

The value of vaccines in health and economic development



Rising to the challenge

GAVI Alliance Partners' Forum
5-7 December 2012, Dar es Salaam, Tanzania



Measuring the potential value of vaccines

Raymond Hutubessy PhD

World Health Organization



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Measuring the potential value of vaccines

- Health ↔ Economic development/growth
 - WHO Commission on Macroeconomics and Health (2001)
- Contribution of vaccines?
- Traditional cost-effectiveness in health
 - EPI programme most cost-effective public health intervention (WDR 1993)
- New vaccines more complex and costly
 - Financial decisions made outside health sector
 - MoF, parliamentarians, deputies etc



Traditional cost-effectiveness too narrow

- What about....
 - Labor productivity
 - Cognitive development
 - Educational attainment
 - Savings
 - Direct foreign investments
 - Fertility
 - Population health
 - ...



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Economic benefits of vaccine framework

Perspective		Type of Benefit	Definition
Broad	Narrow	Health gains	Reduction in mortality or morbidity through vaccination presented in natural units of health ^a
		Health care cost savings	Savings of medical expenditures, health care system savings, and household savings because vaccination prevents illness episodes
		Care-related productivity gains	Savings of parents' productive time because vaccination avoids the need for taking care of a sick child
	Willingness to pay & Value of statistical life	Individuals or society's economic valuation of the long-term benefits from vaccination, including productivity gains and benefits of averting pain and suffering from vaccine-preventable diseases	
	Outcome-related productivity gains	Increased productivity from averted mortality and morbidity, including the productivity benefits from improved cognition and physical strength, as well as school enrollment, attendance and attainment	
	Behavior-related productivity gains	Benefits accruing because vaccination improves child health and survival and thereby changes household choices, such as fertility and consumption choices	
	Outbreak prevention savings	Benefits accruing to society from saved costs of outbreak investigations and prevention	



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Where's the evidence at? The current status of value of vaccines work globally

Sachiko Ozawa, MHS PhD

International Vaccine Access Center (IVAC)

Johns Hopkins Bloomberg School of Public Health



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Impact of the Decade of Vaccines (2011-2020)

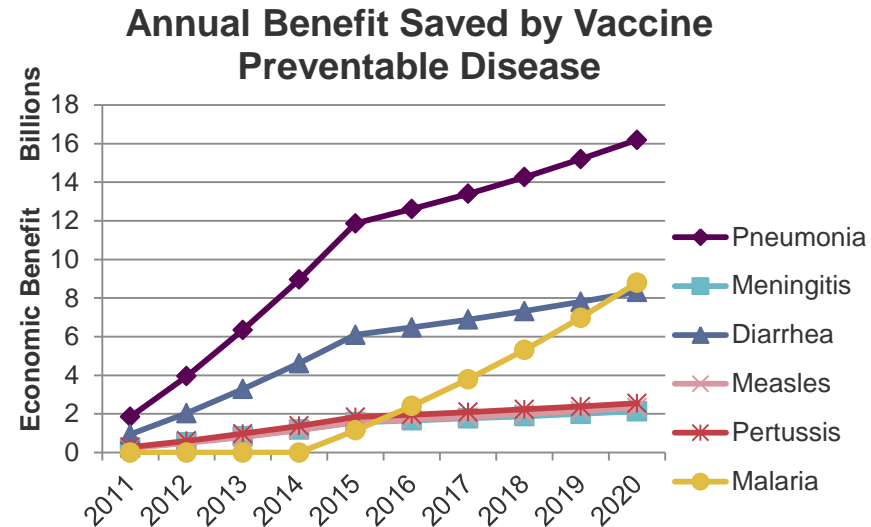
Scaling up 6 vaccines to 90% coverage would result in:

Health Impact:

- 6.4 million deaths averted
- 426 million illnesses prevented
- 63,000 disabilities averted

Economic Impact:

- \$1.2 billion (\$0.7-1.4b) in lost output of caretakers
- \$6.2 billion (\$4.8-9.1b) in treatment cost savings
- \$144 billion (\$120-168b) in future economic output
- \$213 billion (\$116-614b) in economic benefit from saving lives



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Source: Ozawa S, et al. Health Aff (Millwood). 2011;30(6):1010-1020.
Stack ML, et al. Health Aff (Millwood). 2011;30(6):1021-1028.



Vaccines are one of the most cost-effective interventions in public health!

WHO disability-adjusted life year (DALY) threshold:

- Low-income countries
 - <\$150 per DALY averted = **attractive**
- Middle-income countries
 - <\$500 per DALY averted = **attractive**
 - <\$100 per DALY averted = **highly attractive**

From 2012 literature review:

Among 44 articles reporting DALYs since 2000,

- 52% of articles reported that vaccines cost \leq \$100 per DALY averted
- 77% of articles reported that vaccines cost \leq \$500 per DALY averted



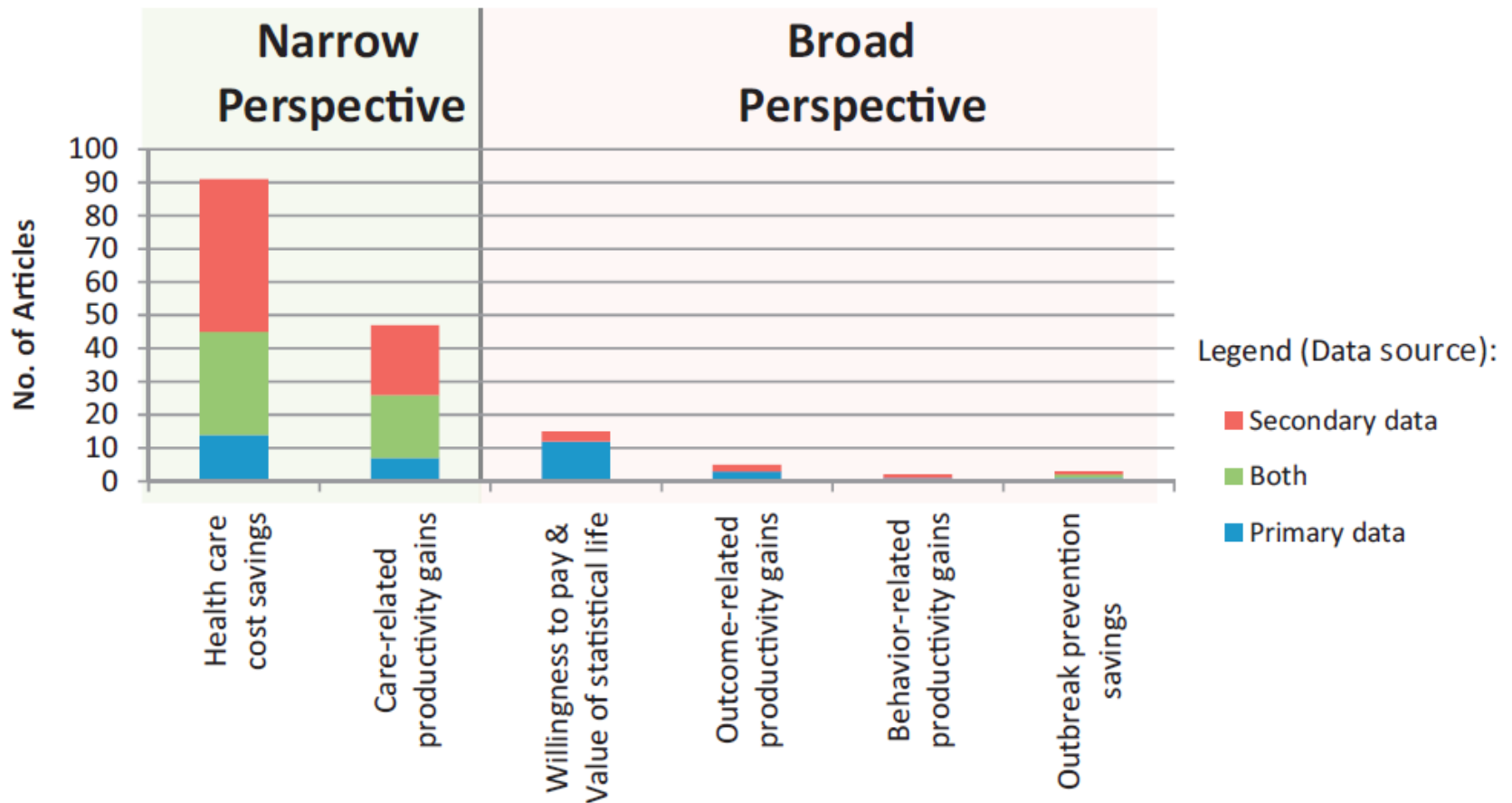
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Source: Ozawa S, et al. Vaccine. 2012; Dec 17;31(1):96-108.



Current status of evidence on value of vaccines:



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Source: Ozawa S, et al. Vaccine. 2012; Dec 17;31(1):96-108.

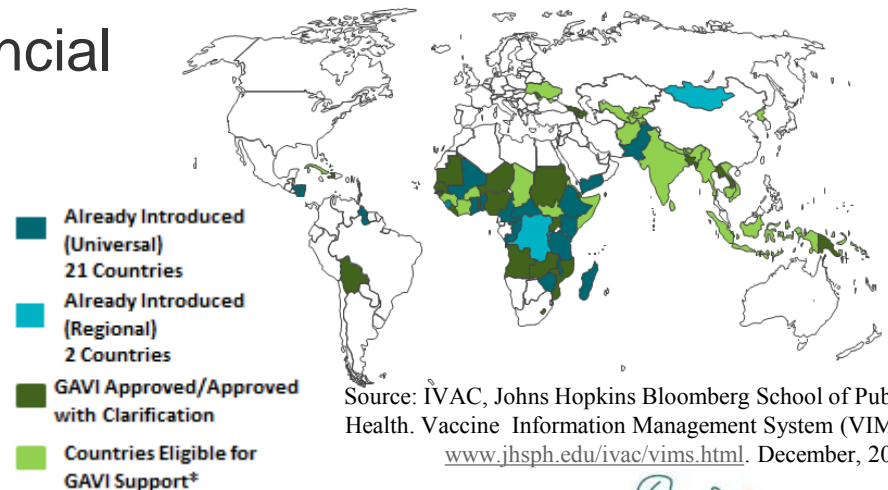


Areas where greater evidence would be valuable:

Long-term and societal benefits, e.g. impact of vaccines on:

- Long-term morbidity-related productivity gains & employment in society
- Economic implications of demographic changes resulting from vaccination
- Growth in gross domestic product (GDP) and impact on economic growth
- Averting poverty through financial protection
- Investment in human capital, which can accelerate development

GAVI Countries Introduction Status of PCV



Source: IVAC, Johns Hopkins Bloomberg School of Public Health. Vaccine Information Management System (VIMS) www.jhsph.edu/ivac/vims.html. December, 2012



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The Effect of Childhood Measles Vaccination on School Enrollment in Matlab, Bangladesh

Damian Walker PhD

Bill & Melinda Gates Foundation

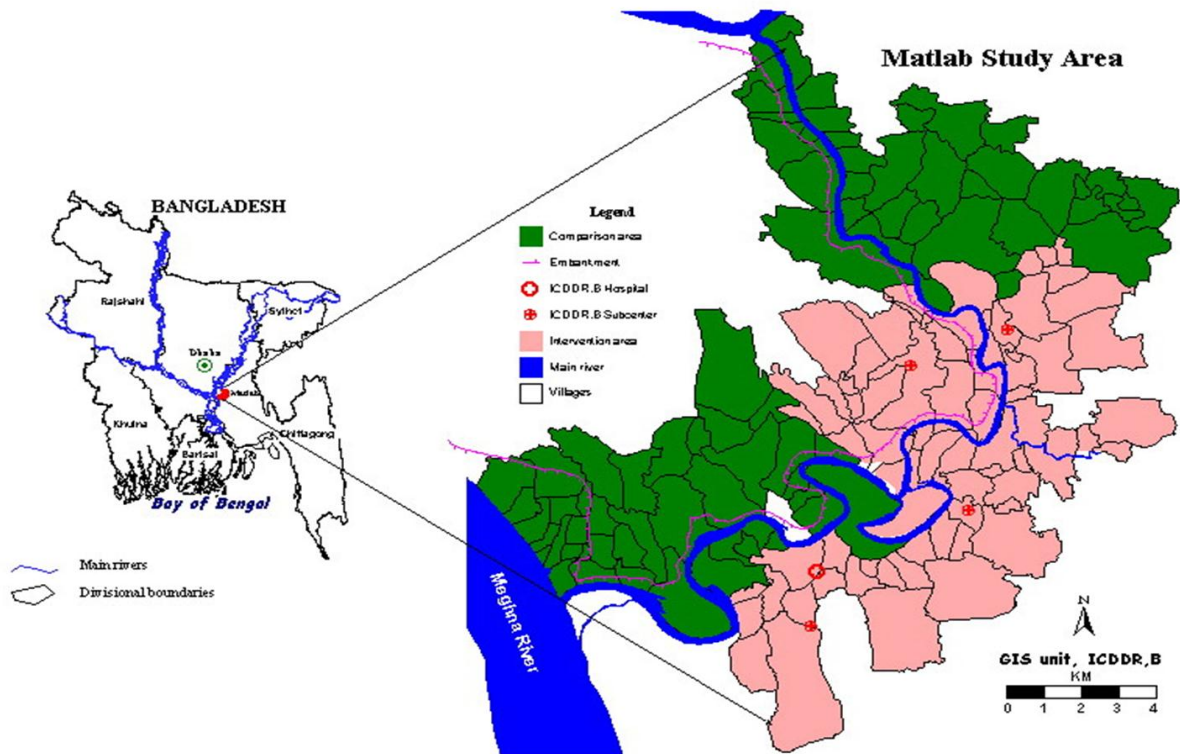


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Matlab & the intervention



- Measles vaccine in Block A & C from March 1982
- Measles vaccine in Block B & D from December 1985
- Measles vaccination not available in block E, the control area, until the 1990s



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Results & Implications

- Vaccination between 9-12 month of age improves probability of school enrollment for boys by 10%; no effect for girls
- Each year of schooling increases wages by 9.7%
- Significant spillover effect / positive externality of vaccination



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Challenges & Opportunities

- Multiple interventions were introduced closely together, weakening our ability to isolate the effect of measles vaccination
- Examine longer-term outcomes, such as educational attainment or earnings



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