Ensuring Health Technologies Reach Those Who Need Them Most

Rajeev Venkayya, MD
Director, Global Health Delivery

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BILL & MELINDA GATES foundation

Priority Diseases and Conditions

Foundation Focus

Infectious Diseases

- HIV/AIDS
- Malaria
- Tuberculosis
- Diarrheal Illness
- Pneumonia
- Vaccine-Preventable Diseases

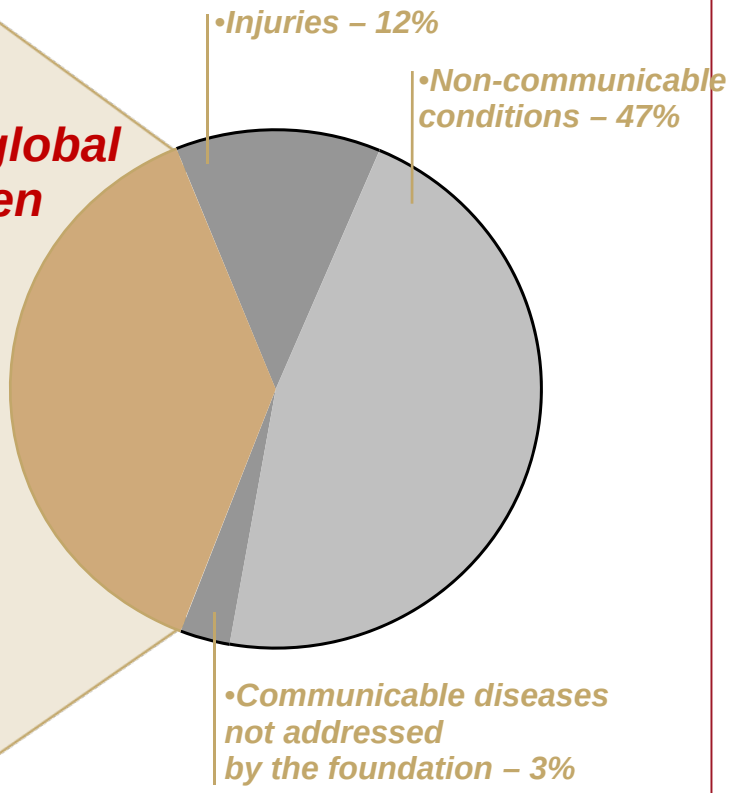
Nutrition

- Micronutrient deficiencies
- Nutrition for children under the age of 2

Maternal, newborn, child, and reproductive health

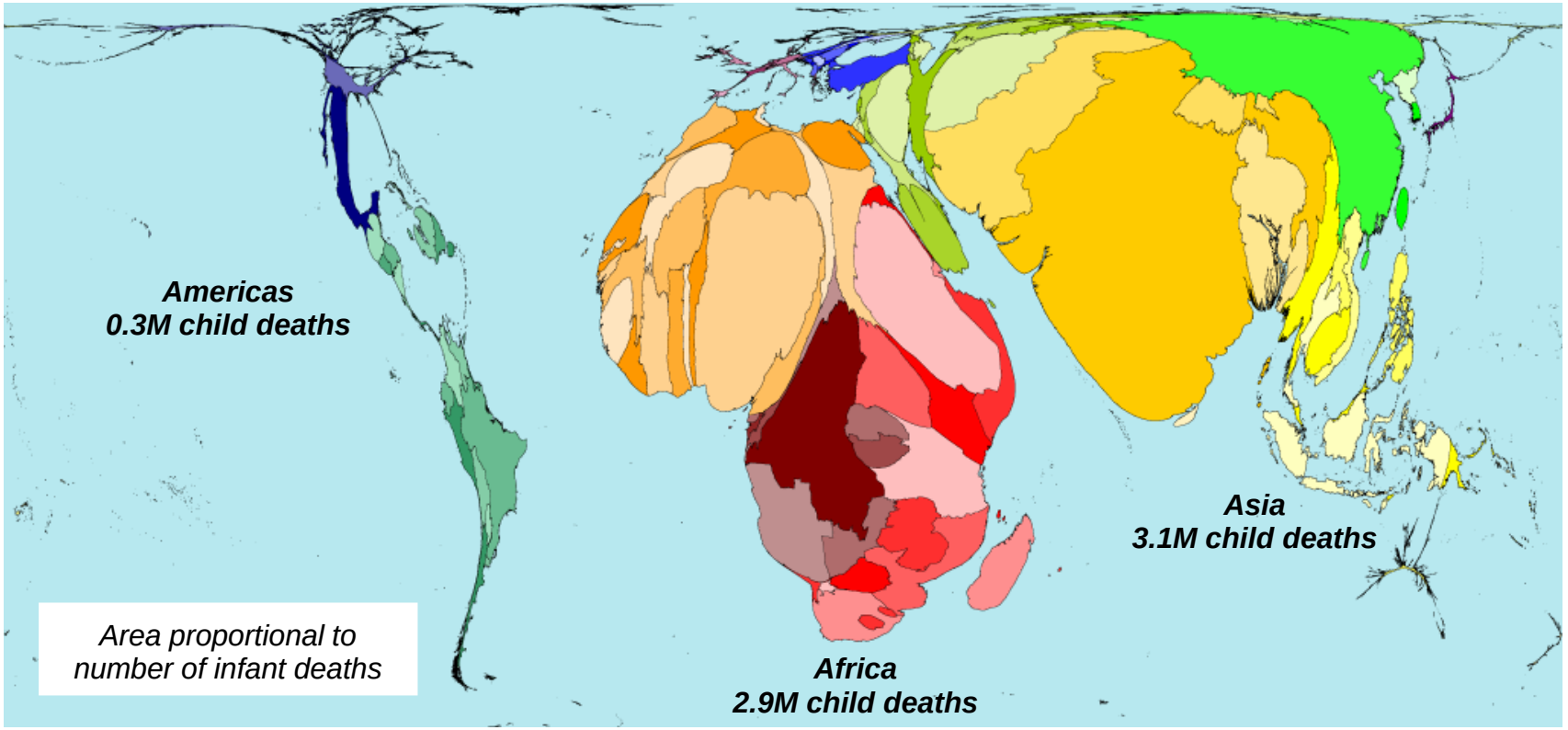
38% of the global health burden

Global Health Burden



Inequitable impact: Infant mortality

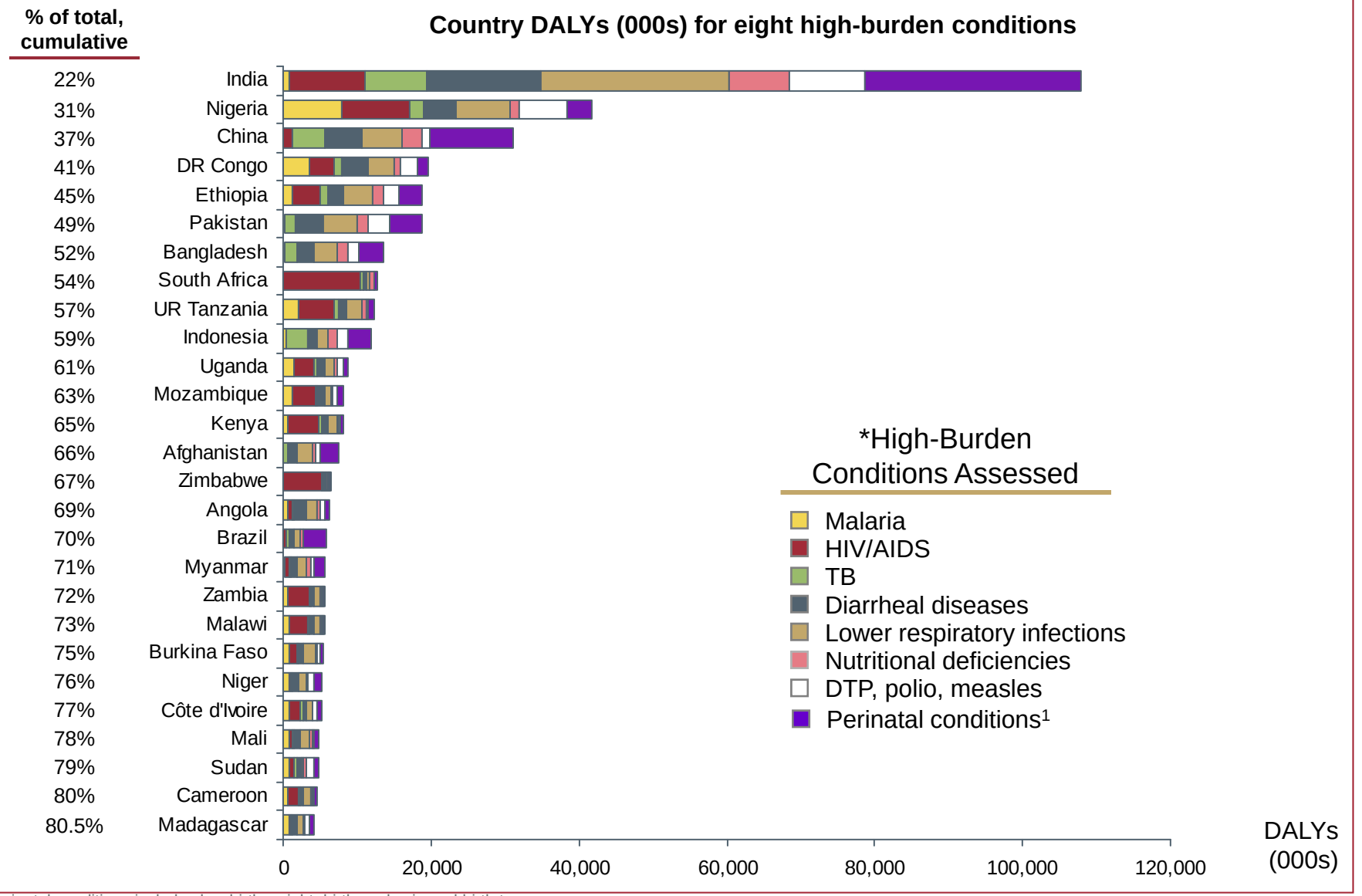
Most child deaths are in Africa and South Asia



The world's countries shaped with area in proportion to the deaths of infants (2001 data)

Source: www.worldmapper.org; UNICEF

Global Burden of Disease is Concentrated in a Few Places



1. Perinatal conditions includes low birth weight, birth asphyxia and birth trauma

Source: WHO global burden of disease, 2002

The Global Health Program supports over 50 new health solutions that are expected to launch in the next 5 years

Health solutions either developed or "adopted" by BMGF

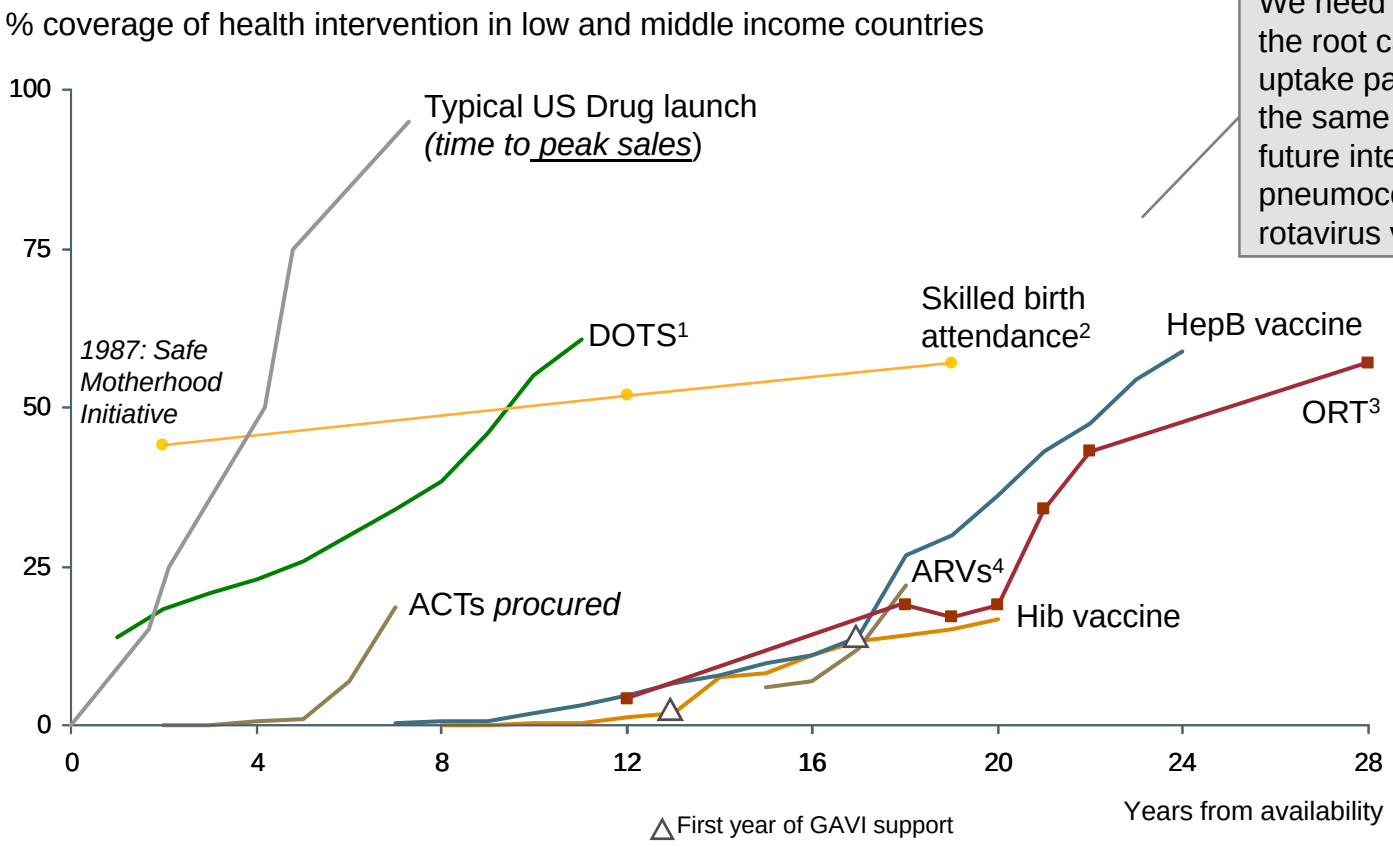
	Launched/Launching	2008	2009	2010	2011
Vaccine	*Rotavirus Vx* *Pneumococcal Vx* *Japanese encephalitis Vx* *Cholera Vx (VaBiotech)* *Typhoid Vx*	*HPV Vx (Cervarix)[1]*	*HPV Vx (Gardasil)[1]* *Meningitis Vx* *Trypanosomiasis Vx*	*Cholera Vx (Shantha and Biofarma)* *Aerosol measles Vx (device)*	*Malaria Vx (RTS,S)* *Rotavirus Vx (Africa, Asia)* *Influenza Vx*
Drug	*Paramomycin-VL*	*Acyclovir for HIV* *Malaria IPTi* *Malaria treatments: Coartem D* *DB289 for trypanomiasis*	*Tenofovir/Truvada* *Moxi for TB (for ethambutol)* *Malaria treatments: Pyramax, Dacart, Eurartesim*	*Moxi for TB (for isoniazid)* *Lymphatic filariasis treatment* *Additional oral HIV preventatives*	*Biosynthetic artemisinin*
Other intervention	*Zinc for diarrheal disease* *MTCT-Plus* *Male circumcision*	*Male contraceptives* *Vaginal contraceptives* *Misoprostol for post-partum*	*Microbicides (Carraguard)*	*Additional microbicide candidates* *Typanosomiasis vector control* *Malaria vector control (LL-IRS)* *Chlorhexidine for HIV transmission*	*Malaria vector control (LL IRS)*
Food	*UltraRice* *Weaning foods* *Biofortified sweet potato* *Iodized salt* *Zinc-fortified wheat* *Micronutrient fortified foods*	*Micronutrient fortified foods*		*Biofortified rice*	
Diagnostic	*TB Dx for reference labs*	*TB Dx for peripheral labs* *Leishmaniasis Dx*	*TB Dx for clinics and peripheral labs* *HPV Dx (Digene)*	*TB Dx for reference, peripheral labs, and clinics* *Malaria Dx*	*Trypanosomiasis Dx* *Dengue Dx*

1. Research to inform developing country introduction

Source: PO interviews; grantee websites

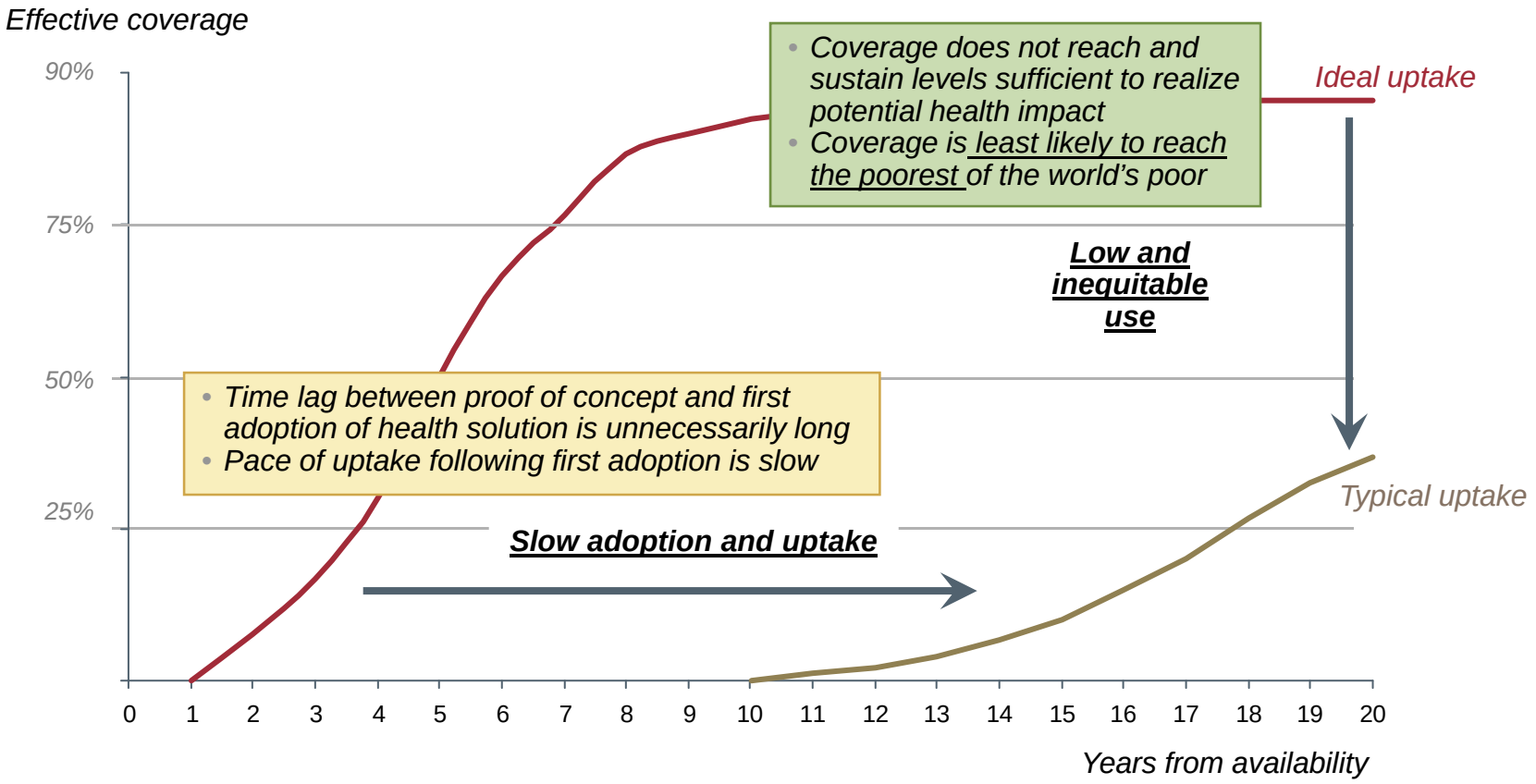
Critical health interventions have historically faced slow uptake and low coverage

Gaps in coverage fall disproportionately on the poor, and amplify inequity



1. DOTS represents a new model to deliver older technologies (drugs), so uptake is faster than completely new interventions 2. Skilled birth attendance is an ancient intervention, but its introduction is measured from 1987, when the Safe Motherhood Initiative was launched. Skilled birth attendance is considerably lower in Sub-Saharan Africa, where it is only 44%.3. Average of 49 countries reporting ORS rates 1999-2005, weighted by population under 15 years old 4. NRTIs were first approved in 1987, which is used as the start date. NNRTIs were approved in 1997 while PIs were approved in 1995. 6 million people are estimated to need ARVs. 5. ACT coverage is overstated as numbers represent only those procured, not those properly administered.
Source: WHO/UNICEF; World Bank; BCG analysis

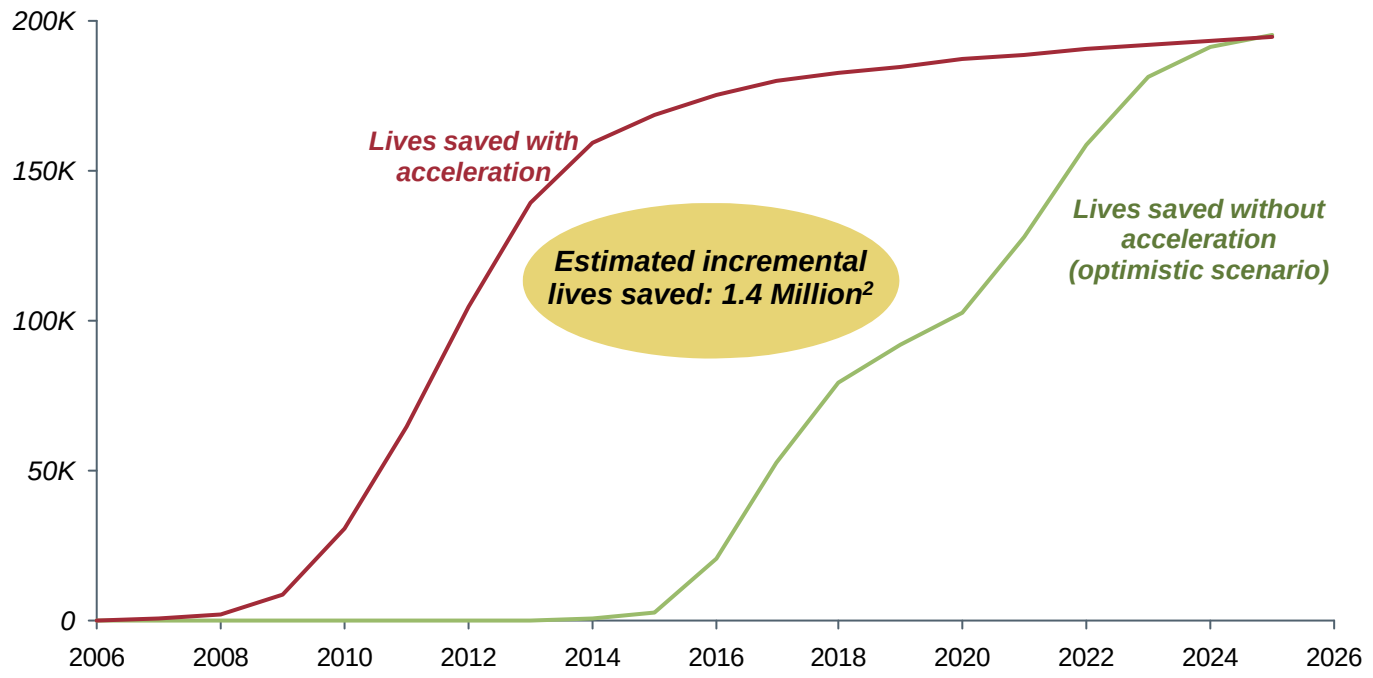
Without improvement in delivery, uptake of new and existing tools will be slow, low and inequitable



Speeding adoption and uptake will save lives

Example: Acceleration of rotavirus vaccine adoption by Rotavirus Vaccine Program (RVP) is predicted to save 1.4M lives

Number of lives saved by rotavirus vaccine with and without accelerated introduction [1]



Rotavirus Vaccine Program (RVP) is one of the several Accelerated Development and Introduction Plans (ADIPs) funded by GAVI to speed uptake and introduction of new vaccines. The RVP program is carrying out this mission in a number of ways:

- *Redesign product and packaging to fit existing cold chains*
- *Support PII/PIII efficacy trials in developing countries*
- *Build investment case and show cost effectiveness of rotavirus vaccine*
- *Improve demand forecasts*
- *Increase evidence base: burden of disease*
- *Advocate for quick, sound decisions*

RVP is only focusing on speeding adoption. Amount and equity of uptake will largely be determined by EPI coverage in individual countries

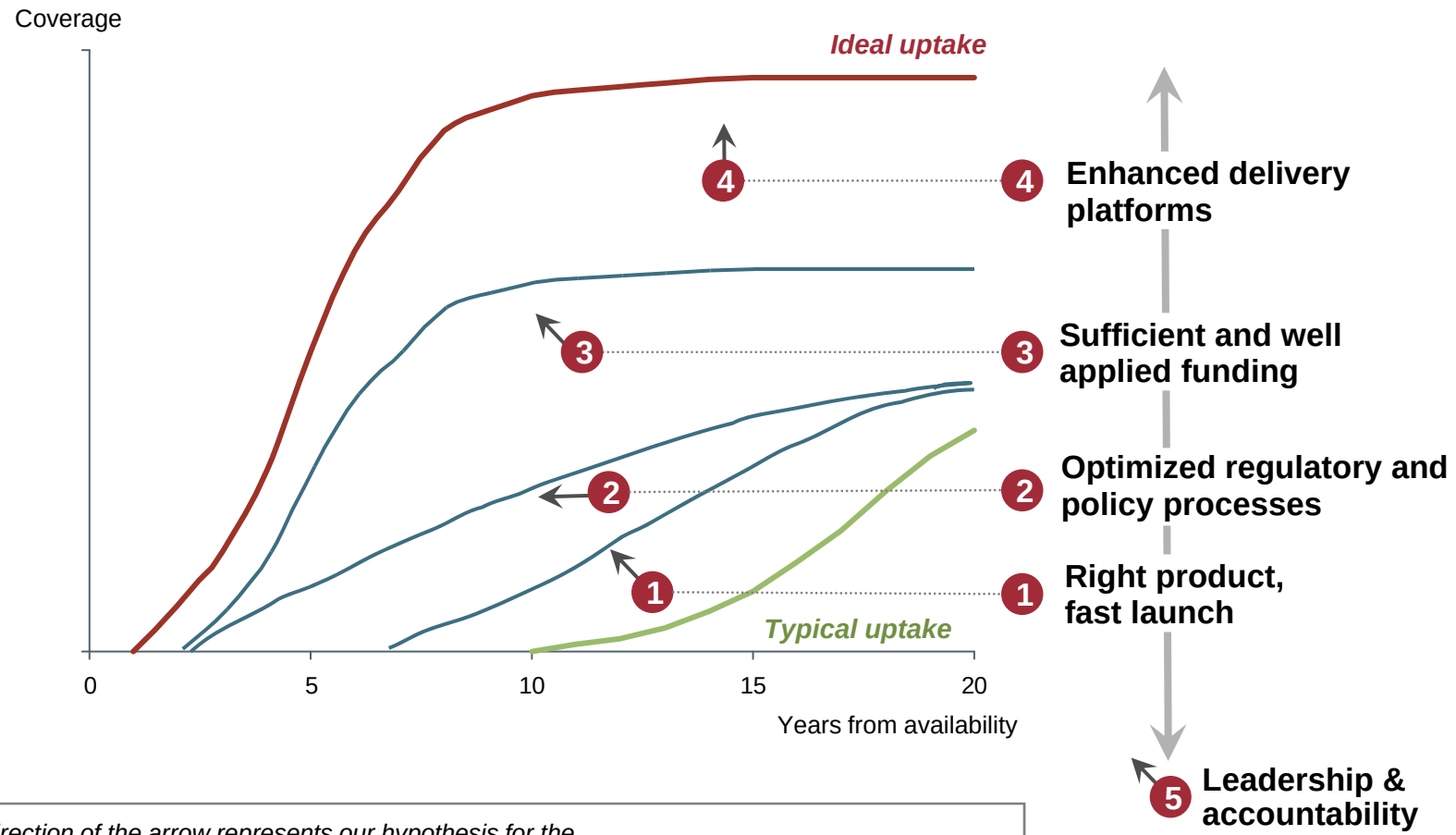
•Source: Rotavirus Vaccine Program (Rotavirus ADIP); 1. Draft Version January 2006 2. Adapted from Rheingans et.al 2005 (unpublished) and Parashar 2003; Range: 0.9 to 2.3 Million Lives Saved 3. Adapted from Rheingans et.al. 2005 (unpublished) and Parashar 2003: 130 hospitalizations and outpatient visits avoided per 1000 infants vaccinated

Several root causes of delayed introduction and slow, low and inequitable uptake

Barrier	Key elements
1 ***Failure to adapt interventions to target populations and plan for launch***	» Poor product profile » Lack of product launch plans » Expensive manufacturing » Lack of adequate demand forecasting » Insufficient data and understanding of the market to support value proposition » Lack of engagement of policymakers in design of late-stage clinical development activities
2 ***Suboptimal policy and regulatory processes at global and local level***	» Insufficient data and tools for decision making at the country level » Multiplicity of regulatory and policy adoption processes » Lack of transparency / clarity about processes and data requirements » Limited monitoring of product safety and quality
3 ***Limited and misdirected funding at global and local levels***	» Local: Poor people, large financial barriers to access care, spending is out of pocket and inefficient » Country: Poor country, limited resource mobilization, low allocation to health, inefficient allocation and low productivity of health spending » Global: Insufficient and unpredictable donor funding – often focused on plans and process, rather than health outcomes
4 ***Underperforming delivery platforms***	» Services accessible to the poor are typically of poor quality » Command and control technologies -Variable levels of performance by public sector; reaching high levels is a challenge (e.g. EPI vaccines) » Consumer directed technologies – benefit from private market scale, but are limited by quality and affordability (e.g. ACTs for malaria) » Provider dependent interventions – currently constrained by lack of skills and incentives (e.g. skilled birth attendants) » Technologies to improve the efficiency, effectiveness and transparency of the health system not appropriately adapted and introduced to developing world settings
5 ***Lack of champions and leadership***	» Country: Few effective, empowered, stable health leaders, and insufficient prioritization of health issues » Global: Lack of effective champions / owners for new interventions

Source: Based on Millions Saved, Gillespie, et al (2007), Frost & Reich (2006), expert interviews, PO and PDP interviews

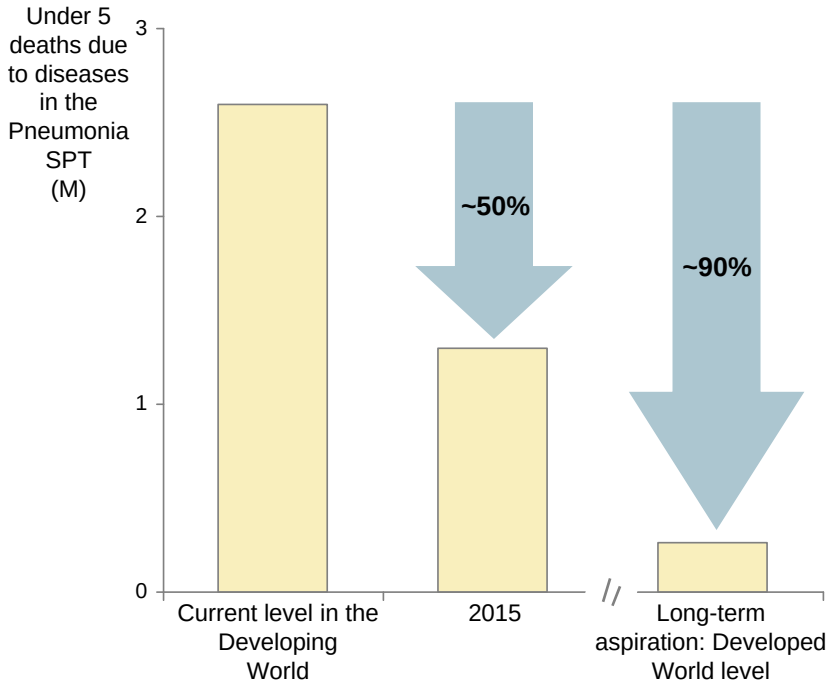
Overcoming the key barriers to delivery should drive adoption and uptake of necessary products and interventions



Achieving the long-term aspiration of reducing disease burden requires that interventions reach coverage targets over time

Example: Pneumonia

Health outcome aspirations for pneumonia



Aspirations can be achieved by increasing product / intervention coverage levels

		Today	2015
Vaccines	Measles	72%	90%
	N. men	-	65%
	Hib	10%	60%
	Pneumococcus	-	60%
	Spn Maternal Im	-	-
	Seasonal flu	-	10%
	Flu Maternal Im	-	10%
Nutrition	Breast feeding	40%	60%
	Comp. feeding	-	0.05
	Zinc	0%	20%
Tx	Antibiotics	25%	60%
	Oxygen	-	25%

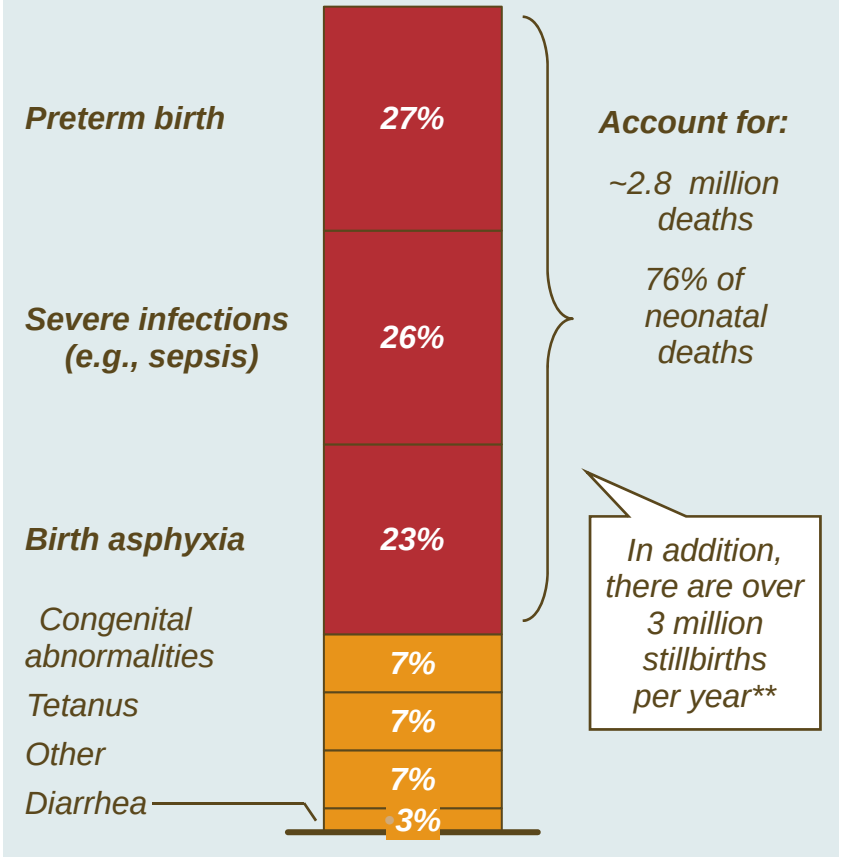
Notes: Interim estimated impact of expanding coverage of current / known interventions; Burden figures are from 2005-6 and represent the most recent data available; includes pneumonia, neonatal sepsis, influenza, measles, meningitis for children < 5 yrs. Millennium Development Goal #4 is to reduce overall childhood mortality by two-thirds from 1990 to 2015. Line shows % of current childhood mortality level to which mortality must be reduced by 2015 to meet this goal for Pneumonia SPT diseases Sources: CHERG model; S. Morris, E. Piwoz, and K. Kreis.

A limited number of conditions account for the majority of neonatal and maternal mortality

Conditions responsible for majority of deaths

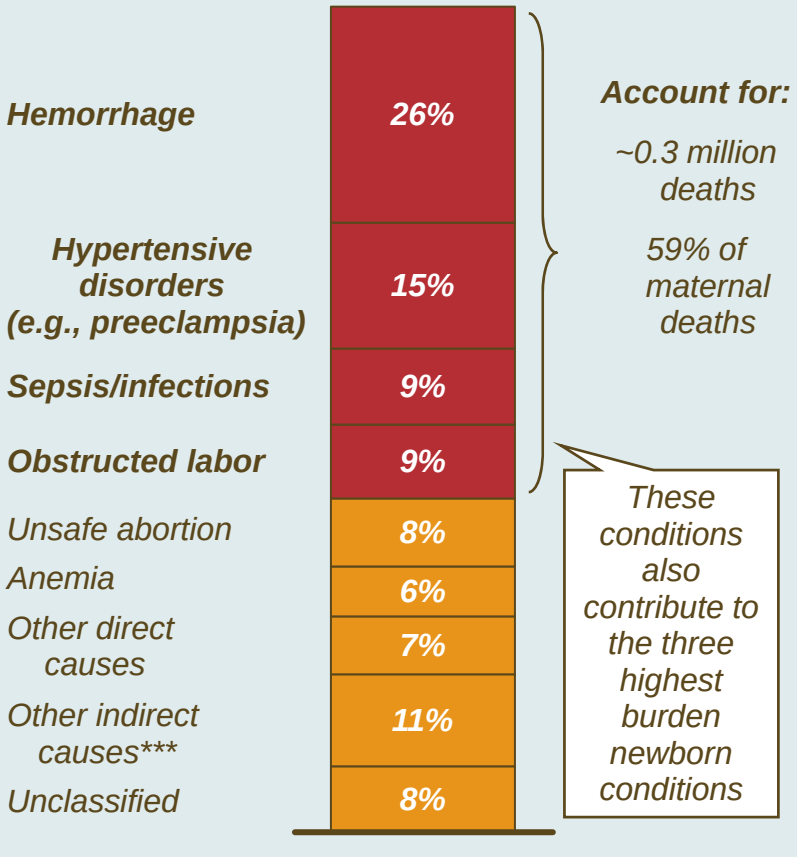
Neonatal mortality by cause*

Total deaths per year ~3.7 million



Maternal mortality by cause*

Total deaths per year ~0.5 million

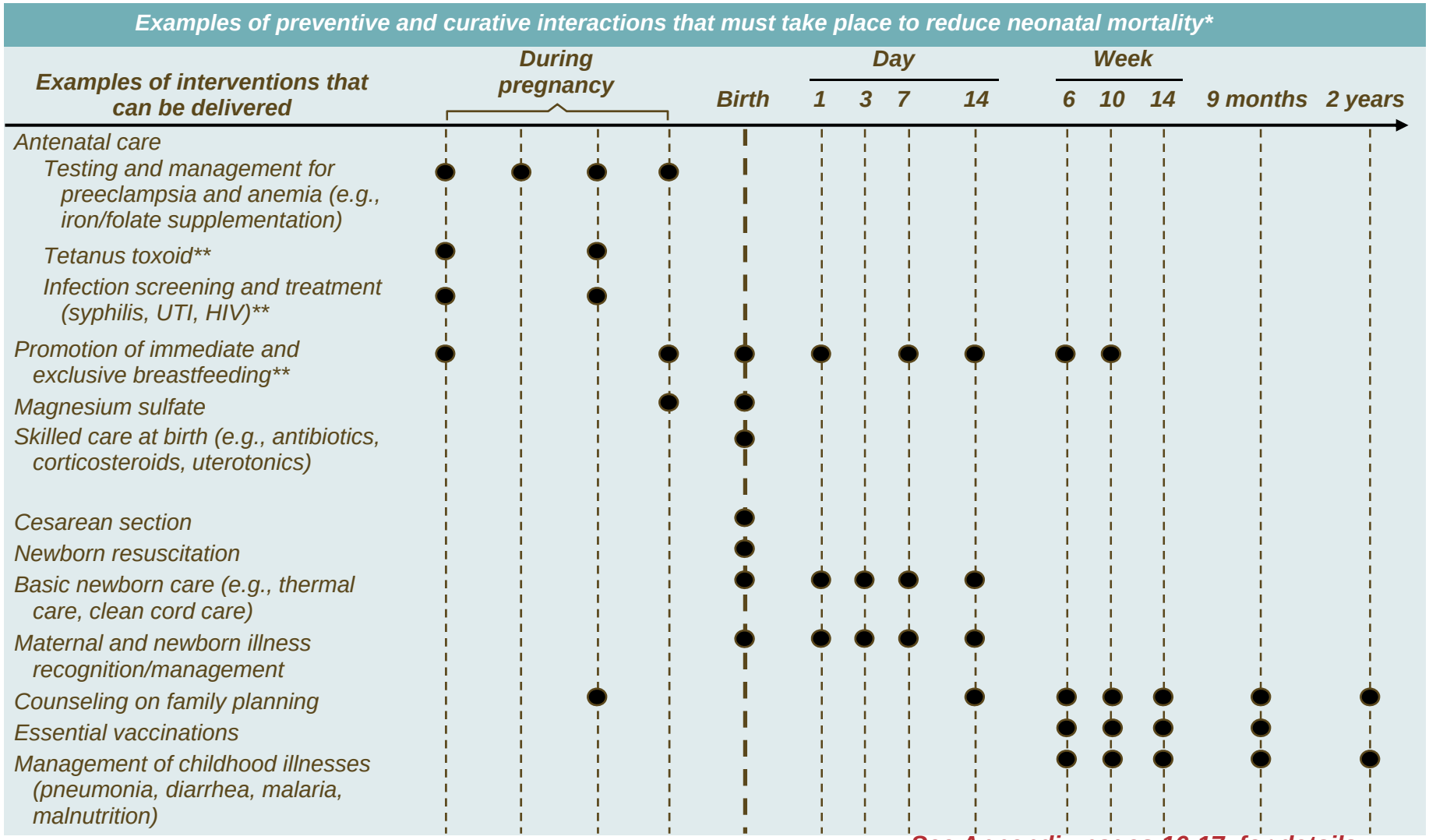


*Organizations such as WHO are planning to re-classify maternal and neonatal conditions to better differentiate between direct and indirect causes and WHO plans to publish new data for maternal conditions within the year (2009)
**Stillbirths are also considered a critical condition but are not included in this chart as they are not attributed with a mortality rate in GBD estimates
***HIV/AIDS is a common indirect cause of maternal deaths, accounting for 6% of maternal deaths in Africa
Note:Not all numbers add to 100% due to rounding
Source:UNICEF "State of the World's Children 2009"; Lawn et al. Lancet 2005; 365: 891–900 (Neonatal); Khan et al, WHO analysis of causes of maternal death, Lancet 2006; 367: 1066–74; "Make Every Mother and Child Count" WHO, April 2005 (Maternal)

Interventions necessary to reduce maternal, neonatal and child mortality

= Interaction

= Delivery of intervention



* These example interventions are a subset of the full set of 30 needed interventions between pregnancy and 28 days of birth (excludes unpredictable curative interactions)

** Can also occur during different visits throughout antenatal period, and promotion of breastfeeding can occur at any interaction

See Appendix pages 16-17 for details

Examining Ways to Strengthen Health Systems

Rationale

- Millennium Development Goals 4 and 5
- Impact of disease-focused programs on health systems
- Myriad donor priorities and requirements for funding

Initiatives

- G8 Support
- Funding windows at the Global Fund and GAVI
- WHO Efforts
- International Health Partnership
- High-Level Task Force on Innovative Financing