

Creating a sustainable vaccine landscape for Typhoid Fever

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- **The elusive TCV vaccine**
 - **Drivers of low manufacturer interest**
 - **Supporting a healthy vaccine market for Typhoid Fever**
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In spite of huge need and pledged donor support in 2008, as of today still no Typhoid Conjugate Vaccine has been pre-qualified

High disease burden in Gavi and LMICs

- **High burden¹ of typhoid fever:**
 - Incidence rate of **21.7 M** and **~217,000 fatalities** annually
- **Children aged 2-14 bear greatest burden**
- **High prevalence of resistance to first-line multi-drug treatments**



Strong rationale for Gavi VIS decision in 2008 to support Typhoid Conjugate Vaccine

- **Low cost² for TCV ~\$12** per case averted
- Suitable for **children < 2 yrs.**
- **Gavi budget² for TCV vaccine in 2008 VIS ~\$0.5B** between **2009-2020**
- **WHO PQ'd TCV** initially expected in **2010-2011**
- **Introduction delayed** as no available PQ'd TCV suppliers during 2008 Gavi VIS

Long lag in TCV suppliers getting to market with earliest WHO PQ approval expected by Q4 2017

Estimated WHO PQ Timelines	2017	2018	2019	2020	2021	2022	2023	2024
 Bio-Med Promise for healthier life	Licensed in India, WHO PQ timelines TBD							
 中国生物技术股份有限公司	Submitted for NRA licensure, WHO PQ timelines TBD							
 Bharat Biotech Lead Innovation	Licensed							
 Zydus Cadila	NRA expected							
 BE								
 SK chemicals								
 biofarma								

Anticipate 1-2 suppliers to get WHO PQ'd by next Gavi VIS in 2018

Source:

1. Dougan, G and Baker, S. *Salmonella enterica* serovar Typhi and the pathogenesis of typhoid fever. *Annu Rev Microbiol.* 2014; 68: 317–336
2. Gavi Vaccine Investment Strategy 2008, Typhoid Analysis
3. Estimated WHO PQ timelines based on current development status of TCV candidate

Typhoid market is characterized by poor market dynamics, leading to internal de-prioritization of TCV development by suppliers and longer time to market

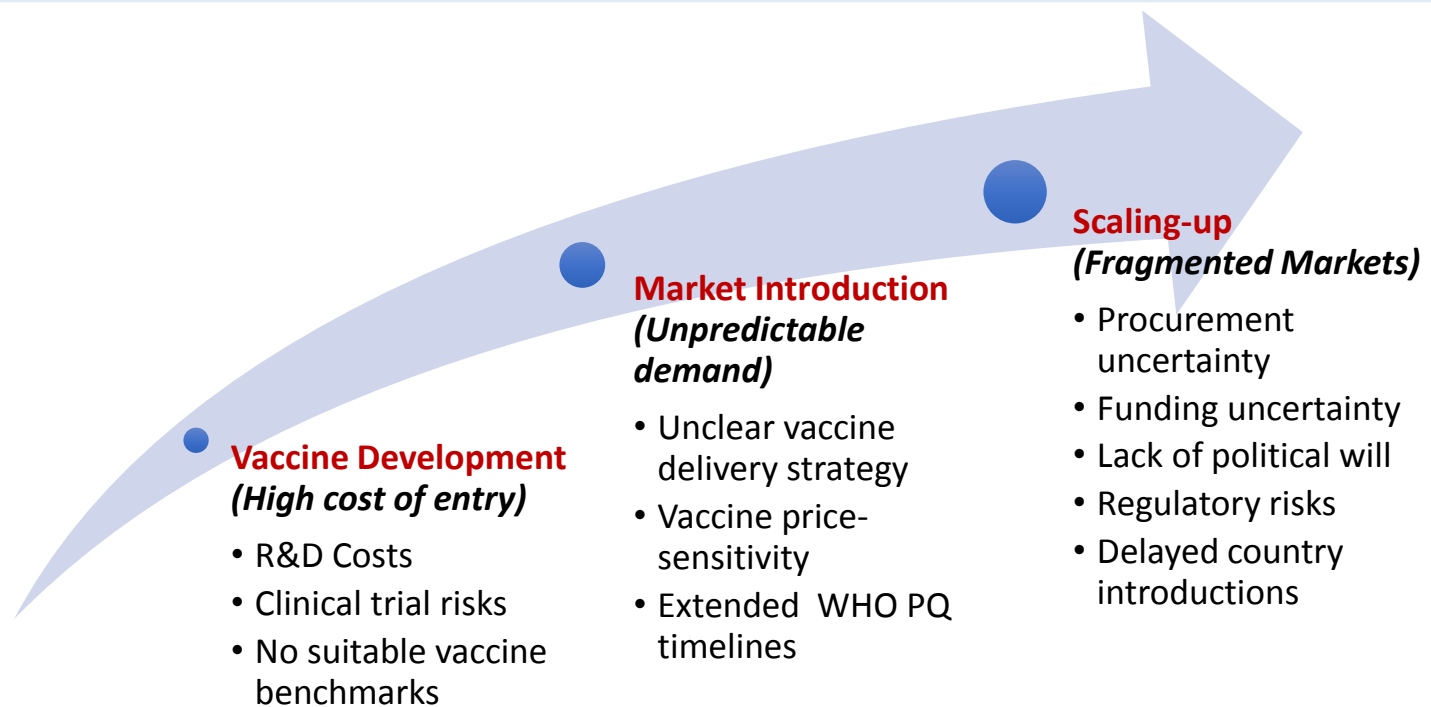
Typhoid Market Dynamics



Limited supplier interest due to low potential margins and demand uncertainty

These market dynamics affect various stages of the product life-cycle and can negatively influence management's decision to invest in TCV market

Suppliers face several development and market barriers across the product life-cycle



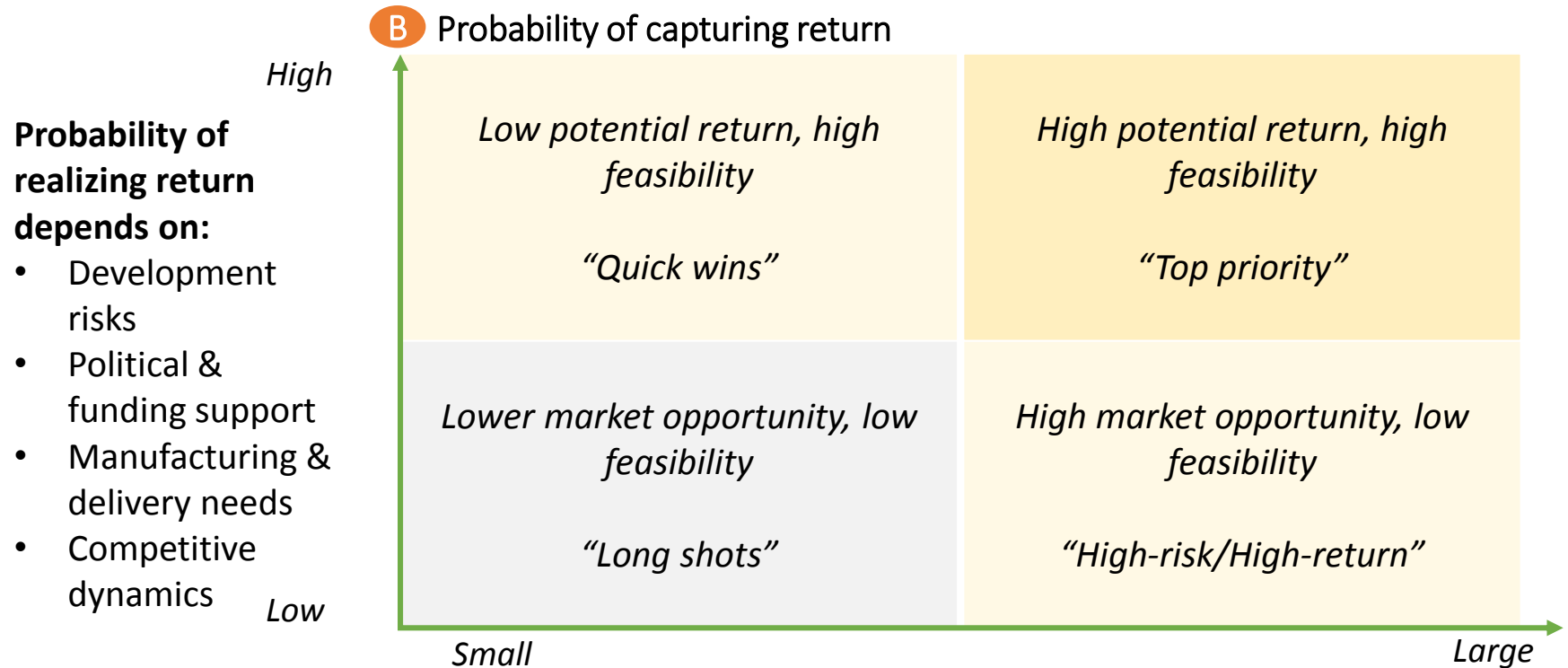
Limiting management's ability to make necessary business and investment decisions

Management considerations include:

- **Allocation of limited resources** based on expected returns
- Budgeting for investments required in **manufacturing capacities/capabilities**
- **Prioritizing markets** and creating market **entry strategy**
- Aligning with **broader company strategy**

Framework for prioritization of vaccine pipeline

Expected return = **A** Potential return X **B** Probability of realizing return



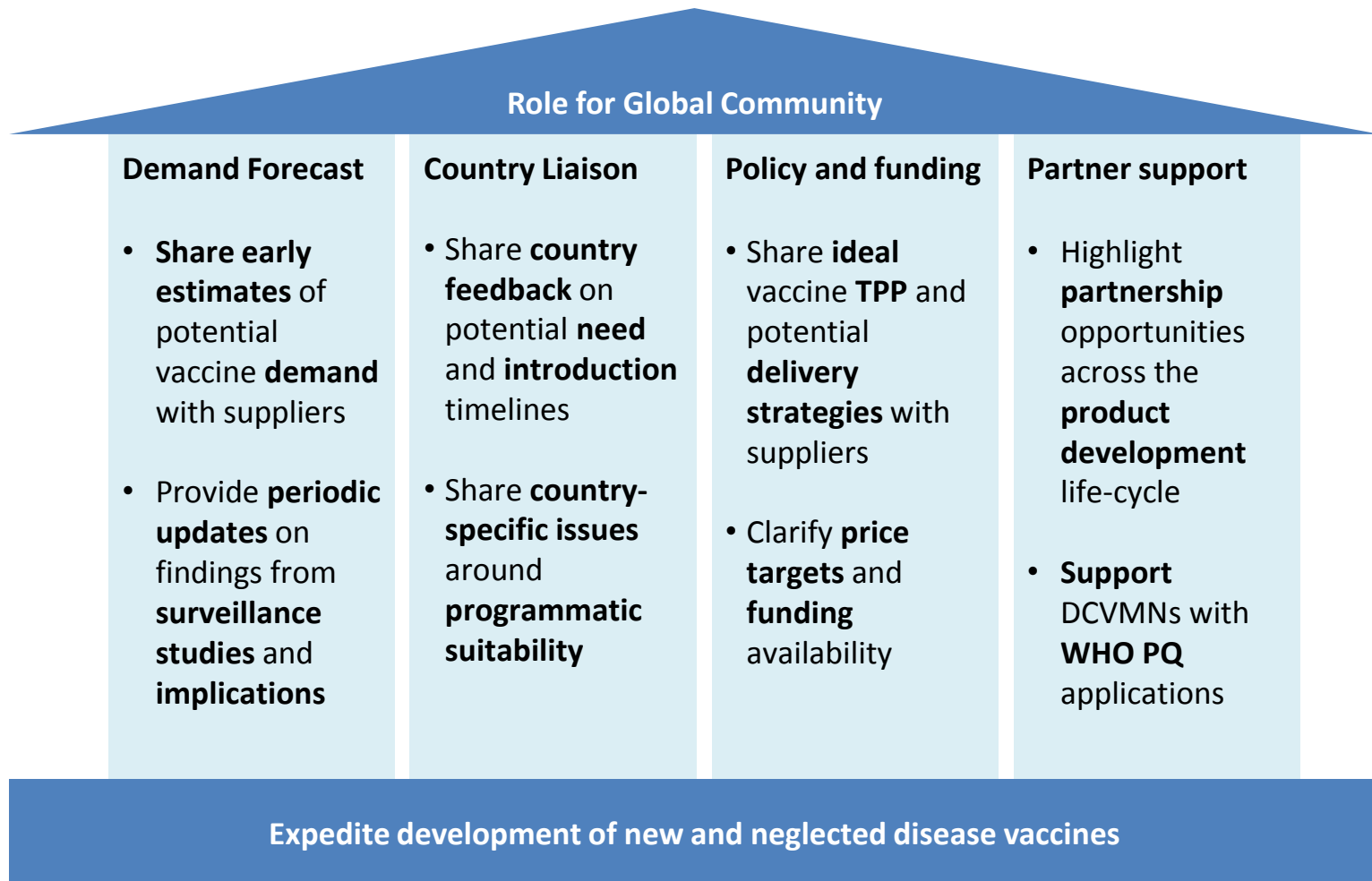
Potential return depends on:

- Potential revenue: Need for vaccine, population size
- Potential margin: Geography, competition

A Potential return

The global community can help suppliers overcome these barriers and accelerate their time to market through a number of activities

Global Community can support suppliers in expediting development of new vaccines



Asante kwa mawazo yako

Thank you for your attention

Merci de votre attention

Obrigado pela sua atenção

여러분의 관심에 감사드립니다

感谢您的关注

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Backup

CHAI's vaccines program works with manufacturers to ensure affordable, adequate supply and with MoHs to improve immunization services

CHAI complements efforts by other global stakeholders across the vaccines value chain

