

CENTER FOR VACCINE  
INNOVATION AND ACCESS

# Introduction of PATH and CVIA

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PATH/Gabe Biencycki

# PATH is a leader in global health innovation

We harness our  
entrepreneurial insight,  
scientific and public health  
expertise, and passion for  
health equity...

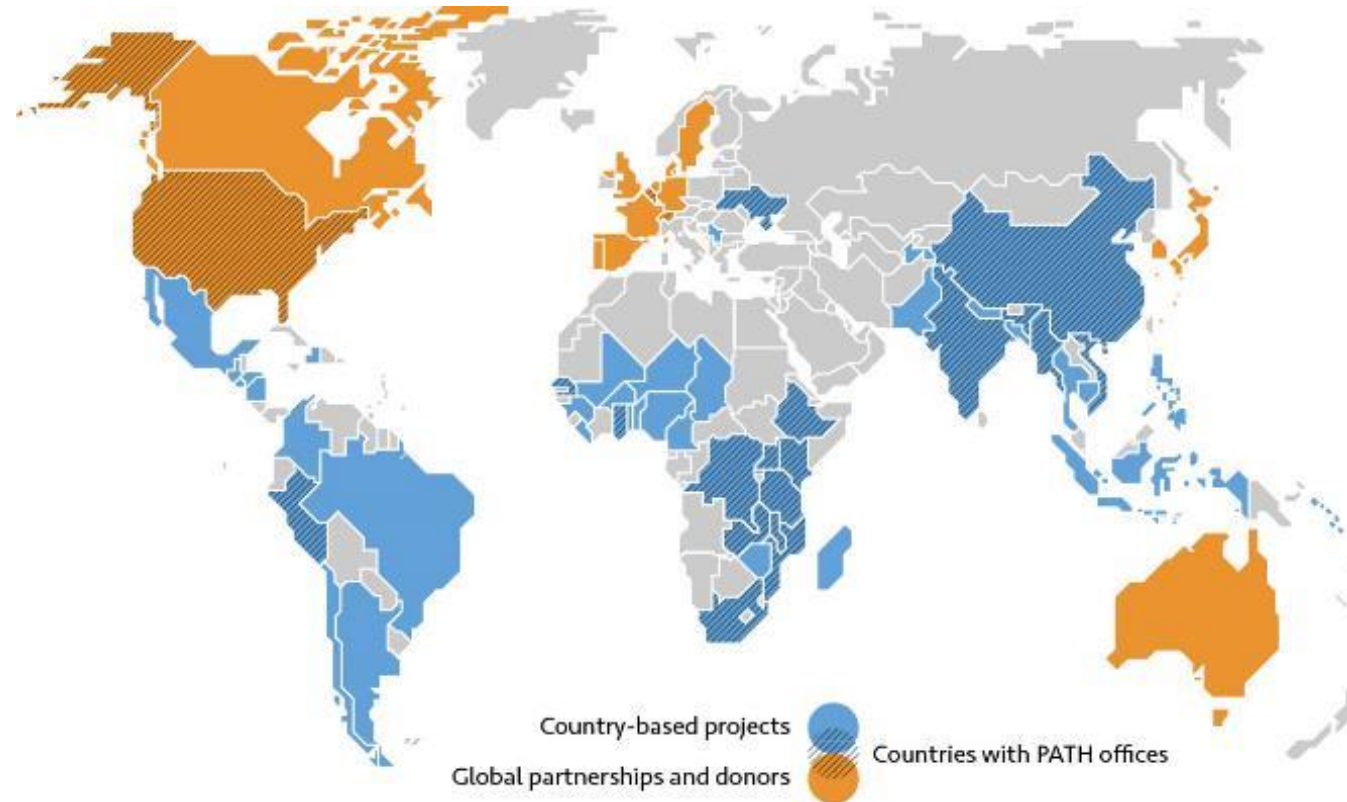
...to save the lives  
of women and children.



PATH/Aaron Joel Santos

# Our global impact

Work in more than 70 countries. 150 million people reached each year on average.



**6 billion vaccine vial**

monitors ensuring that vaccines are potent when given

**260 million people**

immunized with MenAfriVac<sup>®</sup> in the African meningitis belt

**220 million children**

vaccinated in six countries with Japanese encephalitis vaccine

# PATH's Center for Vaccine Innovation and Access

CVIA's primary objective is to accelerate the development and introduction of lifesaving vaccines for optimal public health impact in the world's lowest resource settings. We focus on vaccines that protect women and children from the leading causes of disease and death.

## DISEASE AREAS

### Enteric and Diarrheal Diseases

rotavirus • enterotoxigenic *Escherichia coli* • *Shigella ssp.* • poliovirus • typhoid

### Malaria

*Plasmodium falciparum* • *Plasmodium vivax*

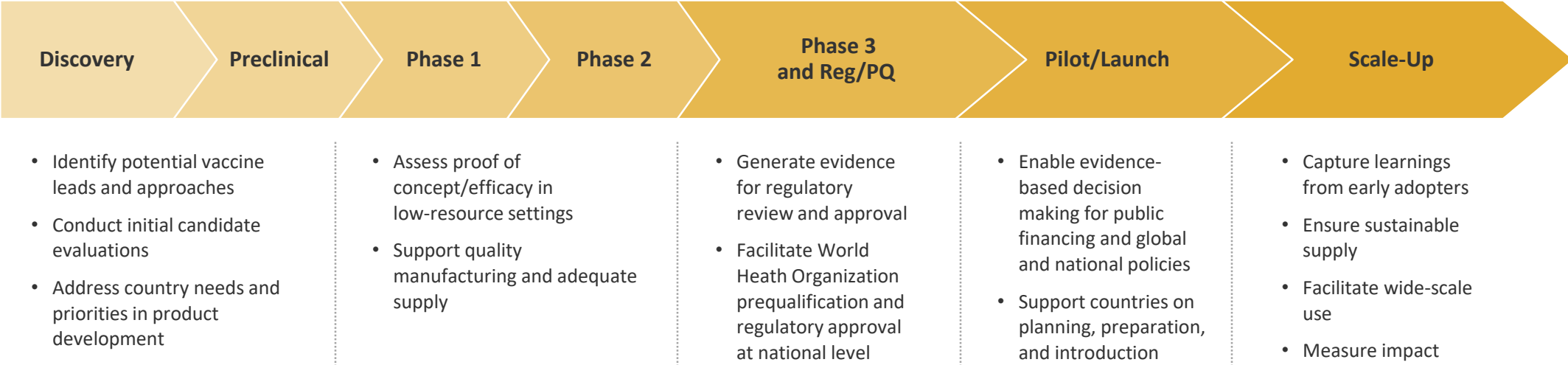
### Respiratory Infections and Maternal Immunization

pneumococcus • meningococcus • group B *Streptococcus* • *B. pertussis* • influenza virus • respiratory syncytial virus

### Zoonotic, Emerging, and Sexually Transmitted Infections

human papillomavirus • Japanese encephalitis virus • dengue virus • yellow fever virus • outbreaks

# Our work spans the entire vaccine development and delivery spectrum



# CVIA's contribution to PATH's mission

Serving women and children disenfranchised because they happen to live in *broken markets*.



Working across a vaccine development to delivery platform in service to *public health and country needs*.



Putting country needs first by thoroughly understanding the needs of all key stakeholders and the *full value proposition*.



Focusing on the middle of the value chain but with a clear *line of sight to impact*.

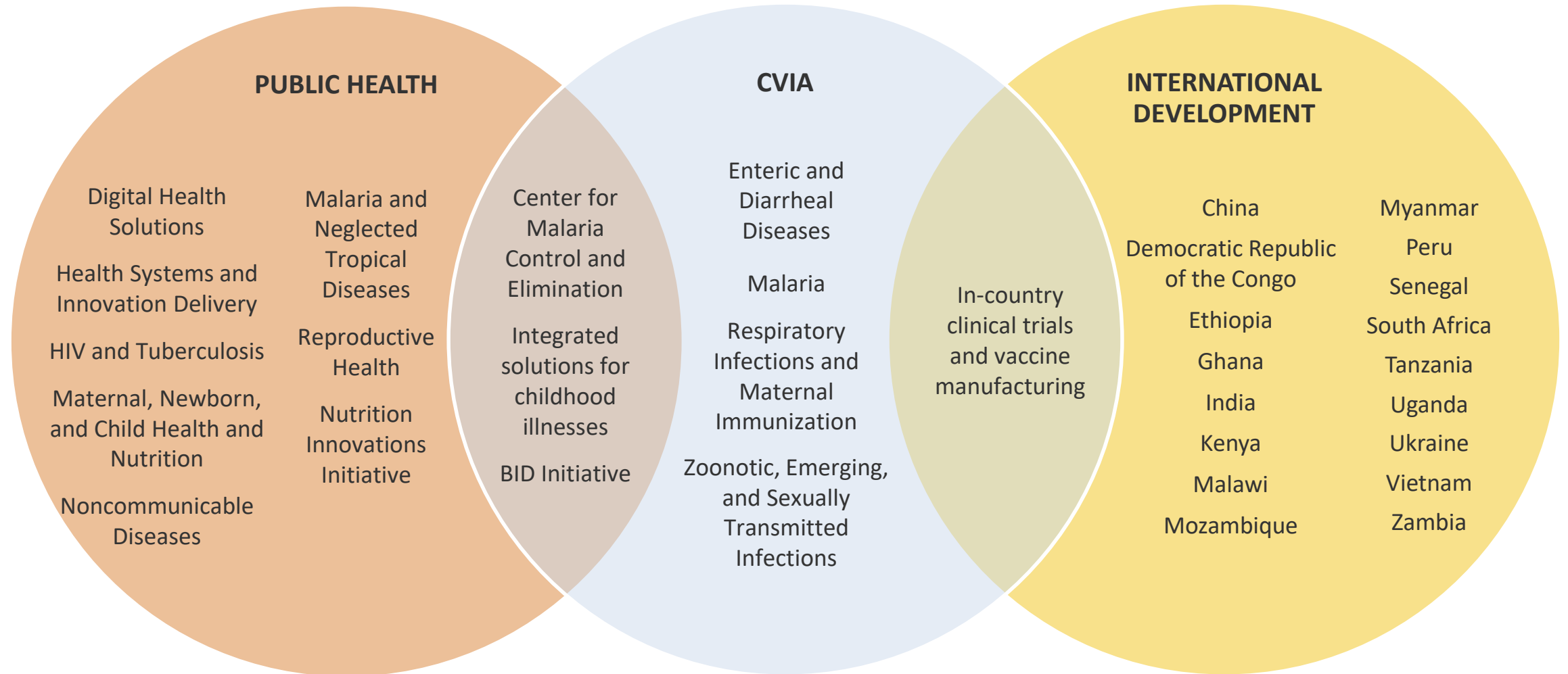


Driving collaboration by building *strong partnerships*, the lifeblood of CVIA.



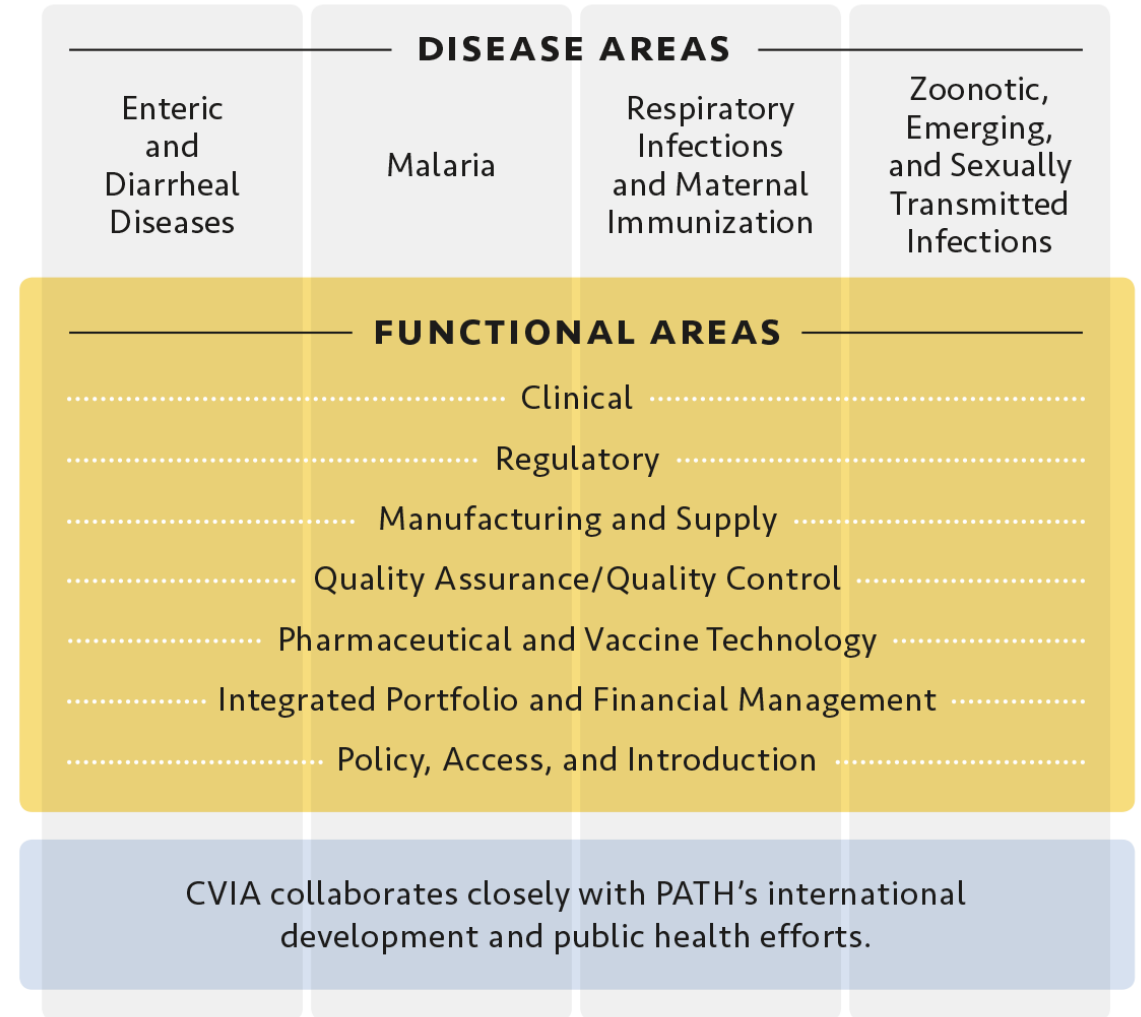
# How CVIA fits into PATH's global footprint

CVIA is part of PATH's essential medicine portfolio.



# CVIA operates as a matrix to optimize staffing resources

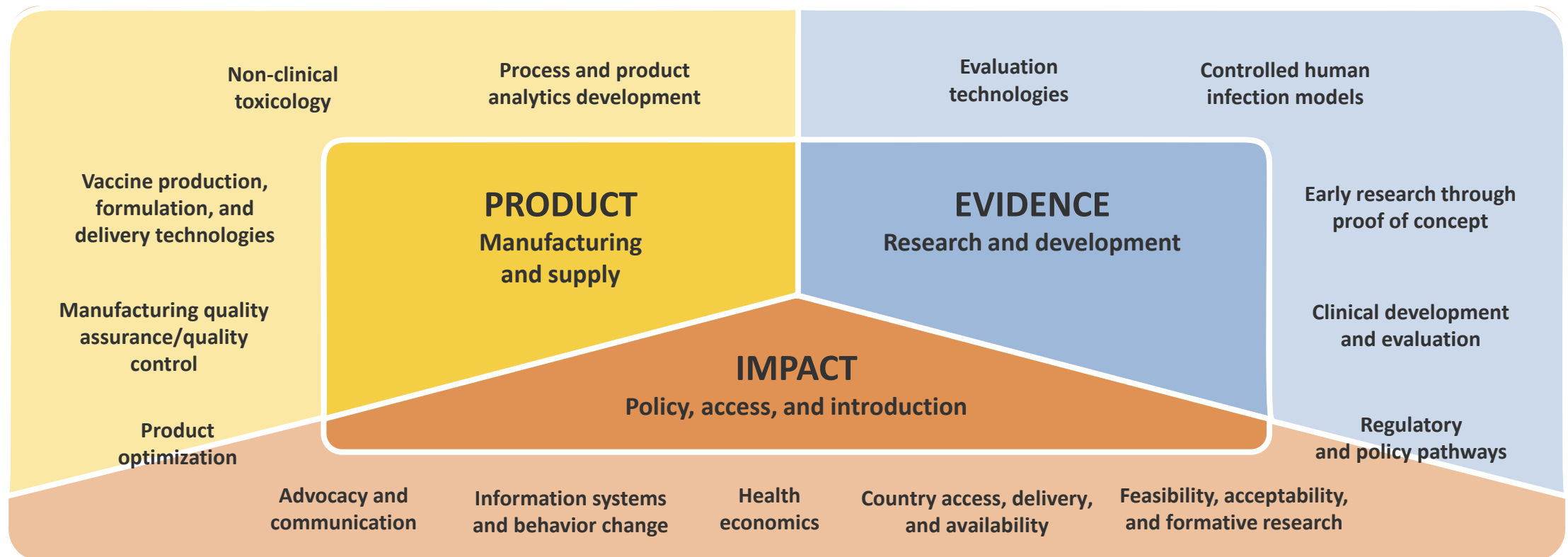
Through its core functional teams, experience and expertise on every aspect of vaccine development and introduction is applied across CVIA's broad portfolio.



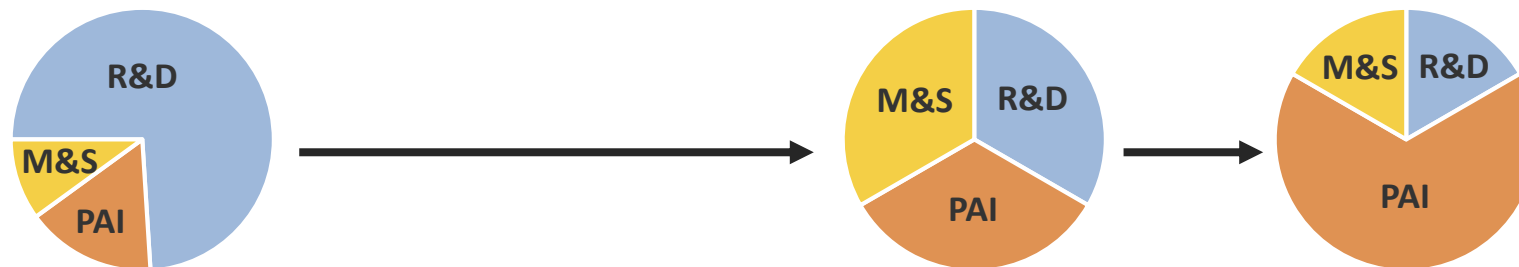
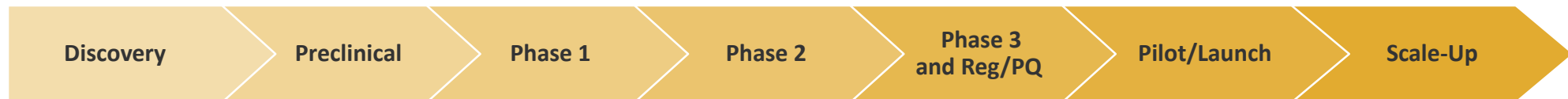
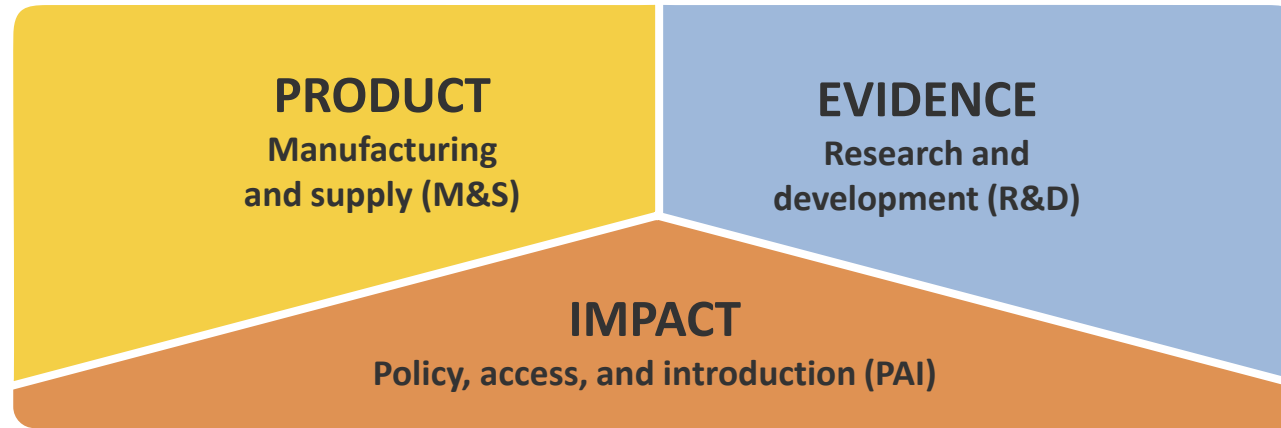


# Multi-disciplinary expertise informs every step

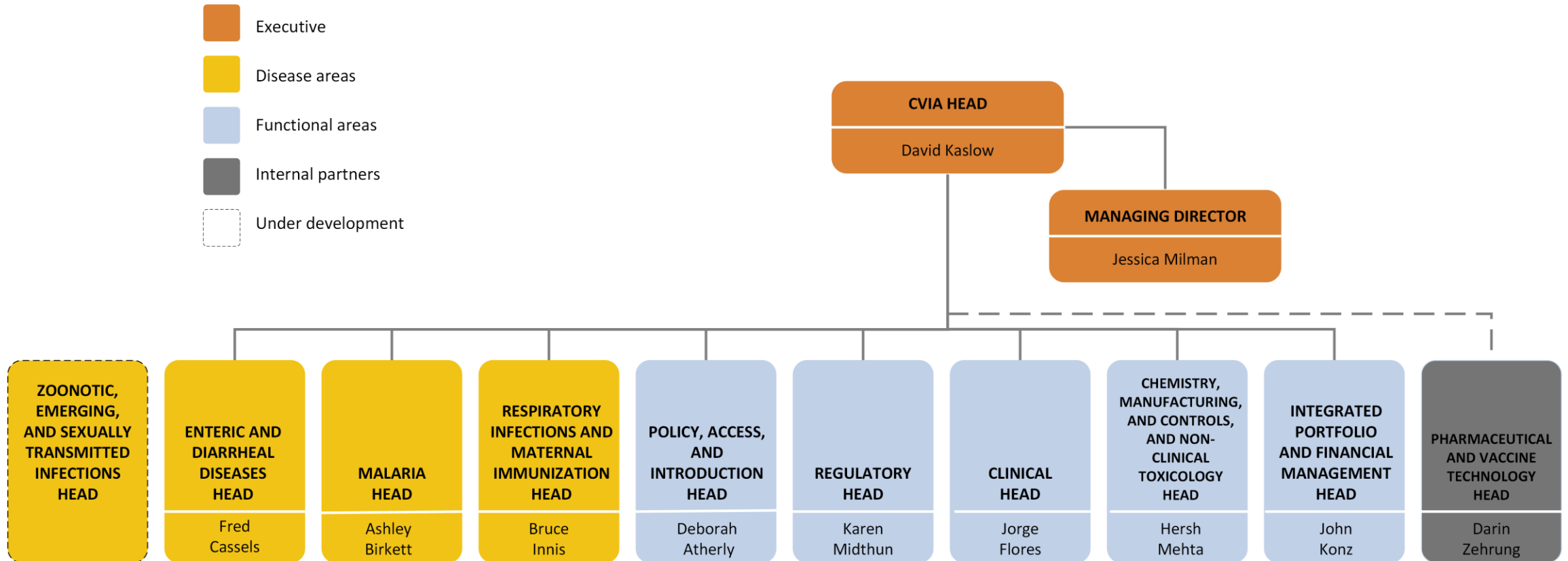
Project and portfolio management expertise provide support along the entire development and delivery spectrum.



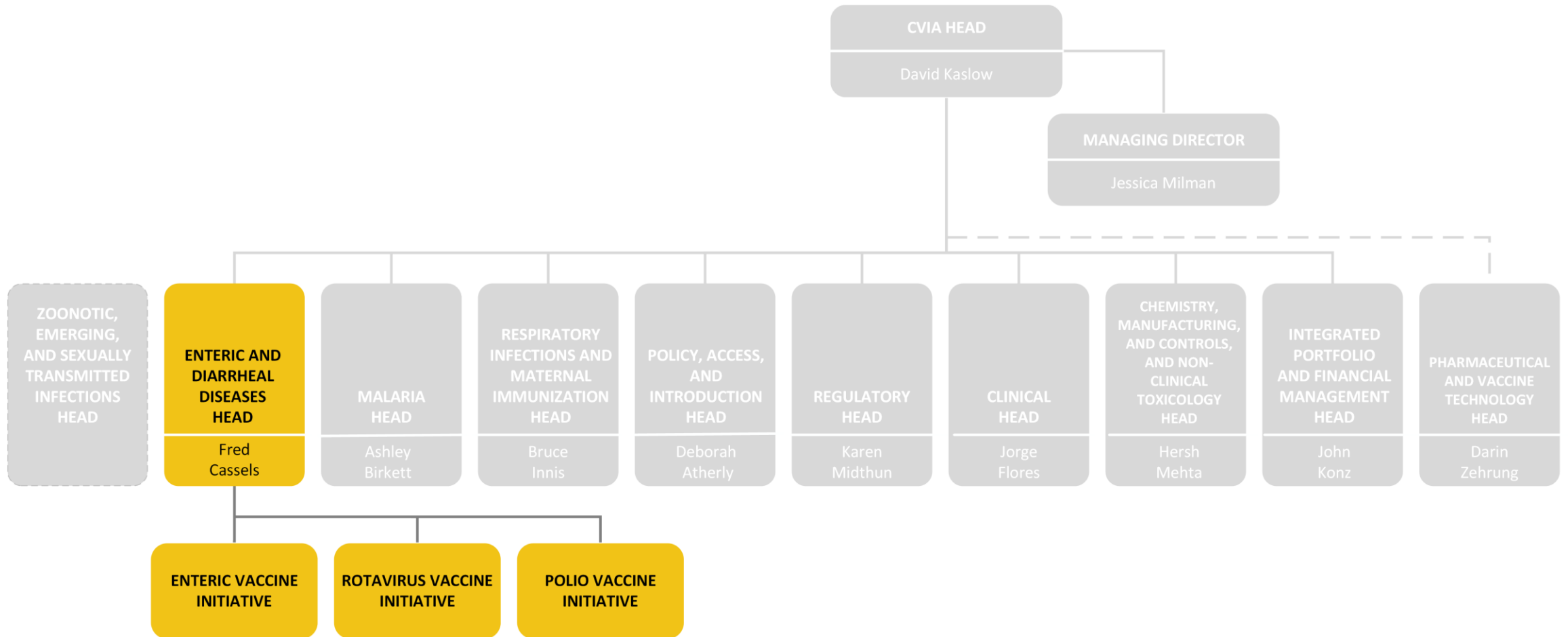
# The right mix of expertise evolves as projects progress across the spectrum



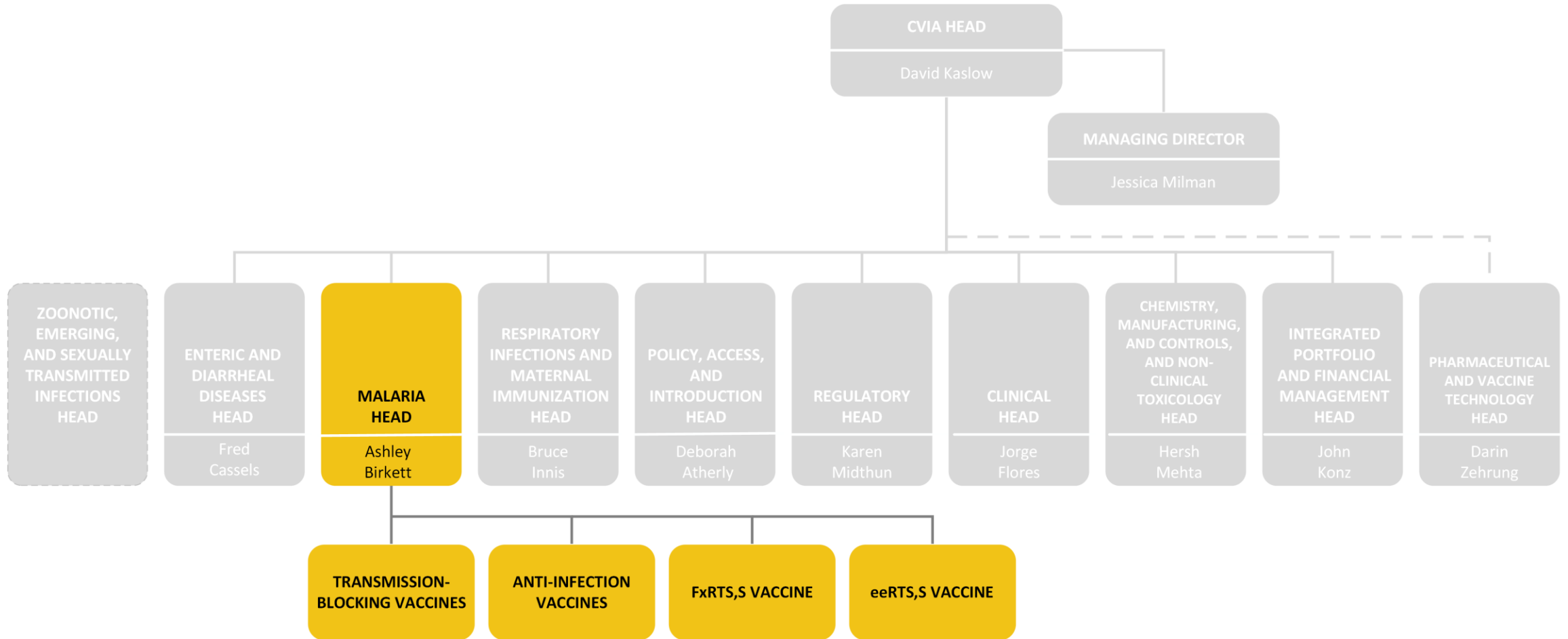
# CVIA is organized by disease and functional areas



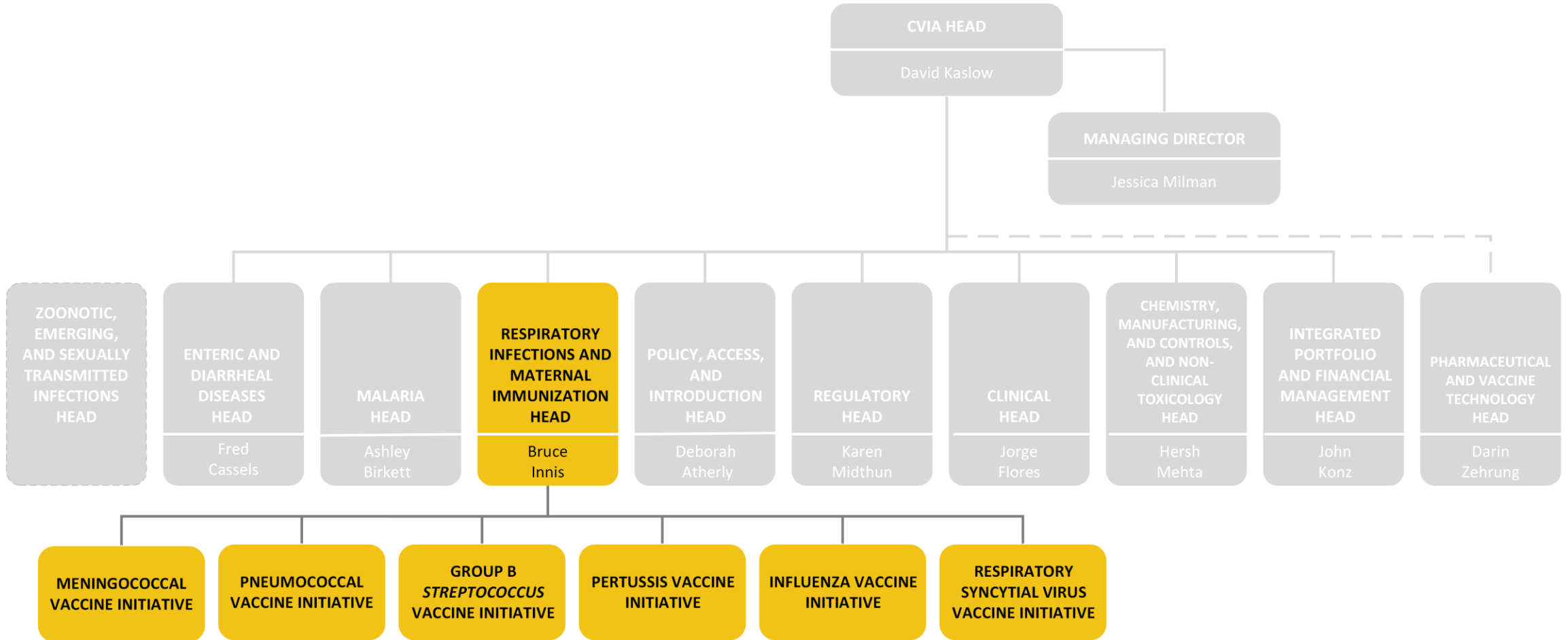
# Enteric and diarrheal diseases area



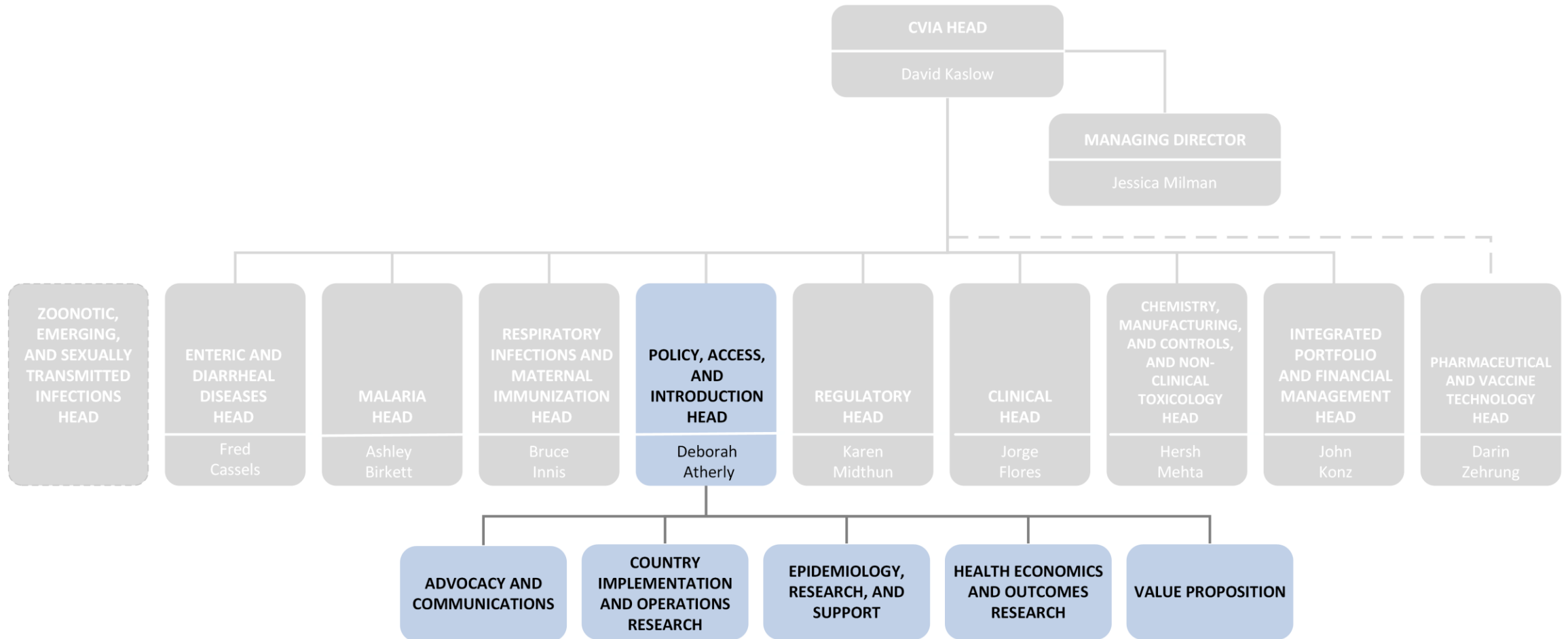
# Malaria disease area



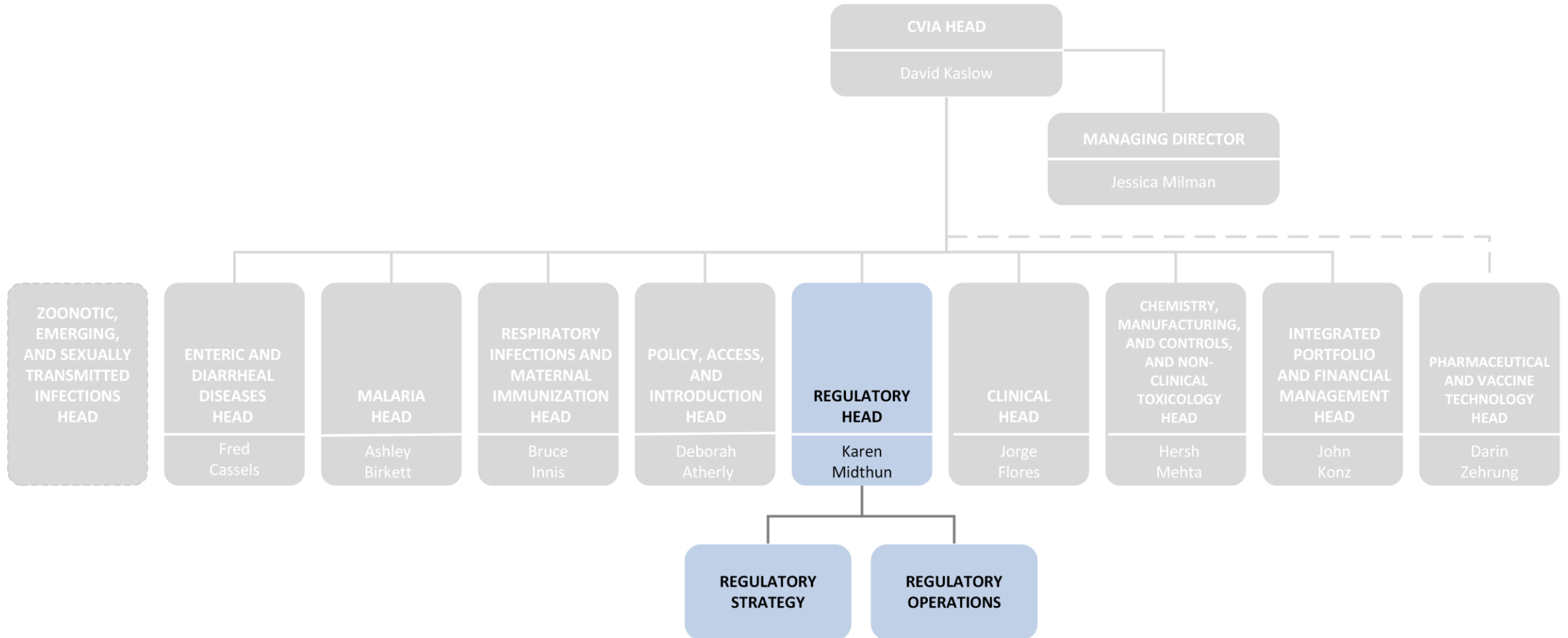
# Respiratory infections and maternal immunization area



# Policy, access, and introduction area

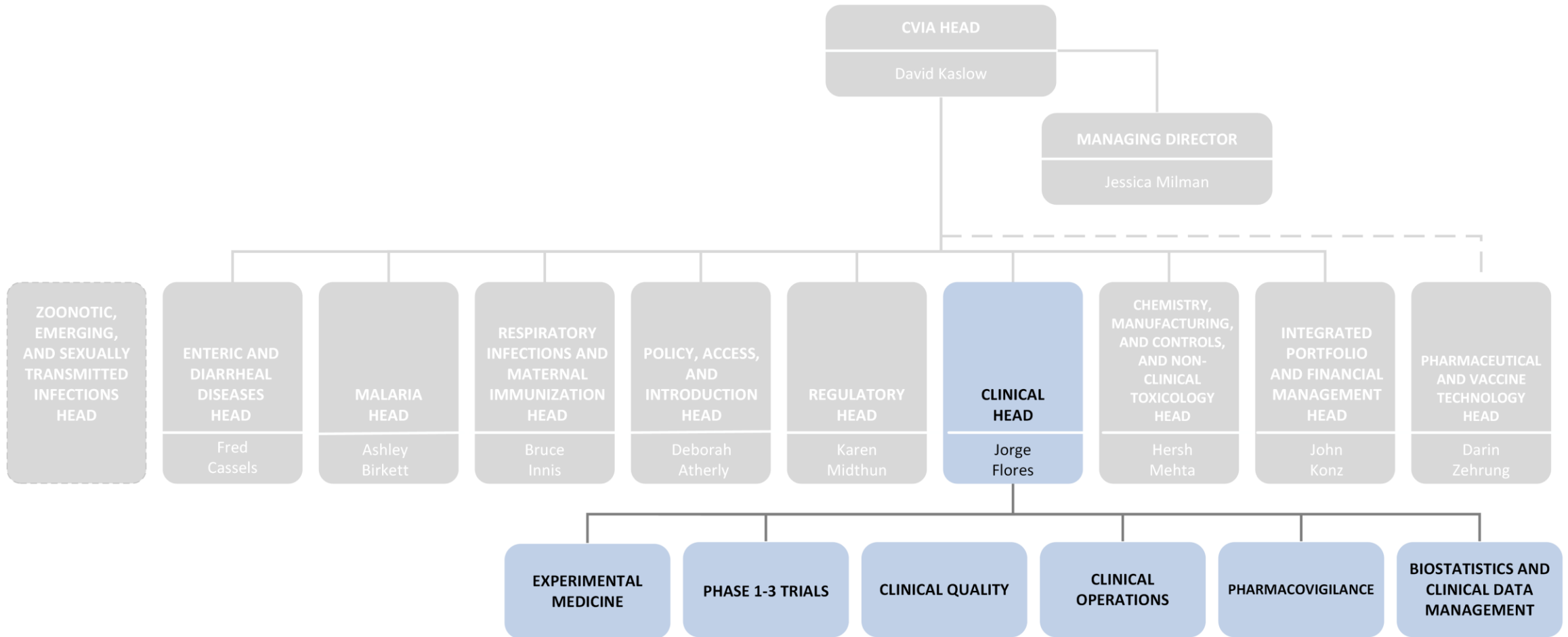


# Regulatory area

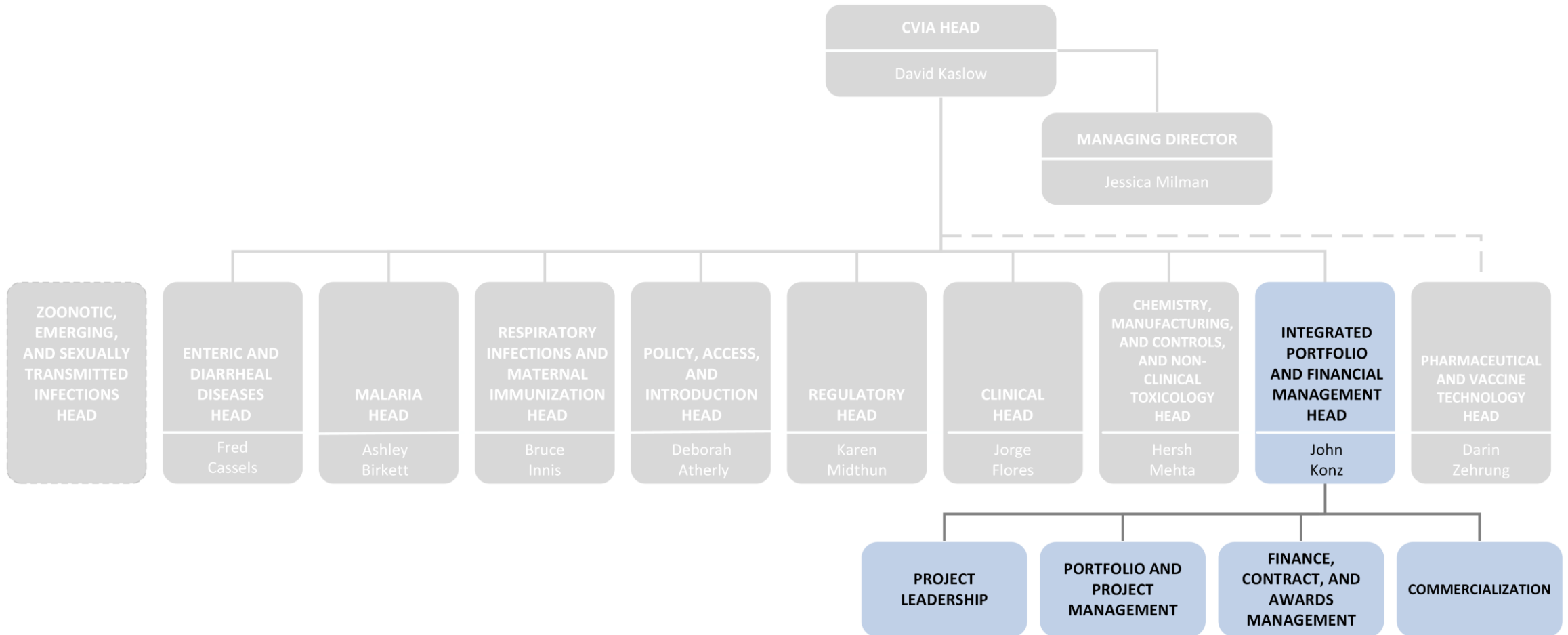




# Clinical area



# Integrated portfolio and financial management area



# Devices & Tools: Vaccine and Pharmaceutical Technologies Group

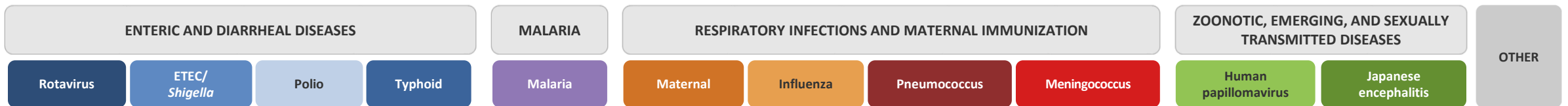
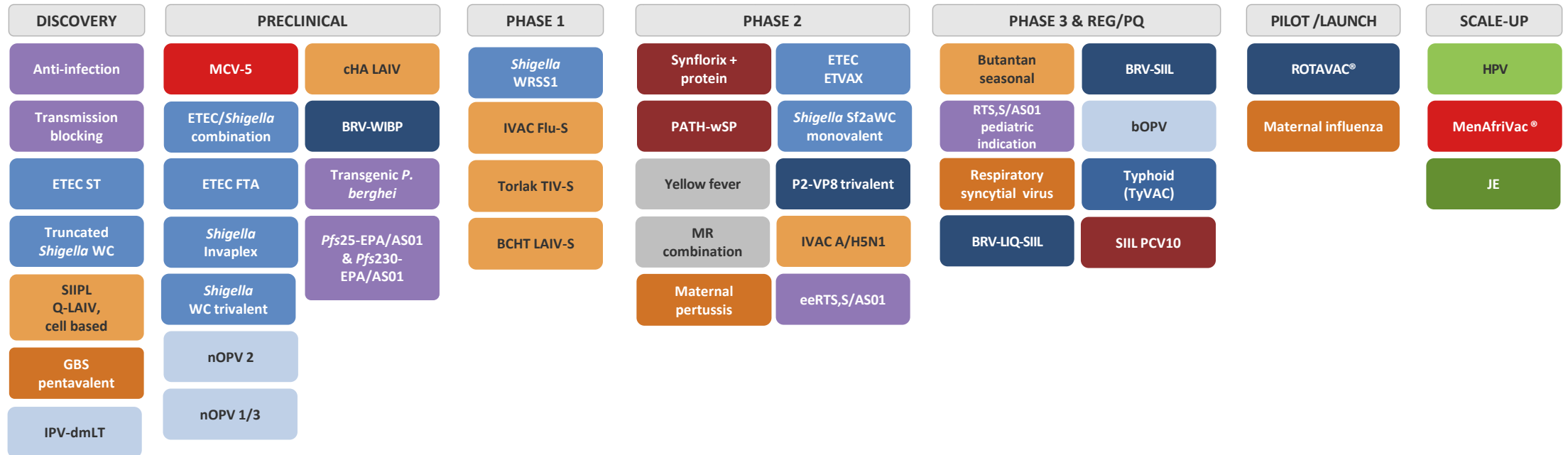
Areas of focus	Examples of current work
<p><b>Formulation and stabilization technologies</b></p> 	<ul style="list-style-type: none"><li>• Formulation and assay assistance to manufacturers</li><li>• Heat/freeze stabilization</li><li>• Pediatric formulations</li><li>• Oral/sublingual delivery<ul style="list-style-type: none"><li>– Thermoresponsive gel</li><li>– Fast-dissolving tablets</li></ul></li></ul>
<p><b>Packaging and delivery technologies</b></p> 	<ul style="list-style-type: none"><li>• Novel primary containers<ul style="list-style-type: none"><li>– Prefilled, polymers</li></ul></li><li>• Microarray patches</li><li>• Reconstitution technologies</li><li>• Prefilled and safety syringes</li><li>• Biodegradable implants</li></ul>
<p><b>Supply systems and equipment</b></p> 	<ul style="list-style-type: none"><li>• Barcodes</li><li>• Freeze-free vaccine carriers</li><li>• Solar powered equipment</li><li>• Refrigerator and passive cold box testing</li><li>• Temperature monitoring</li></ul>

# Highlights from PATH's vaccine work

- Supported development and introduction of MenAfriVac®; over 260 million Africans immunized since 2010.
- Delivered a high-quality, affordable Japanese encephalitis vaccine to over 220 million children in six countries.
- Partnered with GSK to develop RTS,S malaria vaccine, receiving positive scientific opinion from European regulatory authorities and WHO.
- Partnered on the development of the vaccine vial monitor, with more than 6 billion used to date.
- Designed and developed the first autodisable syringe for immunization and drug delivery.

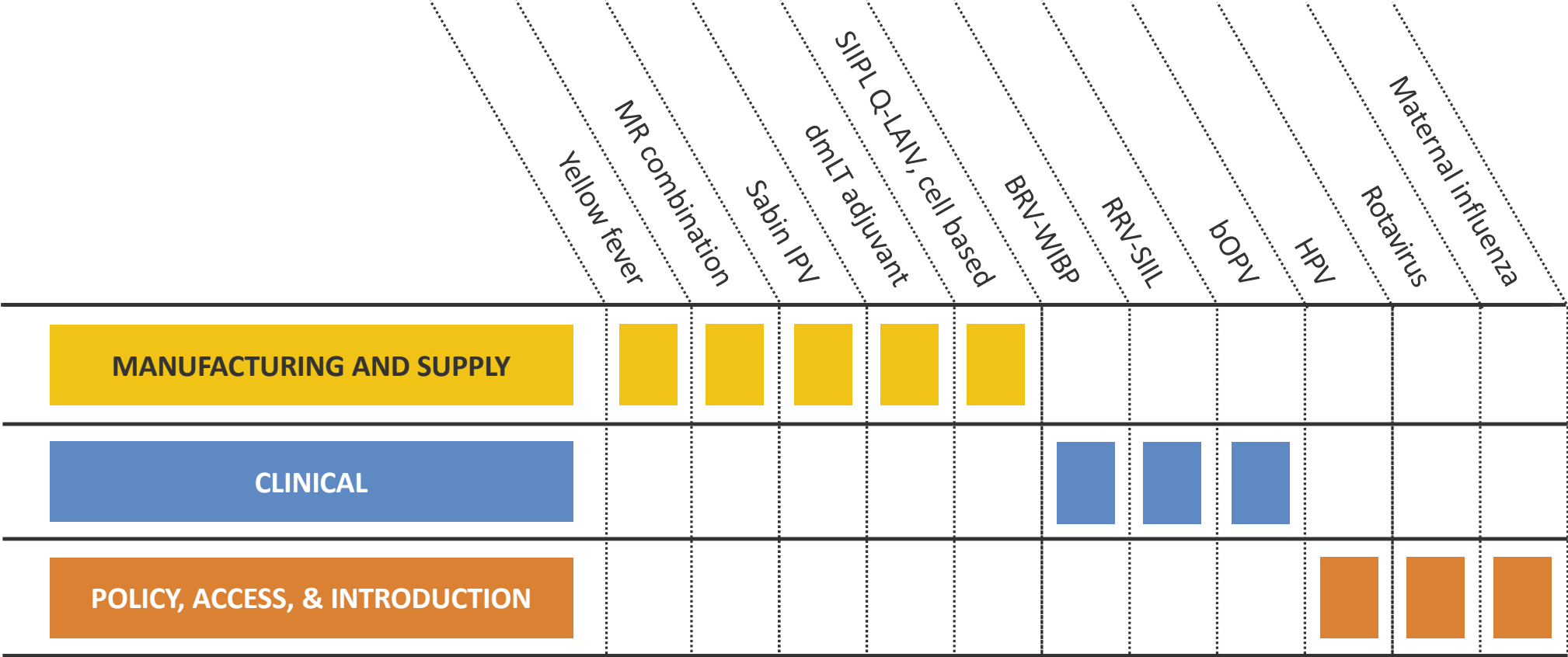


# Our portfolio\* includes over two dozen vaccines in development and use across 17 disease targets



\* Portfolio snapshot Q1 2017; does not include new/ongoing proposal development work in dengue, Zika, or Ebola, nor ongoing support to the Expanded Programme on Immunization in multiple countries.

# Technical assistance and enabling technologies\*



\*Technical assistance snapshot as of Q1 2017.



# *Scaling Chinese innovation for health impact in the world*

**Michael Wang**  
**Country Director**  
**May. 9, 2017**



# Scaling Chinese innovation for health impact in the world

*In the next decade, China will play a unique and critical role in promoting health and development in sub-Saharan Africa and other low-resource settings, especially for women and children. PATH looks forward to collaborating with the Chinese government and companies to provide innovative and sustainable health solutions to vulnerable populations.*

**Steve Davis**  
**President and CEO**  
**PATH**



# PATH China had to change its role because environment is changing

## - *Politics, Economy, Product and Technology in Public Health*

### 1. Economy

- China has become the 2<sup>nd</sup> largest economy entity in the world
- In 2016, GDP, per capital of China is US\$ 8,900 which has been listed into UMIC and international aid is decreasing dramatically
- China is changing its role from “ Recipient country “ to “ Aid Country “
- PATH China had to change the traditional role of international NGO from “ Receive help “ to “ Help other people”

### 2. Politics

- U.S Govt. is pushing Chinese Govt. to take more global responsibility, instead of “ taking free ride”

### 3. Government:

- Chinese government is changing its role from “ Recipient country” to “ Aid country”.
- “China-Africa Health Cooperation Platform” is working
  - ✓ Build CDC system
  - ✓ Malaria treatment
  - ✓ Maternal and newborn health
  - ✓ Local production of drug / Device and improve access to health and medical product

# ***PATH China had to change its role because environment is changing***

## ***Politic, Economic, Product and Technology in Public Health***

### ***4. Private / State-owned companies***

- Great progress of technology, product & service in the area of diagnostic, device & tools in past 10 years
- Local companies are expanding business globally.

### ***5. Philanthropy environment***

- Different local foundations, especially enterprise foundation, are growing up.
- Different civil organizations are growing up.

# Economy & Population comparison – China / India / S. Africa / Vietnam

Population(million) - 2015



■ China ■ India ■ S.Africa ■ Vietnam

GDP per capita-\$



GDP-Billion \$



■ China ■ India ■ S.Africa ■ Vietnam

Health Expenditure - % of GDP - 2014



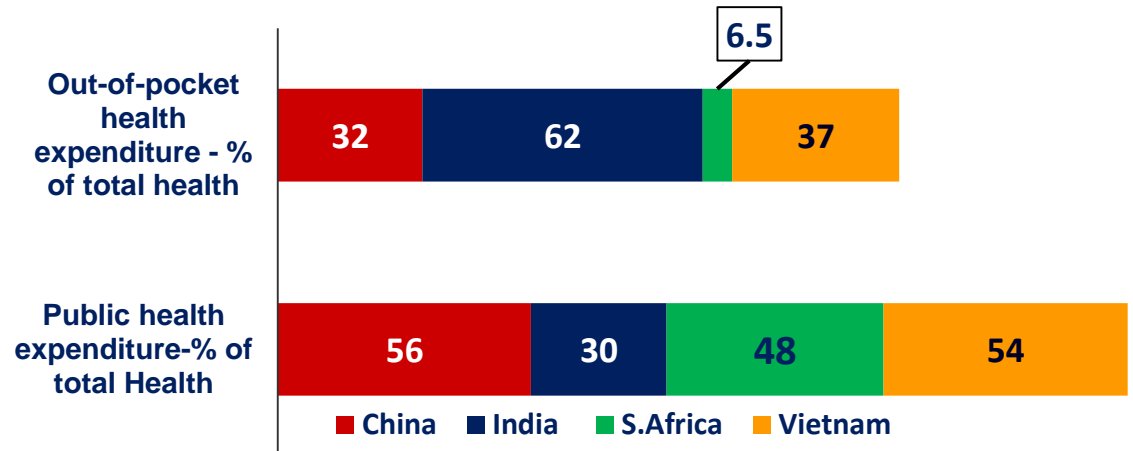
■ China ■ India ■ S.Africa ■ Vietnam

Health expenditure per capita -\$ 2015



■ China ■ India ■ S.Africa ■ Vietnam

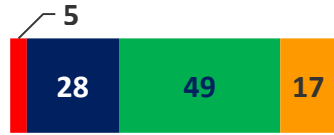
Health expenditure - 2015



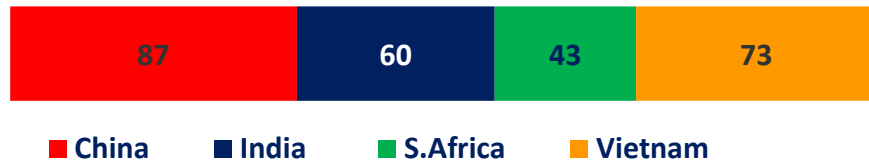
Source: World Bank Data – 2014-2015

# Health Indicator Comparison – China / India / S. Africa / Vietnam

Cause of death, by communicable diseases, maternal, prenatal % nutrition -% of total-2012



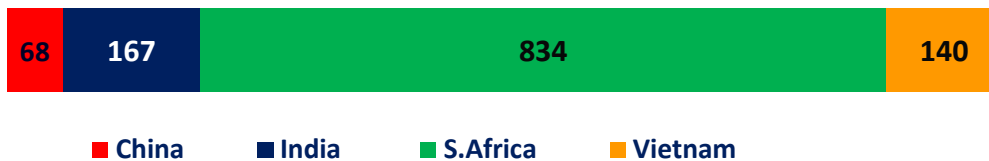
Cause of death, by non-communicable diseases-% of total-2012



Diabetes prevalence(%of population age 20-79) 2015



Incidence of tuberculosis ( per 100,000 people)-2014



Mortality, neonatal( per 1,000 live birth) - 2015



Maternal mortality ratio( per 100,000)-2015



Mortality, infant ( per 1,000 live birth) - 2015



Source: World Bank Data – 2014-2015

# China Global Health Cooperation Platform

## ONE BELT ONE ROAD



## AIIB



## CHINA – AFRICA FORUM



## CHINA-AFRICA DEVELOPMENT FUND



## BRICKS SUMMITS



## NDB



## SOUTH TO SOUTH COOPERATION



South to South Aid Foundation  
( 14 B \$ by 20230)

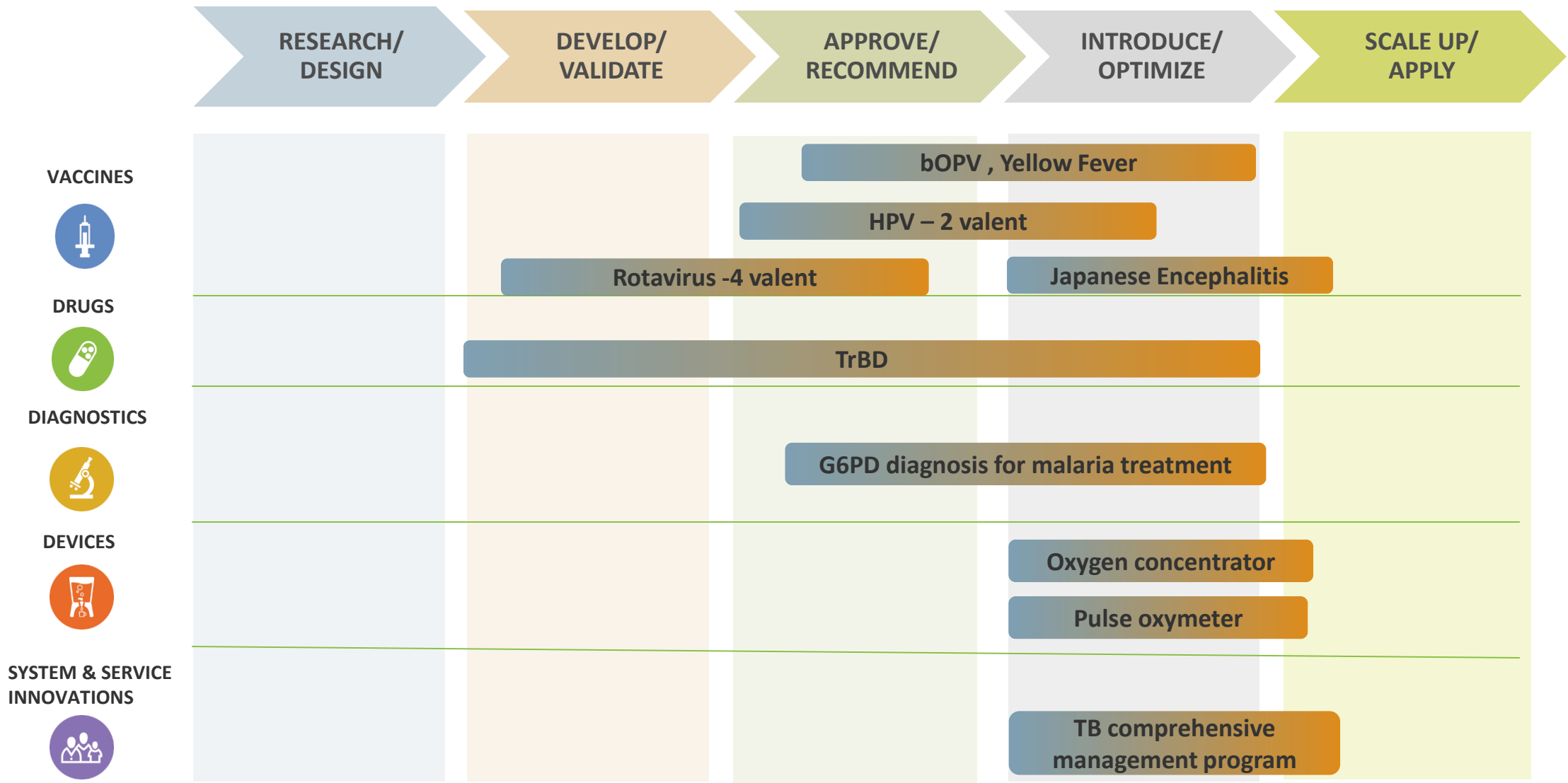
## CHINA-AFRICA HEALTH SYMPOSIUM



# What China can contribute in global health market ?

1. **Finance support.**
2. **Product & Technology**
3. **Professional public health people**
4. **Successful experience in public health service and system**

# China program management - 2017-beyond



# PATH China Pipeline development - 2018 & beyond



## VACCINE

- HPV
- Pneumococcal vaccine
- IPV



## DRUG

1. TrBD
  2. Malaria treatment
- Artesunate
  - Dihydroartemisin in + Piperaquine



## DIAGNOSTICS

1. TB diagnosis
2. Cervical cancer / breast cancer screening & diagnosis
3. Others



## DEVICE & TOOLS

1. Oxygen concentrator
2. Pulse oxymeter
3. Others



## Service & System Innovation

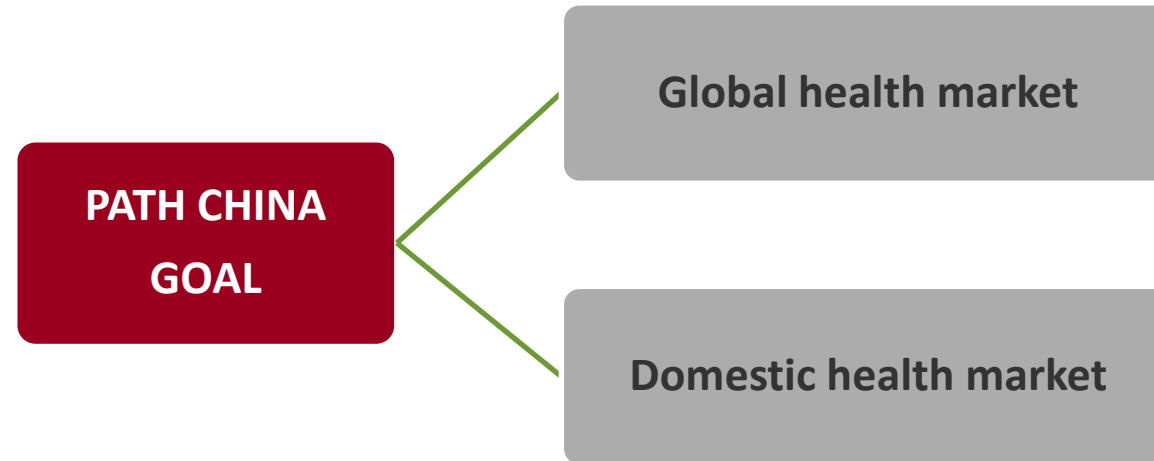
1. China –Africa health cooperation-build CDC system in 5 countries

- Support Chinese government to play important role in global public health market through our professional expertise and strong global presence.

- Work with local private / state-owned companies across five platforms and support them to become important supplier of public health commodity in global market.



# PATH China – Objective and implementation framework



1. PATH China will focus global health market, especially in Sub-Saharan countries, through mobilizing local fund, technology, product and system and service
2. PATH China role in domestic market will expand from infectious disease to NCD

# PATH China – Objective and implementation framework

