Hepatitis B mother to child transmission

Key issues from **Asia and Latin America**

Nick Walsh

Pan American Health Organization/

WHO Regional Office for the Americas

Pan American Health Organization

World Health Organization

REGIONAL OFFICE FOR THE Americas

Acknowledgements

- PAHO
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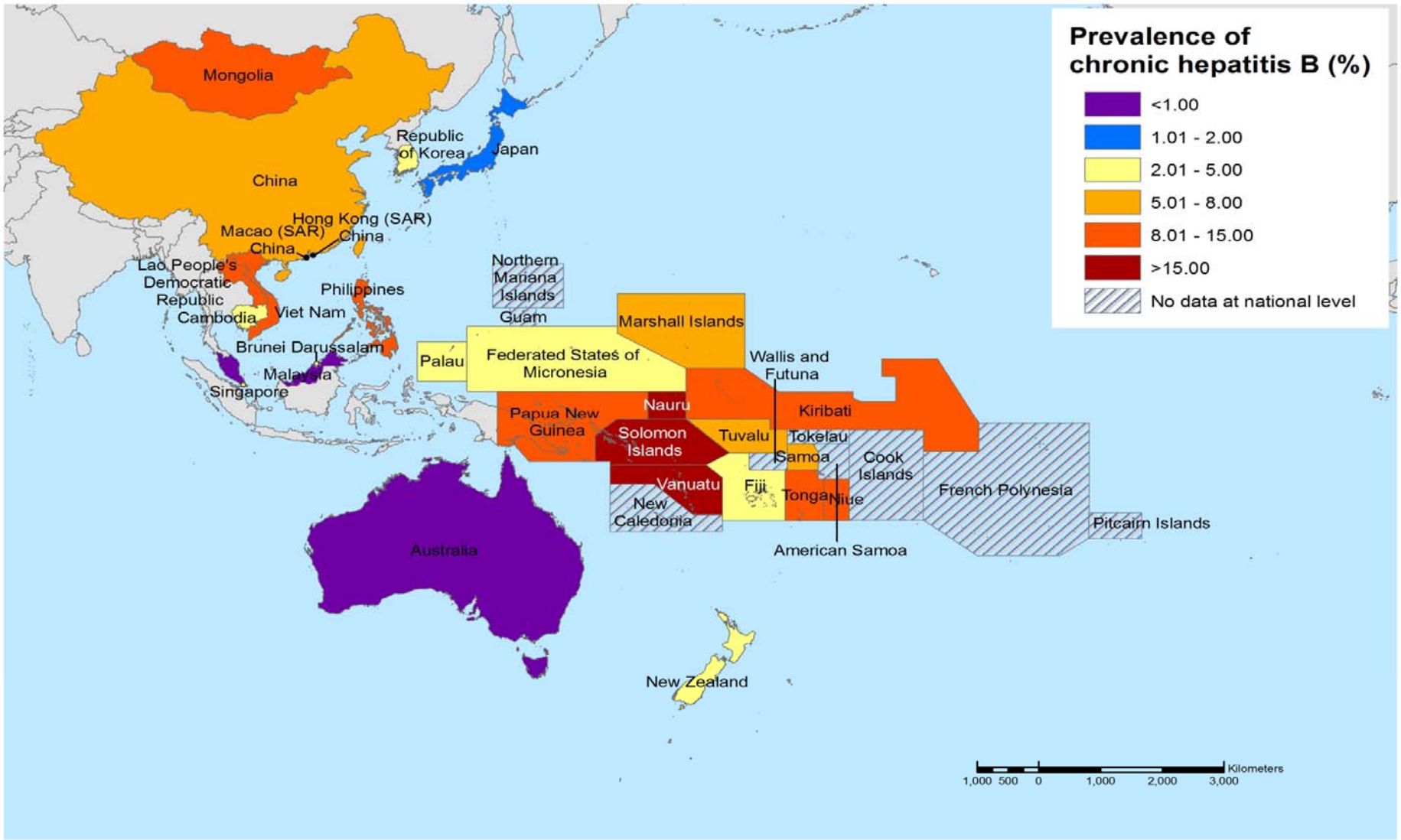
- WPRO
  - Joe Woodring
  - Xi Li
- Center for Disease Analysis (US)

Why are these Regions important?

- Both Regions have endorsed Regional Action Plans and the Global Health Sector Strategy for Viral Hepatitis
- Asia
  - The majority of people infected with HBV reside in the Asia Pacific
  - Successful meeting of Regional HBV goal (WPR <1%) but key countries with substantial transmission remain
- Latin America/Caribbean (LAC)
  - Low prevalence but diverse region
  - Specific hard to reach populations with high prevalence (indigenous)
  - The first region to eradicate smallpox and polio and eliminating endemic transmission of several other infectious diseases

Asia-Pacific

Prevalence of chronic hepatitis B in the Western Pacific Region



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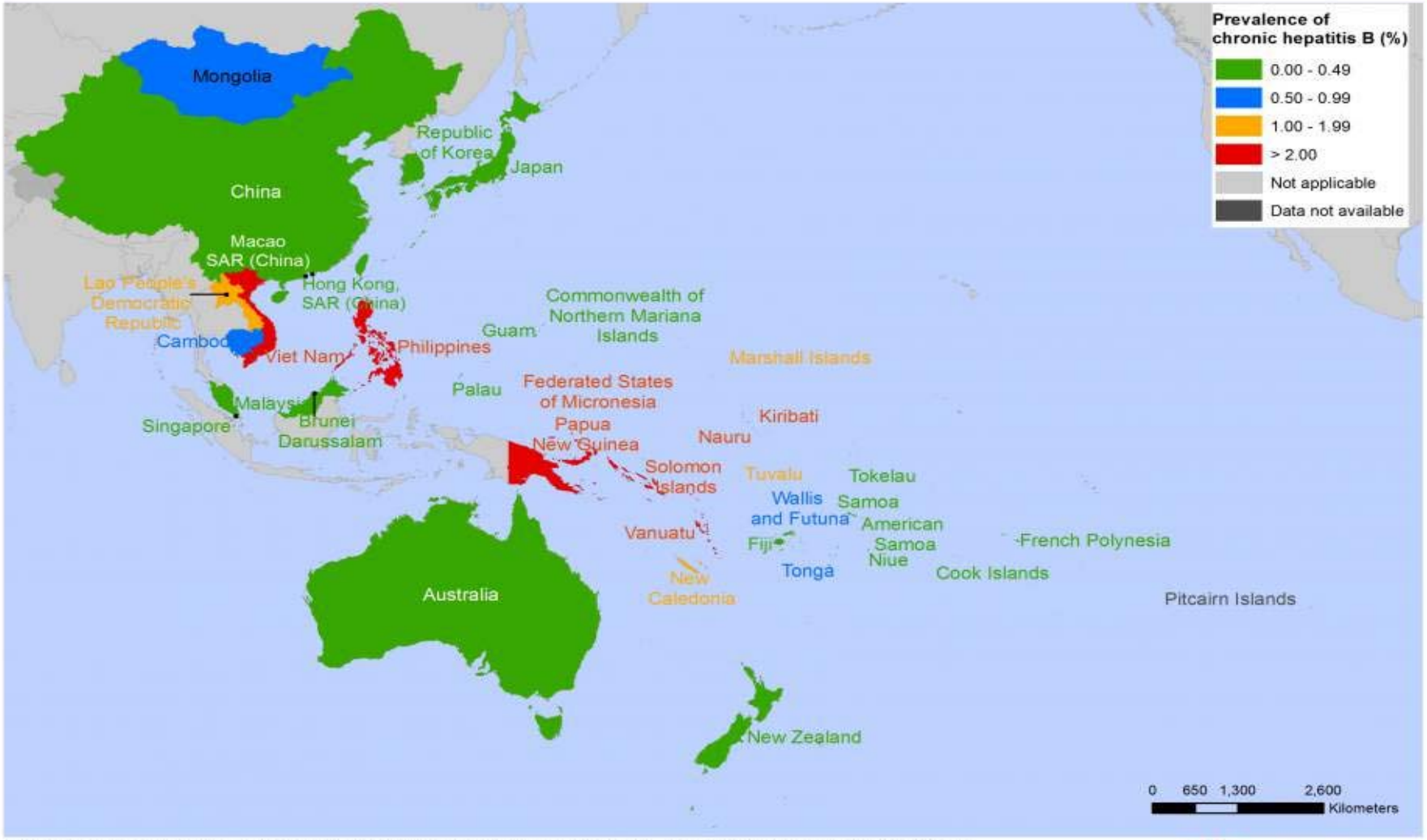
Data source: World Health Organization
Western Pacific Regional Office
Map production: Regional Hepatitis Programme
WHO Western Pacific Regional Office

World Health Organization
Western Pacific Region

Prevalence of Chronic Hepatitis B in the Western Pacific Region among Children



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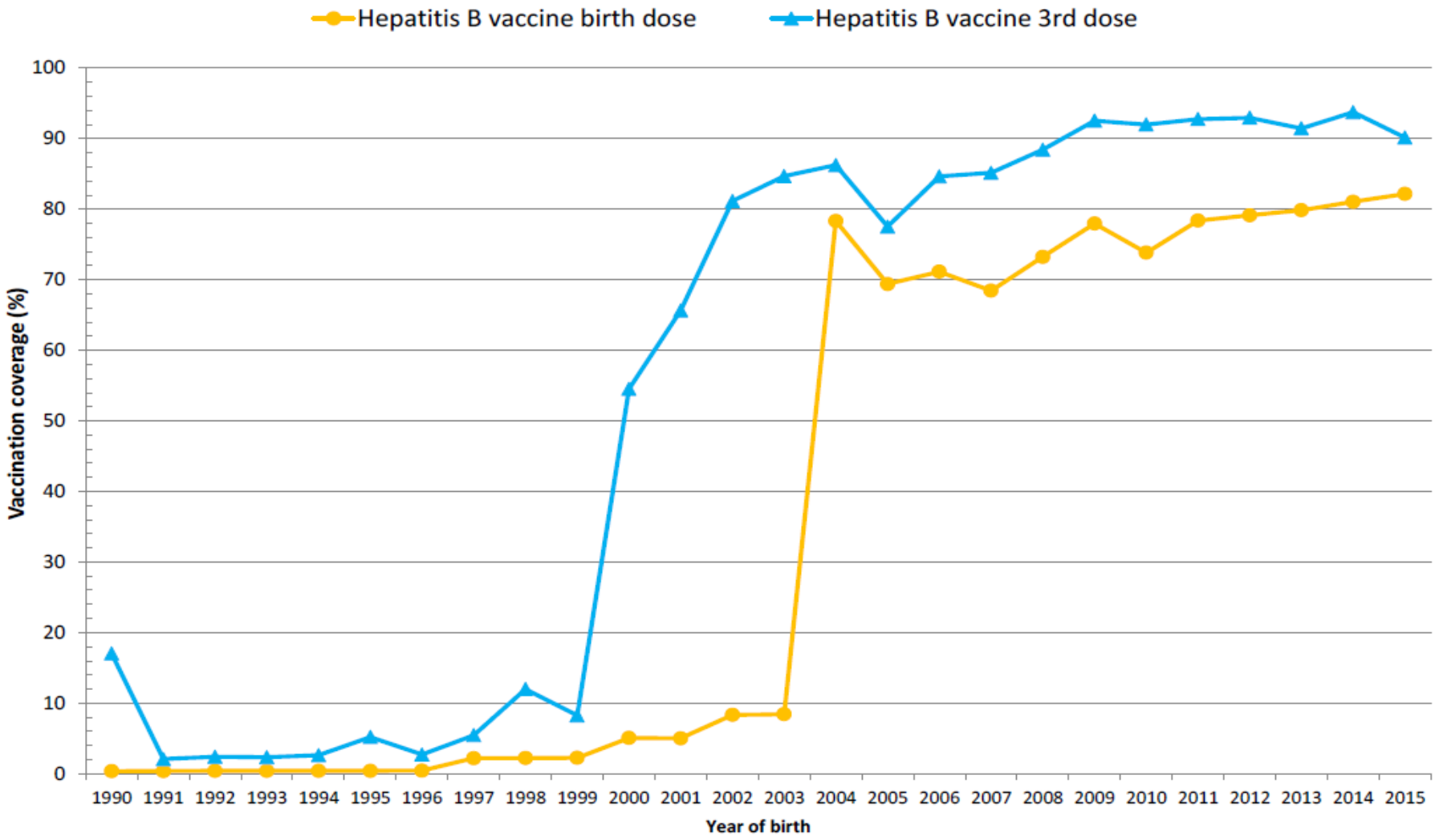
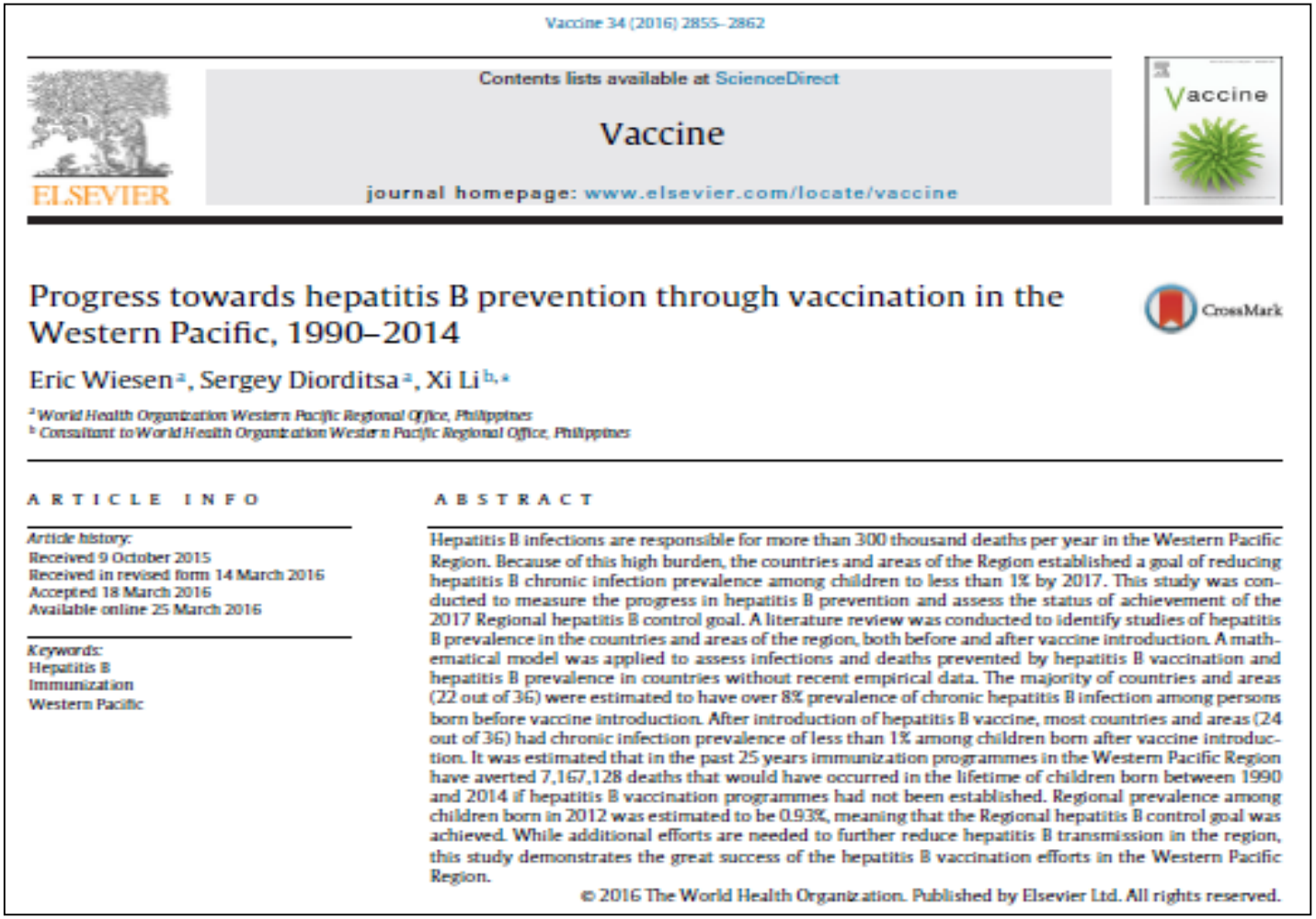
Data source: World Health Organization
Estimates for Cambodia, Federated States of Micronesia, Nauru, New Caledonia, Philippines, Solomon Islands, Tuvalu and Vanuatu are from modelling. Others are from serosurveys.
Regional Office for the Western Pacific
Map production: Expanded Programme on Immunization
WHO Regional Office for the Western Pacific

World Health Organization
Western Pacific Region

WP Region Vaccination Coverage



Regional Progress:
now 0.93% HBsAg prevalence among 5yos



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Progress towards hepatitis B prevention through vaccination in the Western Pacific, 1990–2014

Eric Wiesen[a], Sergey Diorditsa[a], Xi Li[b,*]

[a] World Health Organization Western Pacific Regional Office, Philippines
[b] Consultant to World Health Organization Western Pacific Regional Office, Philippines

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ABSTRACT

Hepatitis B infections are responsible for more than 300 thousand deaths per year in the Western Pacific Region. Because of this high burden, the countries and areas of the Region established a goal of reducing hepatitis B chronic infection prevalence among children to less than 1% by 2017. This study was conducted to measure the progress in hepatitis B prevention and assess the status of achievement of the 2017 Regional hepatitis B control goal. A literature review was conducted to identify studies of hepatitis B prevalence in the countries and areas of the region, both before and after vaccine introduction. A mathematical model was applied to assess infections and deaths prevented by hepatitis B vaccination and hepatitis B prevalence in countries without recent empirical data. The majority of countries and areas (22 out of 36) were estimated to have over 8% prevalence of chronic hepatitis B infection among persons born before vaccine introduction. After introduction of hepatitis B vaccine, most countries and areas (24 out of 36) had chronic infection prevalence of less than 1% among children born after vaccine introduction. It was estimated that in the past 25 years immunization programmes in the Western Pacific Region have averted 7,167,128 deaths that would have occurred in the lifetime of children born between 1990 and 2014 if hepatitis B vaccination programmes had not been established. Regional prevalence among children born in 2012 was estimated to be 0.93%, meaning that the Regional hepatitis B control goal was achieved. While additional efforts are needed to further reduce hepatitis B transmission in the region, this study demonstrates the great success of the hepatitis B vaccination efforts in the Western Pacific Region.

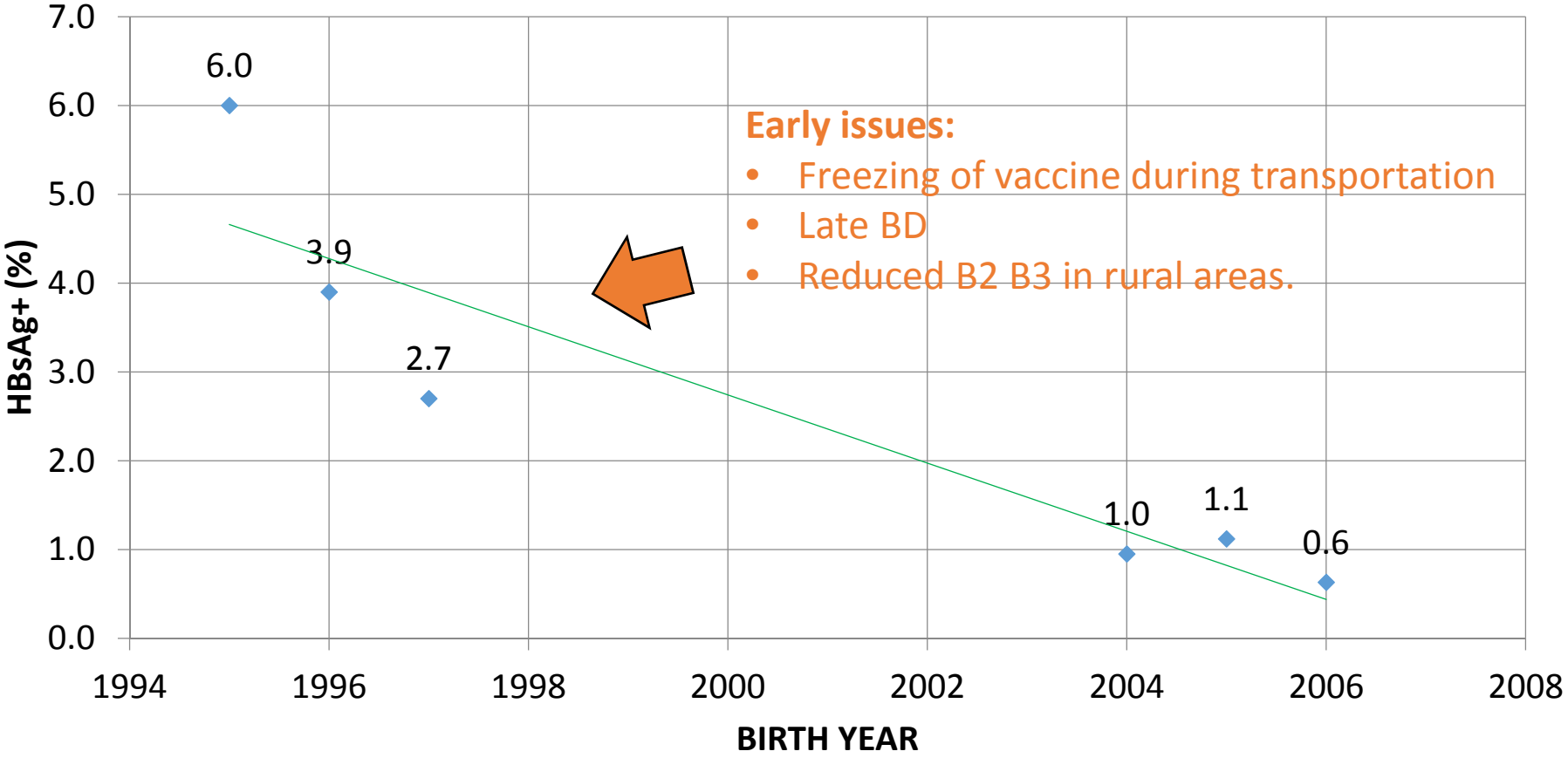
Source: Eric Wiesen, Sergey Diorditsa & Xi Li, Progress towards hepatitis B prevention through vaccination in the Western Pacific, 1990–2014, *Vaccine*, May 2016. 27;34(25):2855-62.

CHINA

Some slides have been removed.

Mongolia

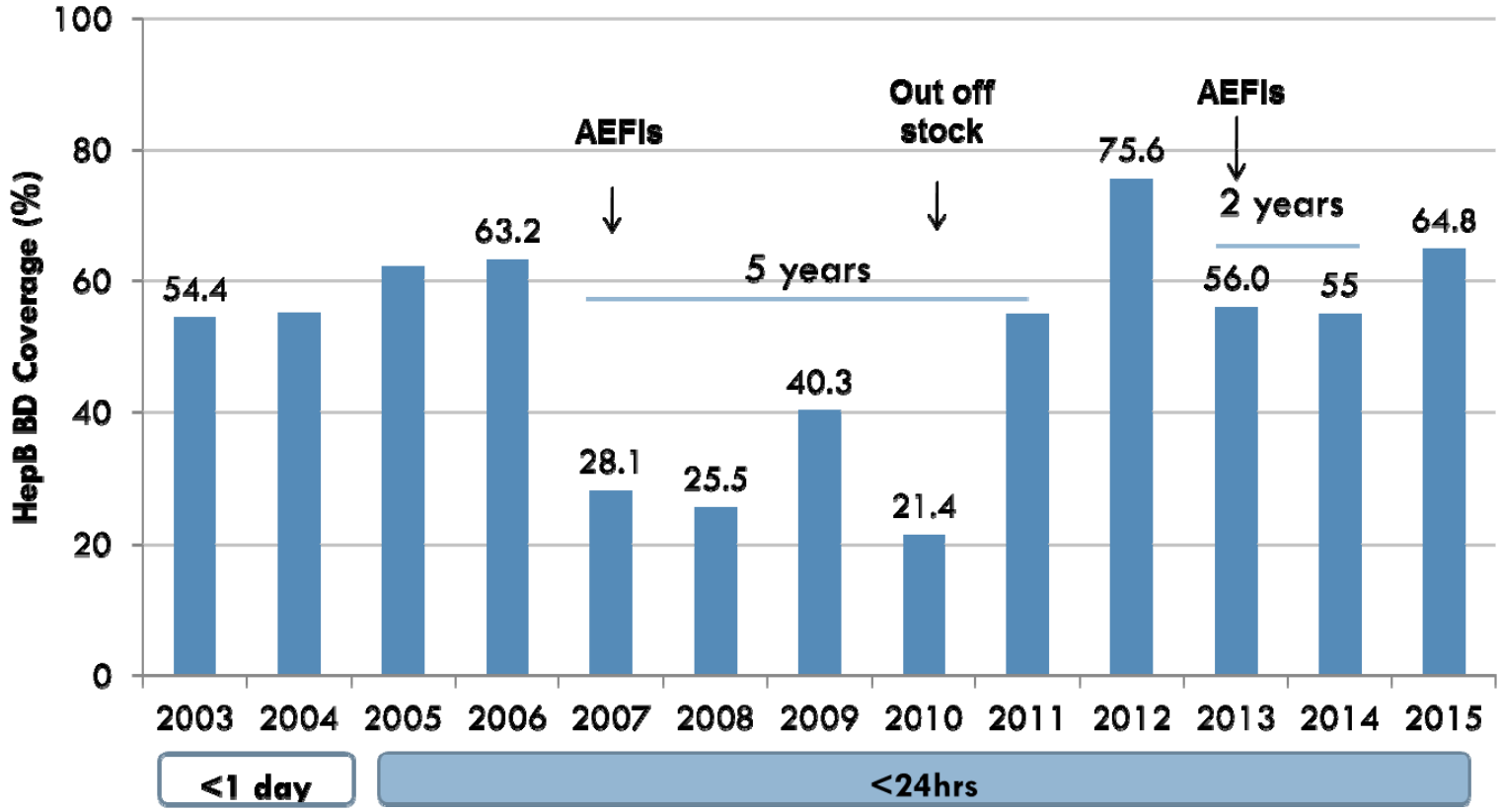
Progress in HBV vaccination – hurdles overcome → ultimate success.



- Davaalkham D, Ojima T, Nymadawa P, Tsend N, Lkhagvasuren T, Wiersma S et al. Seroepidemiology of hepatitis B virus infection among children in Mongolia: results of a nationwide survey. *Pediatr Int*, 2007, 49(3):368-374.
- Dashtseren B, Bold B, Dashdorj N, Yagaanbuyant D. P29: Epidemiological study of prevalence and risk factors for HBV among apparently healthy Mongolians. *Journal of Viral Hepatitis*, 2014, 21:38-38.
- 20. Edstam JS, Dulmaa N, Nymadawa P, Rinchin A, Khulan J, Kimball AM. Comparison of hepatitis B vaccine coverage and effectiveness among urban and rural Mongolian 2-year-olds. Prev Med. 2004; 39(2):384–8.

Vietnam

For the hepatitis B birth dose: Public perceptions matter!



If the hepatitis B vaccination coverage had been maintained as in 2012 then:

90137 chronic infections and 17,456 future deaths could be averted

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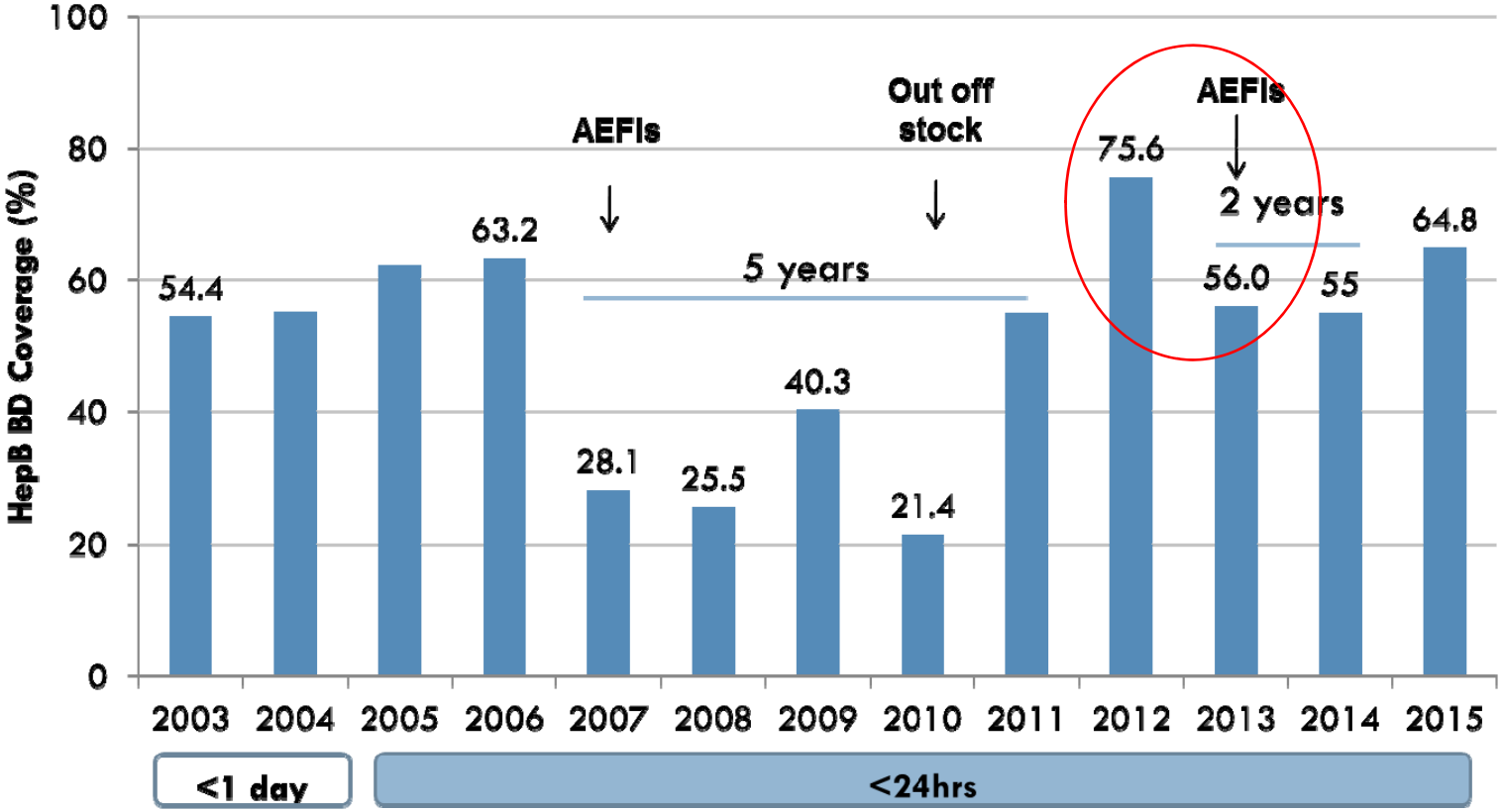

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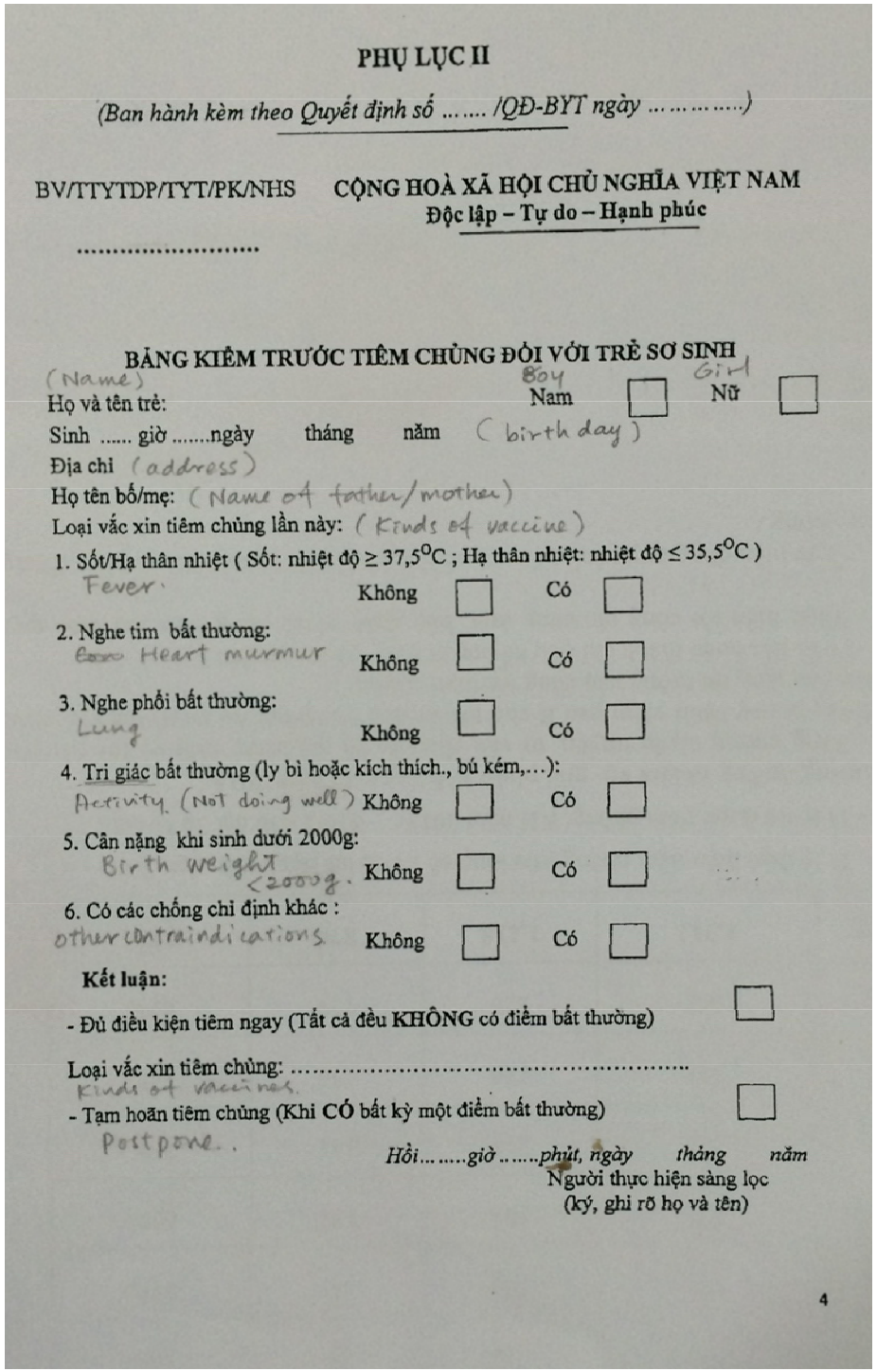


PHỤ LỤC II

(Ban hành kèm theo Quyết định số ..... /QĐ-BYT ngày .....)

BV/TTYTDP/TYT/PK/NHS .....

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

BẢNG KIỂM TRƯỚC TIÊM CHỦNG ĐỐI VỚI TRẺ SƠ SINH

(Name) Họ và tên trẻ: Boy Nam ☐ Girl Nữ ☐

Sinh ..... giờ .....ngày tháng năm (birth day)

Địa chỉ (address)

Họ tên bố/mẹ: (Name of father/mother)

Loại vắc xin tiêm chủng lần này: (Kinds of vaccine)

1. Sốt/Hạ thân nhiệt (Sốt: nhiệt độ ≥ 37,5°C ; Hạ thân nhiệt: nhiệt độ ≤ 35,5°C)
Fever. Không ☐ Có ☐

2. Nghe tim bất thường:
Boo Heart murmur Không ☐ Có ☐

3. Nghe phổi bất thường:
Lung Không ☐ Có ☐

4. Tri giác bất thường (lơ bì hoặc kích thích., bú kém,...):
Activity (Not doing well) Không ☐ Có ☐

5. Cân nặng khi sinh dưới 2000g:
Birth weight <2000g. Không ☐ Có ☐

6. Có các chống chỉ định khác :
other contraindications Không ☐ Có ☐

Kết luận:

- Đủ điều kiện tiêm ngay (Tất cả đều **KHÔNG** có điểm bất thường) ☐

Loại vắc xin tiêm chủng: .....
Kinds of vaccines.

- Tạm hoãn tiêm chủng (Khi **CÓ** bất kỳ một điểm bất thường) ☐
Postpone.

Hồi.....giờ.....phút, ngày tháng năm

Người thực hiện sàng lọc
(ký, ghi rõ họ và tên)

4

Viet Nam Birth Dose Assessment

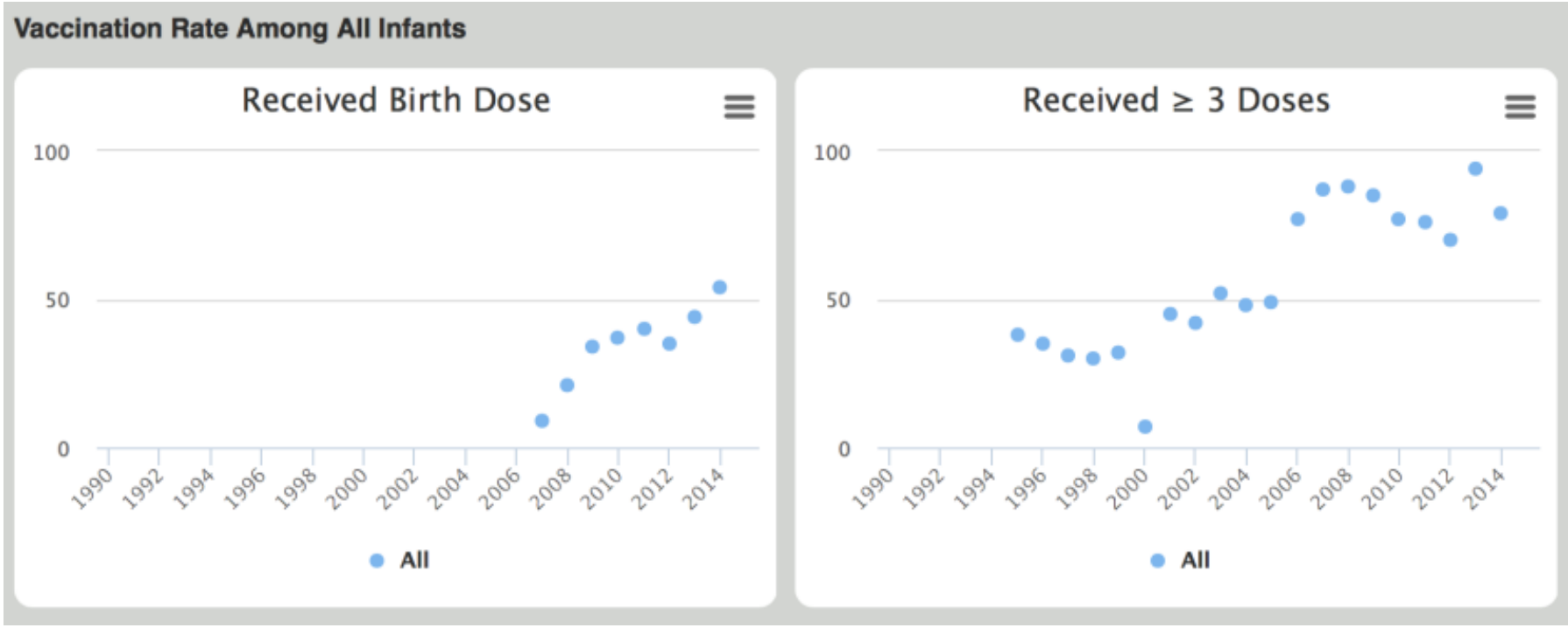
- ❑ Temperature 35.5 – 37.5
- ❑ No heart irregularities
- ❑ Normal breathing
- ❑ Normal activity
- ❑ >2000 g
- ❑ No other contraindications

Philippines

Immunization Coverage of Infants

- Percent of infants vaccinated by year (BD - birth dose, 3D – complete three doses)

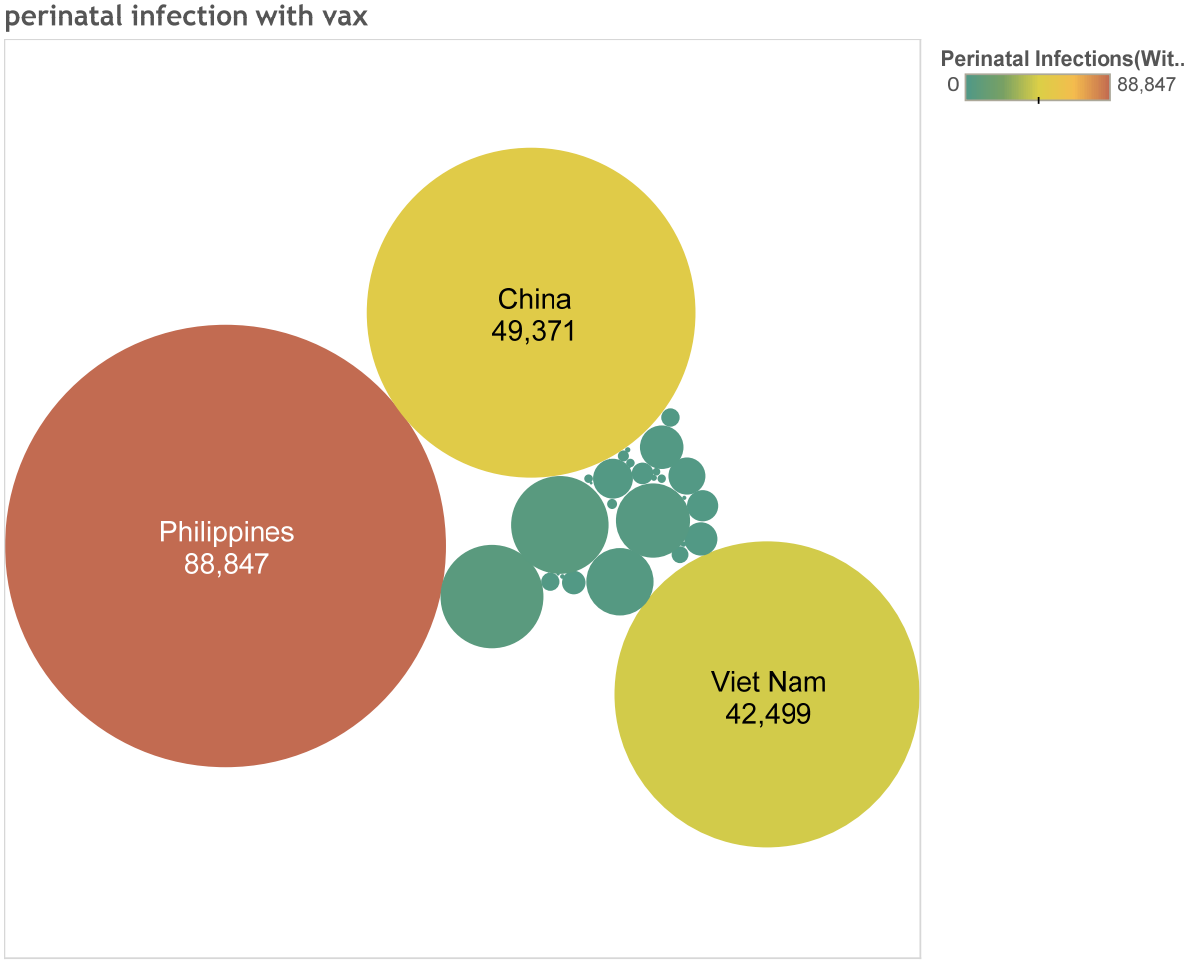
Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
% BD													9	21	34	37	40	35	44	54
% 3D	38	35	31	30	32	7	45	42	52	48	49	77	87	88	85	77	76	70	94	79



WHO. Hep B Vaccine coverage 1989 – 2014. WHO 2015.

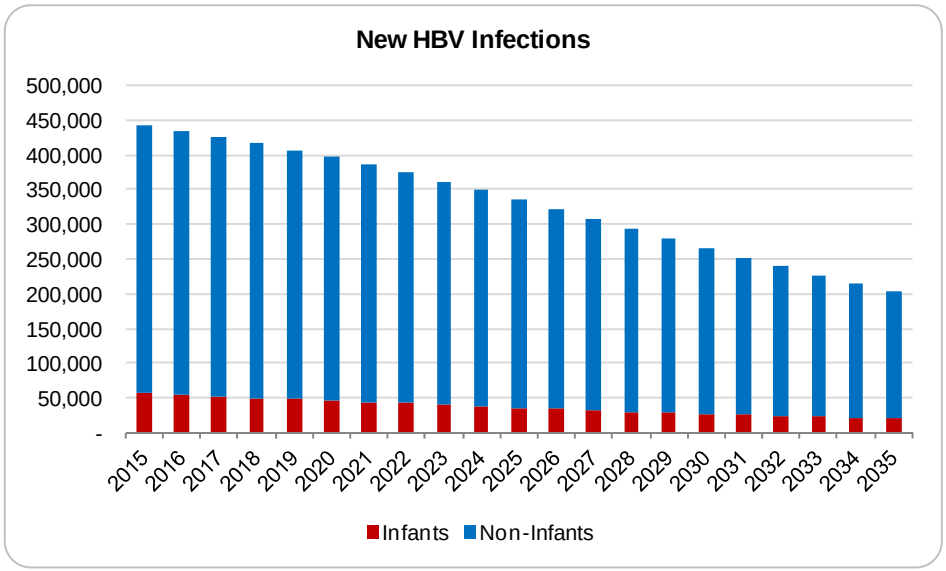
In the Western Pacific how many new infections occur in 2013 due to perinatal infections?

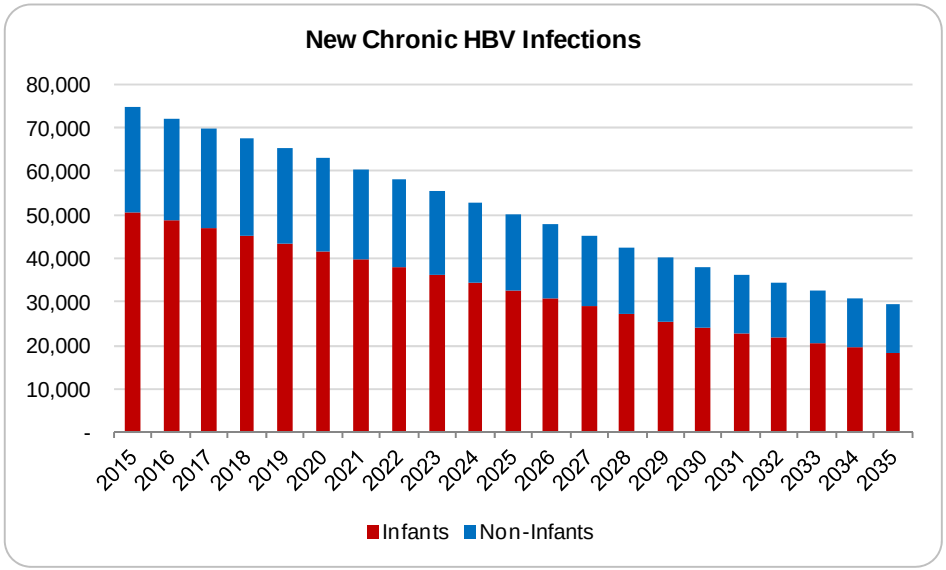
- 199,000 perinatal infections in 2013.
- 179,000 were chronic.
- Repeat analysis in 2016 showed Philippines had the largest HBsAg+ birth cohort



Country and sum of Perinatal Infections(With Vax). Color shows sum of Perinatal Infections(With Vax). Size shows sum of Perinatal Infections(With Vax). The marks are labeled by Country and sum of Perinatal Infections(With Vax).

Most acute infections occur among adults but perinatal transmission remains a main risk factor for chronic infections

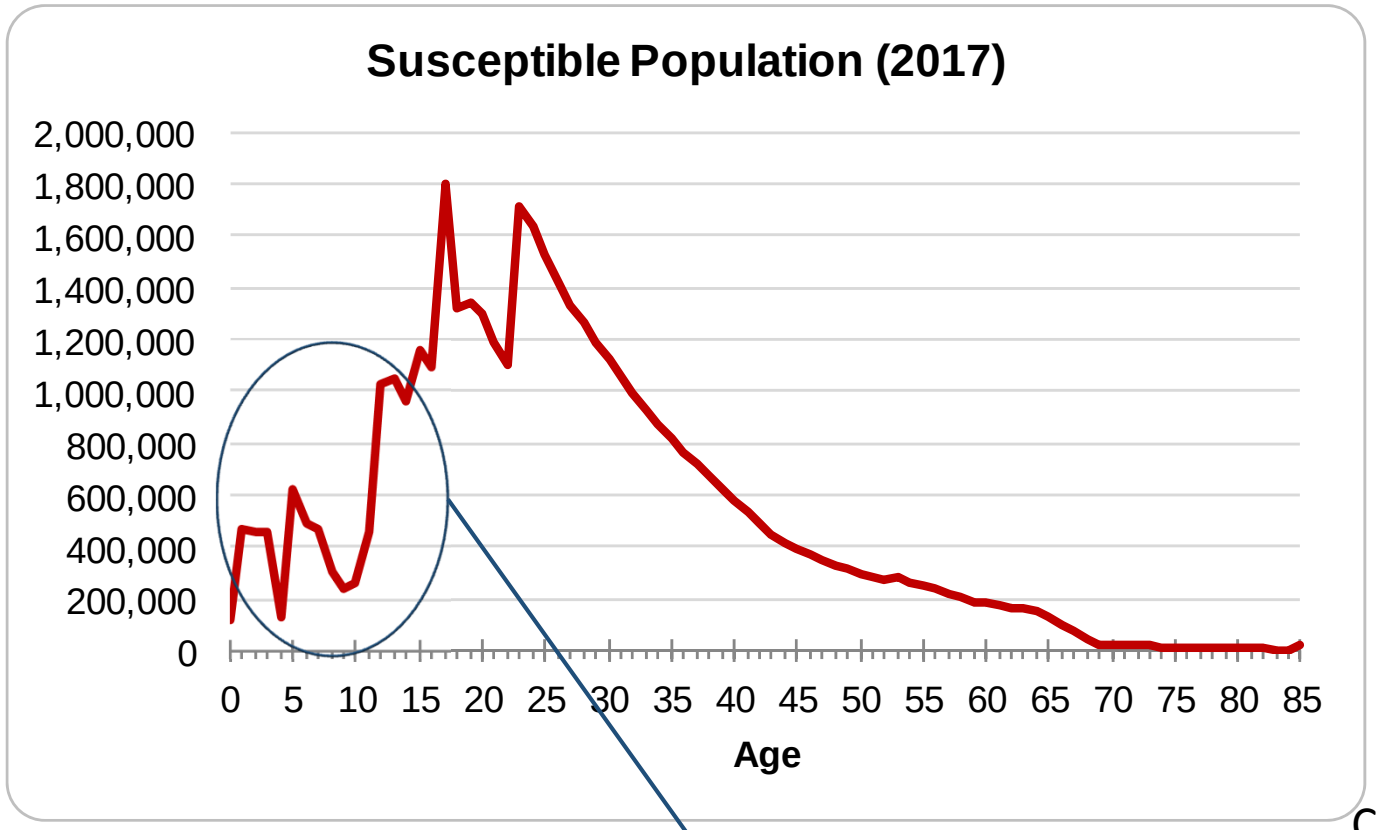




Among non-infants, most new infections are occurring after birth (0-4) and among those aged 20-34.

CDA, WHO 2016

The cost of catch up vaccination will depend on the age group selected



CDA, WHO 2016

The pediatric population have a much higher rate of progression to chronic HBV. There are 11.4 million susceptible to infection (1-17 years old), but vaccination of this population will require testing for core antigen first.

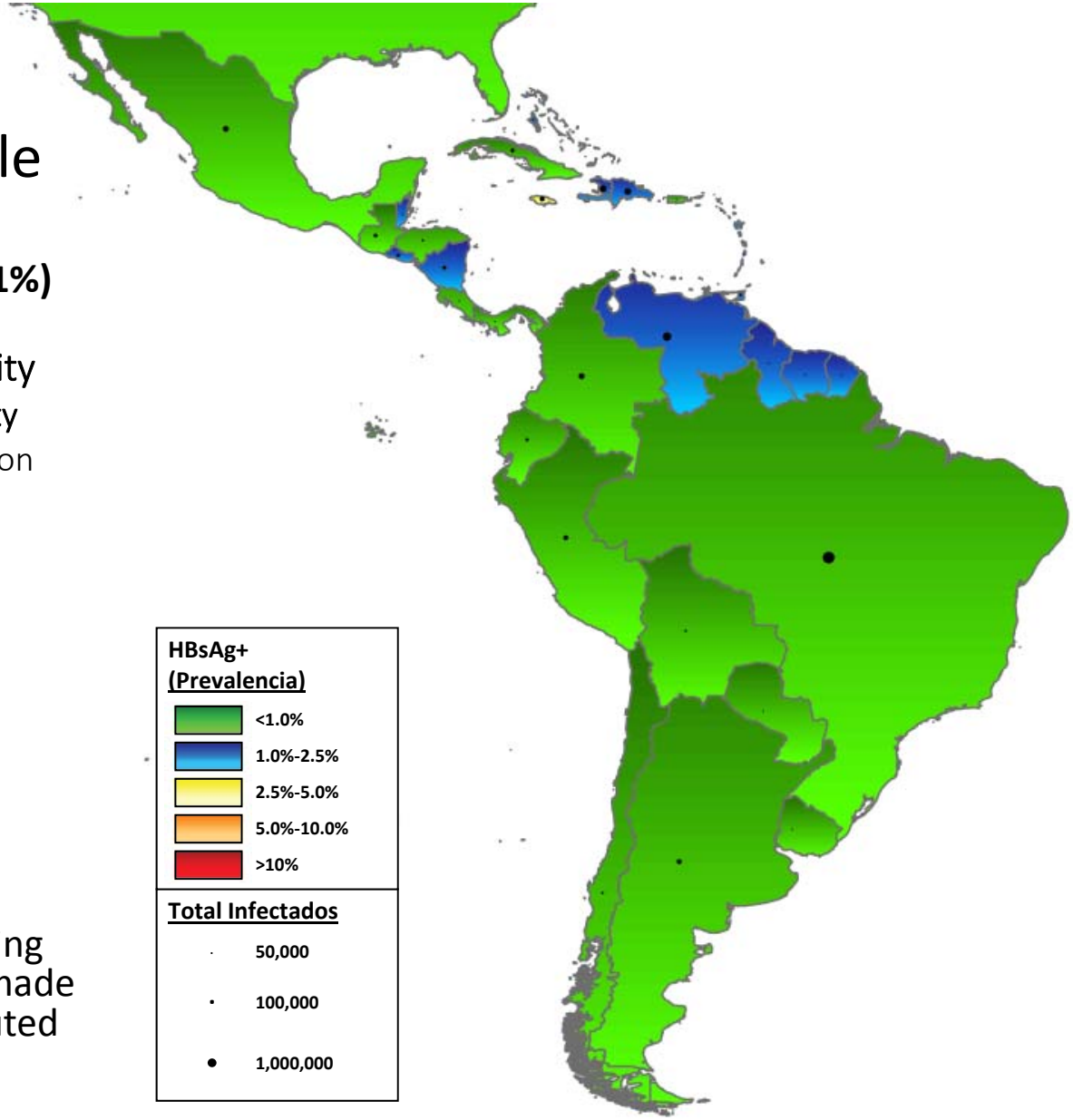
Latin America & Caribbean

*Hepatitis B and C in the Spotlight: A public health response in the Americas, 2016

http://iris.paho.org/xmlui/handle/123456789/31449?locale-attribute=en

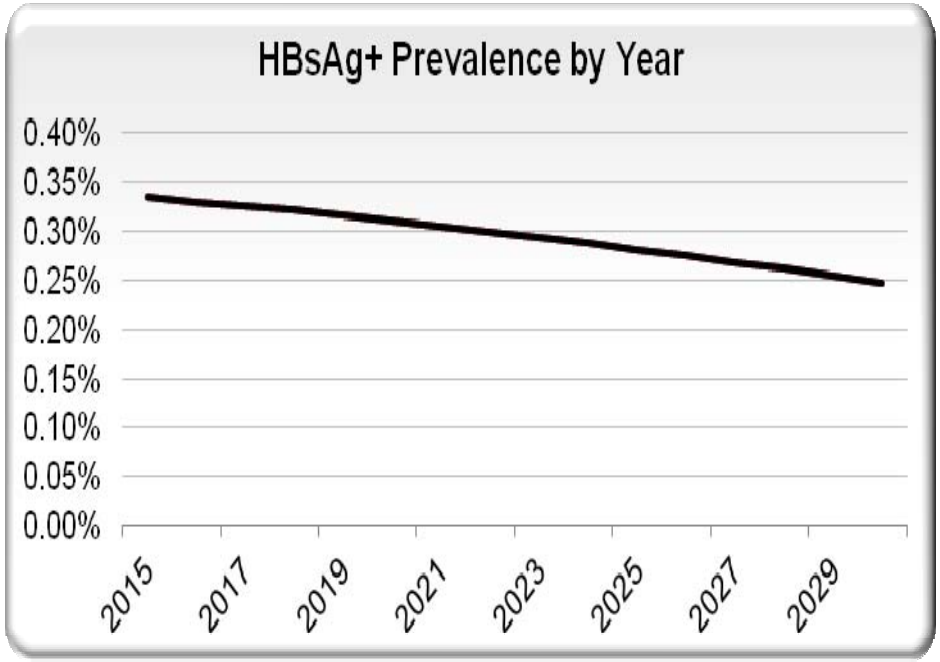
Chronic hepatitis B in Latin America, 2016*

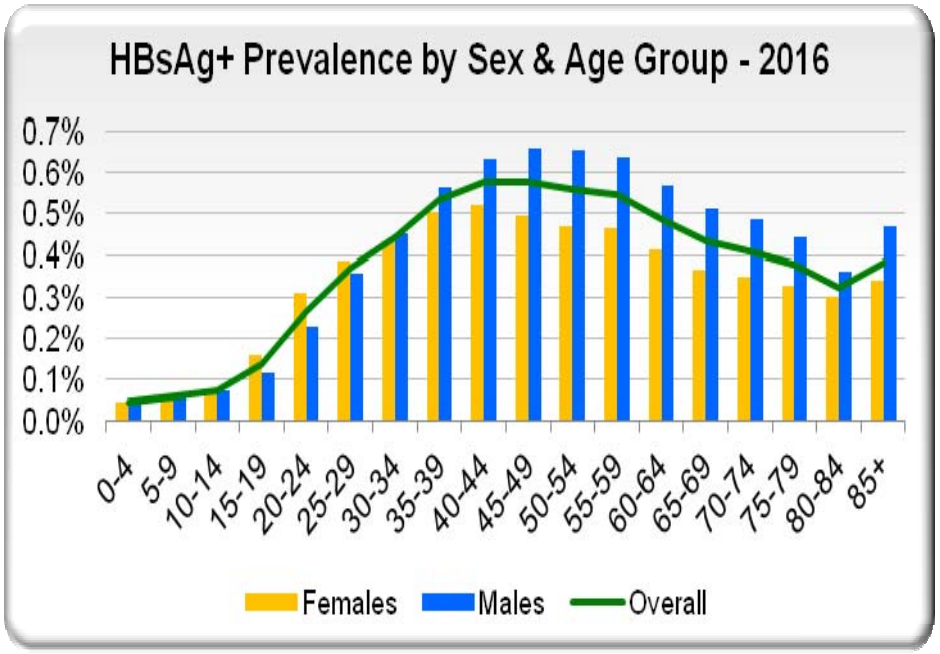
- **2.8 (2.2-8.0) million** people chronically infected
  - Prevalence of **0.28% (0.22-0.81%)** among general population
  - Most areas are of low endemicity
    - Caribe: intermediate endemicity
    - Subnational zones in the Amazon Basin: high endemicity
- **10,000** new chronic infections annually
  - **56% perinatal transmission**



*A 2017 estimate of 6.6m people living with HBsAg in the Region has been made by but this number is currently disputed

Latin America and the Caribbean
Base Estimate – Overall Prevalence



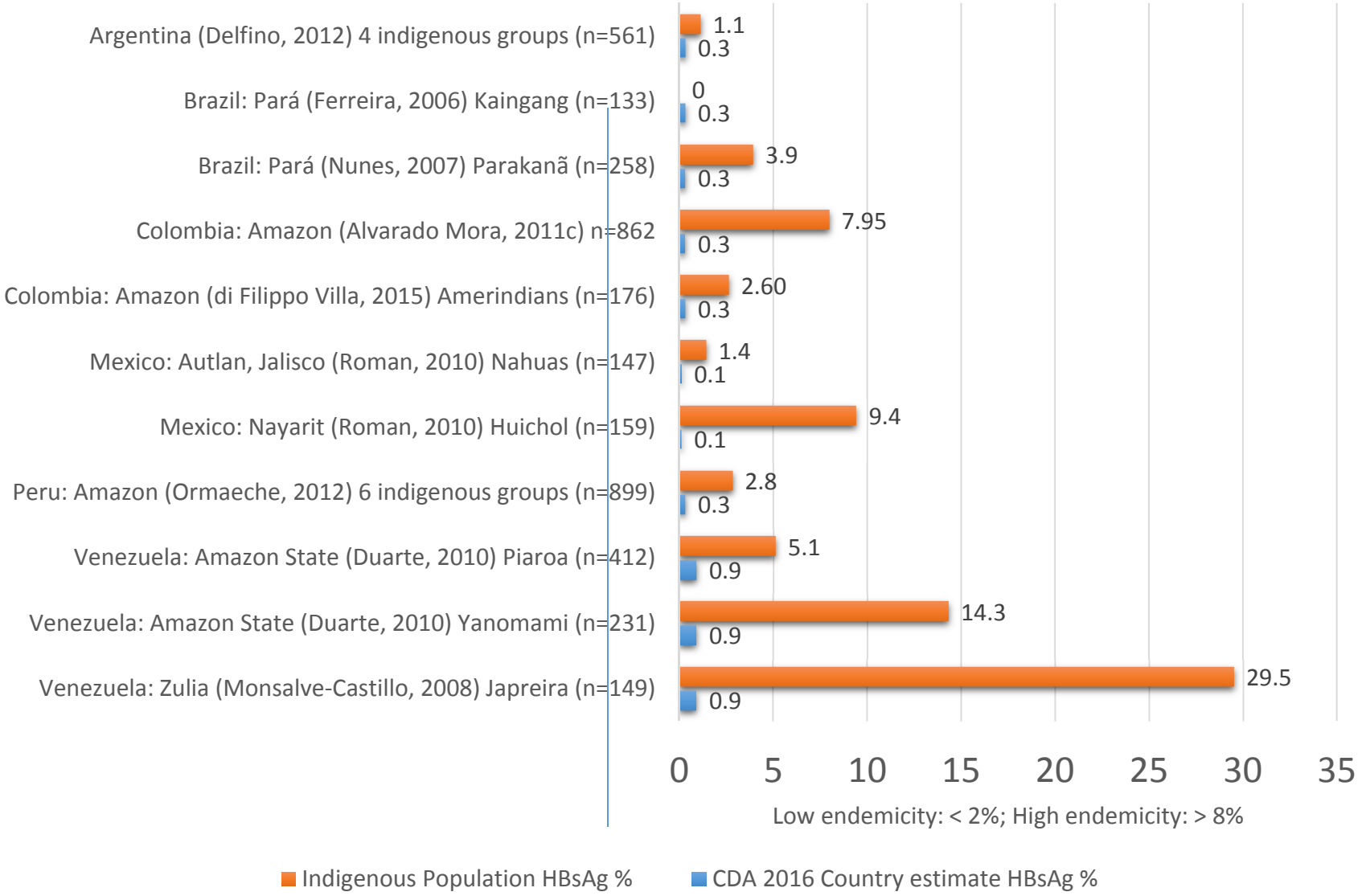


- In 2016 it is estimated that there will be 75,000 new cases of acute HBV
  - 8% from perinatal transmission and 92% from horizontal transmission
    - ~1% of acute cases of horizontal transmission occur in children
  - Of these cases only ~9,000 will become chronic infections
    - 59% from perinatal transmission and 41% from horizontal transmission
      - ~3% of chronic cases of horizontal transmission occur in children

2016 HBsAg Prevalence among 5yos

	2016 HBsAg+ Prevalence 5 years of age		2016 HBsAg+ Prevalence 5 years of age
Argentina	0.03%	El Salvador	**0.4%**
Belize	**0.3%**	Guatemala	0.08%
Brazil	0.02%	Jamaica	**0.6%**
Canada	0.05%	Mexico	0.02%
Chile	<0.01%	Nicaragua	**0.2%**
Colombia	0.05%	Peru	0.04%
Costa Rica	0.03%	United States	0.02%
Cuba	<0.01%	Venezuela	0.09%
Dominican Republic	**0.2%**		

High HBsAg prevalence among indigenous peoples of Latin American

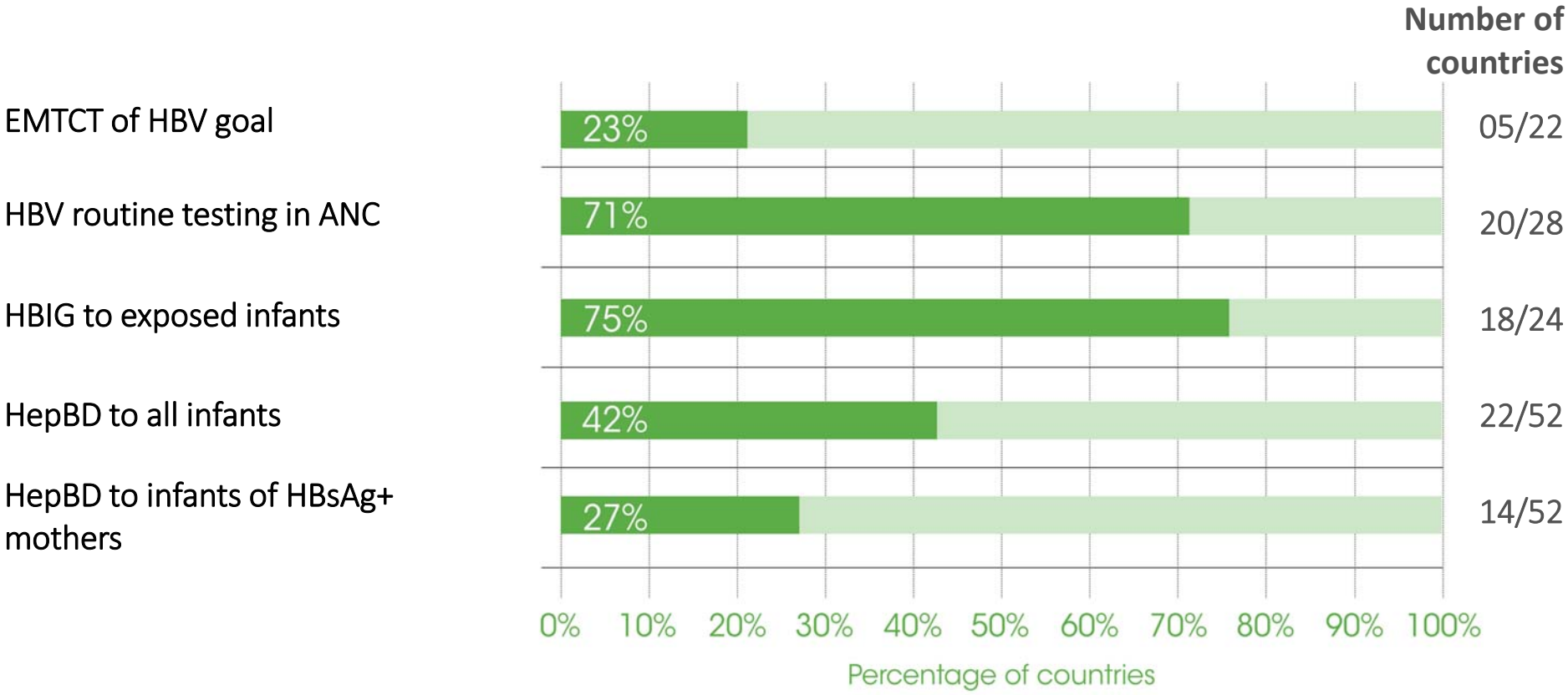


Latin America & Caribbean response

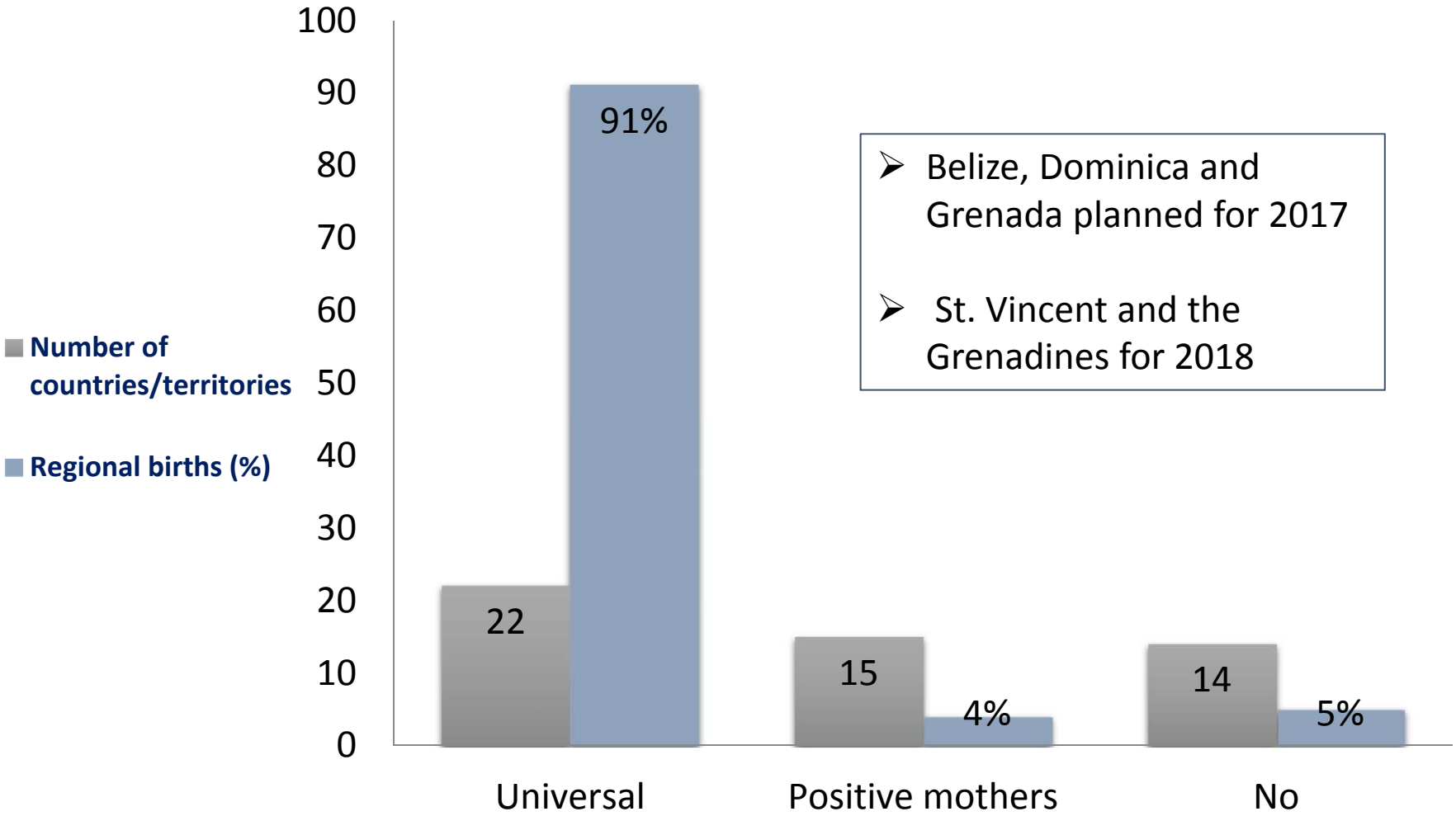
- BD
  - Targeted (but not associated with testing) vs universal
  - Timing varies, and not recorded
- HBIG is used
- Only a subset of antenates are tested, and fewer have data on # of pregnant women being tested
- No policies on antiviral use

MTCT of hepatitis B
National Policies (2015)

Hepatitis B vaccination included in childhood immunization schedule in all LAC countries

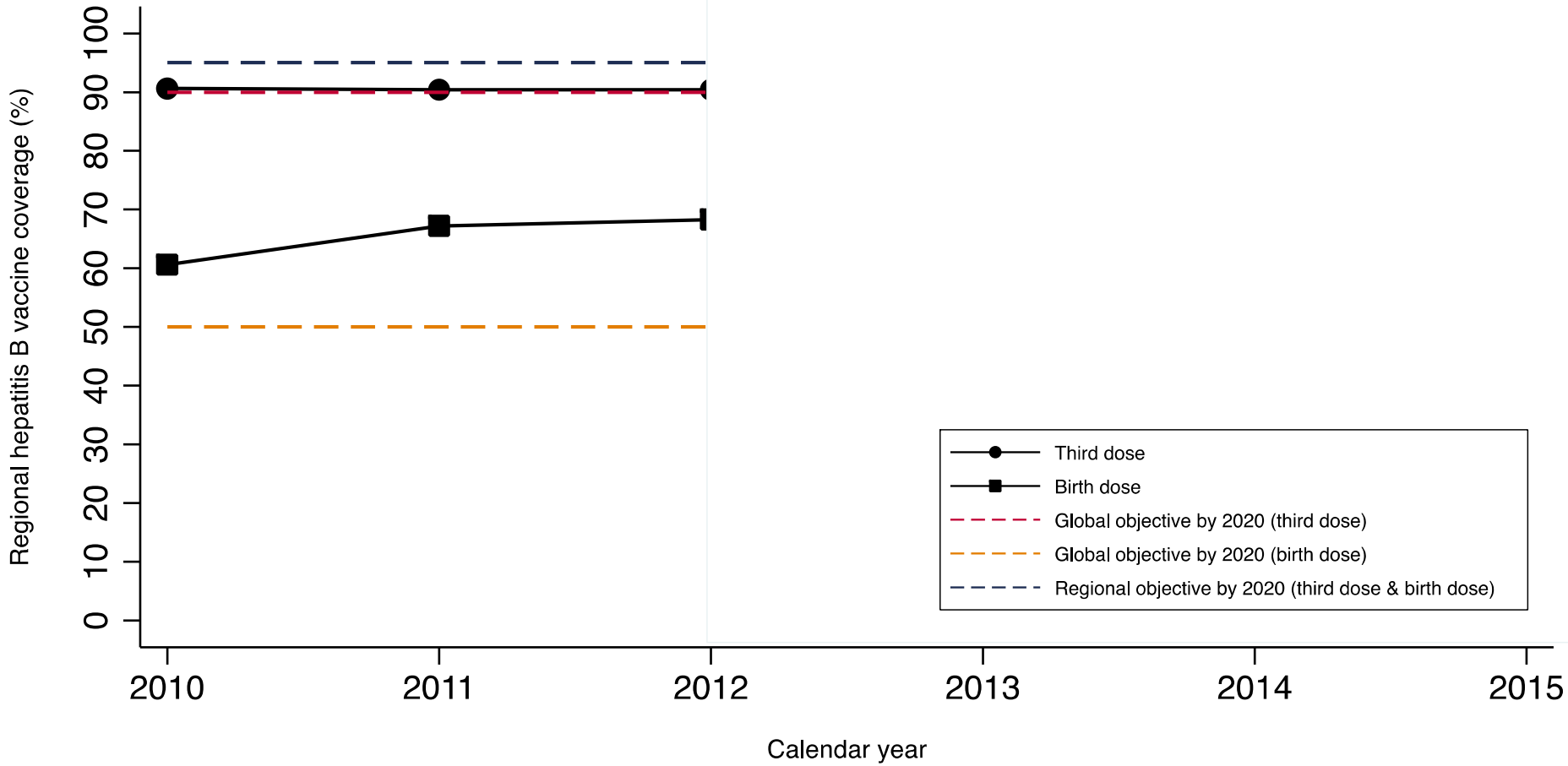


Hep B vaccination policy for newborns (within 24 hours from birth), as of 2016



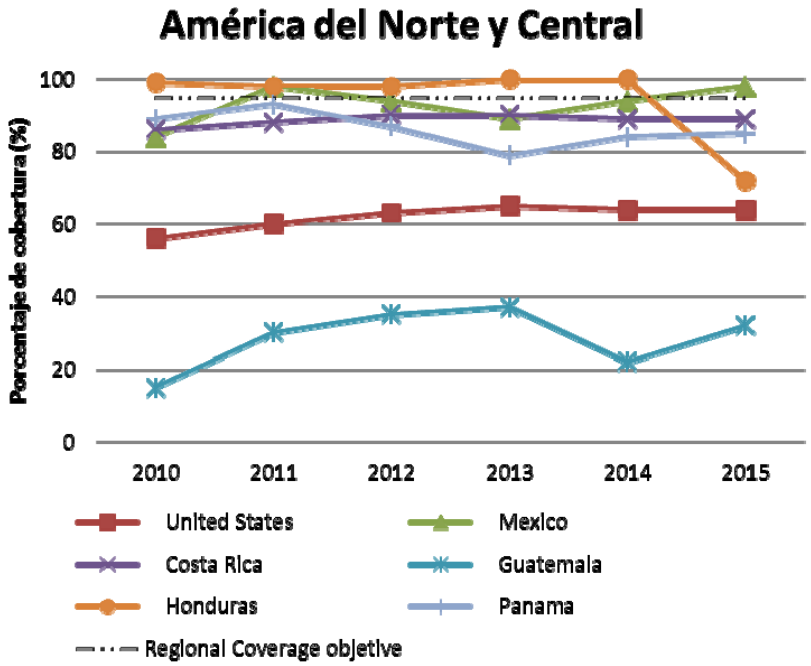
Birth dose in Cayman Islands is given 48 hours from birth.
Only three provinces in Canada are administering a dose at birth (% of births in countries with nationwide birth dose policy (excluding Canada) was 89%
Data on number of births for Bonaire, Saba, and Sint Eustatius were not available

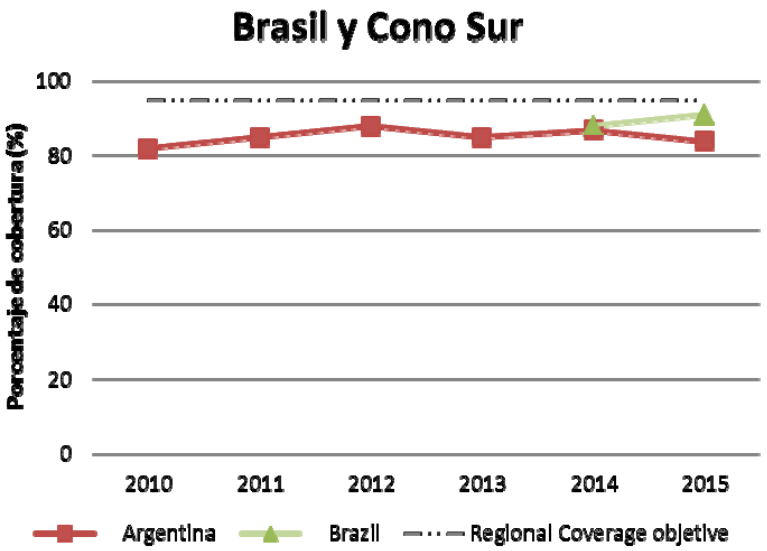
Hepatitis B vaccine coverage in the Region of the Americas, 2010-2015

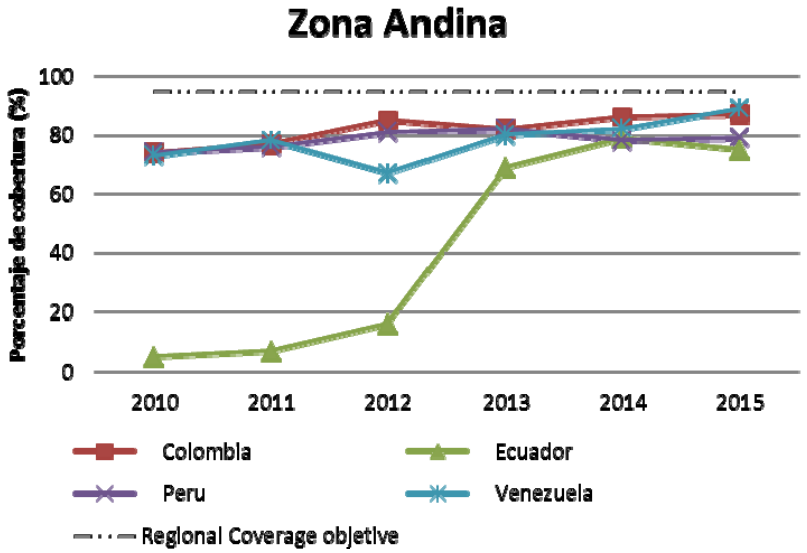


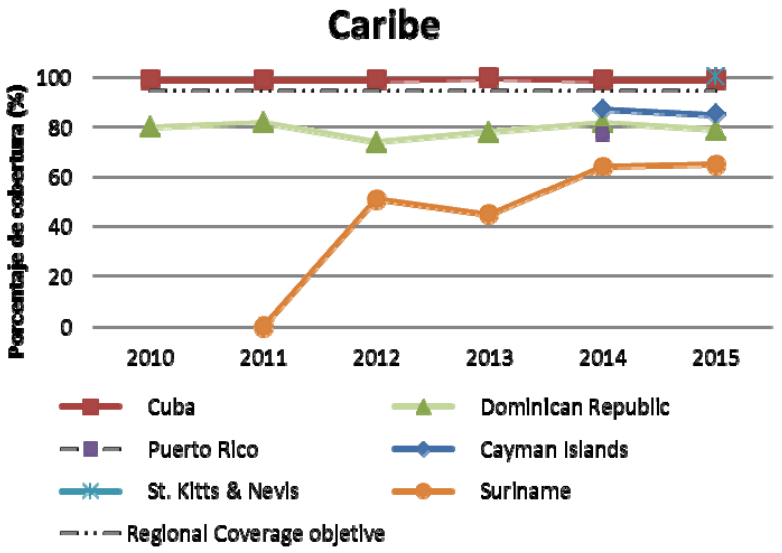
Source: Country reports through PAHO-WHO/UNICEF Joint Reporting Forms (JRFs) and CDC vaccination coverage estimates

Hepatitis B Vaccine Birth Dose Coverage (2010-15)









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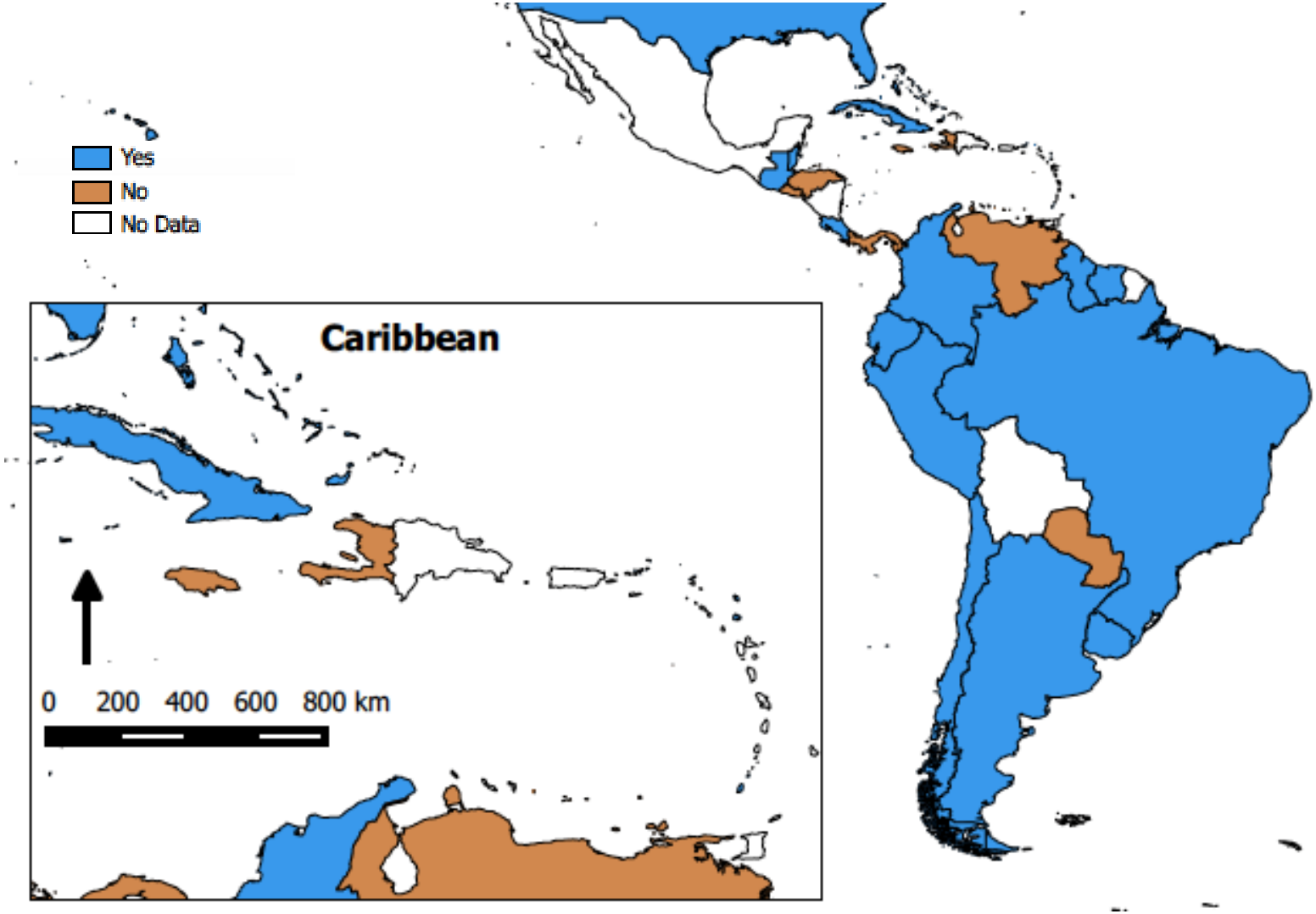
Testing of pregnant women for HBV



Antenatal screening for HBV in the Americas: 2014

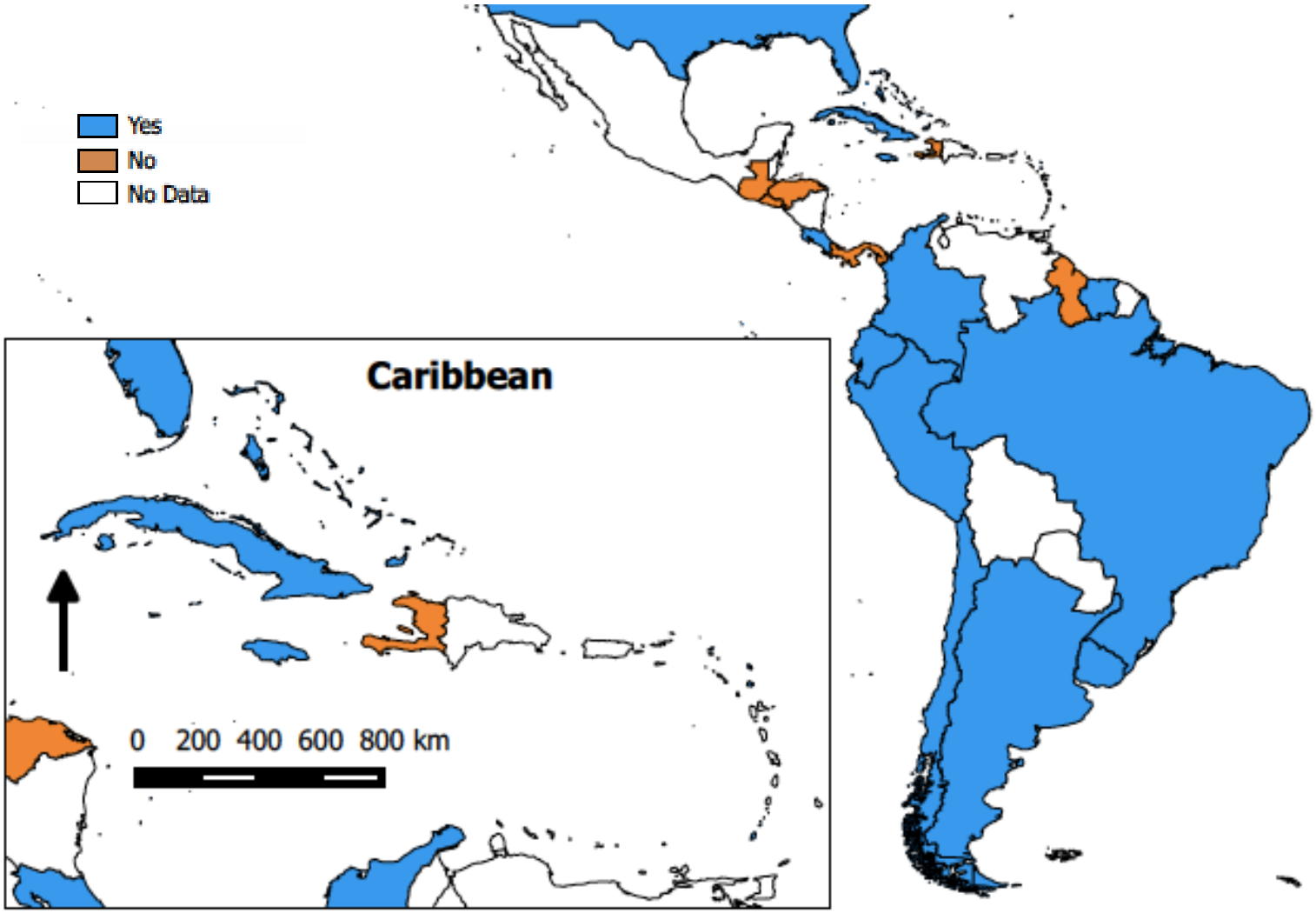
Country	Women screened/annual births (%)	Women HBsAg+/women screened (%)
Anguilla	75	0.7
Argentina	29	0.1
Belize	31	0.3
British Virgin Islands	26	0
Cuba	113	0.05
Guatemala	0	3.5
Panama	2	0.1

From countries with and without screening, 18351 pregnant women were reported HBsAg+ in region from 12/52 countries.

- 52% from the US

Hepatitis B and C in the spotlight: PAHO

HBV Immune Globulin for exposed infants



PAHO's TAG recommendations, 2016

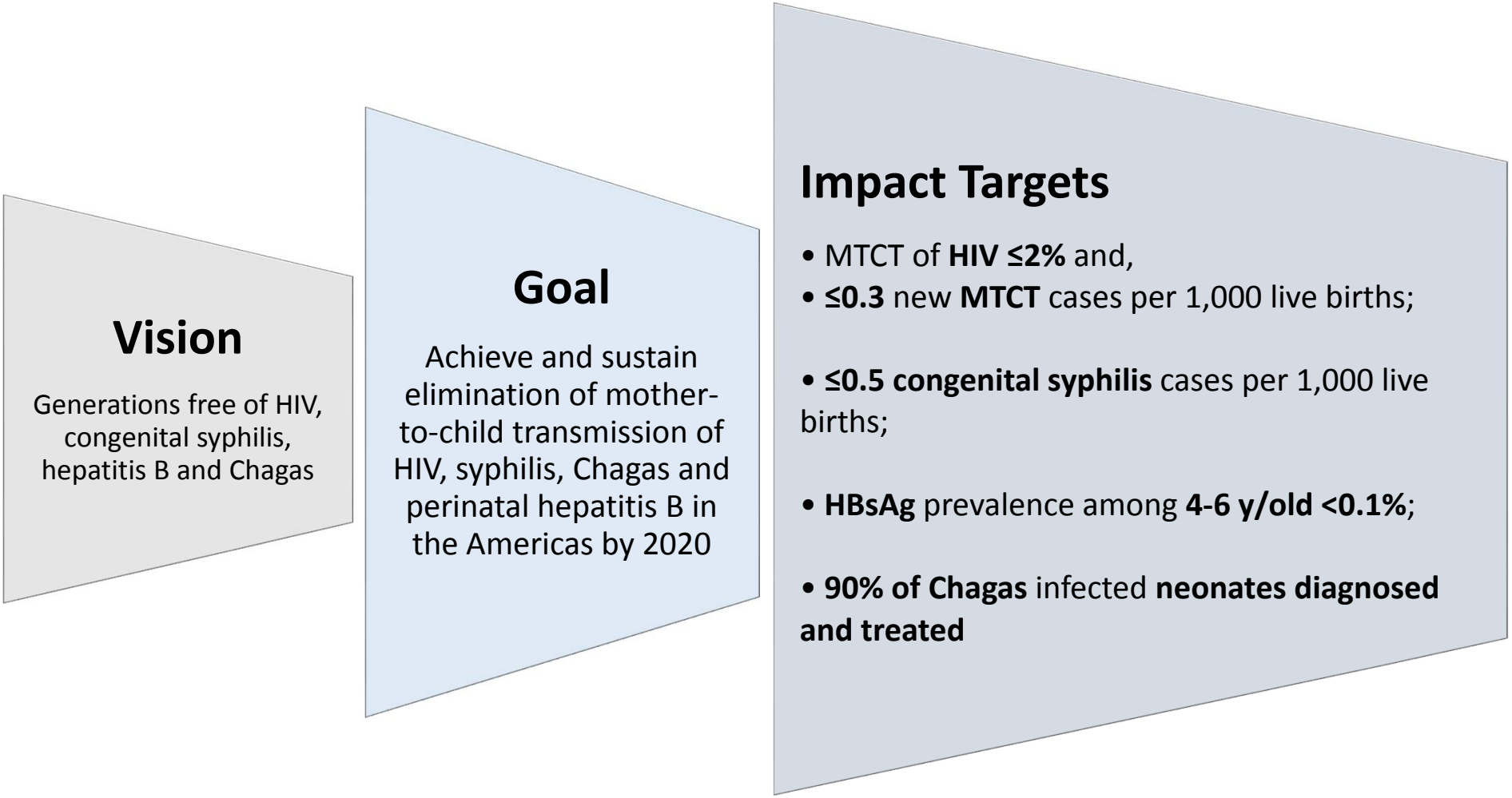
- The **TAG assesses that EMTCT of Hepatitis B is feasible** in the Americas
  - ≥95% with one dose of Hepatitis B vaccine among all newborn babies within 24 hours of birth
  - ≥95% HepB3 among children <1 year

- PAHO should establish a **comprehensive plan** to achieve the elimination goal,
  - including strengthened surveillance
  - targeted **sero-surveys** for all countries.
  - technical support to **countries with highest prevalence** of HBsAg
  - technical support for birth dose introduction.

- Integrate efforts to eliminate MTCT of Hepatitis B with other initiatives: MTCT of HIV, congenital syphilis, other maternal, neonatal and infant health initiatives.

EMTCT+
an integrated single platform framework for eliminating MTCT – HIV HBV syphilis & chagas

EMTCT+ Framework for the Americas



- Initial integrated policy response will be with MoHs of Colombia and Paraguay

Summary

- Much progress in both regions
- Some major countries with success and poorer performance
- Testing of antenates is inconsistent
- Improved data will determine exactly where deficits lay
- Challenges are context specific

Thank you