Mozambique, Rwanda, Mali, Cambodia, Guatemala)



# Under-5 Mortality Impact of Care Group Approach in Mozambique

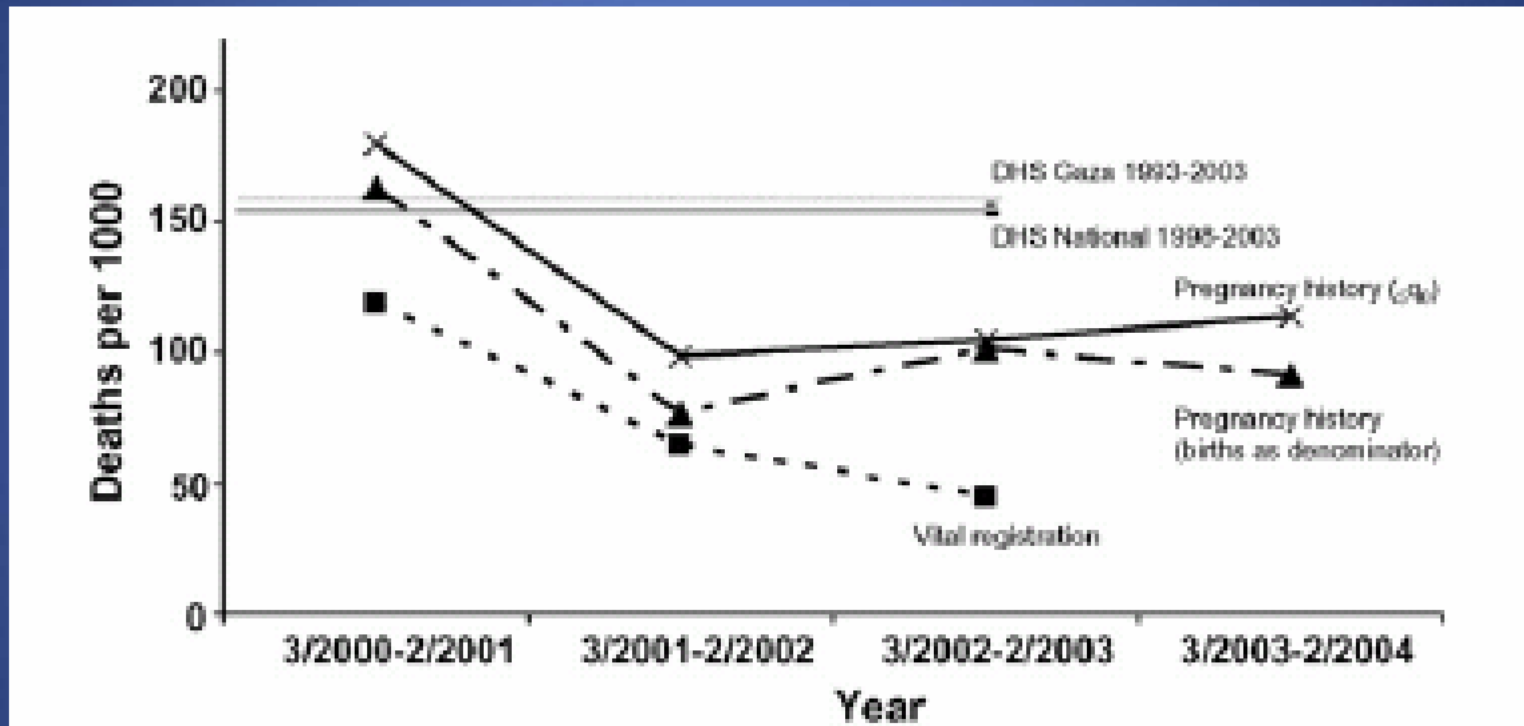



**Figure 3** Under-five mortality in Chokwe district, 2000–2004. DHS: Demographic and Health Survey.

Source: Transactions of the Royal Society of Medicine and Hygiene, 2007

# Care Group Approach

- Being replicated and scaled up in Rwanda and Cambodia and Mozambique, and Guatemala
- Captured the interest of a recent Expert Consultation on Methodological Alternatives for Monitoring Child Mortality convened by the Canadian International Development Agency at Johns Hopkins

# Health for All in Bangladesh: Lessons in Primary Health Care for the 21st Century (2000) and Learning to Reach Health for All (2005)

- Partnerships between the government, NGOs and the community have made success possible
- CHWs and home visitation have played a prominent role in primary health care services
- Operations research has played a strong role
- Scaling up has occurred, but gradually, in association with strong monitoring and evaluation
- BRAC is a global model and emerging global force for scaling up integrated CBPHC programs effectively (the largest NGO in the world, with programs now serving 110 million people, 68,000 CHWs, and a strong program of monitoring and evaluation, and has recently established programs in Afghanistan, Uganda, Tanzania, and Southern Sudan)

# UNICEF ACSD, 2002-2005

- 3 different integrated packages of services delivered in high-mortality districts of 11 countries of West and Central Africa (17 million people)
  - (1) EPI + vitamin A + ITNs
  - (2) ANC, IPT malaria, TT immunization, IFA, PP vitamin A
  - (3) Improved management of pneumonia, malaria, and diarrhea, EBF + CF, with improved facility care and community IMCI

# UNICEF ACSD, 2002-2005 (cont.)

- Twice-yearly Child Health Days going door-to-door to reach every child and pregnant mother
- Comparison of coverage of key indicators in intervention and control districts, with coverage doubling or tripling in intervention districts and staying stagnant in control districts
- Bellagio calculator method estimates saving 18,000 lives a year
- Program now being expanded with direct mortality measurements

# Cochran Review of Integrating Primary Health Services at Point of Delivery (2006)

- Identified only 5 studies which met their criteria (randomized, controlled before and after studies, or interrupted time series analyses of integrated strategies in primary health services)
- Outcome criteria: indicators of health care delivery, user views on any measure of service coherence, or health status

# Noteworthy Integrated CBPHC Programs/Approaches

- The Khanna Study, Khanna, India
- Imesi, Nigeria, Under-Fives Clinic
- The Narangwal Project, Narangwal, India
- Matlab, Bangladesh, MCH-FP Project
- Jamkhed Comprehensive Rural Health Project, Jamkhed, India
- Society for Education, Action and Research in Community Health (SEARCH), Gadchiroli, India
- Comprehensive health and development approach at the Hopital Albert Schweitzer in Haiti
- Andean Rural Health Care/Curamericas and CBIO
- World Relief Child Survival Project, Mozambique and Cambodia
- MSH-REACH in Afghanistan
- Navrongo Initiative, Ghana

# Key Findings from the Review – Contextual Factors Enhancing Intervention Effectiveness

- Integrated community-based approaches are powerful and cost-effective strategies for reducing maternal and child mortality WHEN:
  - "Proven" interventions are employed
  - Strong technical and professional leadership present
  - Strong monitoring & evaluation and operations research present
  - Strong outreach components down to the household level are present
  - Strong supervisory systems present – especially for lower-level workers
  - Functioning health systems with referral systems (including referral hospital care) present
  - The health system interacts with the community and community-level workers with respect and treats them as partners
  - Long-term financial, technical and professional support (> 5 years)

# Key Findings from the Review – Contextual Factors Enhancing Intervention Effectiveness

- Routine systematic home visitation has many unique advantages for achieving the MDGs 1, 4, 5, 6, & 7
  - Provides data for vital events (register pregnancies, pregnancy outcomes, births and deaths) and for determining the population at risk
  - Ensures key health education messages reach the entire population
  - Enables monitoring of use of ITNs in malaria-endemic areas
  - Facilitates case detection of childhood malnutrition, persons with symptoms suspicious for TB, treatment of TB and AIDS patients

# Key Findings from the Review – Contextual Factors Enhancing Intervention Effectiveness (cont.)

- Women-centered approaches are fundamental
  - Facilitating groups of women in communities to improve their health and the health of their children can be a powerful strategy for improving maternal and child mortality
  - Empowered women can promote behavior change on their own – without a health system

# Issues Related to CHWs

- With proper selection, training and supervision, CHWs can be effective agents in reducing child mortality
- Who is going to train and supervise them?
- Who is going to make sure they are not overloaded with too many tasks and also to make sure they are addressing the priority conditions responsible for preventable mortality in their communities?
- How can CHW programs be scaled up and sustained?

# Review of Community Health Programmes and the Management of Sick Children (2005)

- Even though there is strong evidence that community-based treatment of pneumonia lowers under-five mortality, it is rarely implemented, especially in Africa
- In places where both malaria and pneumonia are major causes of childhood morbidity and mortality, they should be managed together by CHWs in the community
- There is little follow-up information available about the CHW programs of the 1980s
- New and emerging strategies for CHWs need rigorous evaluation and gradual scaling up

# Key Strategic Issue: Neonatal and Perinatal Health

- Reducing maternal, perinatal and neonatal mortality key for achieving MDGs 4 & 5
- As under-5 mortality falls, the proportion of deaths that occur during the neonatal period will increase (and 75% of neonatal deaths occur during the first week of life and 25-45% occur on the first day of life)
- A great proportion of early neonatal deaths are related to the quality of care provided during the delivery (which is also related to maternal mortality as well)
- There are 4 million stillbirths and 4 million neonatal deaths globally now

# Key Findings from the Review – Methodological Issues

- Methodological Issues
  - Very few controlled studies with appropriate comparison groups and before/after measurements in control and intervention populations (and even fewer randomized controlled trials)
  - Few studies in routine field settings (we need more effectiveness studies in addition to efficacy studies)
  - These kinds of studies with methodological rigor are much more feasible for single interventions than for integrated program approaches
  - We need more research – more field trials of integrated approaches at scale (more large-scale Narangwals)
  - We need more rigorous field trials from Africa

# Key Findings from the Review – Methodological Issues

- We need a closer alliance between top-quality research institutions and typical field programs
- When such an alliance is present, the chances for effective programs going to scale without losing effectiveness are enhanced
- Examples: ICDDR,B (in collaboration with universities around the world) and the Bangladesh family planning program, the Population Council and the Navrongo Initiative, Johns Hopkins and Save the Children/Saving Newborn Lives
- We need more high-quality mortality impact studies in large-scale, routine settings – and we need better methods for rapid assessment of mortality
- We shouldn’t keep bowling in the dark!

# Implications

- The practice of public health in helping impoverished communities to improve their health using community-based approaches is at a similar stage of scientific development as the practice of medicine was in helping individuals to improve their health 100 years ago – at the threshold of even more major scientific advances
- We are on the threshold of even more exciting progress if we can keep this momentum going

# Henry Perry’s Recommendations for CBPHC, Integration and Child Health

1. Follow Taylor’s Law: “There is no universal solution, but there is a universal process to find appropriate local solutions.” Carl Taylor

2. Invest in promising CBPHC approaches and field sites, start small, and help them go to scale within a framework of rigorous evaluation and operations research that demonstrates effectiveness in reducing under-five mortality

3. Look for and support promising young leaders who have a passion for CBPHC or who have the potential for becoming passionate leaders of CBPHC

# Henry Perry's Recommendations for Implementing CBPHC (cont.)

4. Support opportunities for program leaders to visit and learn from successful experiences – build on success (Africans recently went to SEARCH in India)

5. Plan at the outset for long-term sustainability and for the supportive "human" infrastructure required for CBPHC (supervision, training, M&E)

6. Make under-five mortality in defined geographic areas the key outcome indicator and build it into ongoing program operations

# John Grant, 1934

“Socioeconomic progress depends chiefly upon the actual *demonstration* of feasibility and worth. Second, demonstrations, to be successful, must make use of technical methods which are scientifically efficient and economically practical. Third, and most important, successful demonstration of methods in any social field is dependent upon horizontal integration with other fields rather than separate, single purpose developments"

(Quoted in Seipp, 1963, p. 10).

# Carl Taylor

“The acknowledged leader of primary health care over the second half of the 20th century"

Jon Rohde, 2002

Champion of community-based integrated approaches to improving child health

His and Daniel Taylor’s approach (SEED-SCALE, described in their book *Just and Lasting Change: When Communities Own Their Futures*) is an outgrowth of deliberations at UNICEF and other major development organizations in the 1990s concerning the limitations of narrow top-down approaches

# The "New" Public Health
## (Ashton and Seymour, 1995)

Movement toward "true" community-based PHC with empowerment and capacity building

# Conclusions

- The evidence base is sufficiently strong to justify a major commitment to CBPHC – as long as a “cookie cutter approach” is not used
- MDG 4 (lowering under-5 mortality by two-thirds) cannot be achieved in Africa without a stronger commitment to CBPHC
- The Expert Review Panel’s findings related to CBPHC and child health will help to guide this process

# Conclusions (cont.)

- With rapidly growing knowledge of practical effectiveness of community-based interventions and approaches, more rigorous monitoring and evaluation, expanded funding, and emphasis on going to scale
- We may be at the threshold of a second revolution in maternal, neonatal and child survival