

PUBLIC HEALTH GRAND ROUNDS

Office of the Director

July 15, 2010





About CDC

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About CDC



Grand Rounds

The Public Health Grand Rounds is a monthly series created to further strengthen CDC's common scientific culture and foster discussion and debate on major public health issues. Each session of the Public Health Grand Rounds will focus on key issues and challenges related to a specific health topic, including cutting-edge scientific evidence and potential impact of different interventions. The sessions will also highlight how CDC is already addressing these challenges and discuss the recommendations for future research and practice.

Please [contact us](#) with any questions or comments on the Grand Rounds series.

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For those interested in receiving training and continuing education credits/contact hours for the live broadcasts of Public Health Grand Rounds, please register at <http://www2a.cdc.gov/TCEOnline>.



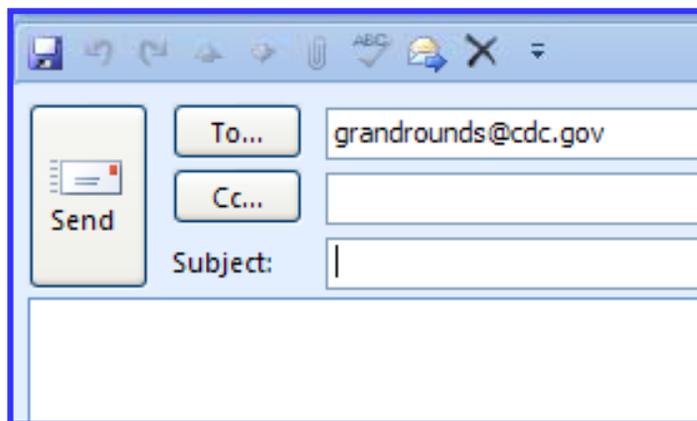
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The screenshot shows an email client window with a toolbar at the top. Below the toolbar, there is a 'Send' button on the left. To its right, there are two buttons: 'To...' and 'Cc...'. The 'To...' button is followed by a text input field containing the email address 'grandrounds@cdc.gov'. Below the 'Cc...' button is another empty text input field. To the right of these fields is a 'Subject:' label followed by an empty text input field. The bottom part of the window is a large empty text area for the email body.

For those outside of CDC, a broadband link is available at:
<http://www.cdc.gov/about/grand-rounds> (Grand Rounds **internet** site)



CDC Connects > Office of The Director

The CDC Director: Dr. Thomas Frieden



"I love this agency. I'm optimistic about our ability to preserve and protect the health and lives of Americans and further strengthen CDC as an institution."

—Thomas R. Frieden, MD, MPH

Request the Director

In the News

- [A Discussion about Combating Underage Drinking and Preventing Teen Pregnancy, 1-20-2010](#)

All Hands Meeting

CDC Director Tom Frieden, MD, MPH, All-Hands meeting Tuesday, June 22, 2011.

[All Hands](#) Marks Year Anniversary for Frieden.

Making a Difference

July 27, 2009: [CSPAN: "Weight of the Nation"](#)

Grand Rounds

The **Public Health Grand Rounds** is a new monthly series aimed to further strengthen CDC's common scientific culture and foster discussion and debate on major public health issues. Each session of the Public Health Grand Rounds will focus on key issues and challenges related to a specific health topic, including cutting-edge scientific evidence and potential impact of different interventions...

Available on IPTV : <http://intra-apps.cdc.gov/itso/iptv/iptvschedule.asp>

IPTV link also available on Grand Rounds [intranet](#) site:

<http://intranet.cdc.gov/od/odweb/about/directorGrandRounds.htm>

CDC Knowledge to Action Science Clips

July 11, 2010

CDC Public Health Library and Information Center

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Welcome to Knowledge to Action Science Clips, CDC's new weekly digest!

Review

Countdown to 2015 decade report (2000–10): taking stock of maternal, newborn, and child survival

Zulfiqar A Bhutta, Mickey Chopra, Henrik Axelson, Peter Berman, Ties Boerma, Jennifer Bryce, Flavia Bustreo, Eleonora Cavagnero, Giorgio Cometta, Bernadette Daalmans, Andres de Francisco, Helga Fogstad, Neeru Gupta, Laura Laski, Jay Lawn, Blerita Maliqi, Elizabeth Mason, Catherine Pitt, Jennifer Requejo, Ann Stairs, Cesar G Victora, Tessa Wardlaw

Lancet 2010; 375: 2032–44
The Countdown to 2015 for Maternal, Newborn, and Child Survival monitors coverage of priority interventions to achieve the Millennium Development Goals (MDGs) for child mortality and maternal health. We reviewed progress between 1990 and 2010 in coverage of 26 key interventions in 68 Countdown priority countries accounting for more than 90% of maternal and child deaths worldwide. 19 countries studied were on track to meet MDG 4, in 47 we noted acceleration in the yearly rate of reduction in mortality of children younger than 5 years, and in 12 countries progress had decelerated since 2000. Progress towards reduction of neonatal deaths has been slow, and maternal mortality remains high in most Countdown countries, with little evidence of progress. Wide and persistent disparities exist in the coverage of interventions between and within countries, but some regions have successfully reduced longstanding inequities. Coverage of interventions delivered directly in the community on scheduled occasions was higher than for interventions relying on functional health systems. Although overseas development assistance for maternal, newborn, and child health has increased, funding for this sector accounted for only 31% of all development assistance for health in 2007. We provide evidence from several countries showing that rapid progress is possible and that focused and targeted interventions can reduce inequities related to socioeconomic status and sex. However, much more can and should be done to address maternal and newborn health and improve coverage of interventions related to family planning, care around childbirth, and case management of childhood illnesses.

Ag Khan University, Karachi, Pakistan (Prof Z A Bhutta PhD); UNICEF, New York, NY, USA (M Chopra MD, T Wardlaw PhD); Partnership for Maternal, Newborn and Child Health, Geneva, Switzerland (H Axelson MSc, A de Francisco MD, F Bustreo MD); World Bank, Washington, DC, USA (P Berman PhD); WHO, Geneva, Switzerland (E Cavagnero PhD, T Boerma MD, B Daalmans MD, N Gupta MD, B Maliqi MD, E Mason FPHM); Johns Hopkins University, Baltimore, MD, USA (J Bryce EdD)

Maternal and Child Health - Child Survival

- [Community-based interventions for diarrhoeal diseases and acute respiratory infections in Nepal](#)
Ghimire M, Pradhan YV, Maskey MK.
Bull World Health Organ. 2010 Mar;88(3):216-21.
[+]Show Abstract
- [The effect of oral rehydration solution and recommended home fluids on diarrhoea mortality](#)
Munos MK, Walker CL, Black RE.
Int J Epidemiol. 2010 Apr;39 Suppl 1:i75-87.
[+]Show Abstract
- [The effect of case management on childhood pneumonia mortality in developing countries](#)
Theodoratou E, Al-Jilaihawi S, Woodward F, Ferguson J, Jhass A, Balliet M, Kolcic I, et al.
Int J Epidemiol. 2010 Apr;39 Suppl 1:i155-71.
[+]Show Abstract
- [The effect of Haemophilus influenzae type b and pneumococcal conjugate vaccines on childhood pneumonia incidence, severe morbidity and mortality](#)
Theodoratou E, Johnson S, Jhass A, Madhi SA, Clark A, Boschi-Pinto C, Bhopal S, et al.
Int J Epidemiol. 2010 Apr;39 Suppl 1:i172-85.
[+]Show Abstract
- [Countdown to 2015 decade report \(2000-10\): taking stock of maternal, newborn, and child survival](#)
Bhutta ZA, Chopra M, Axelson H, Berman P, Boerma T, Bryce J, Bustreo F, et al.
Lancet. 2010 Jun 5;375(9730):2032-44.
[+]Show Abstract

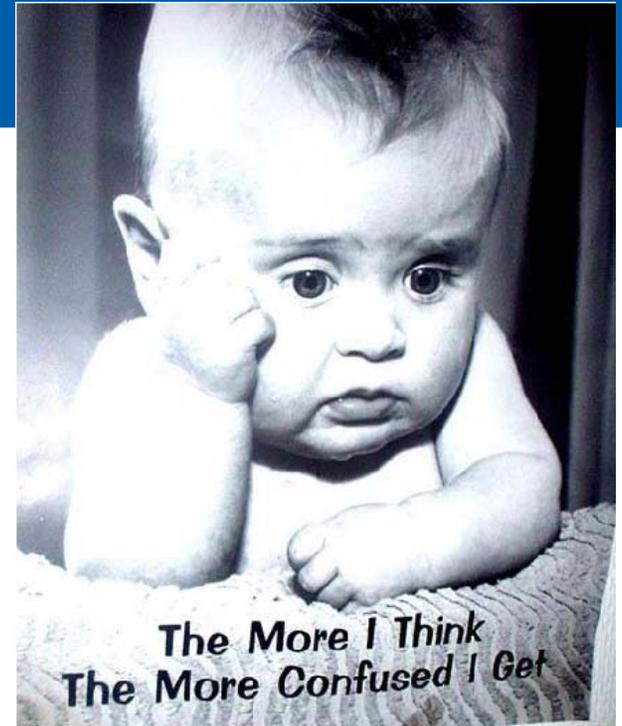
<http://www.cdc.gov/phlic/sciclips>



Continuing Education Credits

As of January 2010
Credit Hours are available for

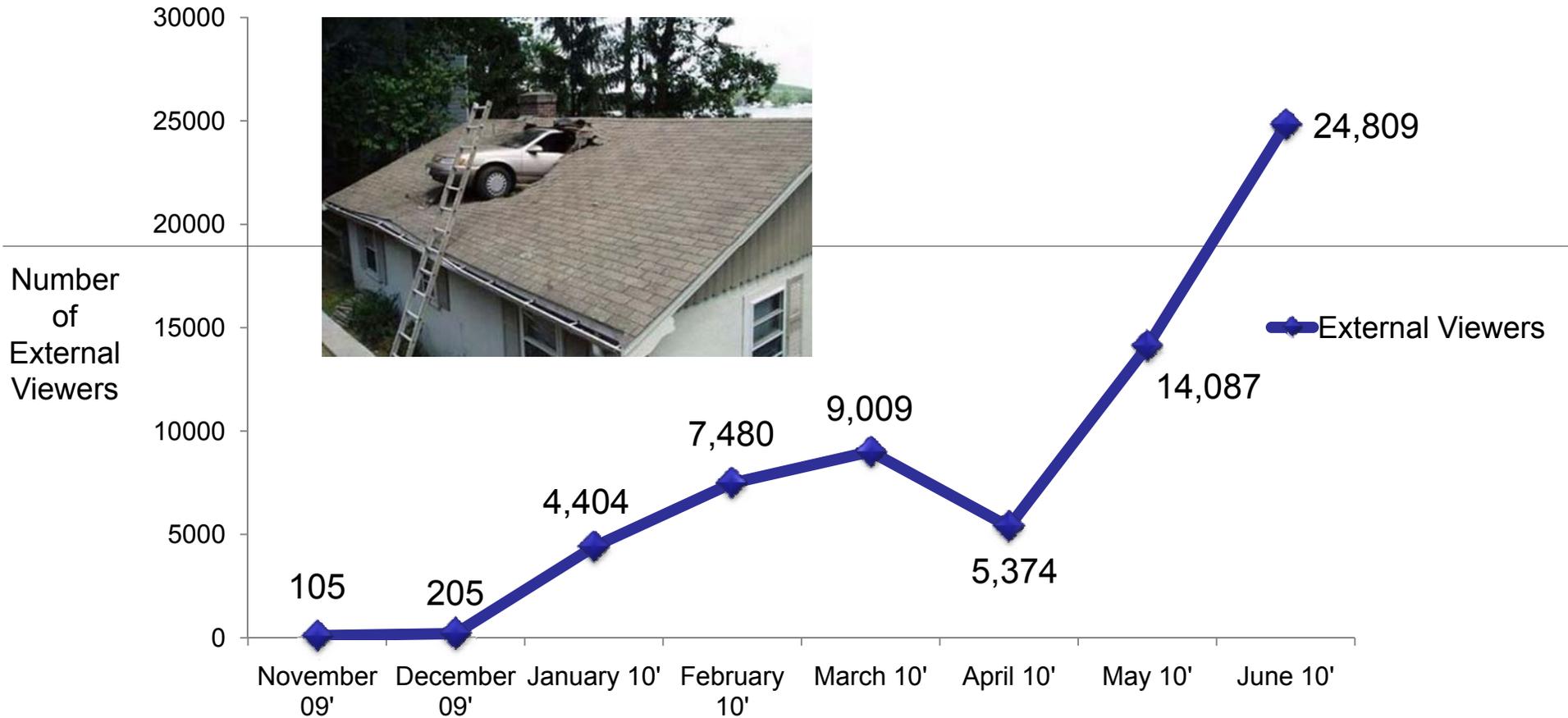
- Physicians (CME)
- Non-physicians (CME)
- Nurses (CNE)
- Certified Health
Education Specialists (CECH)
- Pharmacist (CPE)
- Other professionals (CEU)



**Archived presentations are now eligible for CE credit—
good for 2 years, available through “web on demand”**

ALL Continuing Education credits/contact hours for PHGR are issued online
through the CDC/ATSDR Training & Continuing Education Online system,
<http://www2a.cdc.gov/TCEOnline>.

External Viewers of CDC Grand Rounds



Stay Tuned



August 19

Vitamin D

September 16

H1N1 influenza

October 21

Alcohol

November 18

Malaria

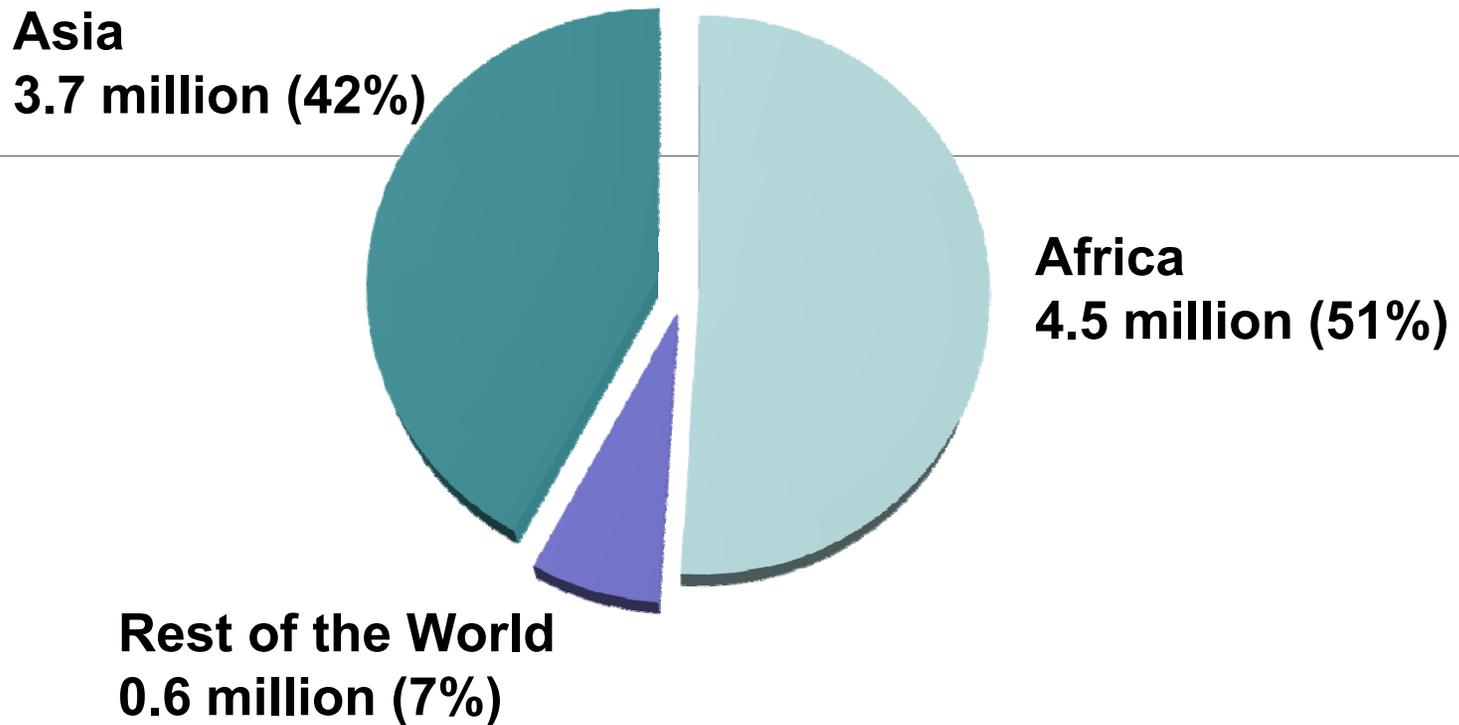


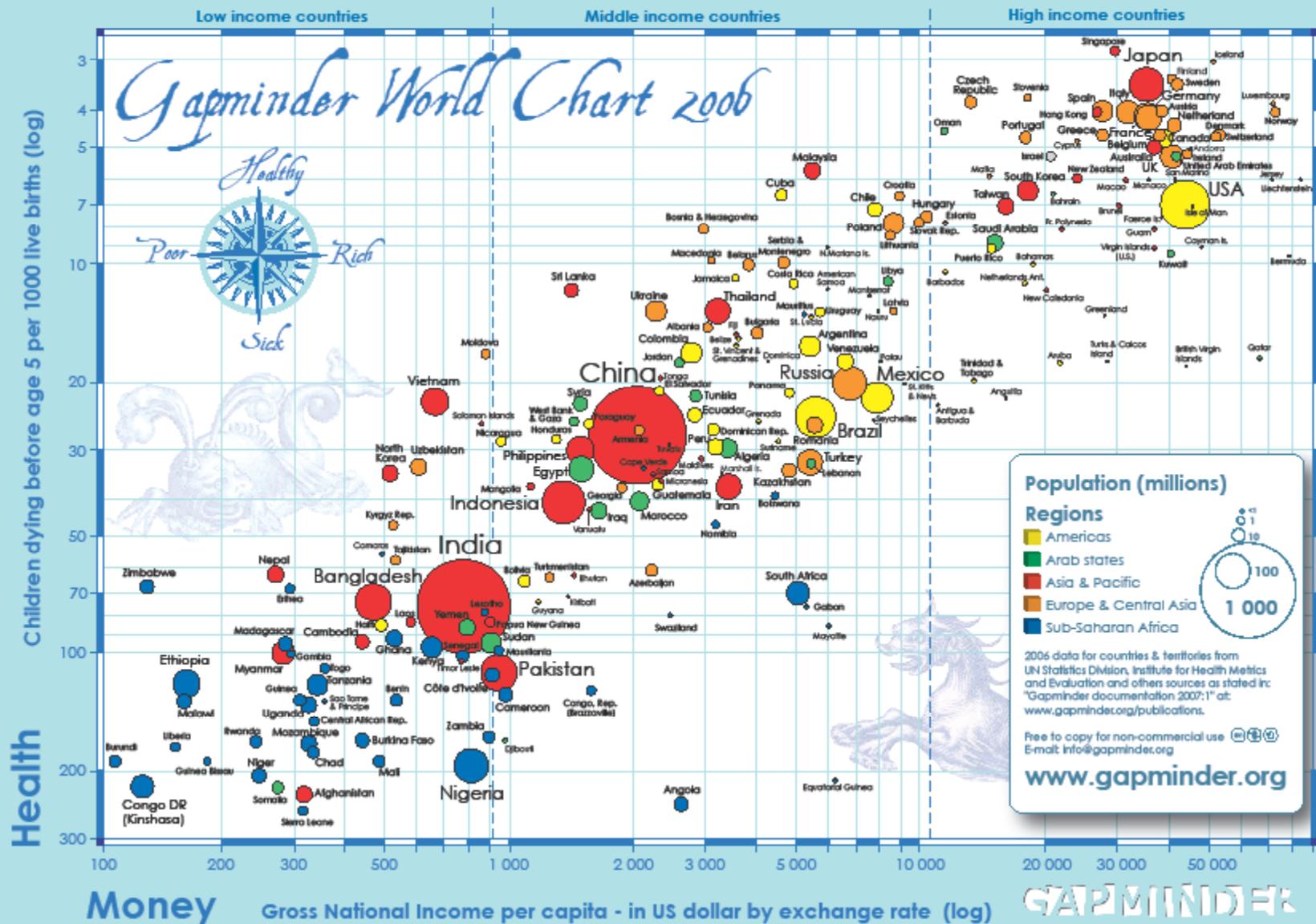
GLOBAL CHILD SURVIVAL: ACCOMPLISHMENTS, CHALLENGES, AND STRATEGIES FOR THE FUTURE



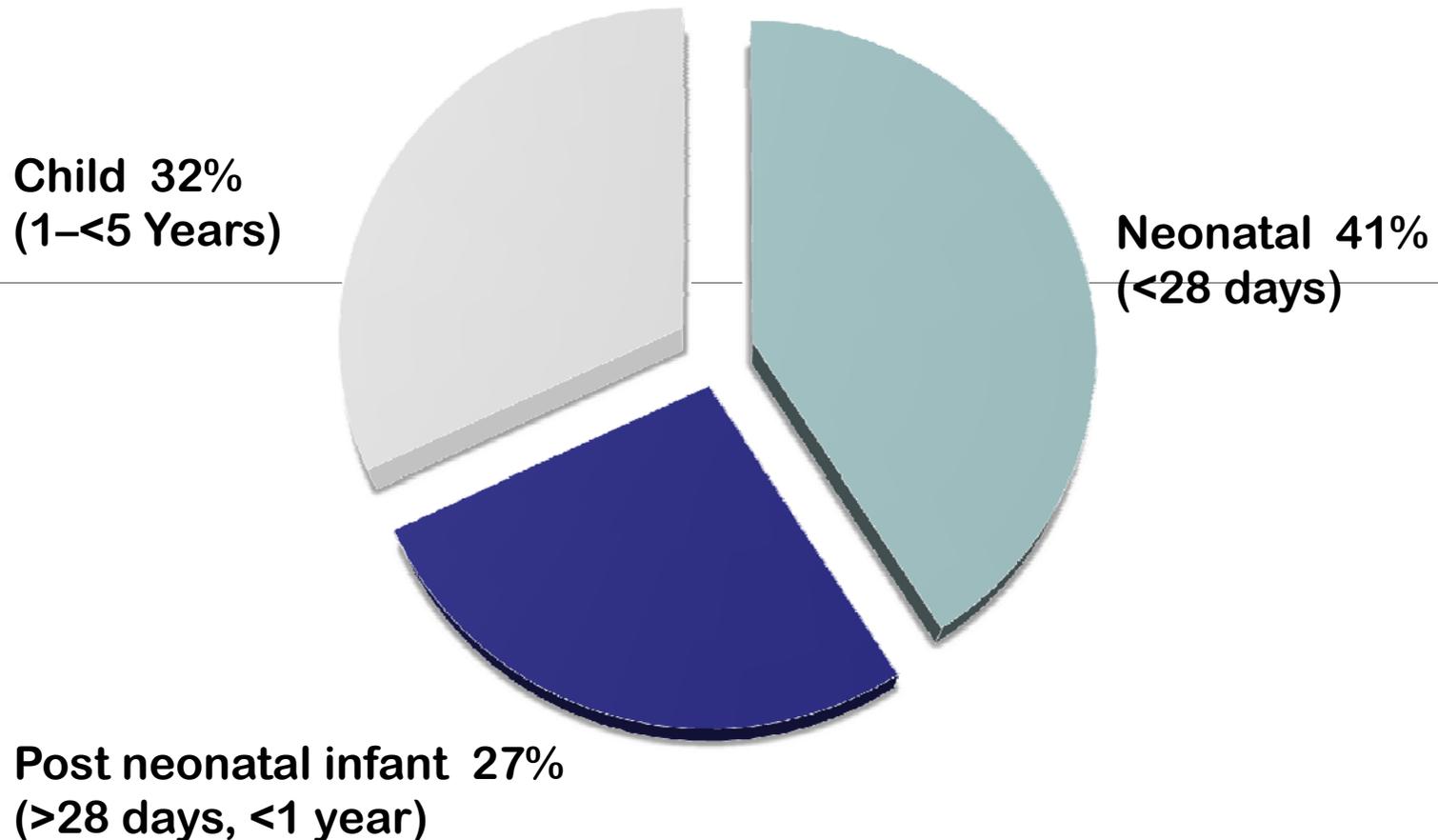
Kevin M. De Cock, MD, FRCP
Director, Center for Global Health
Centers for Disease Control and Prevention

Global Burden of Child Mortality: 8.8 Million Deaths Among Children <5 Years Old





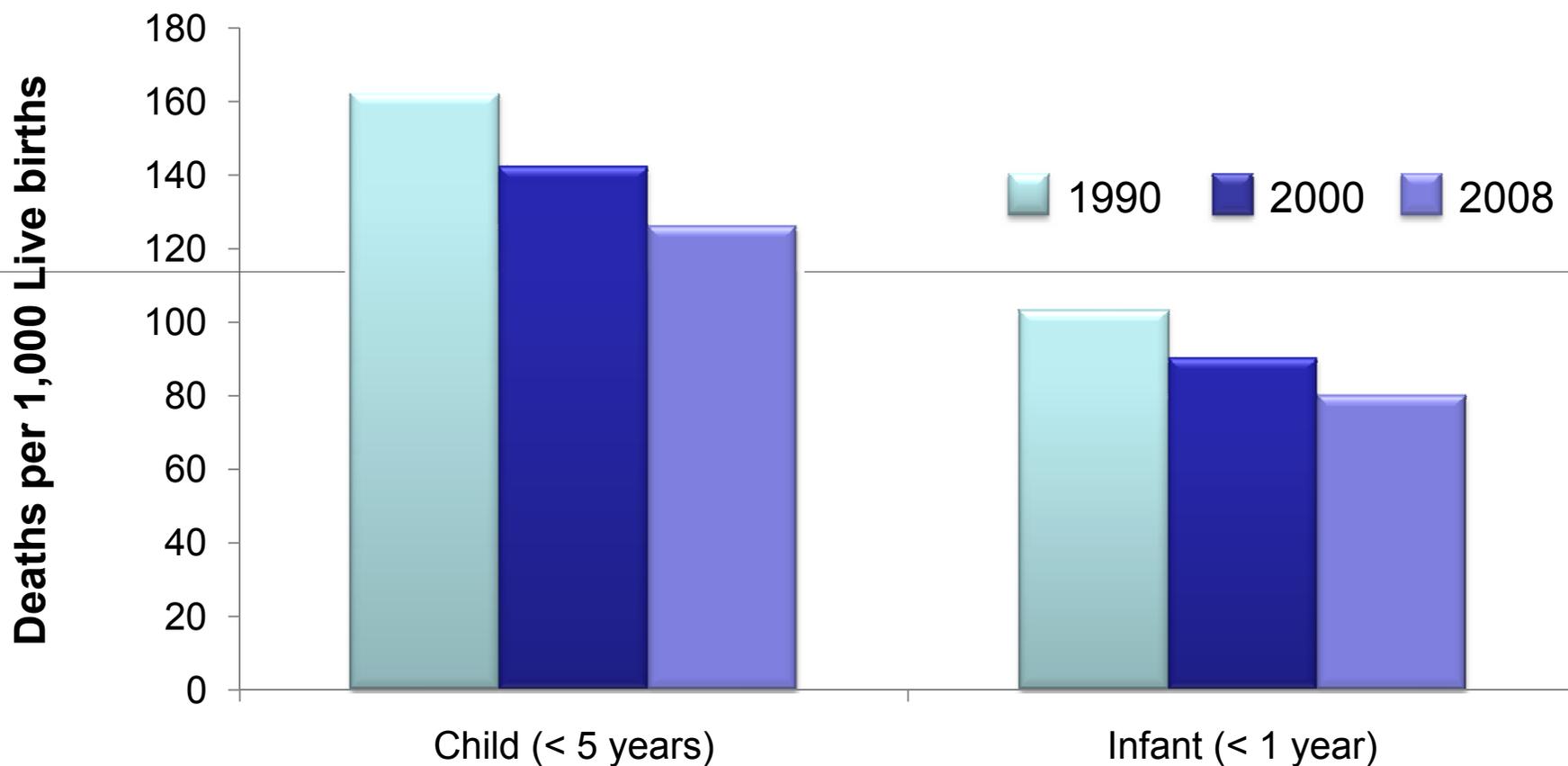
Distribution of Global Deaths, Children <5 Years by Age, 2008 (N=8.8 million)



Black RE, et al. of the Child Health Epidemiology Reference Group of WHO and UNICEF, Lancet 2010;375:1969-87

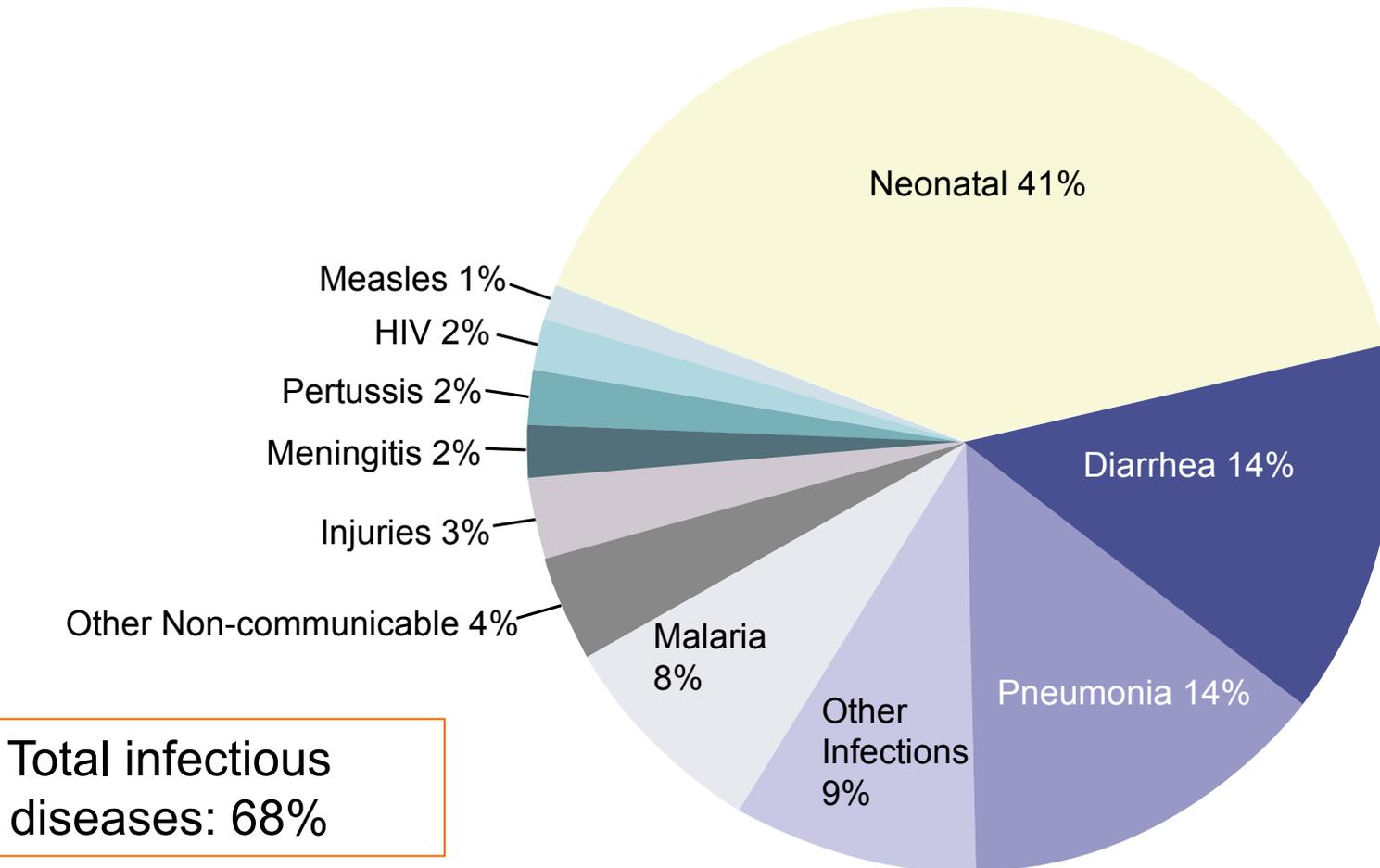


Trends in Child Mortality Low-income Countries, 1990–2008



Mortality Rates, by Year

Causes of Global Child Deaths <5 Years 2008, N = 8.8 million



Black RE, et al. of the Child Health Epidemiology Reference Group of WHO and UNICEF, Lancet 2010;375:1969-87



United Nations Millennium Development Goals

Global targets to advance development and reduce global poverty

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria, and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

The U.S. Global Health Initiative

A Renewed Agenda for Maternal and Child Survival

“We will not be successful in our efforts to end deaths from AIDS, malaria, and tuberculosis unless we do more to improve health systems around the world, focus our efforts on child and maternal health, and ensure that best practices drive the funding for these programs.”



***President Barack Obama
On announcing the Global Health Initiative
May 5, 2009***

Achieving Impact through Global Partnerships

- ❑ **UN agencies**
- ❑ **Donor governments**
- ❑ **Ministries of health**
- ❑ **Philanthropic foundations**
- ❑ **Global alliances**
 - Global Alliance for Vaccines and Immunization (GAVI)
- ❑ **Civil society**

Outline

□ Kevin M. De Cock, MD, FRCP

- *Global Child Survival: Introduction*

□ Brent Burkholder, MD, MA

- *Immunization: Progress, Challenges, and Opportunities for Improving Child Survival*

□ Cynthia Whitney, MD, MPH

- *Improving Child Survival by Preventing and Treating Pneumonia*

□ Robert Quick, MD, MPH

- *Global Strategies to Combat Diarrheal Disease*

□ Nancy Binkin, MD, MPH

- *Child Survival: A UNICEF Perspective*

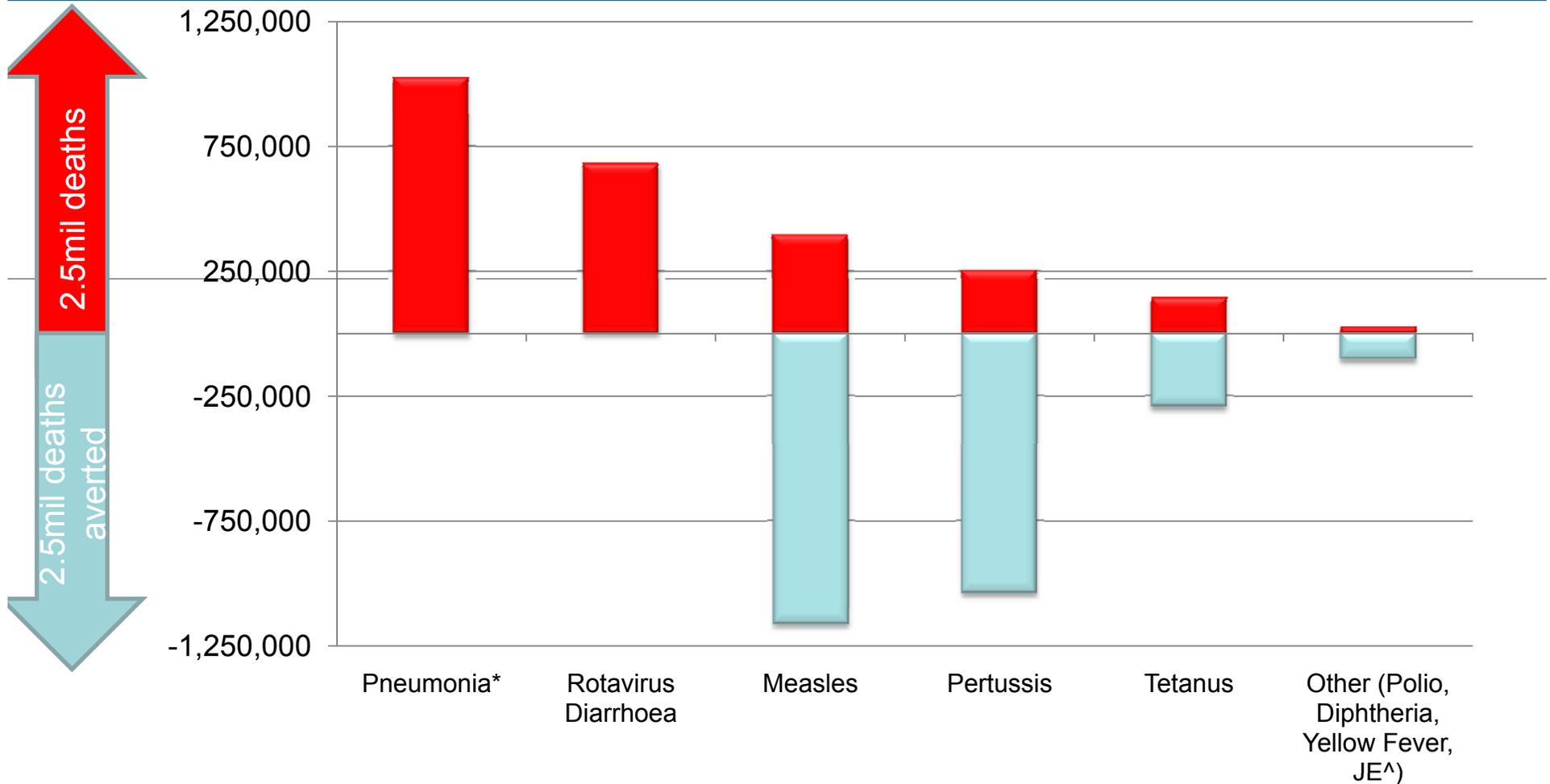
IMMUNIZATION: PROGRESS, CHALLENGES, AND OPPORTUNITIES FOR IMPROVING CHILD SURVIVAL



Brent Burkholder, MD, MA
Director

**Global Immunization Division
National Center for Immunization and Respiratory Diseases
Centers for Disease Control and Prevention**

Estimated Global Annual Vaccine Preventable Disease (VPD) Deaths Averted and Still Occurring among Children <5 Years, 2004



WHO, Burden of Disease 2004, released 2008

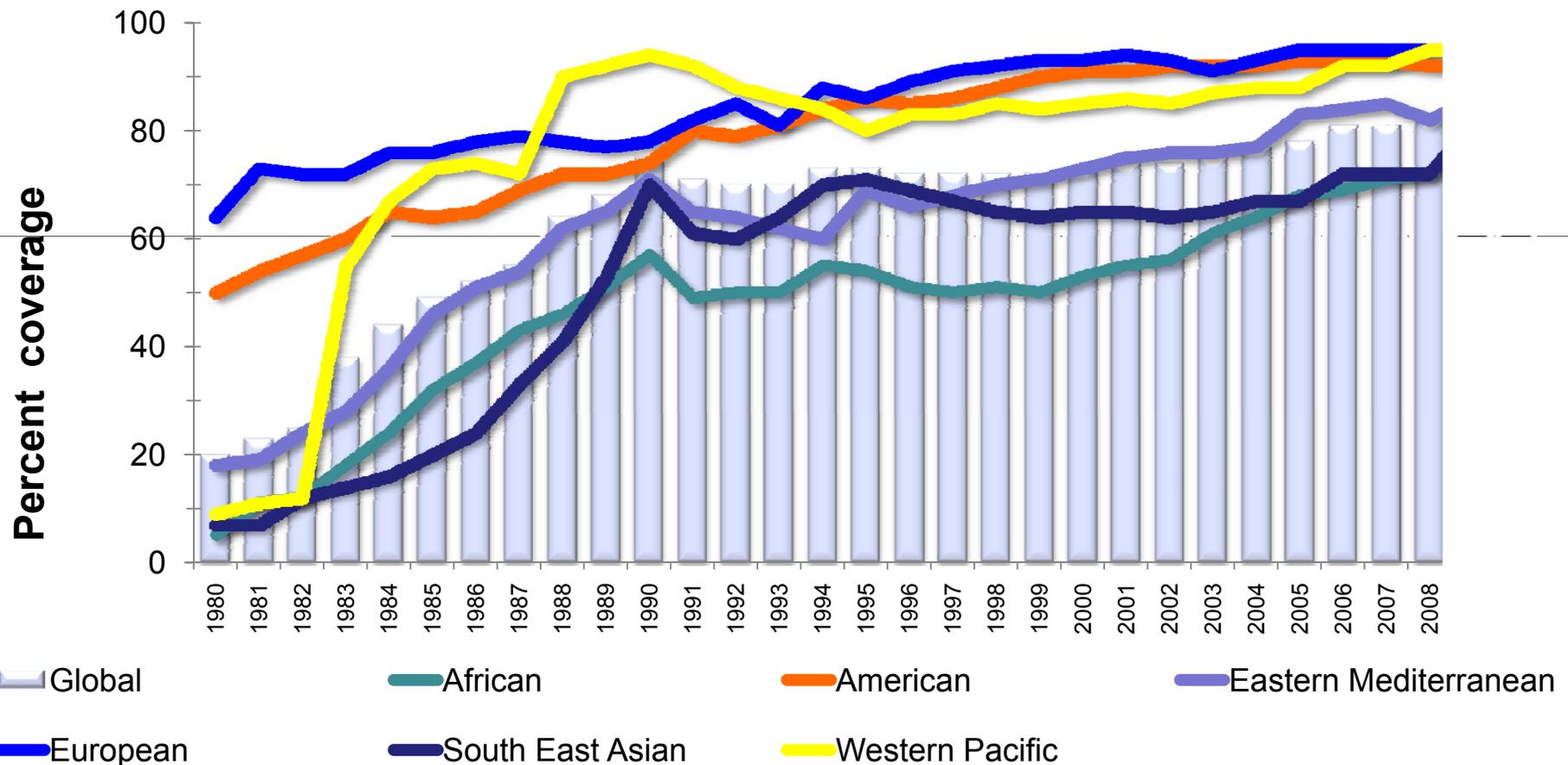
*vaccine preventable component caused by *Streptococcus pneumoniae*, *Haemophilus influenzae* type b, JE[^], Japanese Encephalitis



Expanded Program on Immunization (EPI)

- ❑ **A standard immunization schedule was developed in 1974**
- ❑ **6 basic antigens for infants**
 - Tuberculosis (BCG)
 - Polio
 - Diphtheria, tetanus, pertussis (DTP)
 - Measles
- ❑ **The 3rd DTP dose (DTP3) is a standard immunization measure of EPI performance**

Global and Regional DTP3 Coverage for 1980–2008



Source: WHO/UNICEF coverage estimates 1980-2008, July 2009, 193 WHO Member States
DTP3, Diphtheria, Pertussis, Tetanus 3rd dose

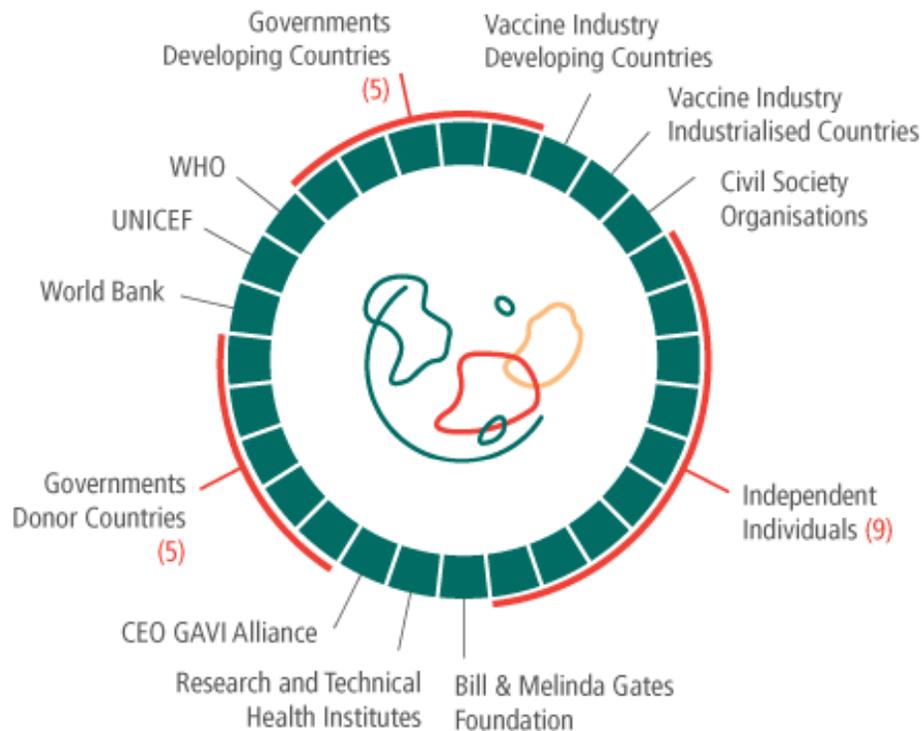


Global Impact of Immunization

- ❑ **106 million of the 130 million children born annually are reached at least 3 times within their 1st year of life with a public health intervention which prevents millions of deaths**

However, 24 million children, particularly in low income countries, fail to receive a complete series of 3 DTP vaccine doses

Global Alliance for Vaccines and Immunization (GAVI Alliance)

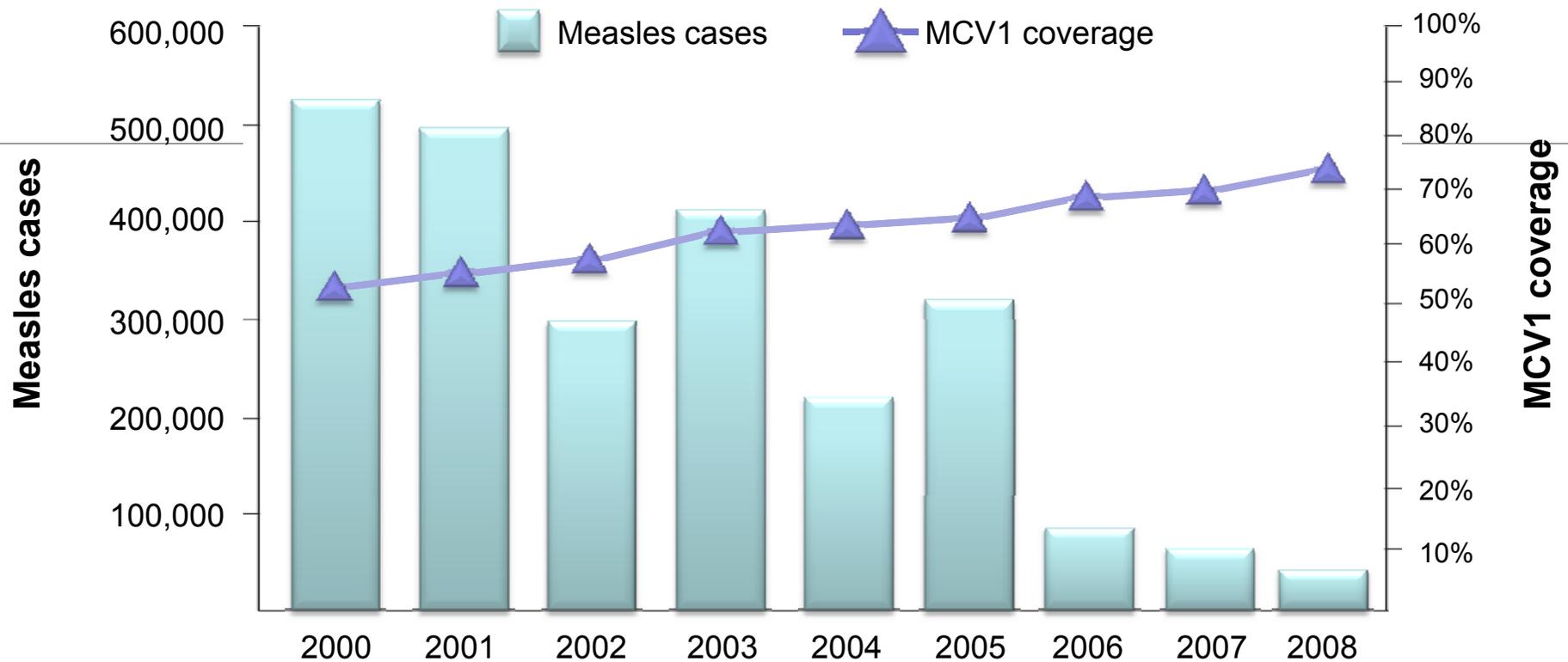


Objectives

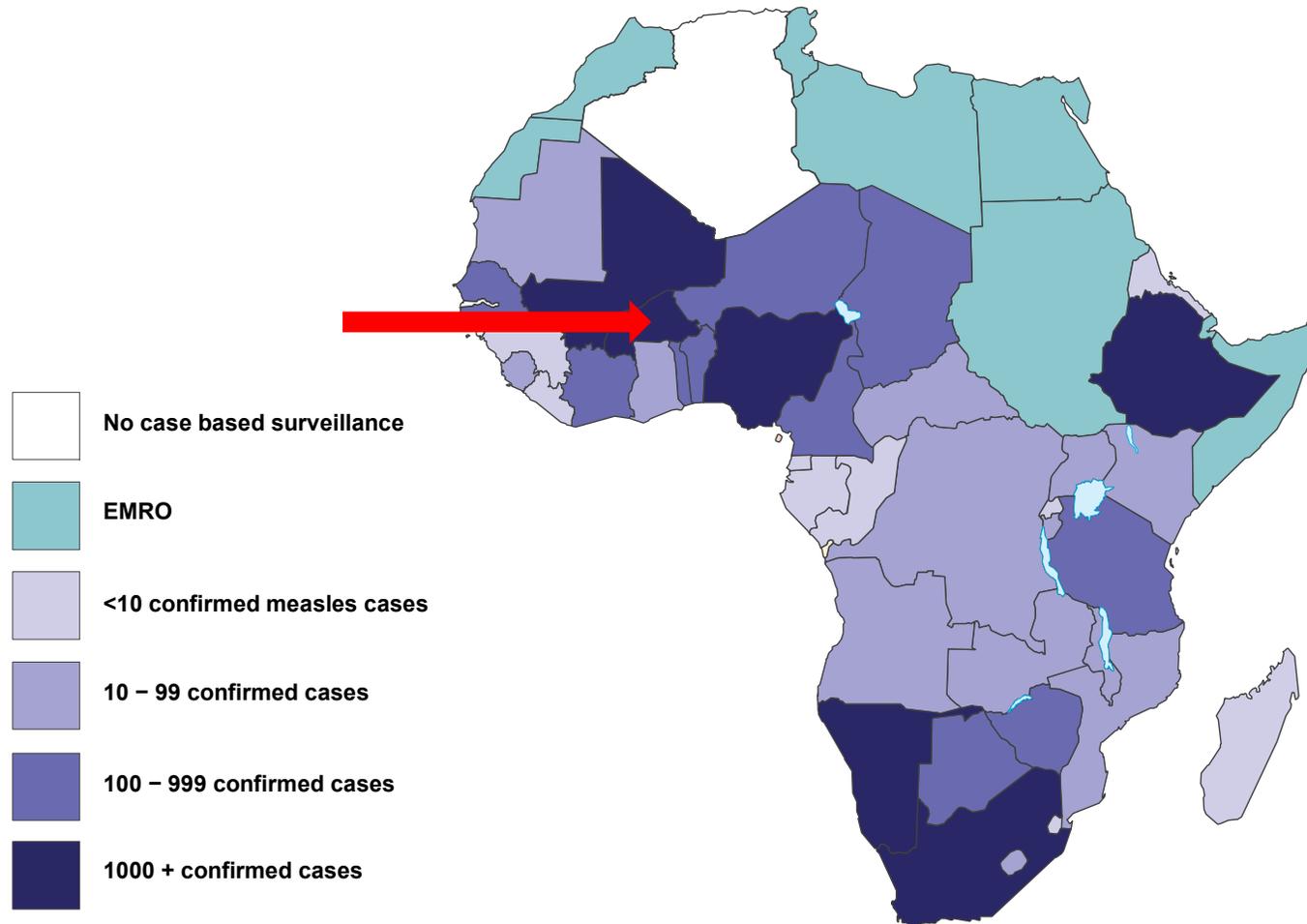
- ❑ Accelerate access to existing underused vaccines
- ❑ Strengthen health and immunization systems in countries
- ❑ Introduce innovative new immunization technology, including vaccines

Challenges to Sustaining Immunization Impact: Example of Measles in Africa

Number of reported measles cases and estimated MCV1 coverage
WHO African Region, 2000–2008



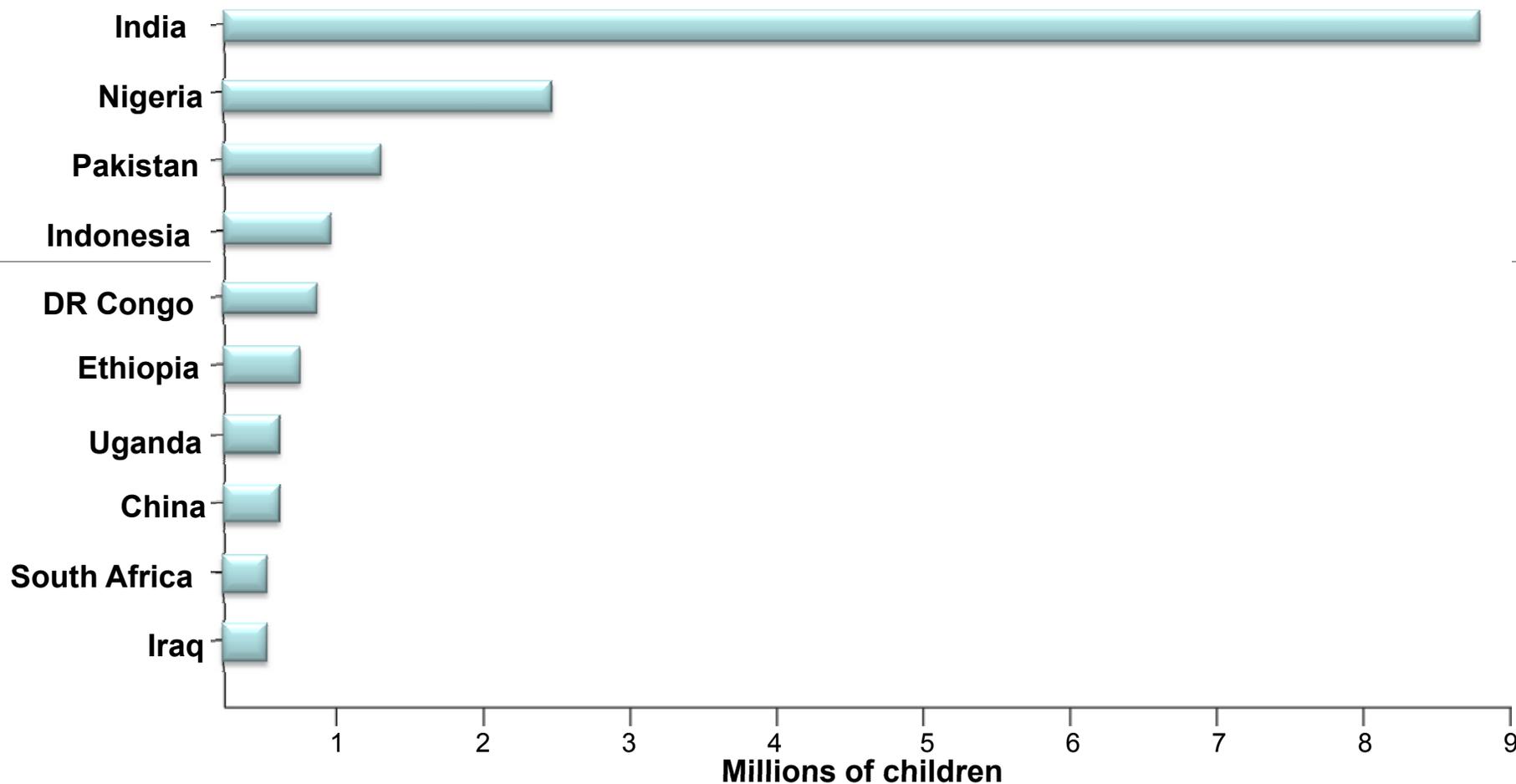
Challenges to Sustaining Immunization Impact: Example of Measles in Africa, 2009–2010



Wkly Epid Rec, Sept 2009, 84:397-404 and WHO/AFRO
EMR, Eastern Mediterranean Region

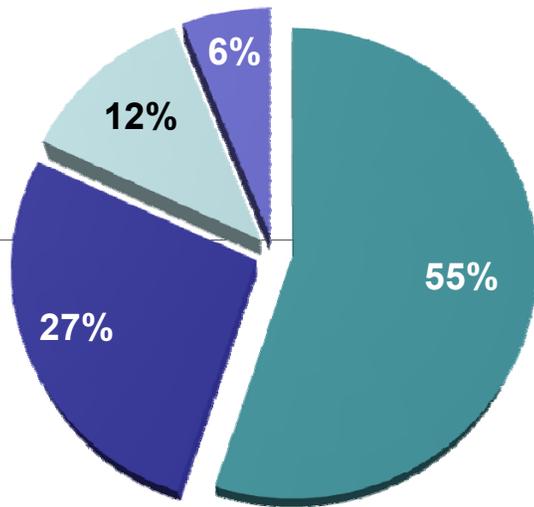


Countries with Highest Number of Children Who Failed to Receive at Least 3 DTP doses, 2008



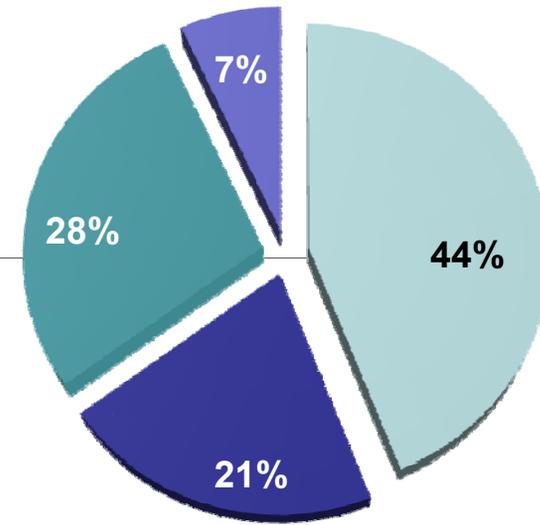
Why Children Are Unvaccinated or Undervaccinated

Unvaccinated



% based on 33 reasons abstracted from 12 articles on unvaccinated children

Undervaccinated



% based on 887 reasons abstracted from 209 relevant articles

- Family characteristics
- Communication and information
- Parental attitudes and knowledge
- Immunization system

Opportunities to Reduce Mortality Due to Vaccine Preventable Diseases (VPD)

- ❑ **Improve coverage with traditional Expanded Program on Immunization (EPI) vaccines to at least 90% in all countries**
 - Innovative measures (e.g., Reach Every District-RED approach) to strengthen communication with parents and service delivery of vaccines
- ❑ **Widespread use of available, but underutilized vaccines**
 - *Haemophilus influenzae* type b (Hib) vaccine
 - Pneumococcal conjugate vaccine (PCV)
 - Rotavirus vaccine

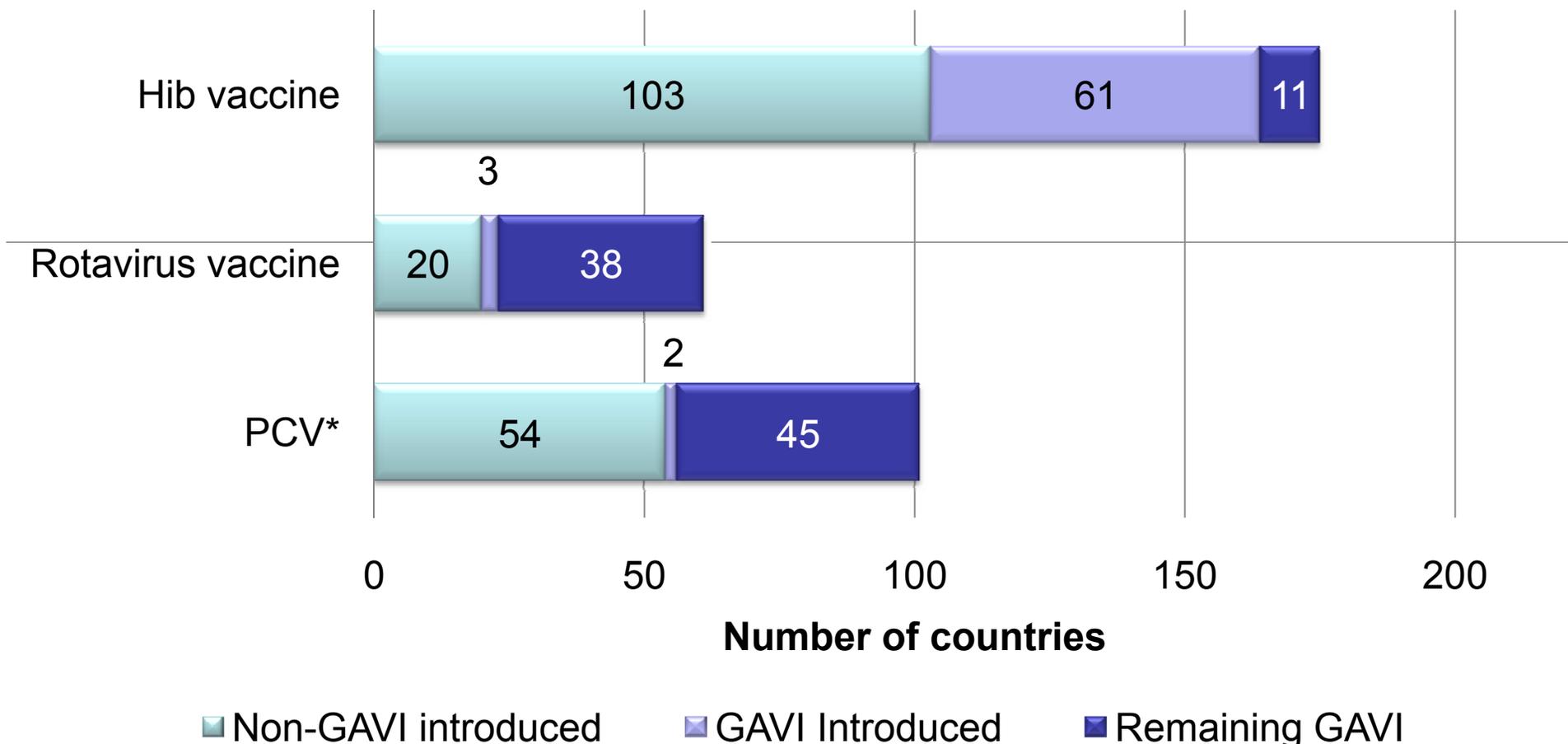
Projected Introduction of Underutilized Vaccines

□ GAVI Alliance forecast for vaccine introduction into 72 eligible countries by 2015

- Hib (“pentavalent”): 72 countries
 - DTP + hepatitis B and Hib
- Pneumococcal conjugate (PCV): 47 countries
- Rotavirus: 41 countries



Status of Introduction of Underutilized Vaccines, GAVI and non-GAVI Countries, June 2010

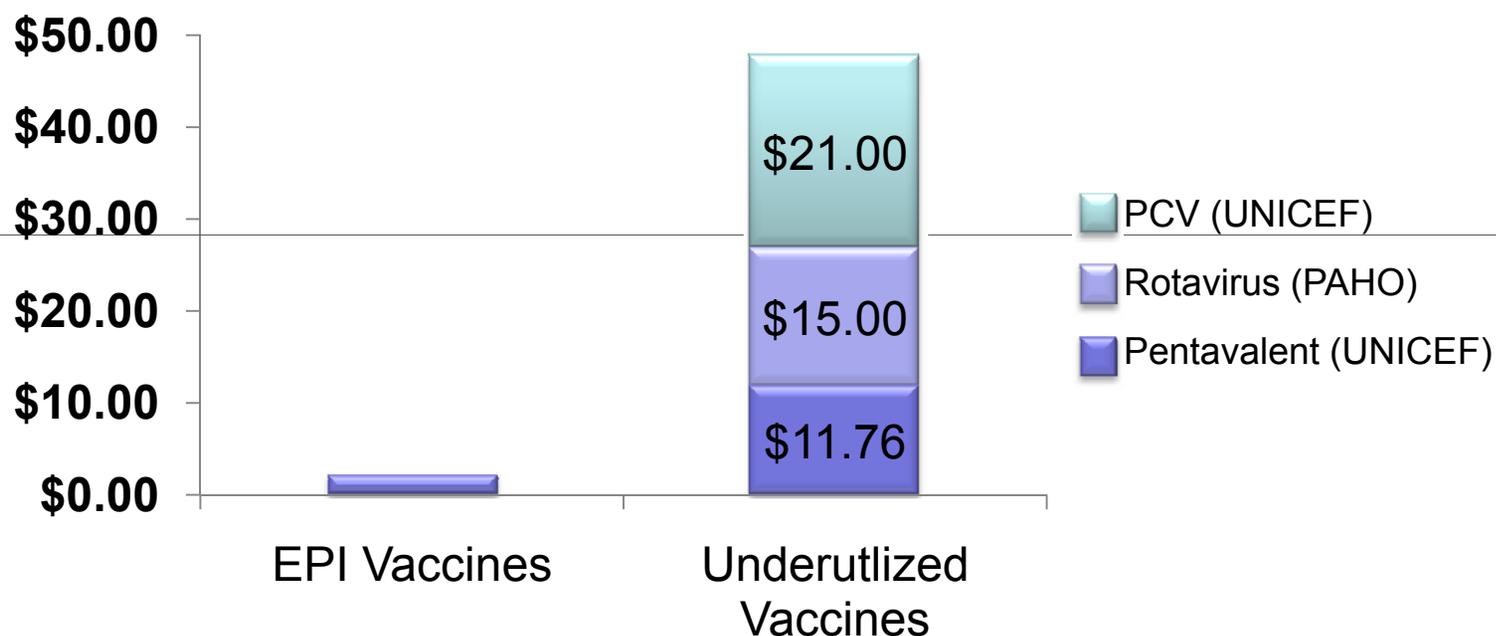


WHO/New and underutilized vaccine data base as of 21 June 2010

*PCV, Pneumococcal conjugate vaccine



Costs to Introduce Underutilized Vaccines: Vaccine Series Cost per Child, UNICEF/PAHO, 2010



Estimated total cost for new vaccine introduction to meet GAVI targets is \$4.3 billion (2010 gap - \$2.6billion)

Summary Thoughts ...

Lancet editorial: Vaccines and the world of child health, October 24, 2009



“It is thrilling that the technology exists to protect people against so many threatening diseases. But sustained and concerted effort will be needed to overcome the many practical barriers to saving children's lives in the developing world.”

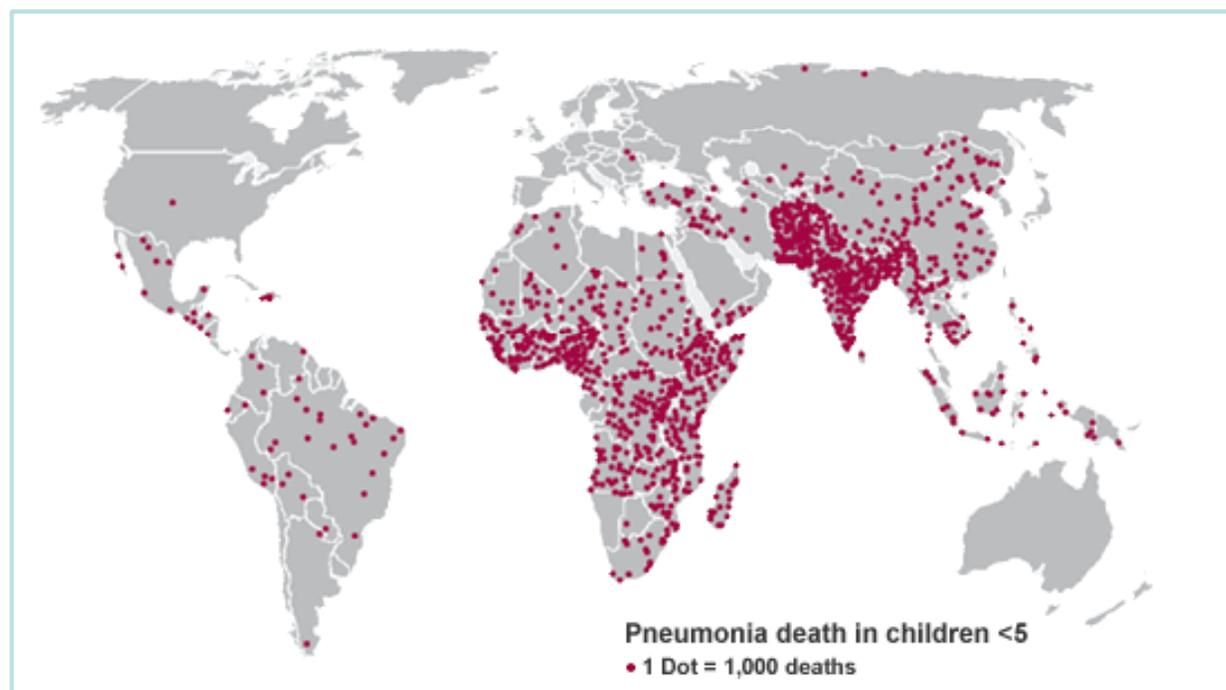
IMPROVING CHILD SURVIVAL BY PREVENTING AND TREATING PNEUMONIA



Cynthia Whitney, MD, MPH

***Chief, Respiratory Diseases Branch, Division of Bacterial Diseases
National Center for Immunization and Respiratory Diseases
Centers for Disease Control and Prevention***

Global Childhood Deaths from Pneumonia



1,575,000 children <5 years die of pneumonia each year
52% of deaths in 5 countries: India, Nigeria, Democratic Republic of Congo, Afghanistan, and Pakistan

Black RE, et al. *Lancet*. 2010. Jun 5;375(9730):1969-87
Williams BG, et al. *Lancet*. 2002



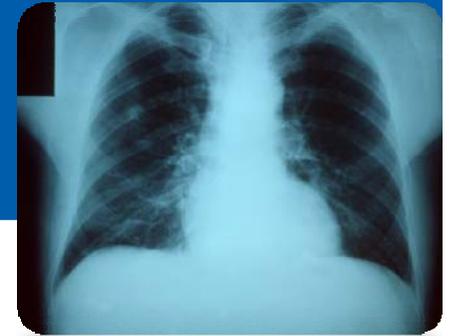
Main Etiologies of Pneumonia Deaths among Children <5 Years

Etiology	Number of deaths annually
<i>Streptococcus pneumoniae</i> (pneumococcus)	741,000 (542,000–805,000)
<i>Haemophilus influenzae</i> type b (Hib)	292,000 (206,000–425,000)
Respiratory syncytial virus	66,000–99,000

Black RE, et al. *Lancet*. 2010. Jun 5;375(9730):1969-87
Obrien KL, et al. *Lancet*. 2010. Sep 12;374(9693):893-902
Watt JP, et al. *Lancet*. 2009. Sep 12;374(9693):903-11
Nair H, et al. *Lancet*. 2010. May 1;375(9725):1545-55



What is Pneumonia?

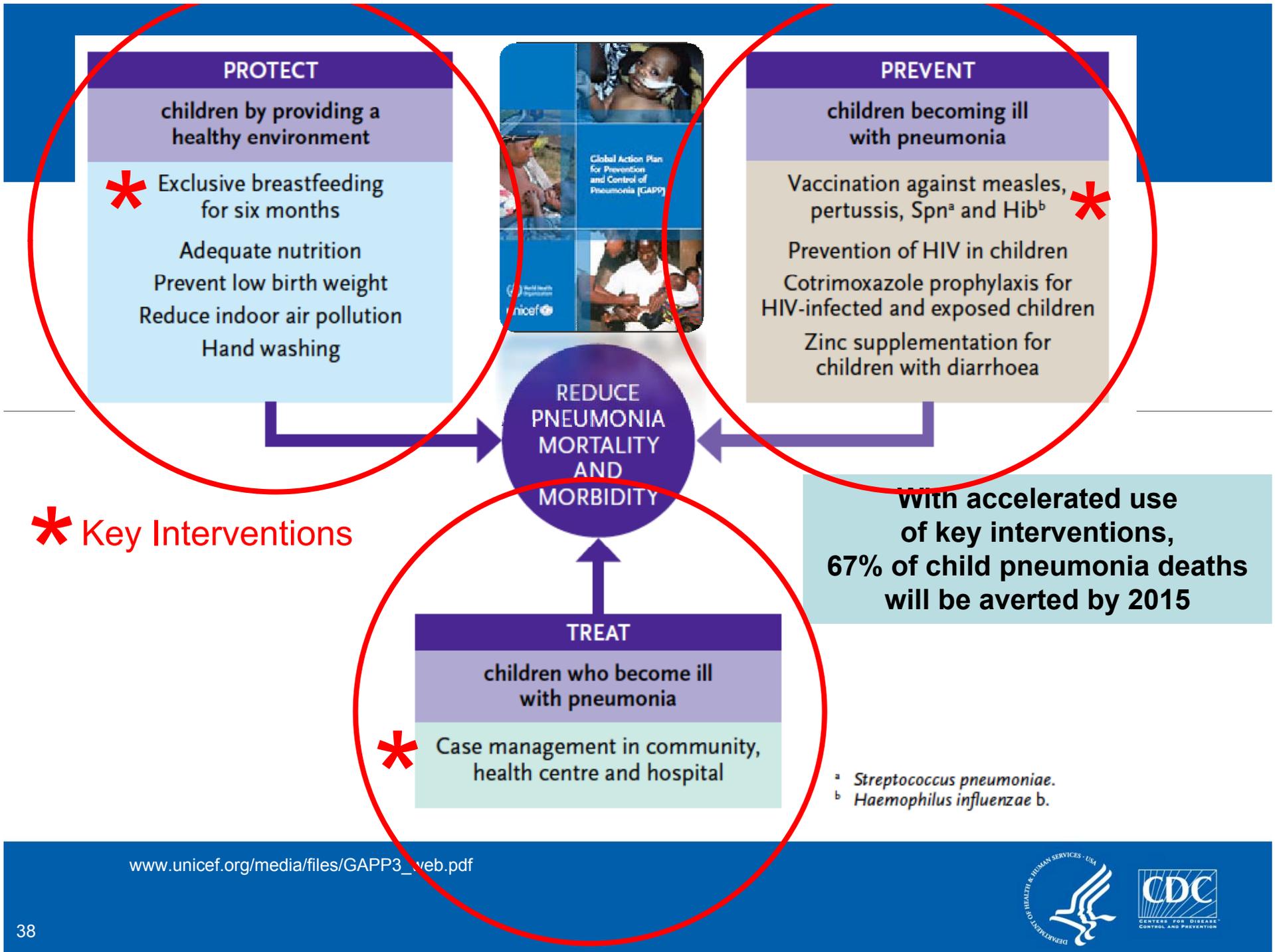


❑ Pneumonia

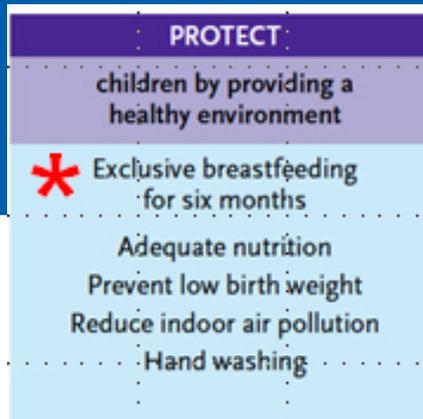
- Abnormal inflammation of lung parenchyma (alveoli)
- Diagnosis confirmed by chest X-ray

❑ Other terms for respiratory disease

- **Acute Lower Respiratory Tract Infection (ALRI)**
 - Pneumonia or bronchiolitis
 - “Clinical pneumonia”
- **Acute Respiratory Infections (ARI)**
 - Upper and lower respiratory tract
- **Severe Acute Respiratory Infections (SARI)**
 - Respiratory symptoms + hospitalization



Strategies for Preventing Pneumonia Deaths: Exclusive Breastfeeding for 6 Months



❑ **Exclusive breastfeeding = no formula, food, water**

- Recommended for 1st 6 months
- Reduces pneumonia incidence by 15-23%
- Occurs in <35% of all breastfeeding
- Rate is affected by
 - Health workers' policies and behavior (BFHI)
 - Marketing of breast milk substitutes
 - Community support and case management

❑ **Lack of breastfeeding: >1 million deaths/year**



Strategies for Preventing Pneumonia Deaths: Immunization

PREVENT
children becoming ill with pneumonia
Vaccination against measles, pertussis, Spn ^a and Hib ^b *
Prevention of HIV in children
Cotrimoxazole prophylaxis for HIV-infected and exposed children
Zinc supplementation for children with diarrhoea

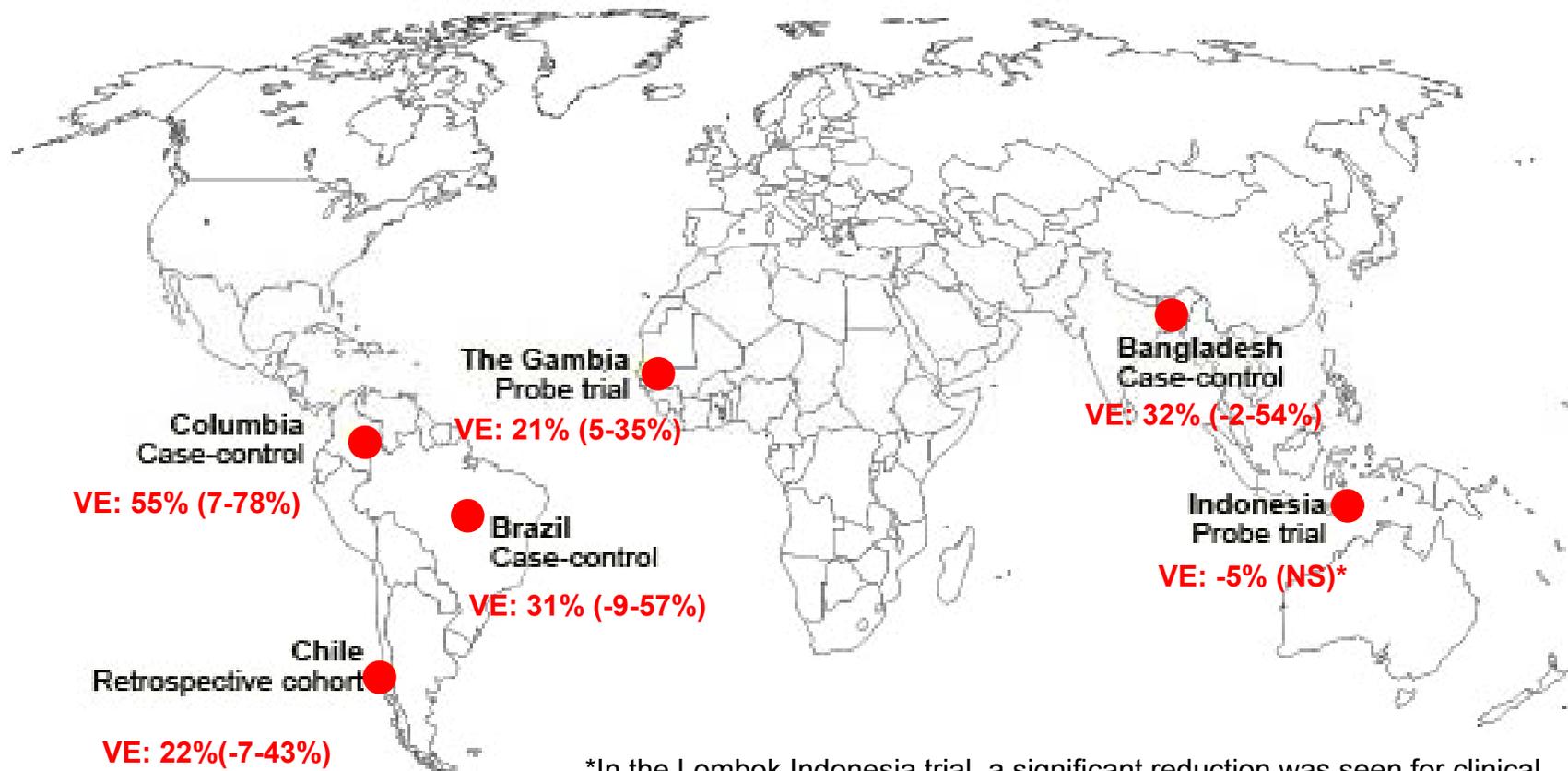
□ ***Haemophilus influenzae* type b (Hib) conjugate vaccine**

- Recommended by WHO's Strategic Advisory Group of Experts (SAGE) for all countries in 2006
- Several formulations including 5-antigen combination vaccines (Hib, DTP, Hepatitis B)

□ **Pneumococcal conjugate vaccine**

- Recommended by WHO in 2007
- 7-, 10- and 13-valent formulations now licensed
- Supply increasing between 2010–2012

Hib Vaccine Efficacy and Effectiveness Against X-ray Confirmed Pneumonia in Developing Countries



*In the Lombok Indonesia trial, a significant reduction was seen for clinical pneumonia but not for X-ray confirmed pneumonia

Levine OS, et al. *Pediatr Infect Dis J*. 1999. Dec;18(12):1060-4
de la Hoz F, et al. *Vaccine*. 2004. Nov 15;23(1):36-42
De Andrade ALSS, et al. *Int J of Epidemiology*. 2004

Baqui AH, et al. *Pediatr Infect Dis J* 2007. Jul;26(7):565-71
Mulholland K, et al. *Lancet* 1997. Apr 26;349(9060):1191-7
Gessner BD, et al. *Lancet* 2005. Jan 1-7;365(9453):43-52



Efficacy of Pneumococcal Conjugate Vaccine (PCV) in The Gambia

- 17,437 infants randomized to receive 3 doses of 9-valent PCV or placebo



Outcome	Efficacy %	CI
Clinical pneumonia	7	1,12
X-ray-confirmed pneumonia	37	27,45
Hospitalization for any cause	15	7,21
Deaths from any cause	16	3,28



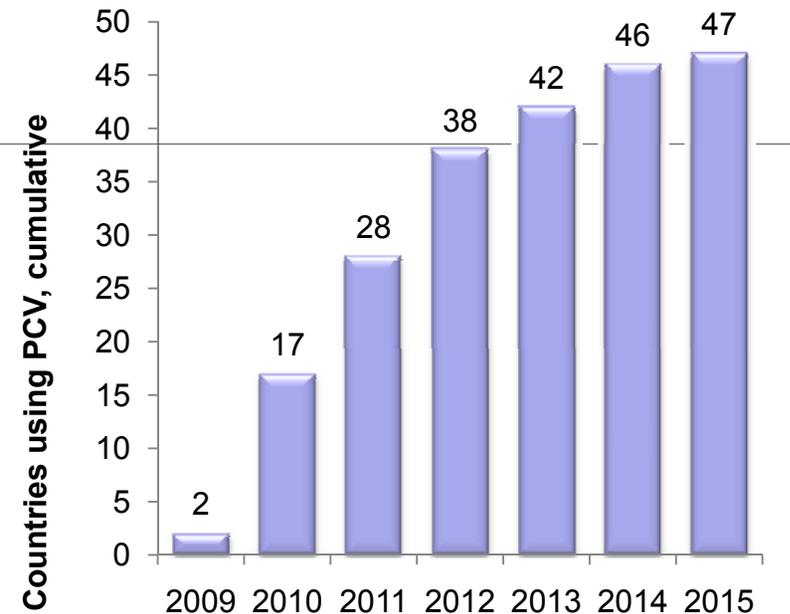
Cutts, et al. *Lancet*. 2005. Mar 26-Apr 1;365(9465):1139-46
CI, Confidence Intervals



Global Initiatives for Accelerating Vaccine Introduction

- ❑ Funding from GAVI Alliance
- ❑ Target lowest income “GAVI eligible” countries
- ❑ Hib Initiative
 - Nearly finished
 - 61/72 GAVI countries using Hib
- ❑ Accelerating Vaccine Introduction (AVI) initiative
 - Pneumococcal and rotavirus vaccines
 - WHO, UNICEF, Technical experts (JHU, PATH, CDC)
 - Strategic Demand Forecast: Pneumococcal vaccine in 47 countries by 2015

AVI Strategic Demand Forecast



Vaccines for Pneumonia: Current Status

□ Successes

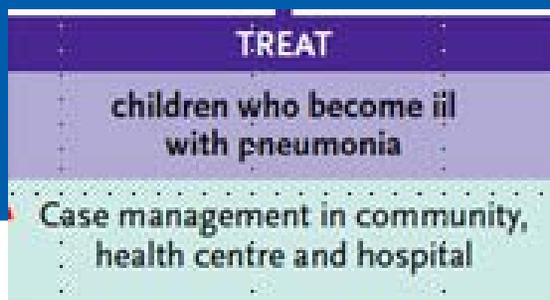
- Hib vaccine: Widespread introduction
- Pneumococcal conjugate vaccine
 - Many countries interested in introducing it
 - Funding available through Advanced Market Commitment



□ Challenges

- Limitations in GAVI Alliance Funding
- Systemic weaknesses in immunization programs
- Lack of surveillance capacity to support vaccine introduction and to sustain use
- Large-country introductions

Strategies for Preventing Pneumonia Deaths: Treatment



- ❑ **Access to care is limited in many countries**
- ❑ **Barriers to appropriate care**
 - Only 1 in 5 caregivers know pneumonia signs
 - Only 54% of children with pneumonia are taken to provider who can appropriately treat them
 - Only 19% of children with pneumonia receive an antibiotic
- ❑ **Community health workers can improve access**
 - Meta-analysis of 9 studies suggests Community Case Management reduces pneumonia deaths by 36%–42%

Calling for Action to Reduce Pneumonia Deaths

❑ World Health Assembly resolution, May 2010

- Calls for member states to implement GAPP strategies
- Directs WHO Director General to strengthen human resources, convene stakeholders to mobilize resources for vaccination, and track progress

❑ World Pneumonia Day, November 12, 2010

- Coalition established in 2009
- Purpose: Prevent deaths by focusing on pneumonia



Rise Against Pneumonia Rally
Delta State, Nigeria, 2009

GLOBAL STRATEGIES TO COMBAT DIARRRHEAL DISEASES



Robert Quick, MD, MPH

Medical Epidemiologist

Waterborne Diseases Prevention Branch

Division of Foodborne, Waterborne, and Environmental Diseases

National Center for Emerging and Zoonotic Infectious Diseases

Centers for Disease Control and Prevention

Global Burden of Diarrheal Diseases

- ❑ **Each year an estimated 2.5 billion cases of diarrhea occur among children <5 years old**
- ❑ **1.34 million children <5 years old died in 2008 from diarrheal diseases**
 - 15% of all child deaths
 - 85% of diarrheal deaths occurred in WHO African and South East Asian regions
 - 51% occurred in 5 countries
 - India
 - Nigeria
 - Democratic Republic of Congo
 - Pakistan
 - Afghanistan

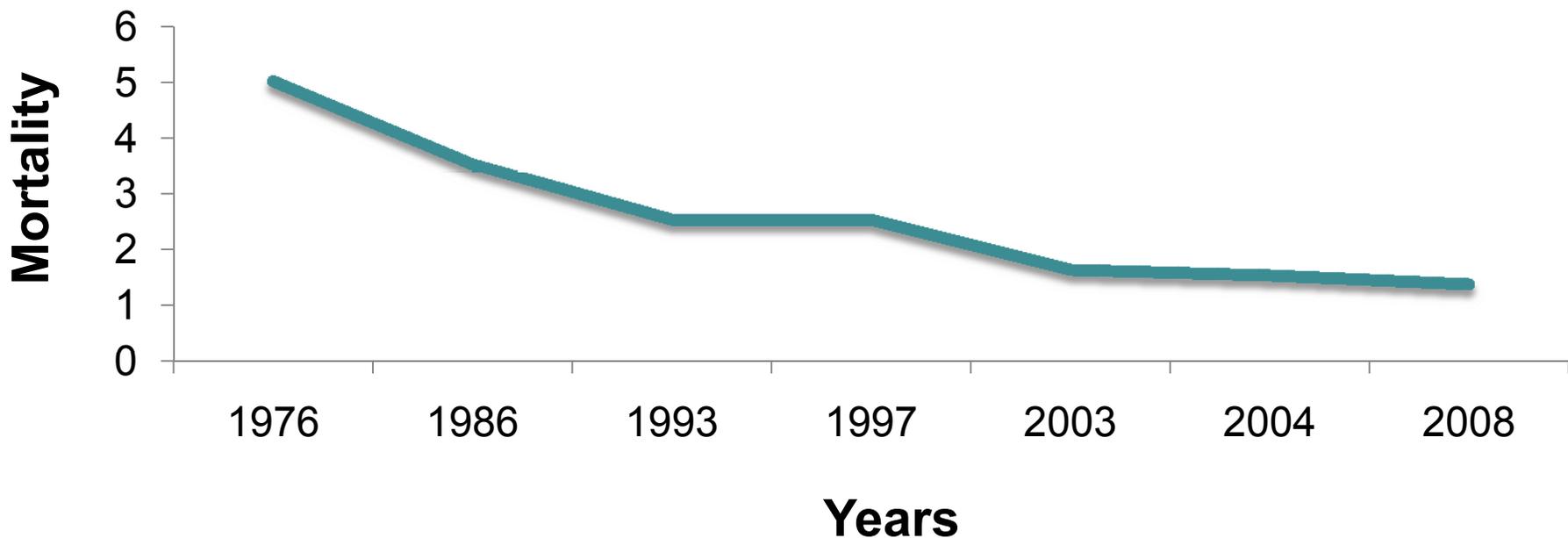
Global Burden of Diarrheal Diseases: Risks and Etiologies

- ❑ **88% of diarrheal disease burden attributable to deficiencies in water, sanitation, and hygiene**
- ❑ **Specific etiologies**
 - 29% of diarrheal deaths attributable to rotavirus
 - 71% attributable to bacterial, parasitic, other viral agents, or undefined
 - *Escherichia coli, Salmonella, Shigella, Campylobacter, Vibrio*
 - *Amoeba, Cryptosporidium, Giardia*
 - *Norovirus* and other caliciviruses, astroviruses



Diarrheal Disease Mortality Trend

Mortality among children under 5 years decreased from 5 million cases in 1976 to 1.4 million in 2008, but the decline has slowed



UNICEF/WHO

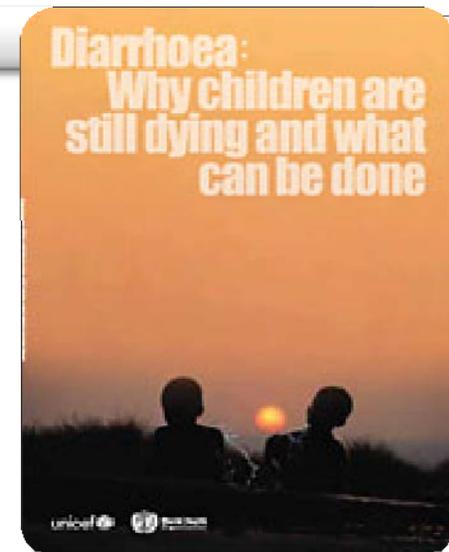
7-Point Plan for Diarrheal Disease Control

❑ Prevention

- Water: Improved supply, household treatment, and storage
- Hygiene: Handwashing with soap
- Sanitation
- Vaccines: Rotavirus and measles
- Exclusive breastfeeding and vitamin A supplementation

❑ Treatment

- Oral rehydration solution
- Zinc



Global Initiatives: Water and Sanitation

❑ Millennium Development Goal for Water and Sanitation

- 1990–2015: Reduce by half the proportion of the world's population lacking access to improved water supply and sanitation
- Multisectoral: Development banks, government ministries, WHO, UNICEF, multilateral and bilateral donors, NGOs

❑ WHO/UNICEF Joint Monitoring Program Report: 2010

- Water: Goal will be met worldwide
- Water: Goal will not be met in sub-Saharan Africa
- Sanitation: Goal will not be met worldwide

Global Initiatives: Household Water Treatment

- ❑ **Focus on health and behavior change, not infrastructure**
- ❑ **Safe Water System (SWS)**
 - Developed by CDC/PAHO
- ❑ **Three elements**
 - Water treatment with locally available hypochlorite solution
 - Safe storage
 - Behavior change techniques
- ❑ **Field trials on three continents**
 - Diarrhea risk reduced by 25–85%



Safe Water System (SWS) Implementation

❑ Partnership with Population Services International (PSI)

- Social marketing program
- Operating in 22 countries
- >16 billion liters of water treated in 2009, enough to supply the drinking water needs of 22 million people

❑ Challenges for scaling up

- Over 1 billion people could benefit from household water treatment
- National coverage rates 20% or less

❑ Integration of Safe Water System with other services

- Antenatal care, infant immunizations, HIV care and support services

Household Water Treatment: The Challenges Ahead

- ❑ **Insufficient resources for scaling up**
- ❑ **Potential for sustainability**
- ❑ **Lack of knowledge about behavior change**
- ❑ **Need for “game-changing” technology**
 - Inexpensive, long-lasting filters
 - Microbicidal filter matrix
 - Innovations to lower the economic and behavioral barriers to early adoption and consistent use

Handwashing with Soap: Evidence Base

□ Handwashing efficacy studies

- Literature reviews
 - Reduced risk of diarrhea by 32%
 - Reduced risk of acute respiratory infections by 16%
- Nepal study: Reduced risk of neonatal mortality by 41%

□ Primary school programs in China and Kenya

- Reduced student absenteeism by 26% to 54%



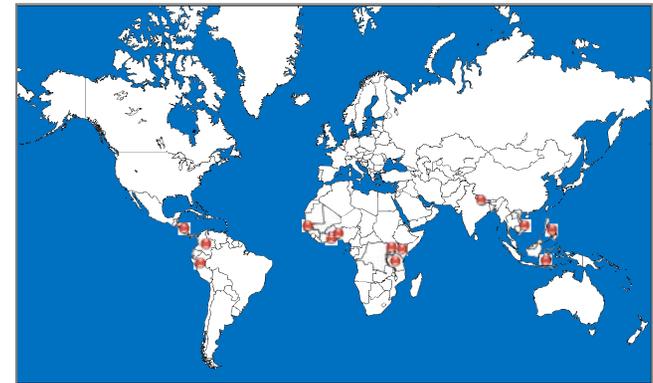
Handwashing with Soap: Global Initiatives

□ Global Public-Private Partnership for Handwashing

- Programs in 13 countries

□ Partners

- Governments: Enabling environment
- Donors: Financial support
- Private sector: Marketing
- NGOs: Implement programs
- Academic institutions: Evaluate outcomes
- **Program impact:** Not yet measured
 - Objective indicators elusive



Handwashing with Soap: The Challenges Ahead

❑ Large-scale implementation of handwashing

- Availability of water
- Access to soap
- Changing behavior
- Few good studies to guide implementation

❑ Adequate tools for monitoring handwashing behavior

- Self-reporting not reliable
- Structured observations expensive and may alter people's behavior
- Microbiologic indicators are unreliable
- Technological measures (smart soap – records motion as a proxy for usage) promising, but expensive and not validated

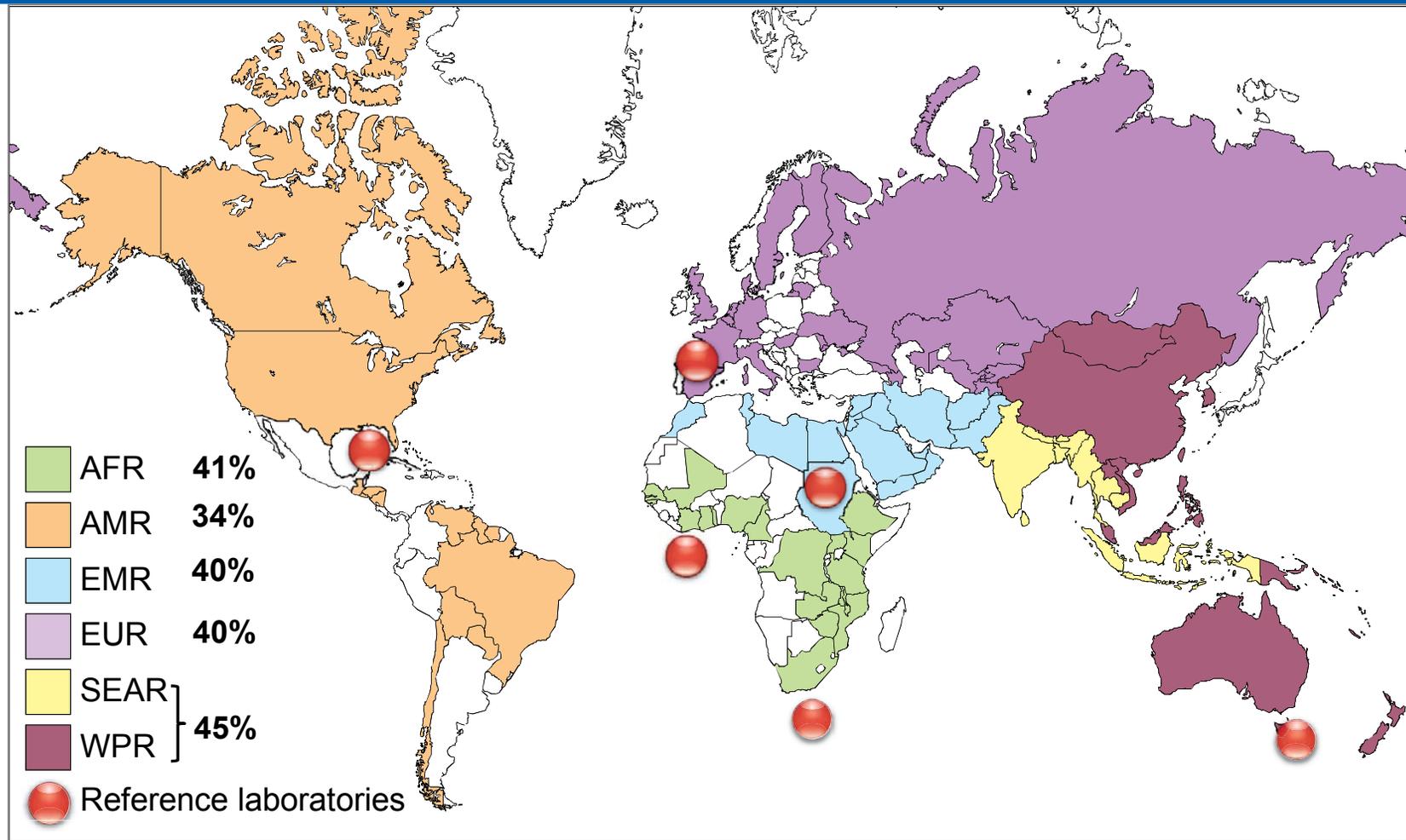
Rotavirus Vaccines: Evidence Base

- ❑ **Two new safe vaccines licensed since 2006**
 - Efficacy in wealthier countries: 85%–98%
 - Efficacy in poorer countries: 50%–75%



Ruiz-Palacios, NEJM 2006
Vesikari, NEJM 2006
Jiang, Hum Vaccine 2010

Countries Conducting Rotavirus Surveillance, by WHO Region



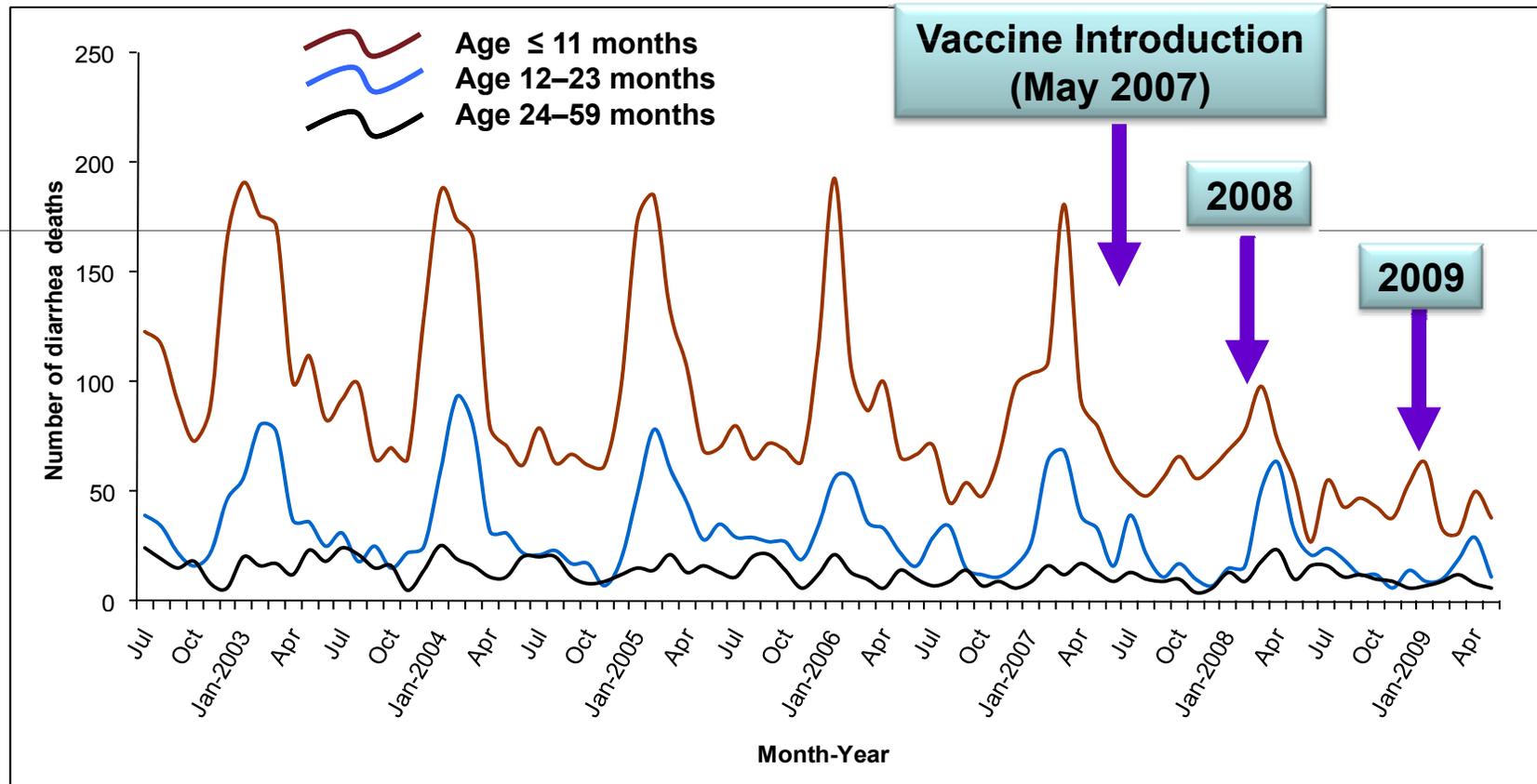
MMWR November 21, 2008



Global Initiatives: Rotavirus Vaccines

- ❑ **WHO recommended global rotavirus vaccine use in 2009**
- ❑ **GAVI Alliance**
 - Forecast for 2015: Rotavirus vaccines introduced in 41 countries
- ❑ **Partners**
 - Gates Foundation/World Bank
 - WHO/UNICEF
 - Ministries of health
 - Vaccine industry
 - Program for Applied Technology in Health (PATH)

Decline in Childhood Diarrhea Deaths in Mexico after Rotavirus Vaccine Introduction



Richardson et al, NEJM 2010



Rotavirus Vaccine: The Challenges Ahead

- ❑ **Cost**
- ❑ **Decreased donor support**
- ❑ **Added burden on resource-poor health ministries**
- ❑ **Need to demonstrate vaccine safety and efficacy**
- ❑ **Strategies to accelerate vaccine introduction in high- burden, developing countries**
- ❑ **Strategies to improve vaccine performance in developing country settings**

Way Forward

❑ UNICEF/WHO 7-point plan

- Blueprint for addressing the underlying causes of diarrheal disease mortality through targeted prevention and treatment strategies

❑ MDG, GAVI, GHI, and other initiatives

- Leveraging resources to implement these strategies at scale

❑ Program evaluation to improve implementation

- Assess factors influencing behavior change
- Improve measures of utilization and scale
- Evaluate health impact

CHILD SURVIVAL: A UNICEF PERSPECTIVE



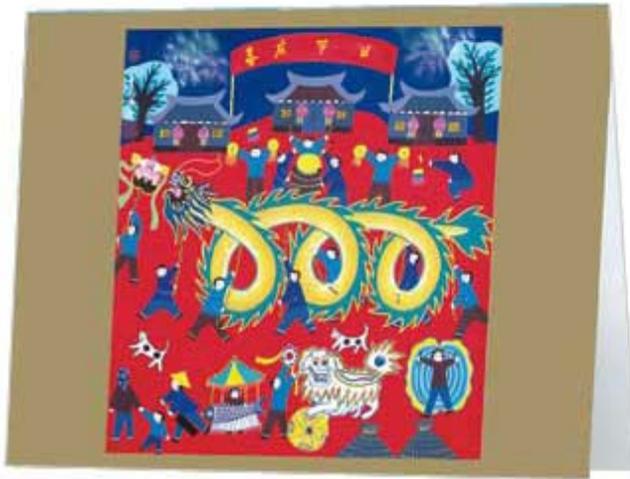
Nancy Binkin, MD, MPH
Chief Policy and Evidence
Health Section – Programme Division
UNICEF New York

Overview

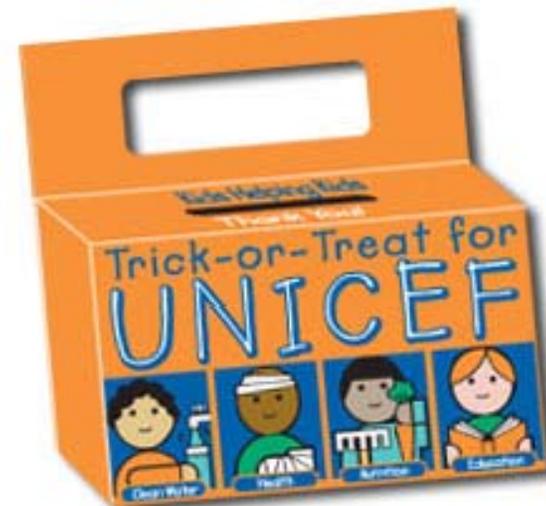
- ❑ **UNICEF: Who we are and what we do**
- ❑ **Approaches and priorities**
- ❑ **Protect – Prevent – Treat framework**
- ❑ **Key challenges**



Contrary to public belief, UNICEF is not a greeting card company....



Nor is trick or treating our main way of fundraising....



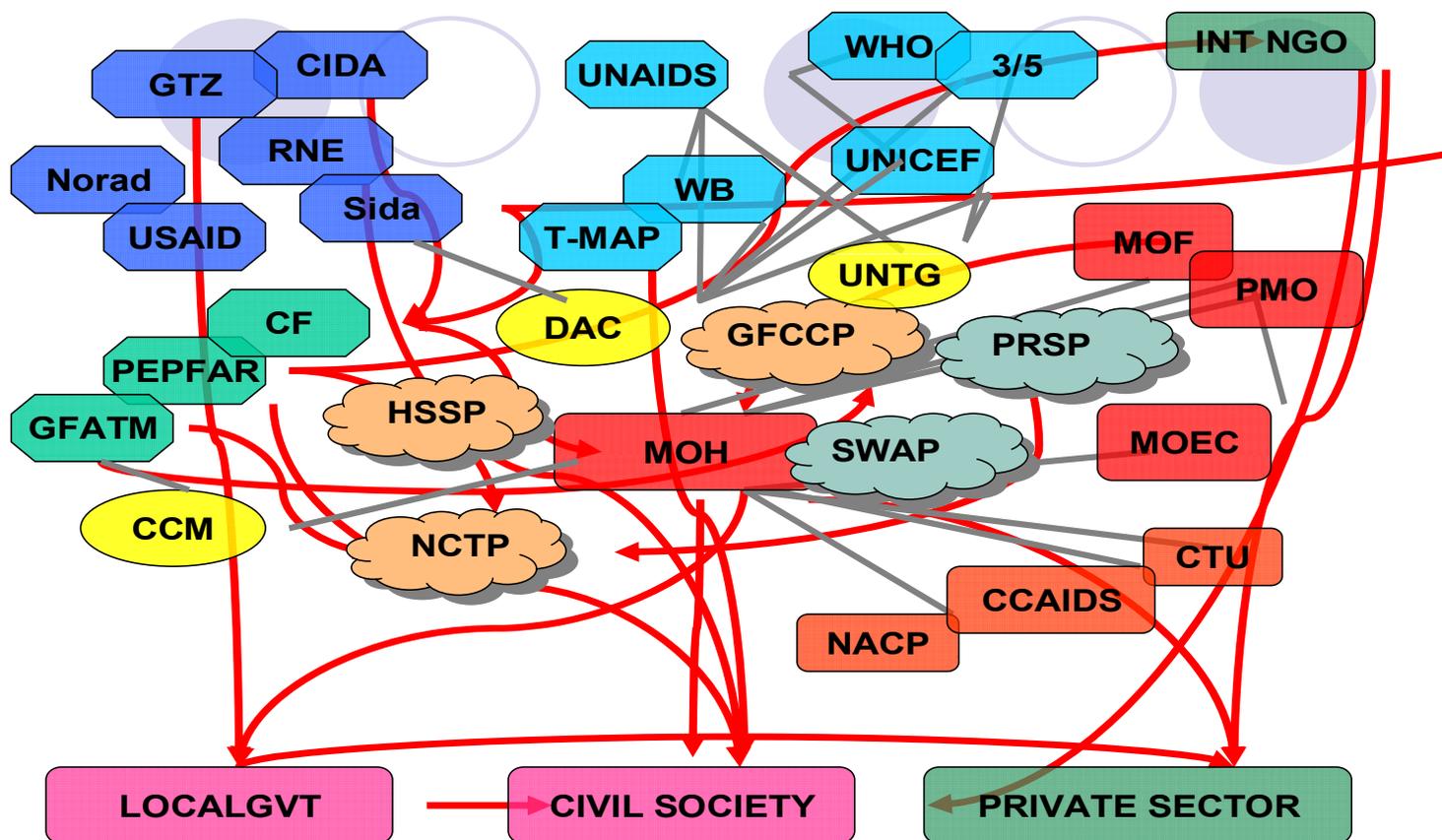
Who We Are

- ❑ **United Nations Children's Fund: specialized agency of the United Nations**
- ❑ **12,000 employees worldwide**
- ❑ **More than health: education, child protection, early childhood development, emergencies**
- ❑ **Supported entirely by voluntary funds: 2/3 from governments, 1/3 from national committees**
- ❑ **Budget of about four billion dollars, of which nearly 60% is spent on health**
- ❑ **124 country offices serving 150 countries**

How We Work

- ❑ **Influence donors and countries to do the right thing (advocacy)**
- ❑ **Provide them with the “how to” to get it done (technical assistance)**
- ❑ **Help them get the money they need to do it (leveraging)**
- ❑ **Assist them in getting the materiel and supplies they need to make it happen (procurement)**

Partnerships—The Good News and the Bad News



Overview

- ❑ UNICEF: Who we are and what we do
- ❑ **Approaches and priorities**
- ❑ Protect – Prevent – Treat framework
- ❑ Key challenges



UNICEF's Focus in Health: Scaling up Proven Interventions

- ❑ **UNICEF's emphasis is scale-up: taking interventions shown in field trials to be of proven efficacy to sub-national or national level**
- ❑ **Our main question is not does an intervention work, but how can we help countries make it work in the complex environment of the real world in a sustainable way**
 - Which interventions are likely to have the greatest impact, especially for the poorest children?
 - How can the individual interventions be packaged to ensure maximal use of scarce resources, and what are the best delivery strategies for these packages?
 - How do we resolve the bottlenecks that prevent scale-up?

What Types of Interventions Do We Scale Up?

Interventions with the greatest impact in children 1-59 months

- Exclusive breastfeeding
- ORS/zinc for diarrhea
- Insecticide treated bed nets
- Complementary feeding
- Pneumococcal vaccine
- Antibiotics for pneumonia
- Antimalarial treatment
- Hib vaccine
- Zinc prophylaxis
- Water, sanitation, hygiene
- Rotavirus vaccine
- Measles vaccine

In low income countries, coverage for most of these interventions ranges from <1% to 40%

The Protect – Prevent – Treat Approach

❑ Focused around three points of intervention

- Protecting against exposure altogether and/or optimizing host defenses (e.g., breastfeeding, handwashing, bed nets)
- Preventing illness if exposure does occur (e.g., immunization)
- Treating (e.g., ORS/zinc, antibiotics, antimalarials)

❑ Interventions provided through three delivery channels

- Family and community
- Schedulable or outreach services
- Facility- or community-based care providers

Overview

- ❑ UNICEF: Who we are and what we do
- ❑ Priorities and approaches
- ❑ **Protect – Prevent – Treat framework**
 - **An innovative approach to community mobilization to protect children against diarrhea**
 - **New vaccine challenges and opportunities for prevention**
 - **Community case management for treatment of the major killers of children**
- ❑ Key challenges

PROTECT: An Example of a New Way of Approaching a Very Old Problem

- ❑ **38% in rural Africa, 58% in rural South Asia practice open defecation**
- ❑ **Its elimination could reduce childhood diarrhea cases by over 1/3**
- ❑ **Community-led total sanitation (CLTS):**
 - Creation of demand in community to stop open defecation based on shame, disgust, and pride
 - Focus on behavioral change
 - Latrine construction not subsidized
- ❑ **Communities develop own solutions and provide support to poorer members to achieve 100% latrine coverage**
 - Ownership
 - Greater chance of sustainability

Total Community-led Sanitation in Practice



Defecation area mapping



“Walk of shame”



Food, flies and feces demonstration



Latrine Construction



Certification and celebration

40 countries: pilot or at scale

PREVENT: Challenges and Opportunities for Prevention through the Eyes of an Implementing Agency

- ❑ Vaccination coverage is higher than for any other child health intervention
- ❑ Opportunities to integrate other life-saving interventions into vaccination programs (e.g., vitamin A, bed nets)
- ❑ Concerns, however, that new interventions being added onto systems that are not performing optimally



The Logistic Challenges of Integration



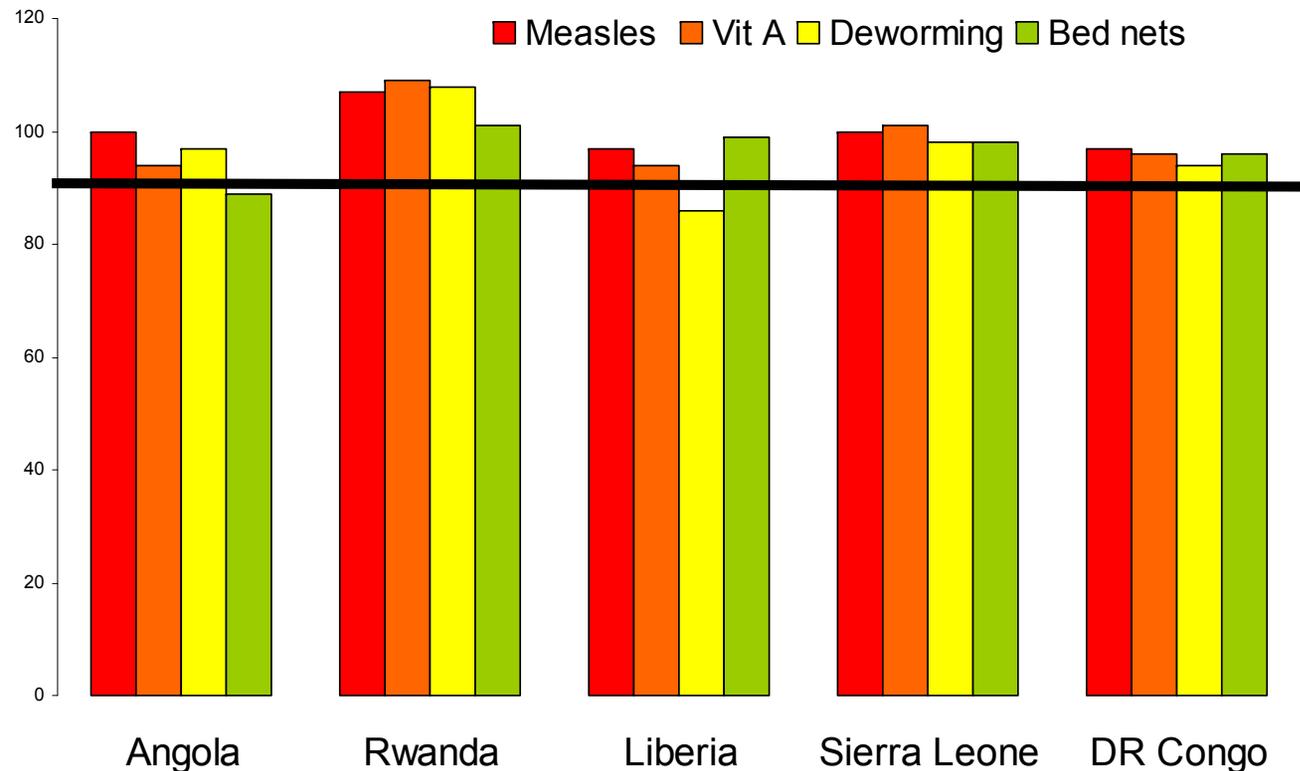
20 doses
of
vaccine



20 bed nets

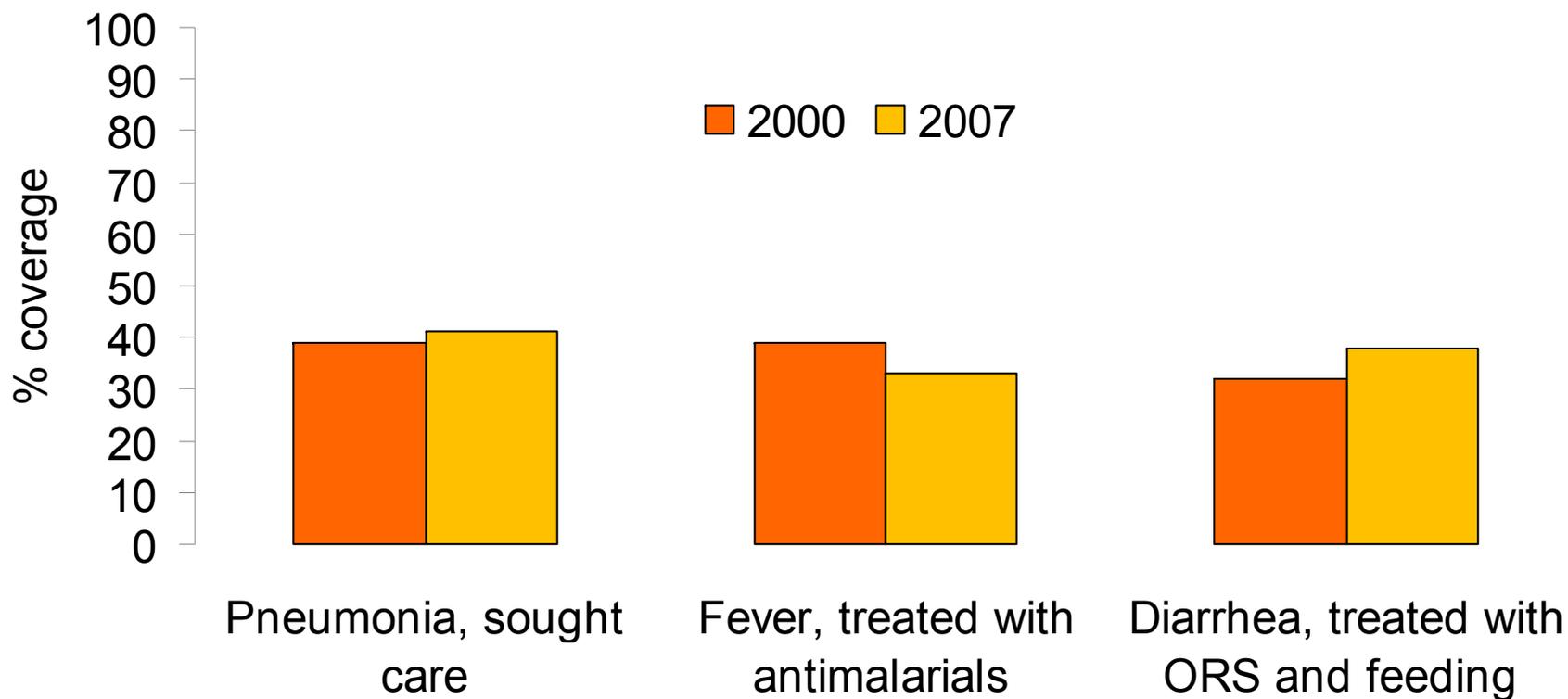


The Promise of Synergy: Other Interventions Delivered through Measles Campaigns, 2005 – 2007



But how many more interventions can be absorbed before the system breaks down?

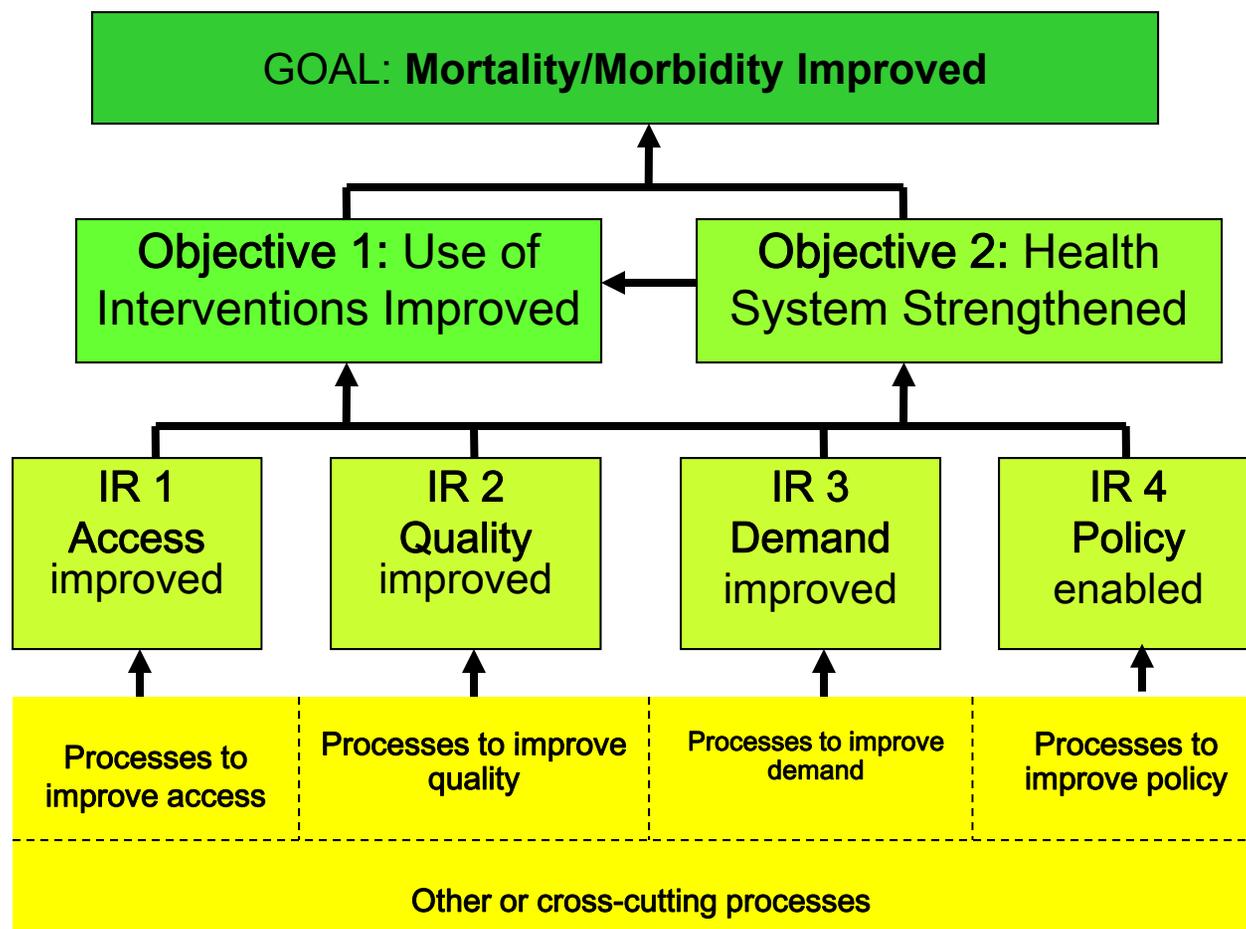
TREAT: Little Progress in Treatment of the Top Three Causes of Death in Africa (2000, 2007)

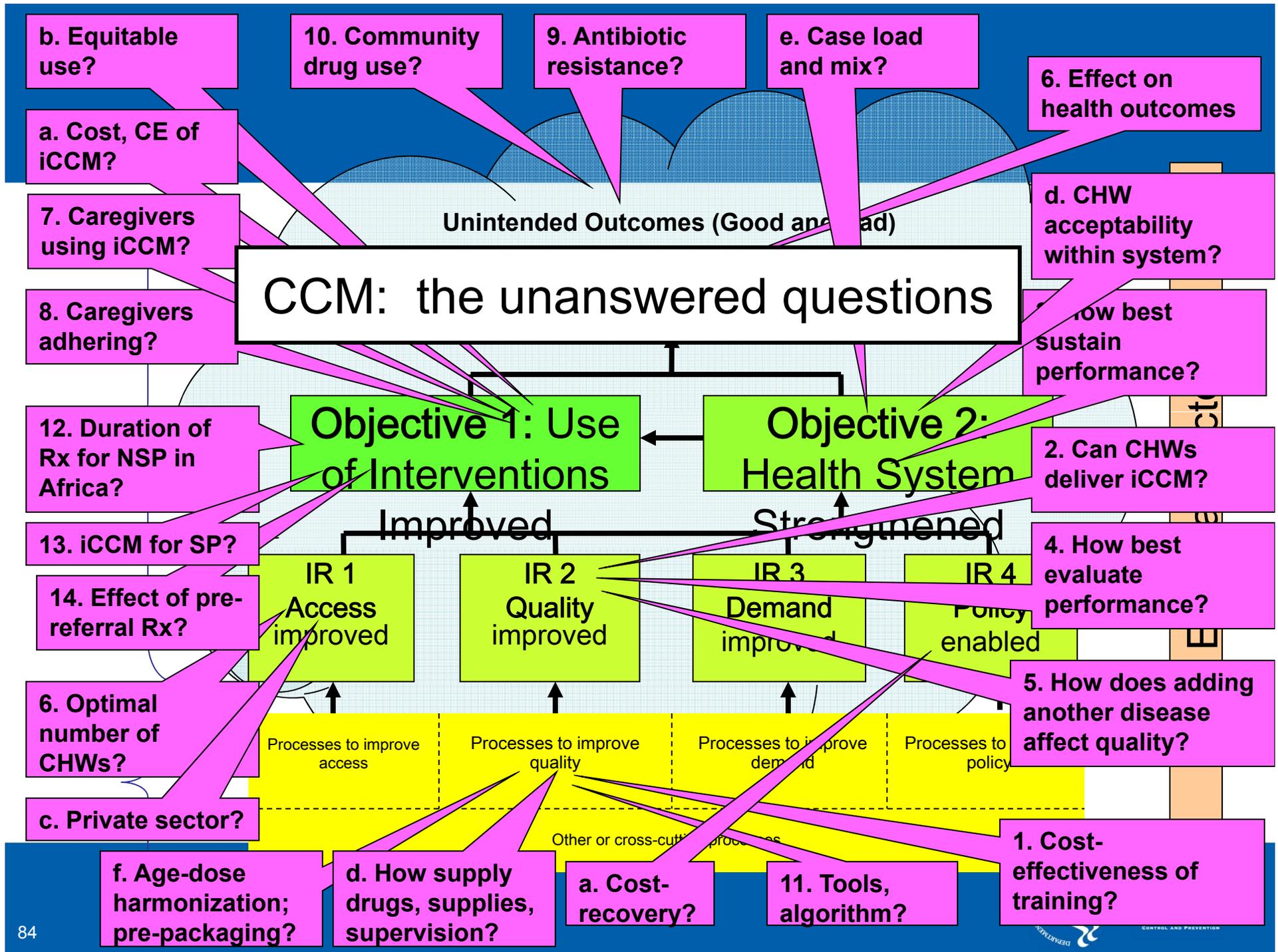


TREAT: Where there Is No Doctor (or Nurse or Midwife)

- ❑ **Crisis in human resources in low income countries:**
- ❑ **Community case management: task shifting of curative services to community health workers (CHWs) who are residents of the communities they serve**
- ❑ **Usually unpaid**
- ❑ **Treatment decisions based on simple diagnostic algorithms**
- ❑ **Provided with drugs to treat diarrhea, pneumonia, and malaria, including antibiotics for pneumonia**

Logic Model, Community Case Management





Overview

- ❑ UNICEF: Who we are and what we do
- ❑ Approach and priorities
- ❑ Protect – Prevent – Treat framework
- ❑ **Key challenges**



Key UNICEF Challenges in Child Survival

❑ PROMOTE

- Develop innovative ways of promoting behavior change

❑ PREVENT

- Find a balance between short-term versus long-term solutions e.g., child health days versus routine immunization

❑ TREAT

- Strengthen health systems



Key UNICEF Challenges in Child Survival

□ And a few broader issues

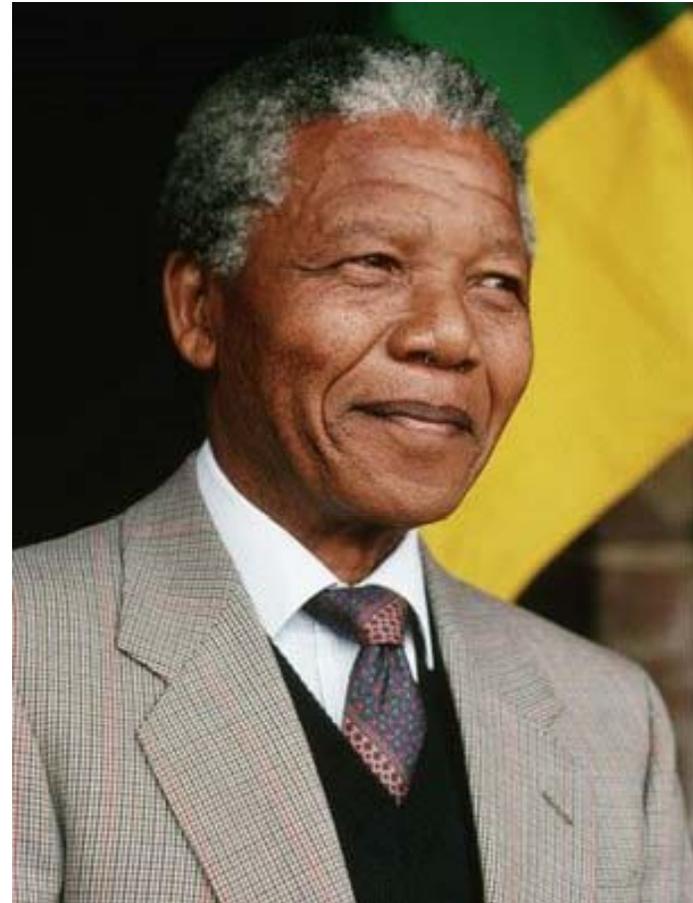
- Ensure equity and financial access (nearly half of expenses out of pocket)
- Develop methods to collect ongoing data for local decision-making and program adjustments and to evaluate the success of scale up efforts

How Much Can Health Do?

- ❑ **Beyond health, we need to advocate for**
 - Development
 - Good governance
 - Female education



**“It always seems
impossible until it’s
done!”**



Nelson Mandela

THANK YOU!



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PUBLIC HEALTH GRAND ROUNDS

Office of the Director

July 15, 2010

