

Meeting of the Strategic Advisory Group of Experts (SAGE) on Immunization,  
Geneva, 17-18 April 2018

Full public health value proposition of vaccines (FPHVPs)

# Global economic investment case for vaccines

Mark Jit<sup>1,2</sup>

<sup>1</sup>London School of Hygiene & Tropical Medicine

<sup>2</sup>Modelling and Economics Unit, Public Health England

**I have no conflicts of interest to declare.**

**Improving health worldwide**

**[www.lshtm.ac.uk](http://www.lshtm.ac.uk)**



Public Health  
England

LONDON  
SCHOOL of  
HYGIENE  
& TROPICAL  
MEDICINE



# Helpful or confusing???

BUSINESS

REVIEW ARTICLE

## Value Frameworks in Oncology: A Comparative Analysis to the Pharmaceutical Industry

Mark Slomiany, PhD, MBA, MPA; Priya Madhavan; Mi

**BACKGROUND:** As the cost of oncology care continues to rise, the industry has begun to capture the diverse concerns of patients, physicians, payers, and policy makers. The industry has begun to take shape.

**OBJECTIVES:** To review the capabilities and limitations of 5

Vaccine 33 (2015) 3471–3479



ELSEVIER

Contents lists available at ScienceDirect

Vaccine

journal homepage: [www.elsevier.com/locate/vaccine](http://www.elsevier.com/locate/vaccine)

Evaluating the value proposition for improving vaccine thermostability to increase vaccine impact in low and middle income countries

Christopher L. Karp<sup>a,\*</sup>, Deborah Lans<sup>a</sup>, José Esparza<sup>a,1</sup>, Eleanore B. Edson<sup>a</sup>, Katey E. Owen<sup>b</sup>, Christopher B. Wilson<sup>a</sup>, Penny M. Heaton<sup>b</sup>, Orin S. Levine<sup>c</sup>, Raja Rao<sup>c</sup>

<sup>a</sup> Discovery & Translational Sciences, The Bill & Melinda Gates Foundation, Seattle, WA, USA

<sup>b</sup> Vaccine Development, The Bill & Melinda Gates Foundation, Seattle, WA, USA

<sup>c</sup> Vaccine Delivery, Global Health, The Bill & Melinda Gates Foundation, Seattle, WA, USA

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



## The Business Case for Pricing Vaccines

Review, March 2012

One of the goals of the American Academy of Pediatrics (AAP), shared by the American Academy of Family Physicians (AAFP) and the Centers for Disease Control and Prevention (CDC) Immunization Practices (ACIP), is to promote maximum immunization coverage for children and young adults. To achieve this goal, physicians must be paid for the full costs (of product-related expenses and vaccine administration expenses as well as the margin). Because the private physician practice is the backbone of the immunization delivery system,



POLIO GLOBAL ERADICATION INITIATIVE

INVESTMENT CASE

POLIOERADICATION.ORG

MARCH 2017

Country Investment Case Study on Cholera Vaccination: Bangladesh



# Standardising terminology

Following discussions between IVR, HGF and IVIR-AC, we have agreed that the best terminology to describe the economic case underpinning the FPHVP is a **“global economic investment case”**.

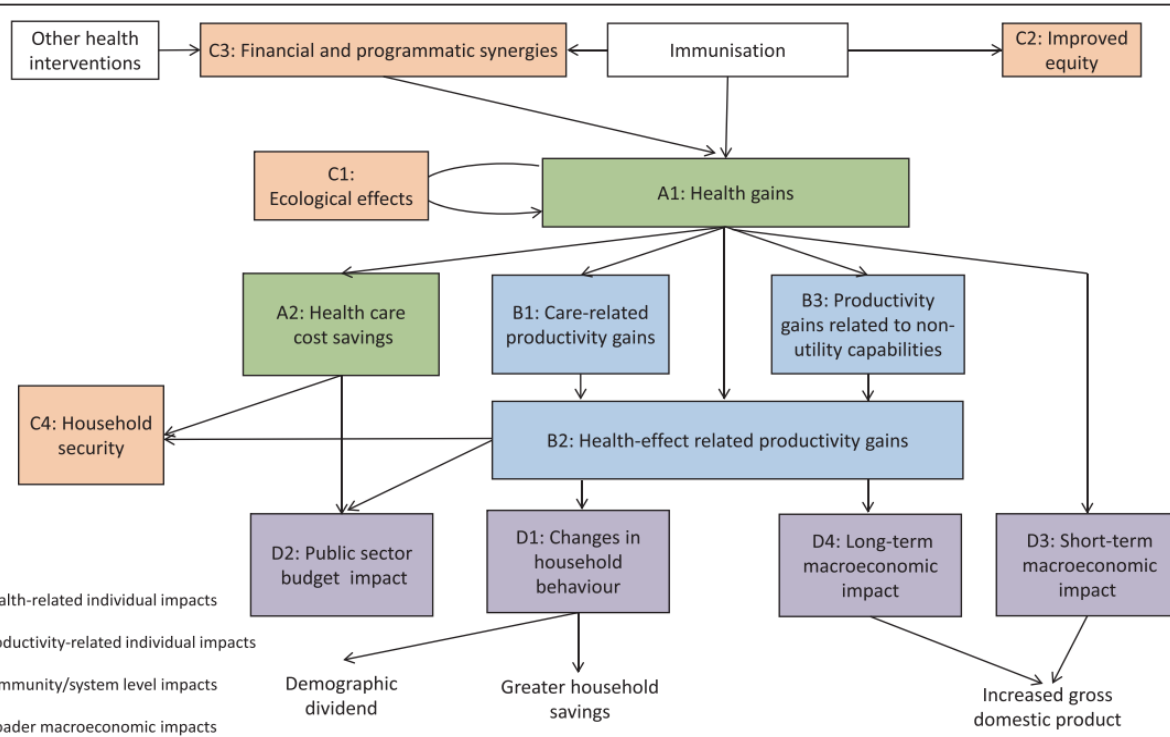
Why **global** and not public health?

- ❑ Vaccines have characteristics of both private goods and public goods.
  - Direct benefits of vaccines are private goods (rivalrous, excludable in consumption).
  - Population benefits (eg. herd protection) of vaccines are public goods (non-rivalrous, non-excludable in consumption).
- ❑ Vaccine investment cases have diverse audiences that take different perspectives eg. government, healthcare providers (public/private), manufacturers, users.
- ❑ “Public health” is now most commonly used to refer to population health at the national or subnational (rather than global) level.
- ❑ The case for vaccine investment is broader than economics – medical, ethical, political and other aspects are also important. Work presented here only looks at (broad) economic aspects.

NB: An investment case should have both positive and negative predictive value, i.e. a case can be made both for or against investment depending on the evidence.

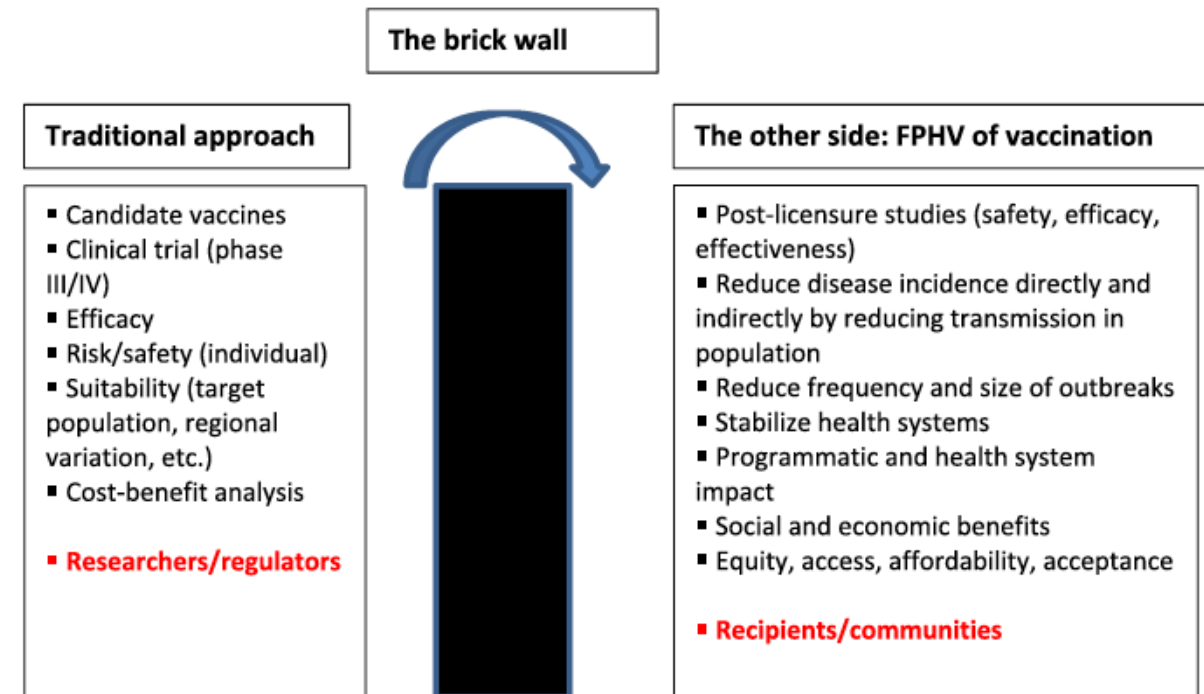
# Outcomes of immunisation programmes: paradigm shifts

## From “narrow” to “broad” impacts Jit et al. 2015



**Fig. 1** A conceptual framework for pathways to the broader economic impact of vaccines. Boxes are shaded in colours corresponding to different major categories in Table 1

## From “the brick wall” to “the other side” Gessner et al. 2017



**Fig. 2.** The brick wall: Moving from vaccines to vaccination.

### Sources:

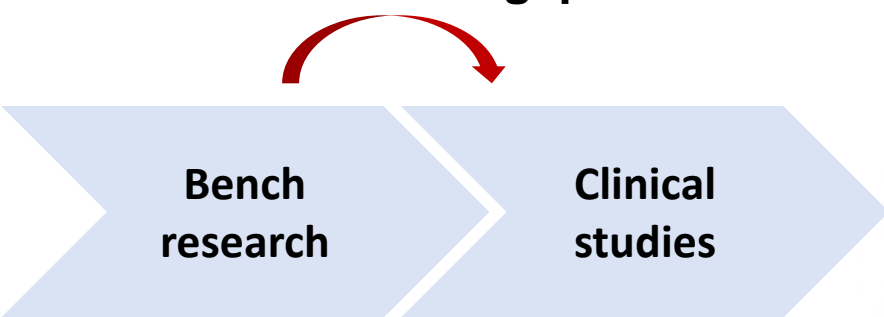
Jit M et al. The broader economic impact of vaccination: reviewing and appraising the strength of evidence. BMC Medicine 2015; 13:209.

Gessner B et al. Estimating the full public health value of vaccination. Vaccine 2017; 35:6255.



# Multiple gaps ... multiple audiences

## Translation gap



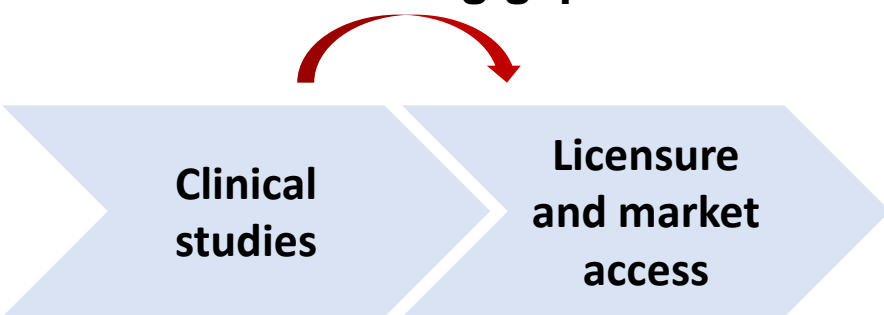
## Audience: research funders



## Appropriate analyses:

- Value of information
- Cost-effectiveness
- Return on investment
- Economic surplus

## Marketing gap



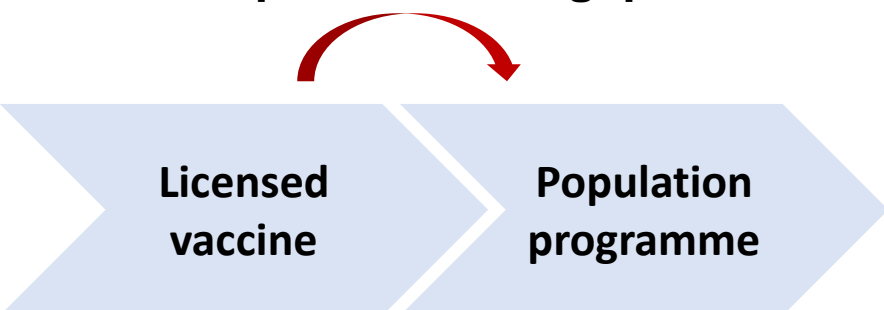
## Audience: manufacturers



## Appropriate analyses:

- Return on investment
- Profitability ratio

## Implementation gap



## Audience: donors and countries



## Appropriate analyses:

- Budget impact
- Cost-effectiveness
- Extended cost-effectiveness

# RECAP: IVIR-AC recommendations, Sept 2017

2018, 93, 1-8



Organisation mondiale de la Santé

## Weekly epidemiological record Relevé épidémiologique hebdomadaire

5 JANUARY 2018, 93th YEAR / 5 JANVIER 2018, 93<sup>e</sup> ANNÉE

No 1, 2018, 93, 1–8

<http://www.who.int/wer>

No 1

## Session 7: The Development of Value Propositions of New Vaccines Framework

### Summary of recommendations

- There is a need for **standardising approaches and terminologies** around value proposition and investment cases.
- Vaccine development is a complex and dynamic system. IVIR-AC recommends that efforts are conducted to **understand components that drive decisions and develop appropriate metrics.**
- Broader **consultation outside the vaccine field** is required to develop the necessary frameworks.

### Contents

- 1 Immunization and Vaccine-related Implementation Research Advisory Committee (IVIR-AC): summary of conclusions and recommendations, 20–22 September 2017

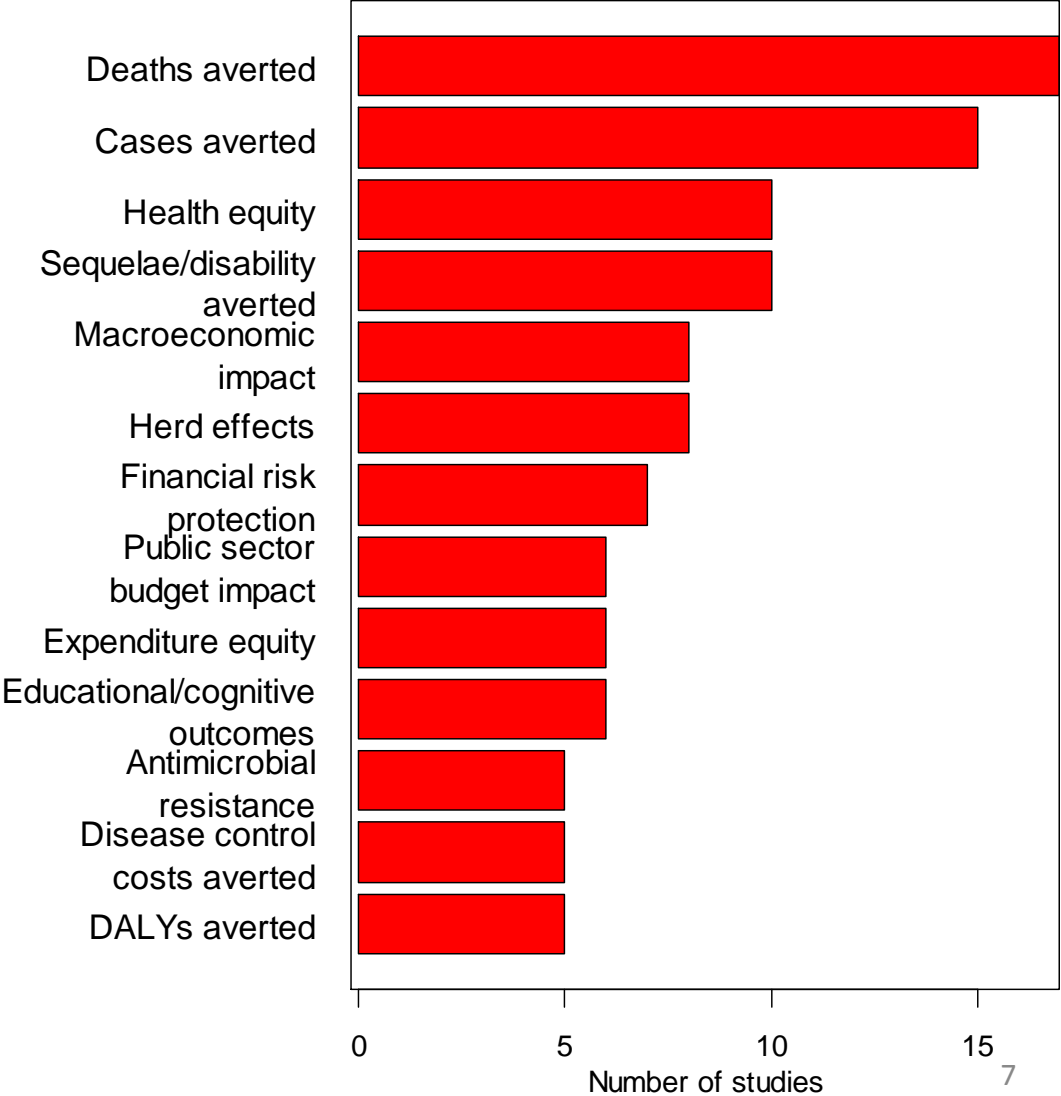
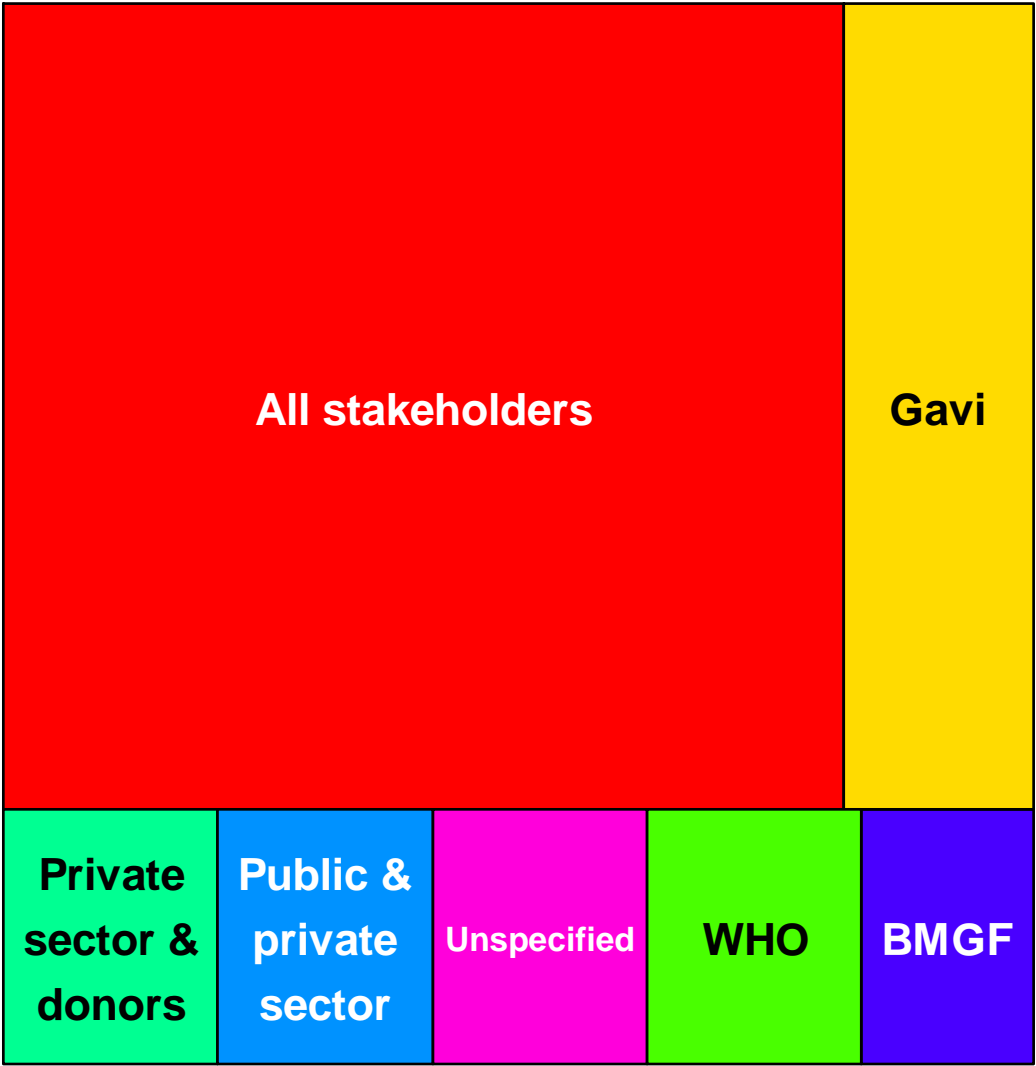
**Immunization and Vaccine-related Implementation Research Advisory Committee (IVIR-AC): summary of conclusions and recommendations, 20–22 September 2017**

**Comité consultatif sur la vaccination et la recherche sur la mise en œuvre des vaccins (IVIR-AC): résumé des conclusions et recommandations, 20-22 septembre 2017**

# From a review of 21 investment cases of vaccines

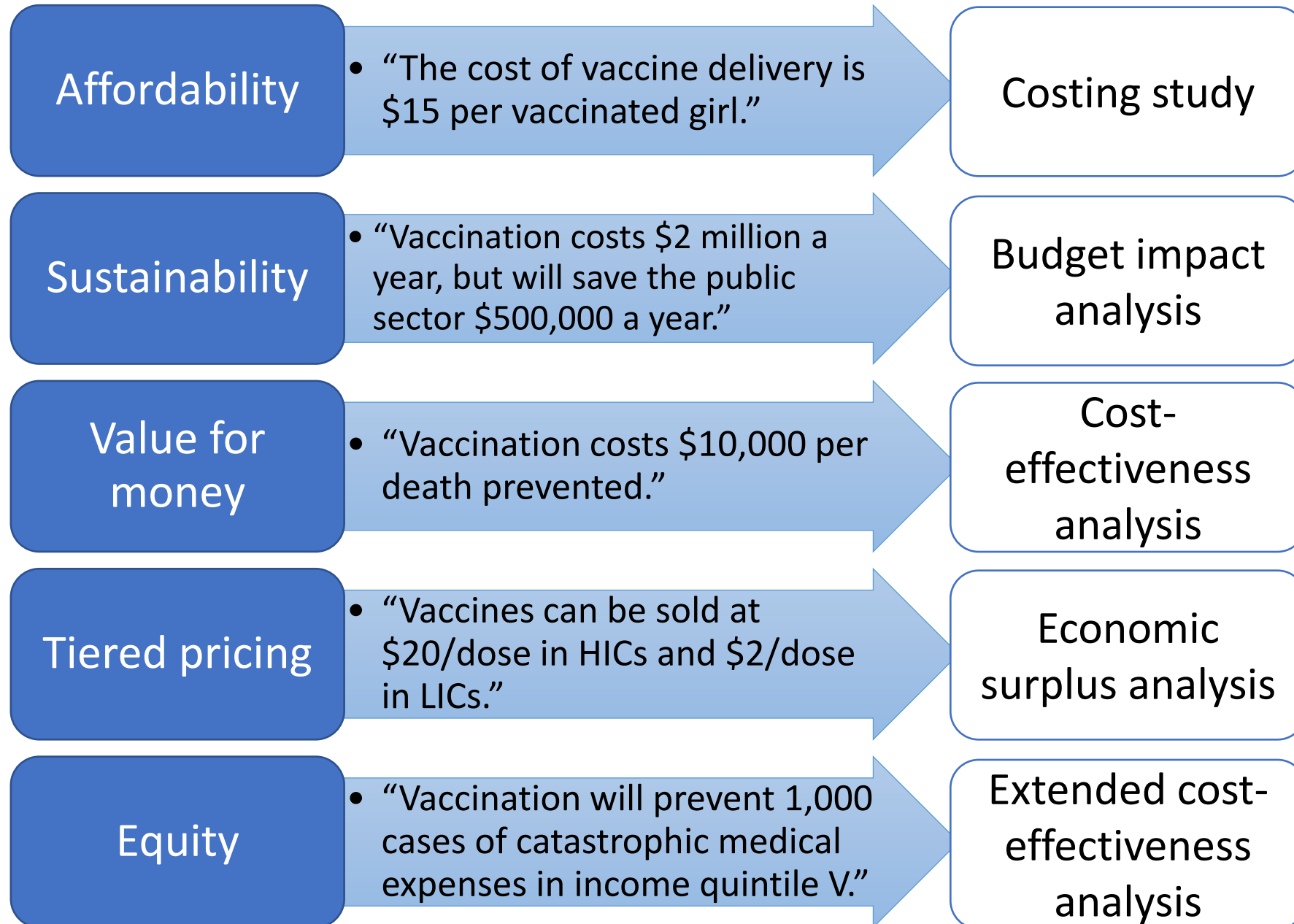
## Audience

## Outcomes



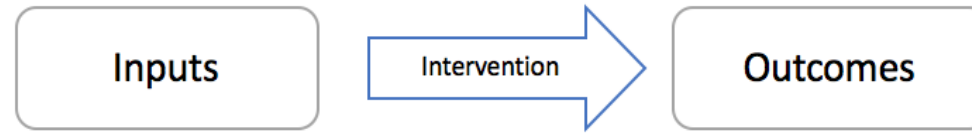
Source: Adapted from Sim SY et al. In preparation.

# Multiple analyses: a consequentialist framework



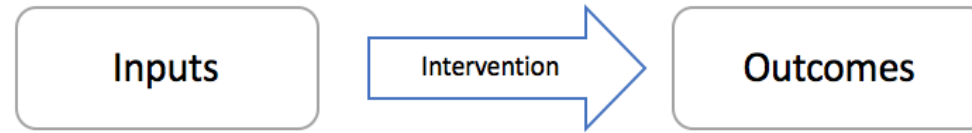


# 2 × 2 tables: WHO/HGF accounting framework



	Inputs	Outcomes
Market-traded inputs and outcomes	<ul style="list-style-type: none"><li>• Human resources</li><li>• Equipment and machines</li><li>• Medicines and consumables</li><li>• Facilities</li><li>• Other market-traded inputs</li></ul>	Productivity or labour-market improvements
Non-market-traded inputs and outcomes	<ul style="list-style-type: none"><li>• Beneficiaries' travel time</li><li>• Beneficiaries' waiting time</li><li>• Volunteers' time, e.g. family carers' time</li><li>• Other non-market-traded inputs</li></ul>	<ul style="list-style-type: none"><li>• Increased years of life</li><li>• Increased health-related quality of life</li><li>• Other non-market-traded outcomes</li></ul>

# Example: Maternal GBS vaccine return on investment



	Inputs	Outcomes
<b>Market-traded inputs and outcomes</b>	<ul style="list-style-type: none"><li>• Cost of vaccine purchase</li><li>• Cost of equipment, transport etc. for vaccine delivery</li><li>• Per diems for vaccinators</li></ul>	Economic output due to avoiding mortality-related, care-related and sequelae-related productivity loss
<b>Non-market-traded inputs and outcomes</b>	<ul style="list-style-type: none"><li>• Vaccinees' travel time</li><li>• Vaccinees' waiting time</li><li>• Vaccinators' unpaid time</li></ul>	<ul style="list-style-type: none"><li>• Increased years of life and health-related quality of life (due to direct and herd effects)</li><li>• Reduced antimicrobial resistance</li></ul>

# Conclusions

- ❑ The global economic investment case for researching, developing, marketing and implementing vaccines and immunisation programmes involves **multiple actors with different objectives**.
- ❑ There is a move from traditional/narrow economic outcomes towards “over the wall”/**broad outcomes** including population and programmatic effects, considerations of equity and macroeconomic impact.
- ❑ An “investment case” is a wrapper for a multitude of economic analyses and outcomes that need to be **tailored to the audience**.
- ❑ However, standardised terminology and frameworks are needed to ensure comparability in the field.
- ❑ WHO/HGF **2 × 2 tables** may offer a suitable framework for reporting, providing a structured way of identifying important elements in different study types.

*Acknowledgments: Raymond Hutubessy (WHO/IVR), Jeremy Lauer (WHO/HGF), So Yoon Sim (JHU)*