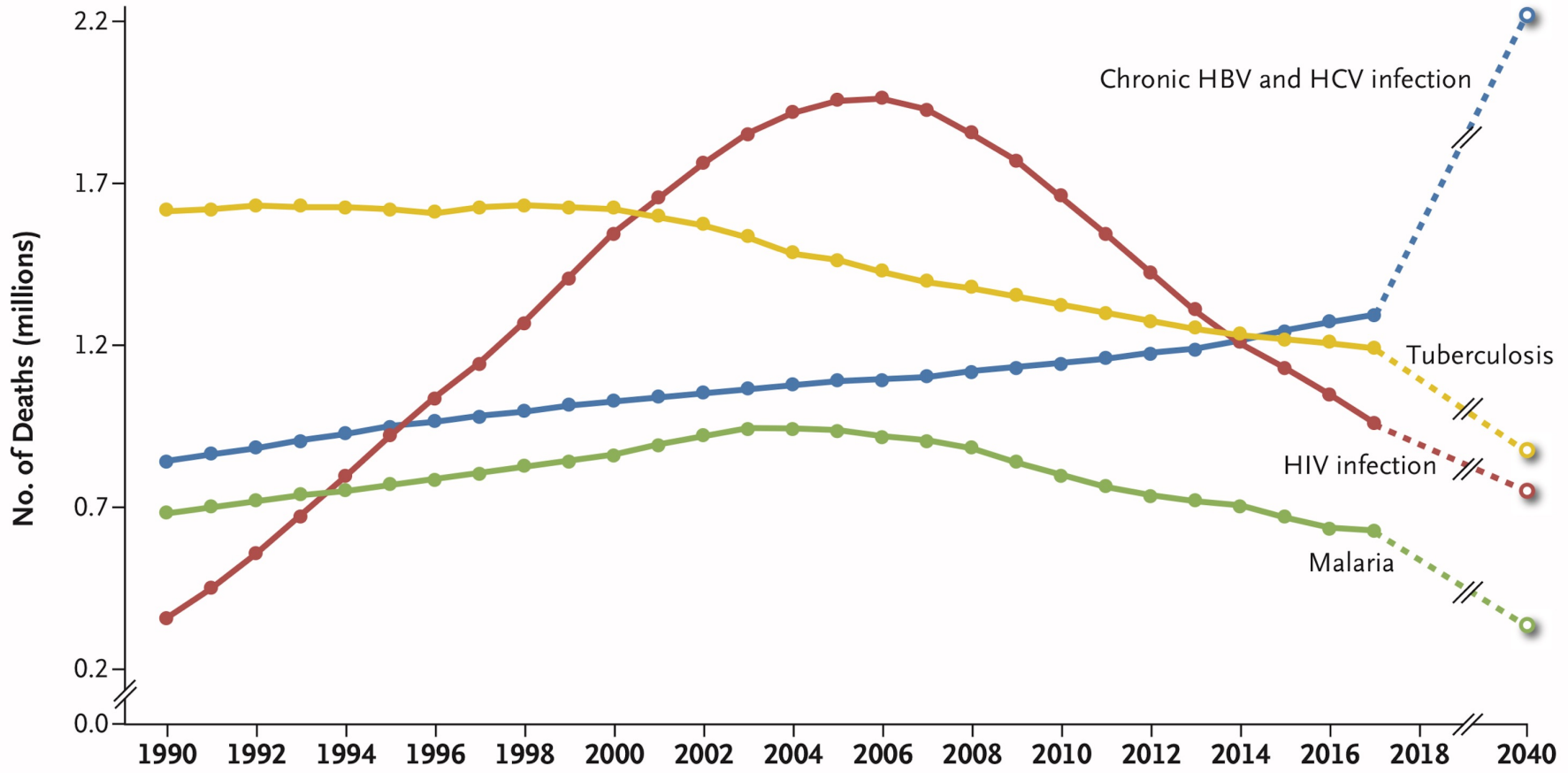


# **Public Health Tools for Eliminating Hepatitis**

David L. Thomas, MD, MPH  
Johns Hopkins Medicine

# Chronic hepatitis is an important public health problem



Thomas NEJM 2019

# Tools for eliminating hepatitis

HBV vaccine

Blood screening

Safe injections

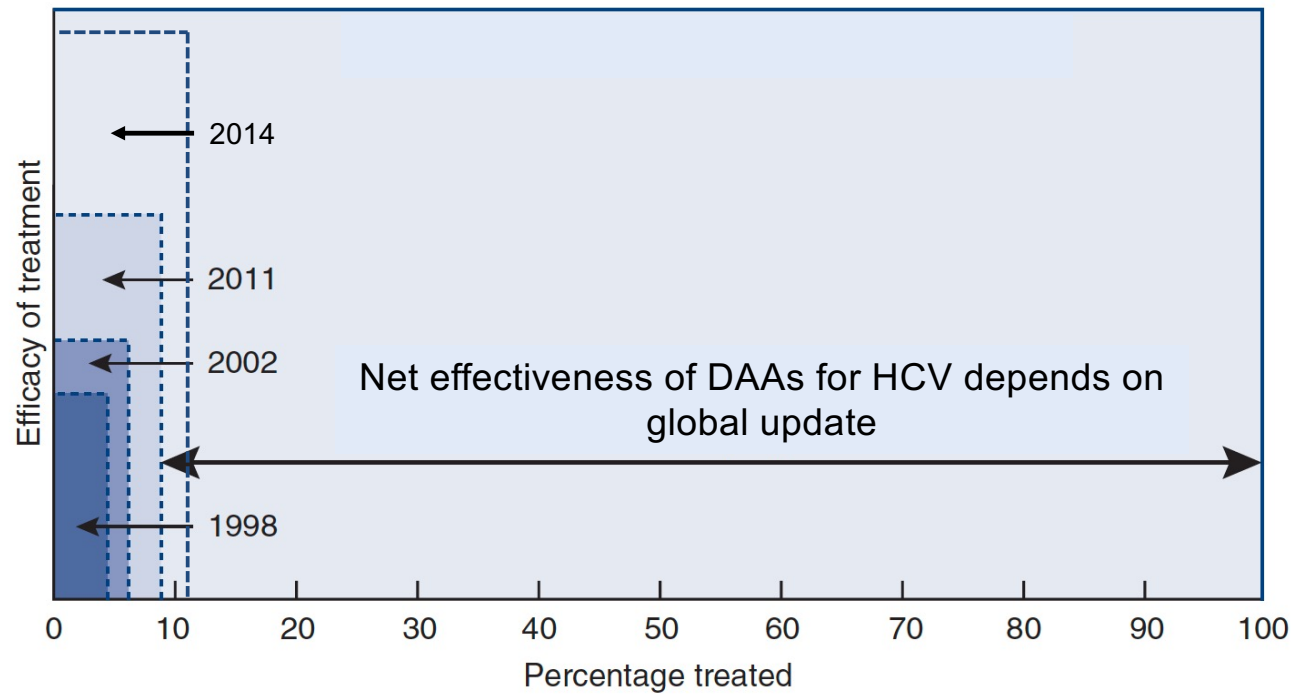
Harm reduction

Testing

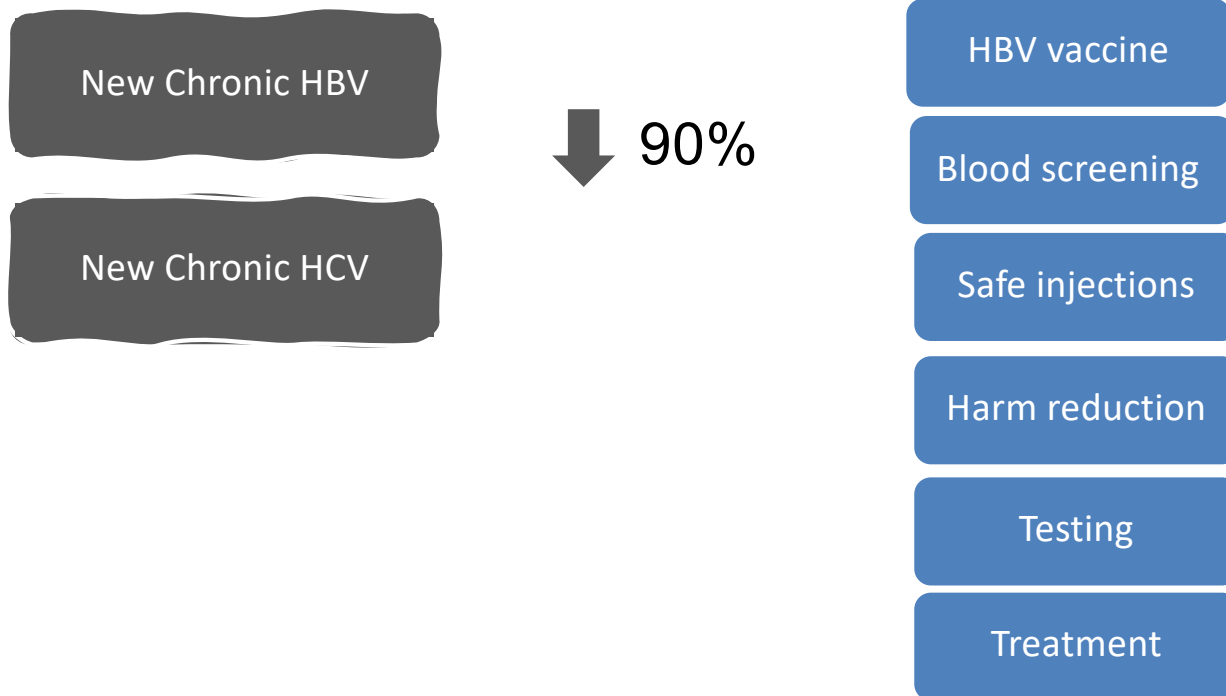
Treatment

# Public health tools for eliminating hepatitis

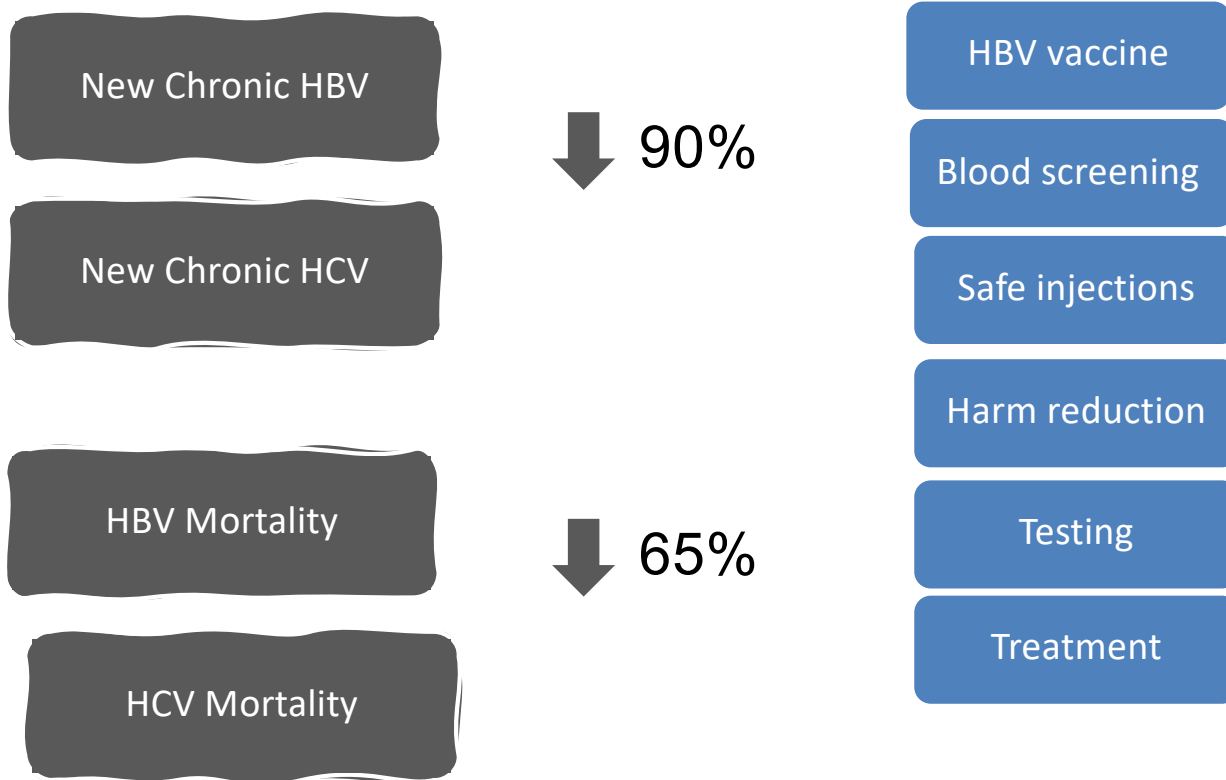
- HBV vaccine
- Blood screening
- Safe injections
- Harm reduction
- Testing
- Treatment**



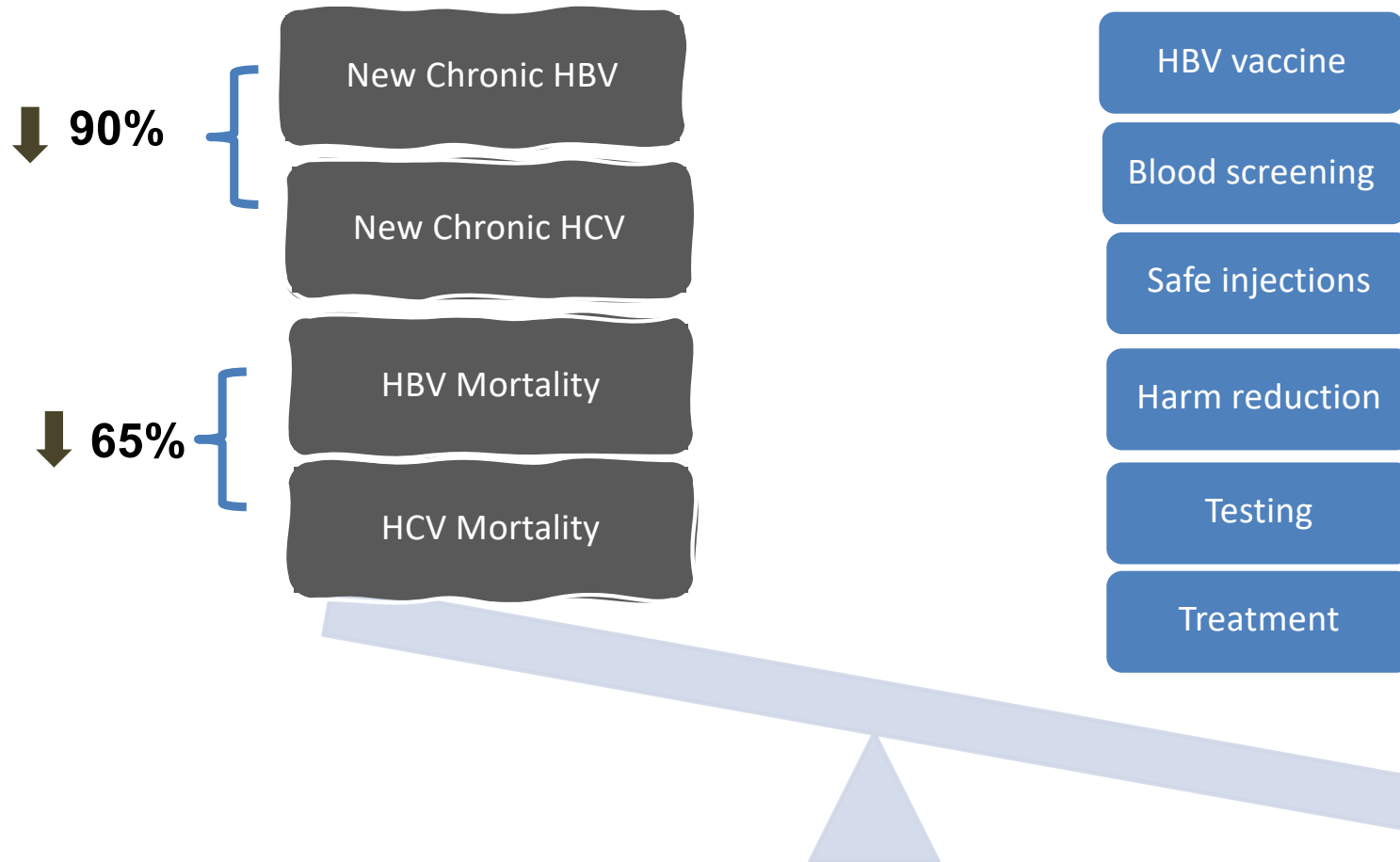
# Public health tools for eliminating hepatitis



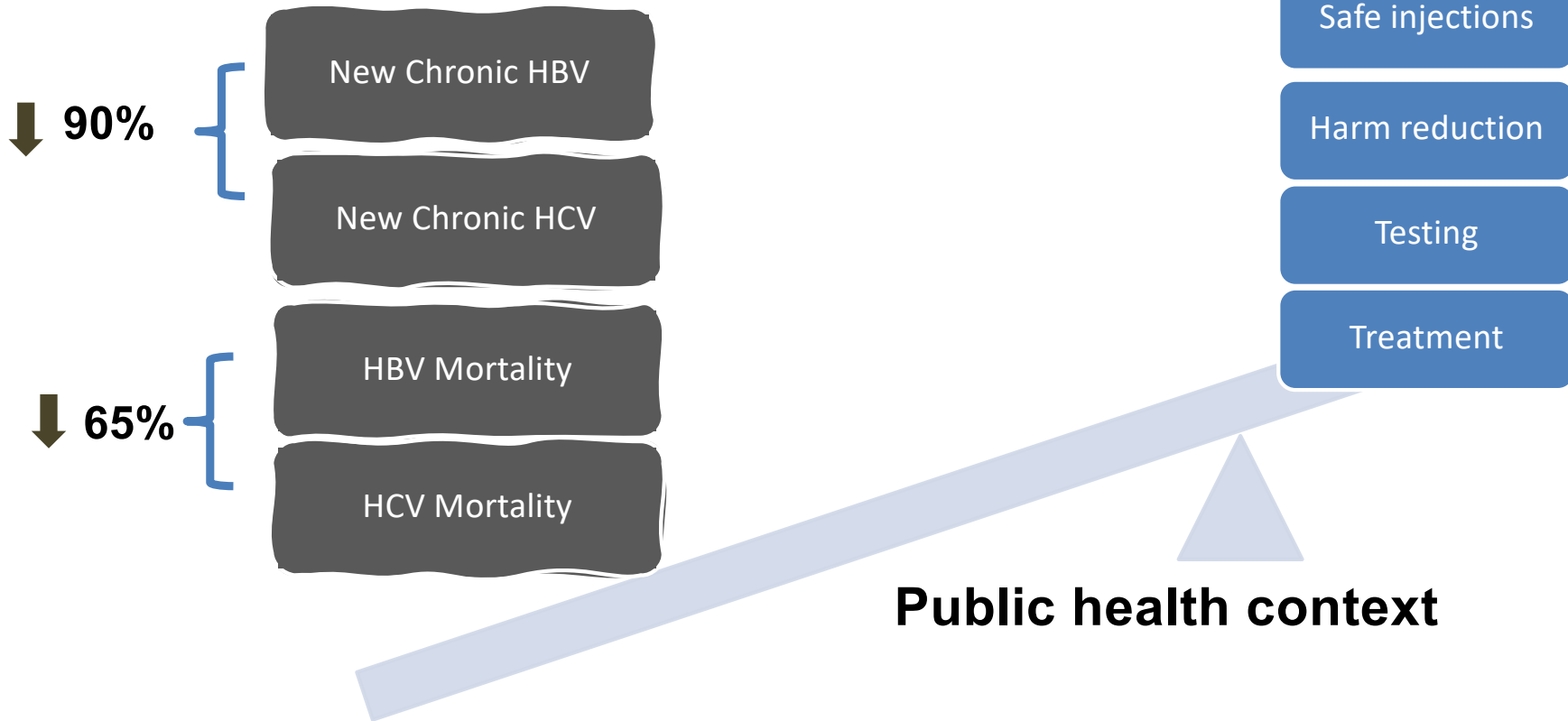
# Public health tools for eliminating hepatitis



# Public health tools may be sufficient

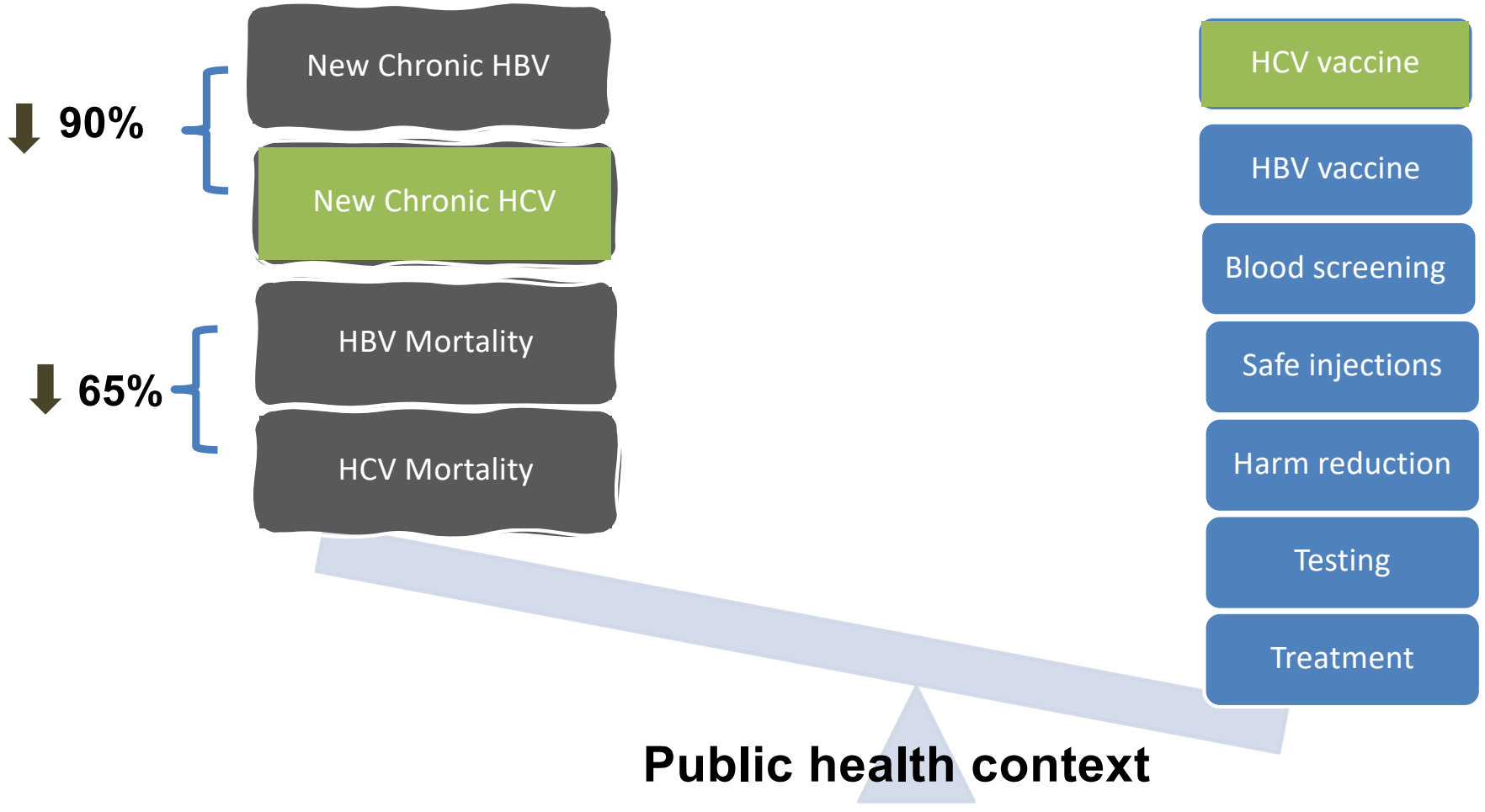


# In some contexts the tools are NOT sufficient





# In some contexts new tools are needed



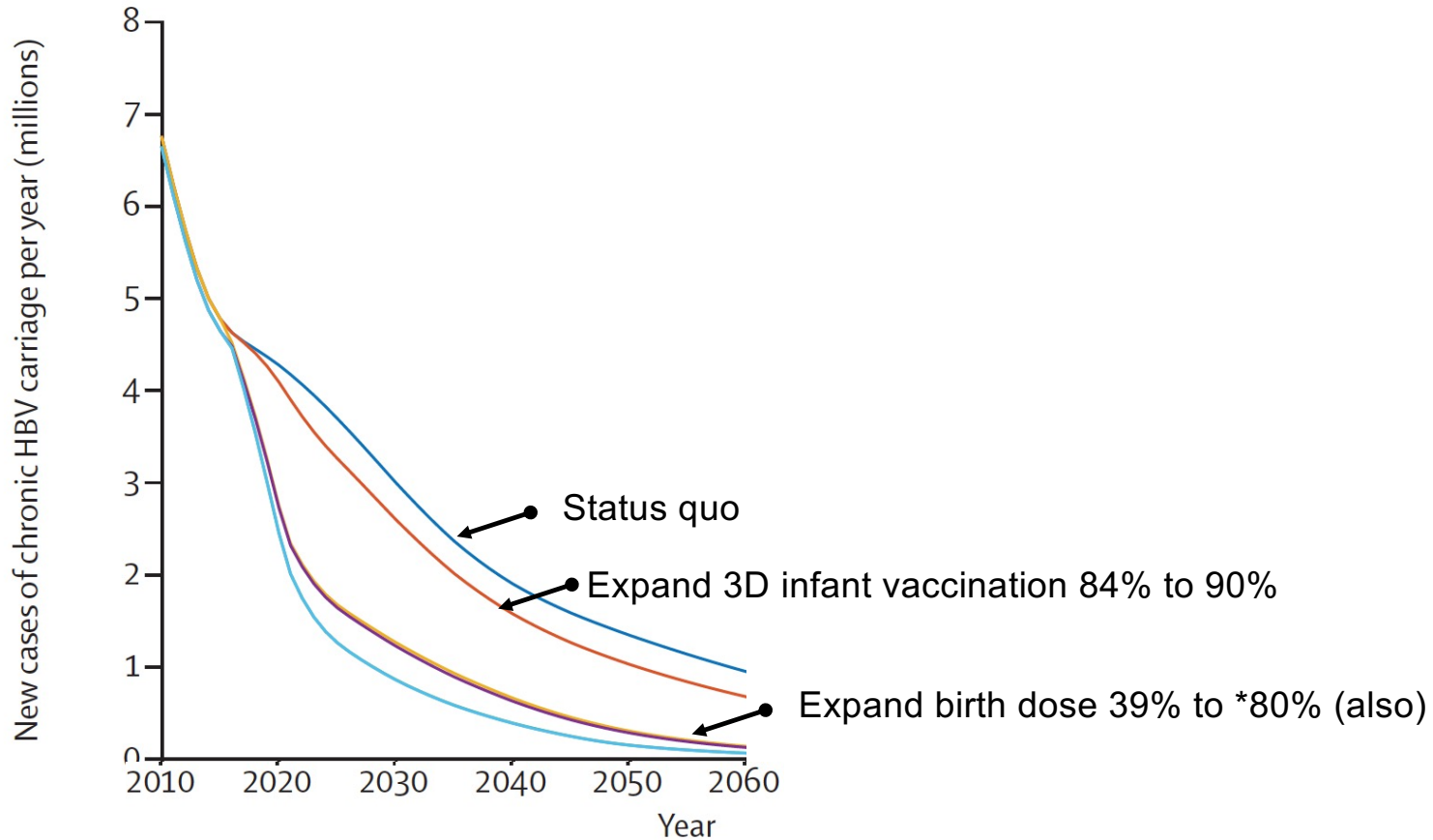
# Tools to reduce annual number of new persons living with CHB 95%

- HBV vaccine
- Blood screening
- Safe injections
- Harm reduction
- Testing
- Treatment



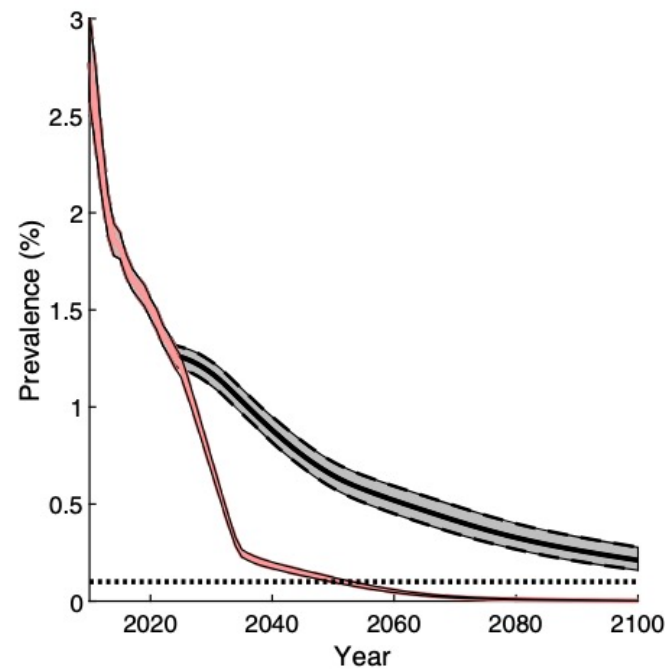
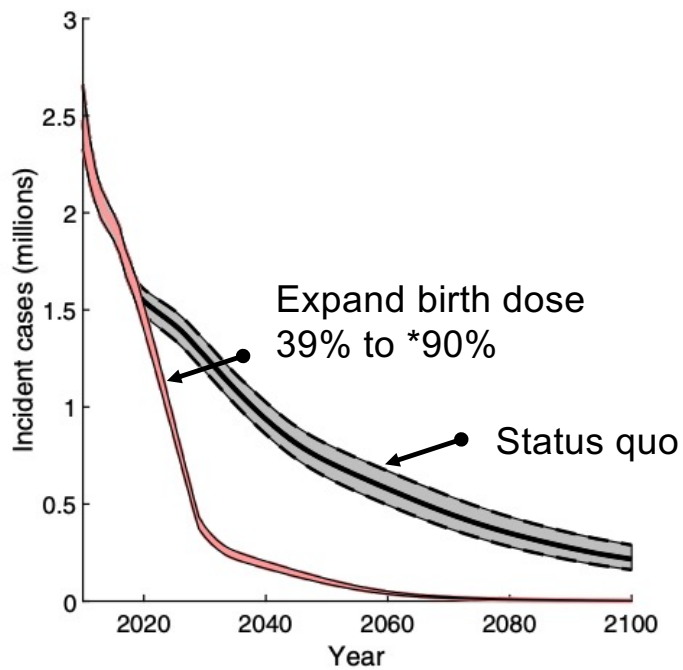
\*prevalence  $\leq 0.1\% \leq 5$  years

# Blocking perinatal spread of HBV is key to control



\*90% chosen by WHO De Villiers and Hallet Nat Comm 2021; Nayagam and Hallett Lancet ID 2016

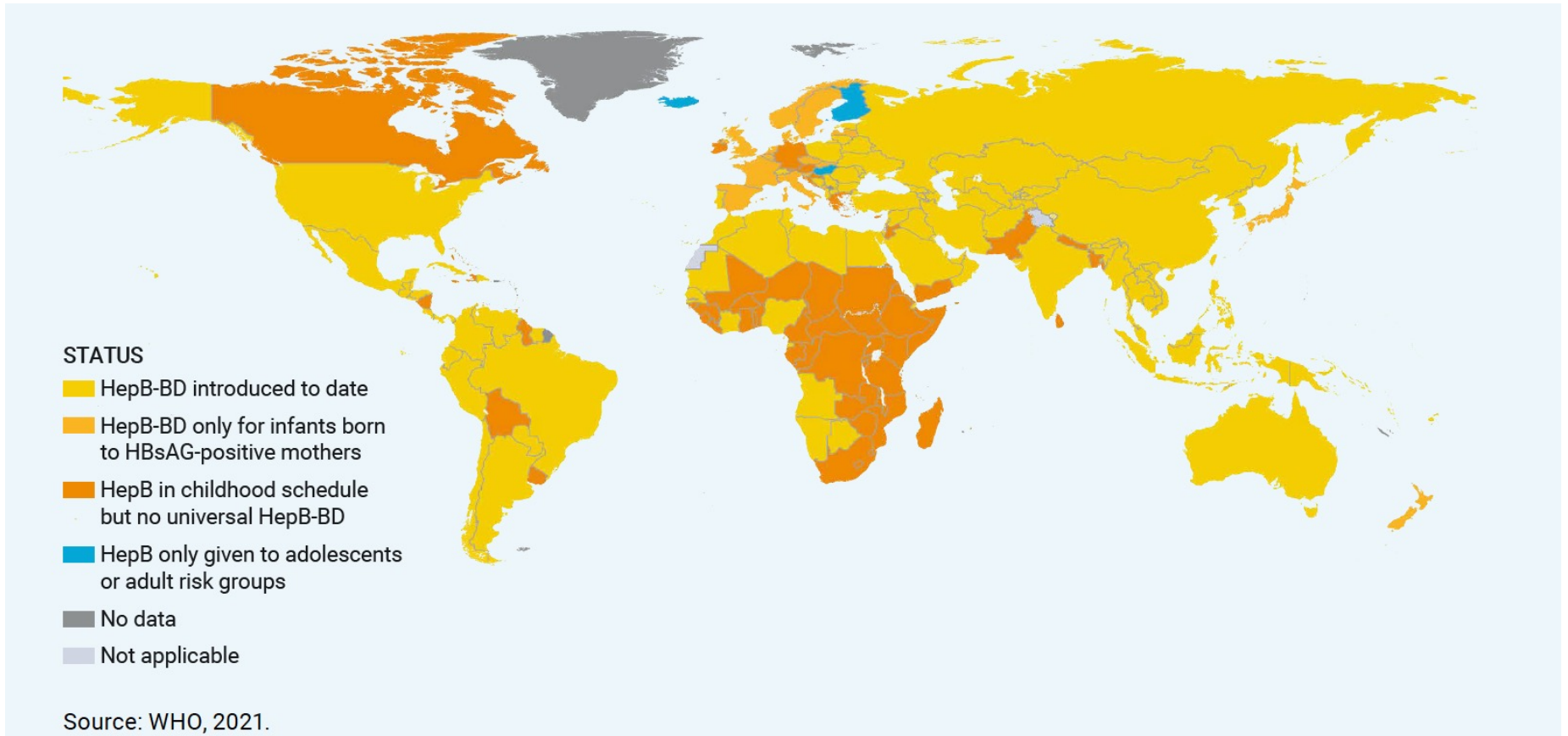
# Blocking perinatal spread of HBV is key to control



\*90% chosen by WHO

De Villiers Nat Comm 2021; Nayagam Lancet ID 2016

# Uneven uptake of the birth dose vaccination tool



## **New uses of tools may help eliminate hepatitis B when birth dose vaccination does not occur**

### ***Universal peripartum treatment***

- WHO triple elimination initiative: testing 95% of pregnant women for HIV and syphilis\*
- HBV treatment with tenofovir could be recommended
- May be efficacious supplemental tool
  - Models of Homie Razavi and Margaret de Villiers/Tim Hallett

2021 WHO Report on Elimination of Mother-to-Child-Transmission of HIV, syphilis and HBV. Thompson Lancet Global Health 2021; Lesi and Ward Lancet Global Health 2021; Funk Lancet ID 2020

\*90% rec for HBsAg

## **New uses of tools may help eliminate hepatitis B when birth dose vaccination does not occur**

### ***Universal peripartum treatment***

- All 4016 women agreed to HBsAg screening
- 90 pregnant women with chronic hep B in DRC (1 HIV pos)
- Of 88 infants born, 46 (52%) received timely birth dose vaccination
- 9/10 women HBeAg pos (n=9) and/or DNA>200,000 (n=5) given TDF
- 0/6 had expected TDF blood levels

## **New tools may help eliminate hepatitis B**

- WHO triple elimination initiative: testing 95% of pregnant women for HIV and syphilis\*
- HBV treatment with tenofovir could be uniformly recommended
- Might be efficacious when mother is HBeAg negative
- Long-acting TFV formulations
- Home birth dose vaccination

2021 WHO Report on Elimination of Mother-to-Child-Transmission of HIV, syphilis and HBV. Thompson Lancet Global Health 2021; Lesi and Ward Lancet Global Health 2021; Funk Lancet ID 2020

\*90% rec for HBsAg



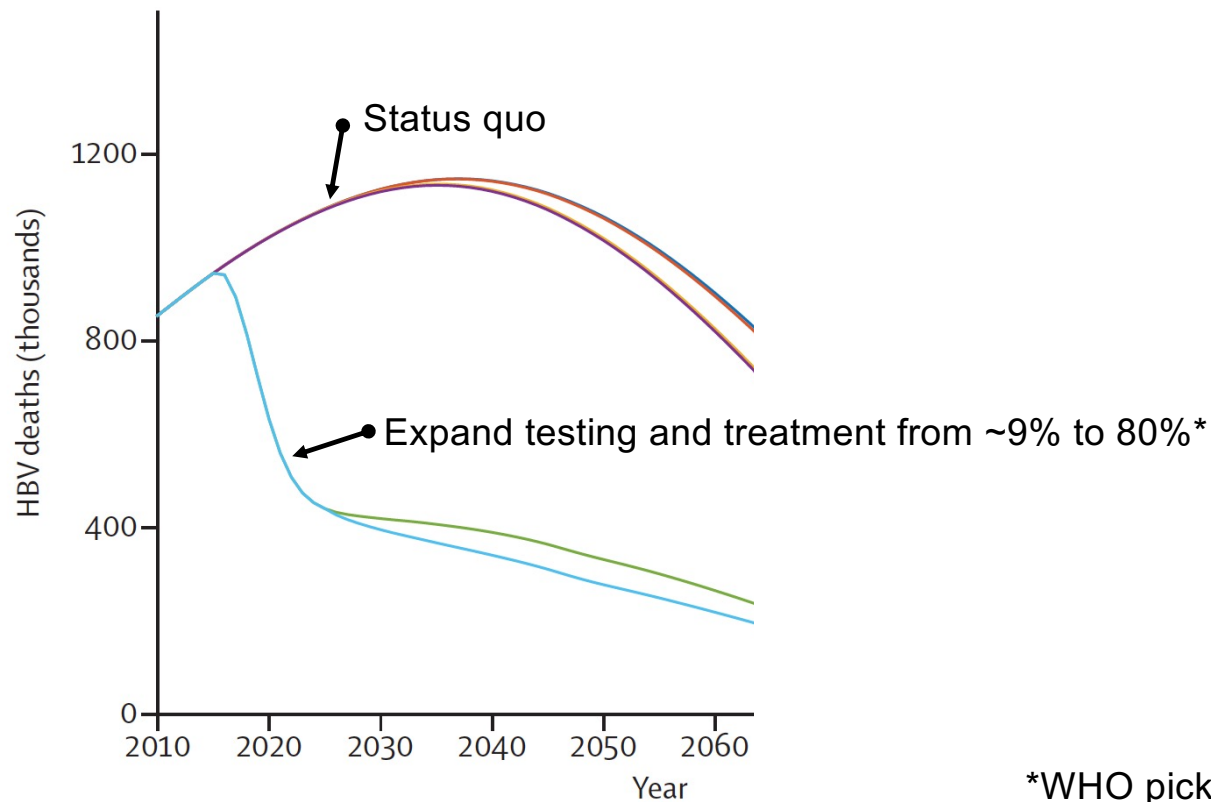
# Tools to reduce persons dying from with CHB

- HBV vaccine
- Blood screening
- Safe injections
- Harm reduction
- Testing
- Treatment



WHO: Global Health Sector Strategies: HIV, STI and Hepatitis: 2022-2030

# Testing and treatment needed to reduce HBV mortality

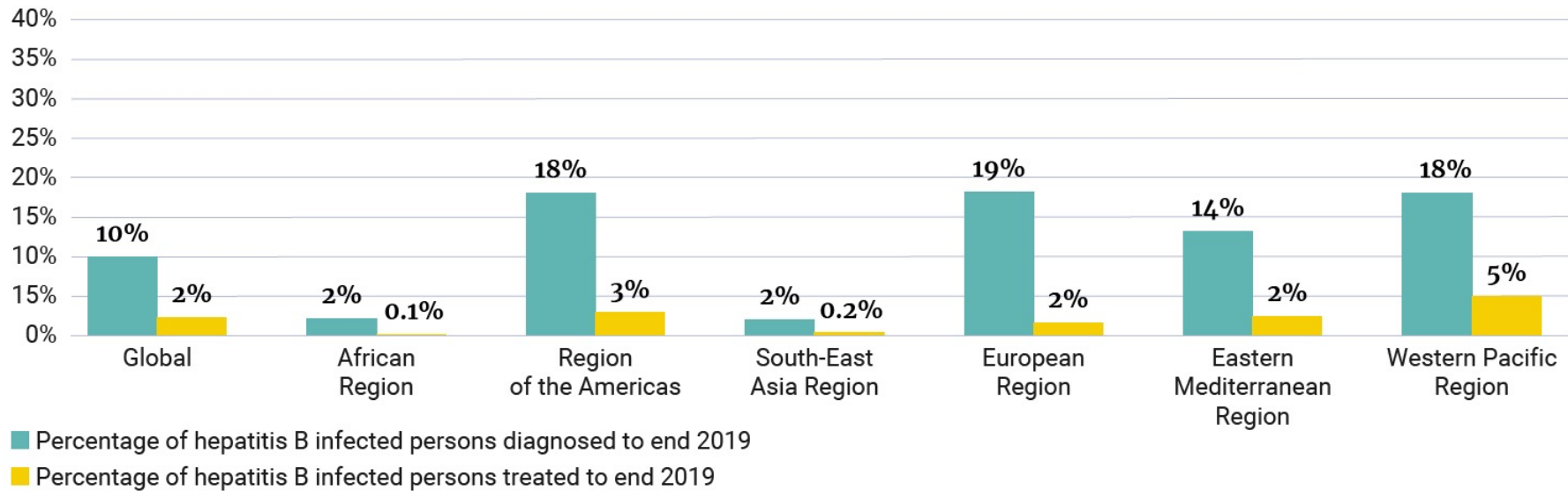


\*WHO picked 90% test/80% treat

Nayagam Lancet ID 2016

PPT- peripartum treatment

# Uneven uptake of testing and treatment tools



# **New tools may help eliminate mortality among persons living with CHB**

- Universal (not risk based) testing
- POC tools (home) for diagnosis and management
- Simpler guidance for treatment
- Alternative, affordable/available treatments
- Long-acting
- Cure

# Tools to reduce annual number of new persons living with chronic HCV

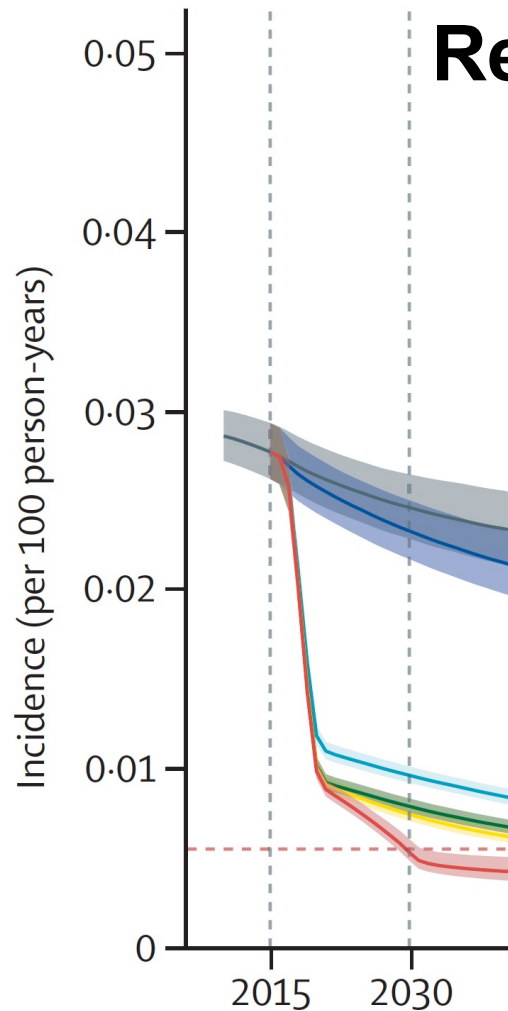
- HBV vaccine
- Blood screening
- Safe injections
- Harm reduction
- Testing
- Treatment

*\*80% overall reduction in incidence*

2015                      2020 (30%)                      2030 (80%)



# Reducing HCV incidence depends on expanding blood safety and harm reduction services



Status quo

Blood safety and infection control: reduce 80% 2020\*

PWID harm reduction: 40% reached, reduce 75%\*\*

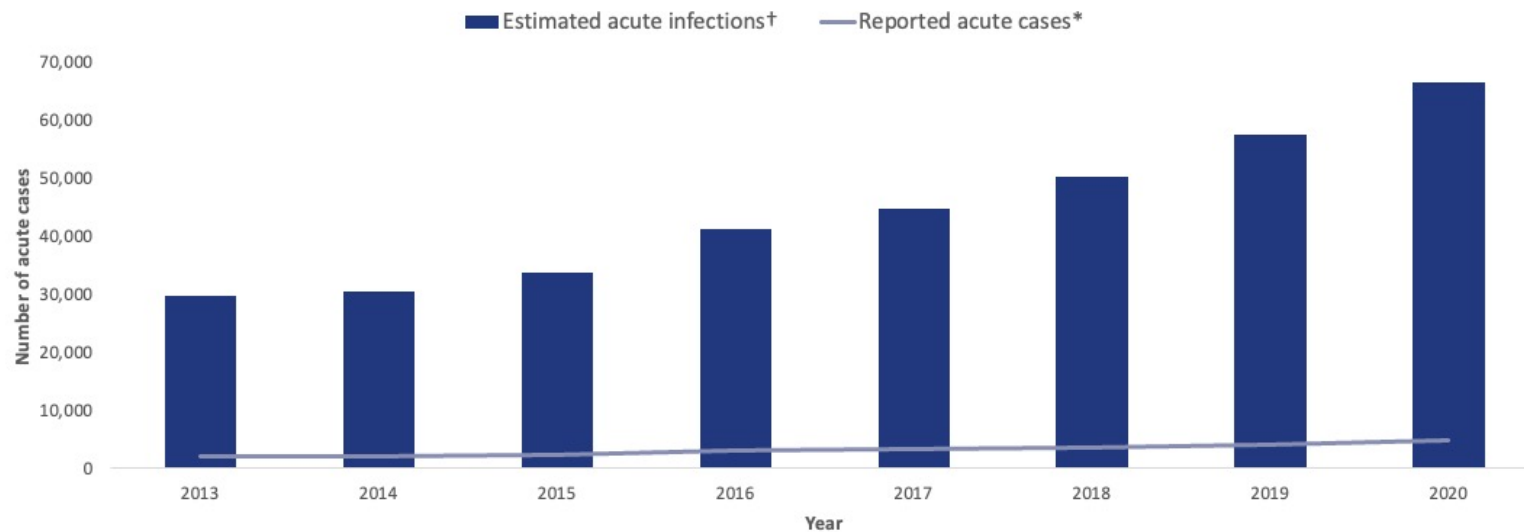
Expand testing and DAA

\*WHO: 95% to 100% safe

\*\*WHO: 27 to 300 syringes/year/person

# HCV incidence is rising fast in the USA because of opioid crisis

## Rates of reported acute hepatitis C, by age group — United States, 2003–2018



Source: CDC, National Notifiable Diseases Surveillance System.  
Centers for Disease Control and Prevention. Viral Hepatitis Surveillance Report – United States, 2020. <https://www.cdc.gov/hepatitis/statistics/2020surveillance/index.htm>.  
Published September 2022.

# **New tools and uses to eliminate new persons acquiring HCV**

- HCV vaccine
  - CHIM
- Expansion of harm reduction
  - Integration of treatment
  - Decriminalization and destigmatization



# Tools to reduce annual number of persons dying from chronic HCV%

- HBV vaccine
- Blood screening
- Safe injections
- Harm reduction
- Testing
- Treatment

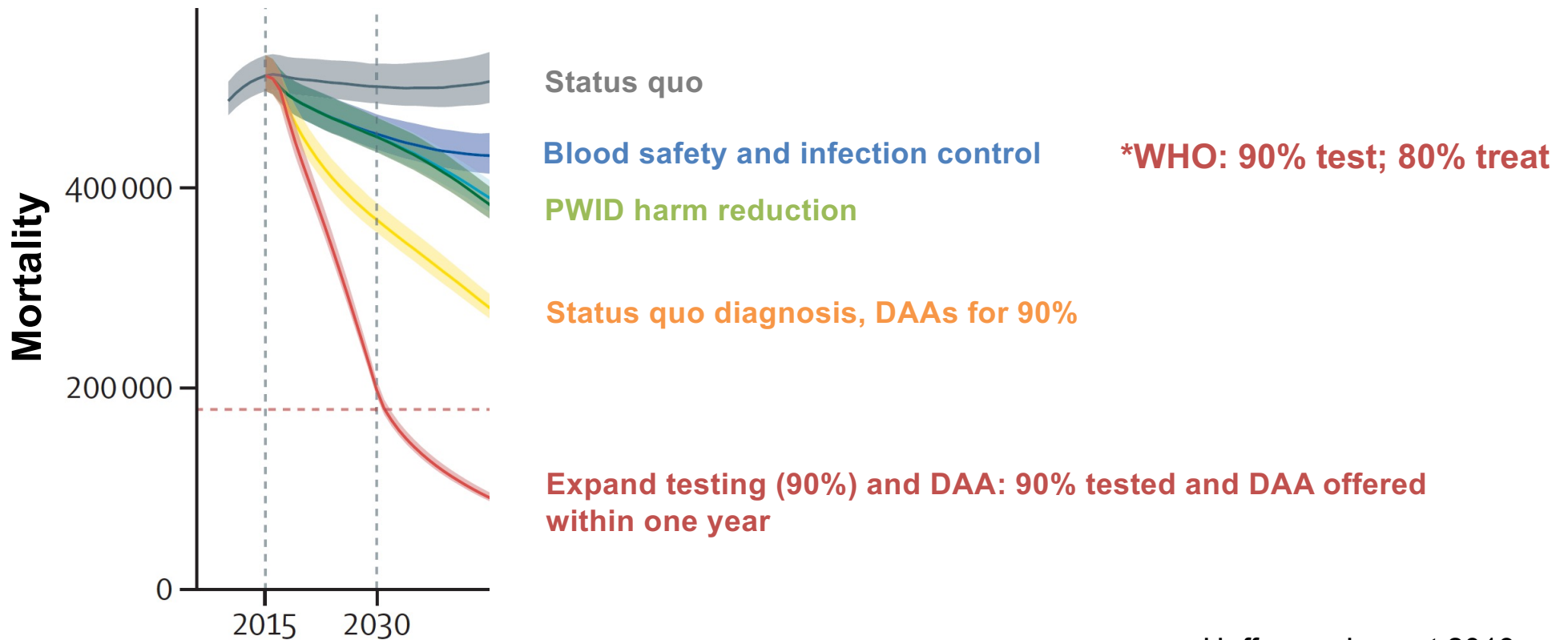
*\*65% overall reduction in mortality*

2015                      2020 (10%)                      2030 (65%)

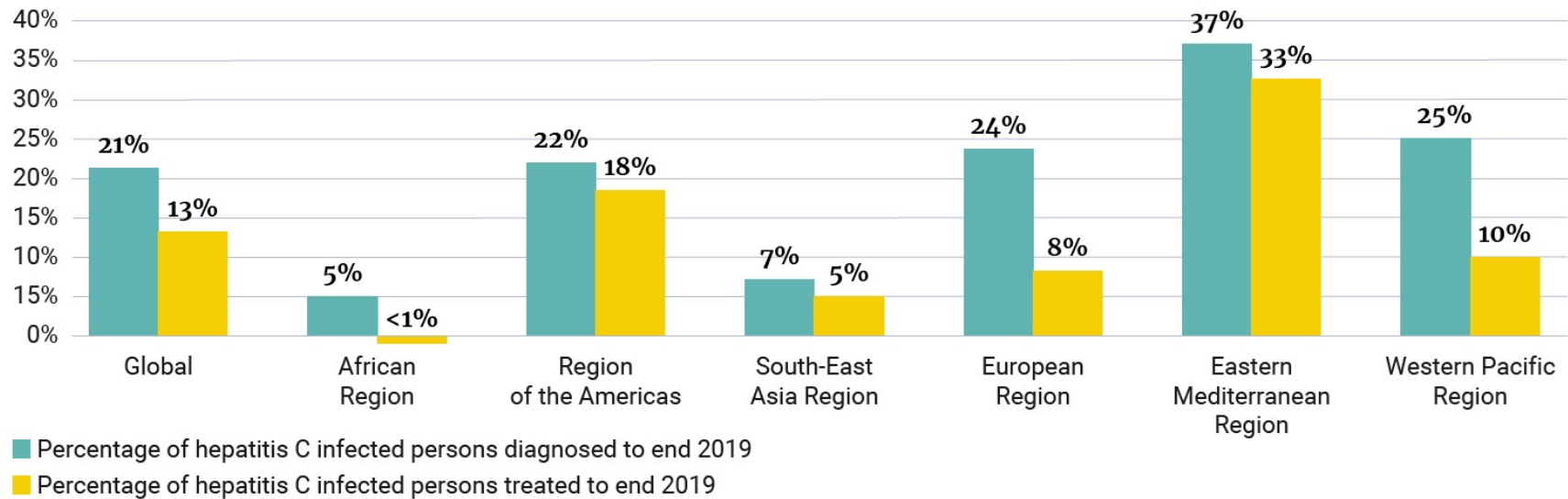


WHO: Global Health Sector Strategies: HIV, STI and Hepatitis: 2022-2030

# Declines in HCV mortality depend on expanding testing and treatment



# Uneven uptake of testing and treatment tools



## **New tools to reduce mortality in persons living with HCV**

- Fast, affordable POC confirmation of diagnosis
- Self testing
- Treatment distribution in corrections and unreached places
- Long-acting 1x cures

**More new tools can help global elimination**

# More new tools can help global elimination

- Surveillance

	Policy and data				Prevention of transmission			Screening and treatment			
	National plan/ strategy	Reliable national epidemiological data	Estimate of economic burden	Mandatory screening of donated blood	Harm-reduction programmes	Free birth dose vaccination	Third dose vaccine coverage (%)*	Publicly funded screening programmes	HBV treatment on NEML or government subsidised	HCV DAAs on NEML or government subsidised	Free HCV DAAs for nationals
<b>Asia</b>											
Bangladesh	●	○	○	●	●	○	●	○	●	○	○
China (mainland)	●	●	●	●	●	●	●	●	●	●	○
Hong Kong	○	○	○	●	●	●	●	●	●	●	●
Indonesia	●	●	○	●	●	●	●	○	●	●	○
Japan	●	○	●	●	●	●	●	●	●	●	●
Malaysia	●	○	○	●	●	●	●	○	●	●	●
Myanmar	●	●	●	●	●	●	●	○	●	○	○
Pakistan	●	●	●	●	●	○	●	●	●	●	●
Philippines	●	●	●	●	●	●	●	○	●	●	○
Taiwan	●	●	●	●	●	●	●	●	●	●	●
Thailand	●	●	●	●	●	●	●	●	●	●	●
Vietnam	●	●	●	●	●	●	●	○	○	●	○

Cooke Lancet Gastro Hep 2019

# More new tools needed for global elimination

- Surveillance
- Patents, licensing, and pricing

# More new tools needed for global elimination

- Surveillance
- Patents, licensing, and pricing
- Regulatory pre-approval



# More new tools needed for global elimination

- Surveillance
- Patents, licensing, and pricing
- Regulatory pre-approval
- **Politics**

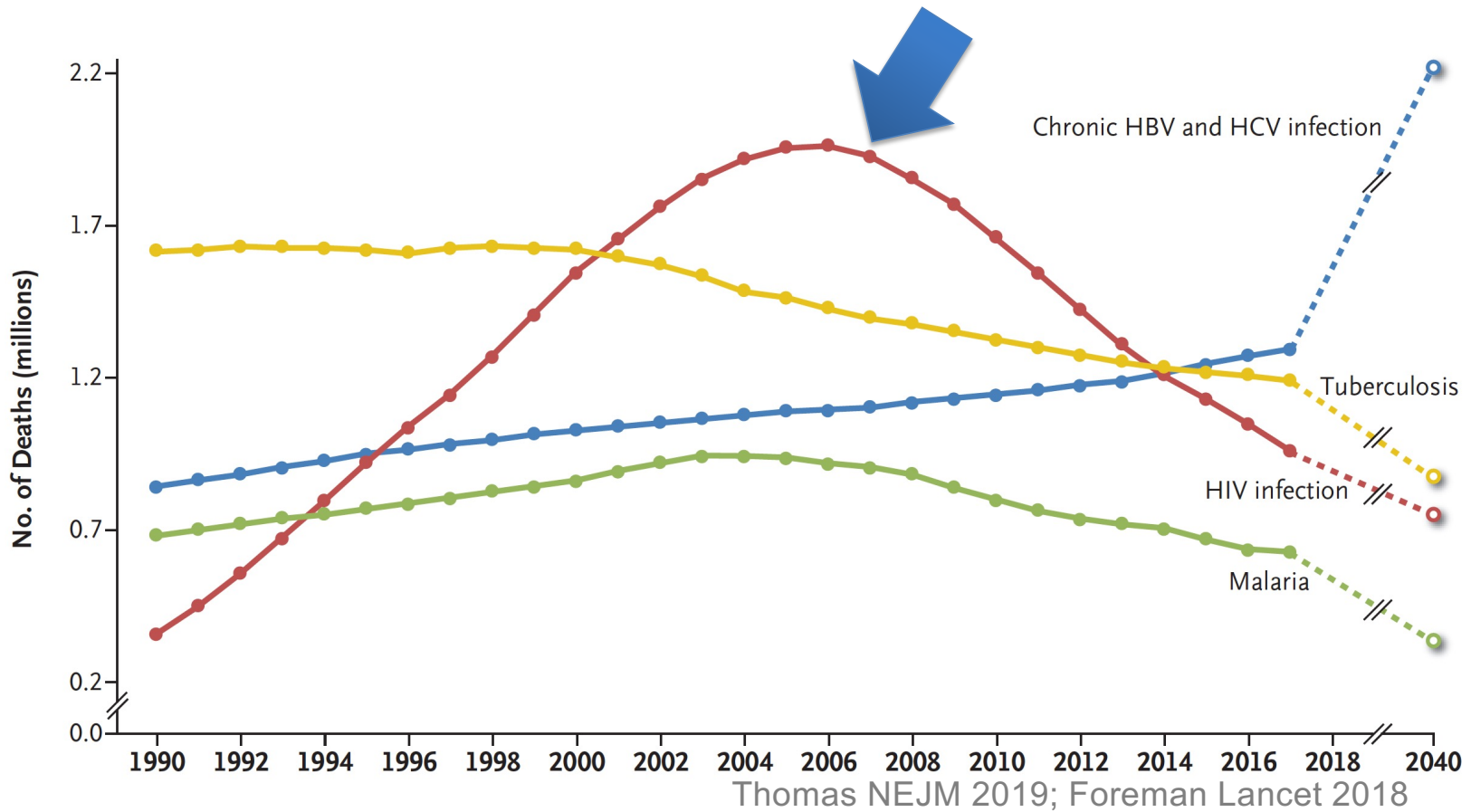
# More new tools needed for global elimination

- Surveillance
- Patents, licensing, and pricing
- Regulatory pre-approval
- Politics
- Persons living with HBV and HCV

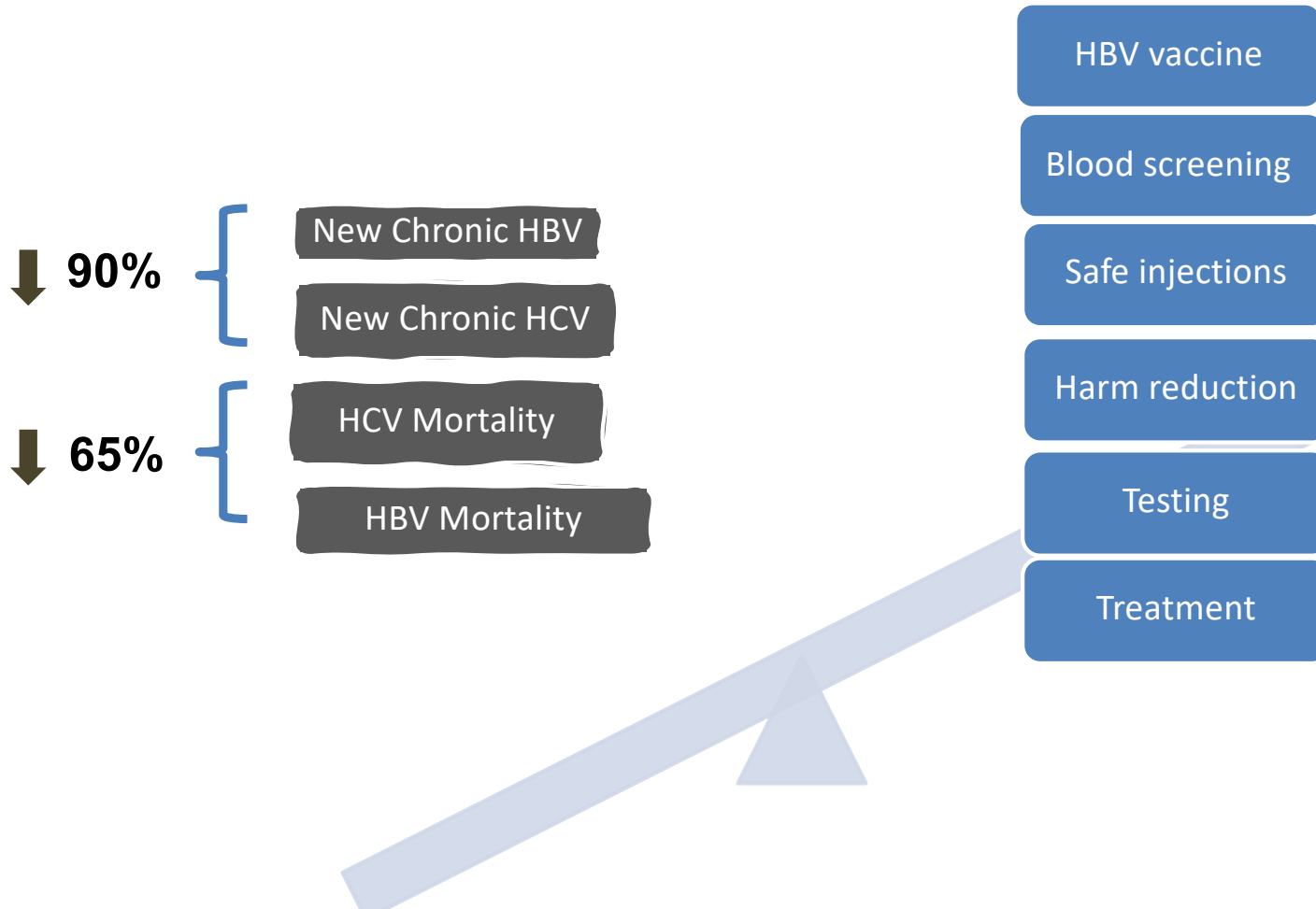
# More new tools needed for global elimination

- Surveillance
- Patents, licensing, and pricing
- Regulatory pre-approval
- Politics
- Persons living with HBV and HCV
- Funding

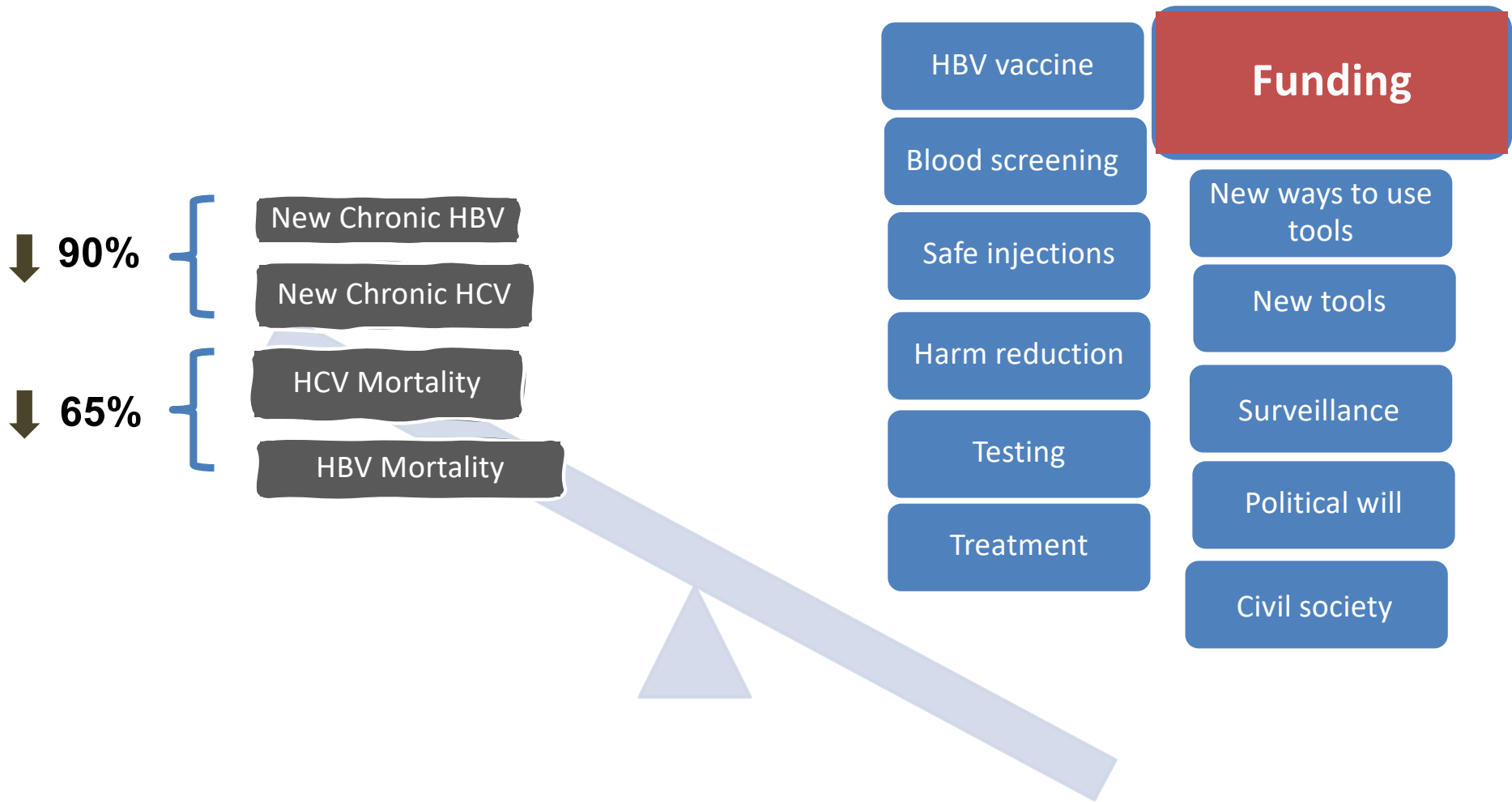
# Global funding is needed to reduce hepatitis mortality as occurred for HIV



# Global hepatitis elimination requires more



# Global hepatitis elimination requires more



# Special Thanks

