Hepatitis B mother to child transmission

Key issues from Asia and Latin America

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WHO Regional Office for the Americas
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  • 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
WP Region Vaccination Coverage

- Global health sector strategies for HIV, STI and viral hepatitis
- Global and regional status of elimination of mother-to-child transmission (EMTCT)
- Hepatitis B control through immunization and beyond
- Triple elimination in Asia-Pacific
- Way forward
Regional Progress:
now 0.93% HBsAg prevalence among 5yos
CHINA
Some slides have been removed.
Mongolia
Progress in HBV vaccination – hurdles overcome → ultimate success.

Early issues:
- Freezing of vaccine during transportation
- Late BD
- Reduced B2 B3 in rural areas.

Vietnam
For the hepatitis B birth dose: Public perceptions matter!

If the hepatitis B vaccination coverage had been maintained as in 2012 then: 
90,137 chronic infections and 17,456 future deaths could be averted

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**

Viet Nam Birth Dose Assessment

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

<table>
<thead>
<tr>
<th>Criteron</th>
<th>Status</th>
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<tbody>
<tr>
<td>Temperature</td>
<td>35.5–37.5</td>
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<tr>
<td>Heart irregularities</td>
<td>No</td>
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<tr>
<td>Breathing</td>
<td>Normal</td>
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<tr>
<td>Activity</td>
<td>Normal</td>
</tr>
<tr>
<td>Weight</td>
<td>&gt;2000 g</td>
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<tr>
<td>Other contraindications</td>
<td>No</td>
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Philippines
Immunization Coverage of Infants

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

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<tbody>
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<td>% BD</td>
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<tr>
<td>% 3D</td>
<td>38</td>
<td>35</td>
<td>31</td>
<td>30</td>
<td>32</td>
<td>7</td>
<td>45</td>
<td>42</td>
<td>52</td>
<td>48</td>
<td>49</td>
<td>77</td>
<td>87</td>
<td>88</td>
<td>85</td>
<td>77</td>
<td>76</td>
<td>70</td>
<td>94</td>
<td>79</td>
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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). Colbr 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.

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

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

<table>
<thead>
<tr>
<th>Country</th>
<th>2016 HBsAg+ Prevalence 5 years of age</th>
<th>2016 HBsAg+ Prevalence 5 years of age</th>
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</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>0.03%</td>
<td>El Salvador</td>
</tr>
<tr>
<td>Belize</td>
<td>0.3%</td>
<td>Guatemala</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.02%</td>
<td>Jamaica</td>
</tr>
<tr>
<td>Canada</td>
<td>0.05%</td>
<td>Mexico</td>
</tr>
<tr>
<td>Chile</td>
<td>&lt;0.01%</td>
<td>Nicaragua</td>
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<tr>
<td>Colombia</td>
<td>0.05%</td>
<td>Peru</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>0.03%</td>
<td>United States</td>
</tr>
<tr>
<td>Cuba</td>
<td>&lt;0.01%</td>
<td>Venezuela</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>0.2%</td>
<td></td>
</tr>
</tbody>
</table>
High HBsAg prevalence among indigenous peoples of Latin American

- Argentina (Delfino, 2012) 4 indigenous groups (n=561)
- Brazil: Pará (Ferreira, 2006) Kaingang (n=133)
- Brazil: Pará (Nunes, 2007) Parakanã (n=258)
- Colombia: Amazon (Alvarado Mora, 2011c) n=862
- Colombia: Amazon (di Filippo Villa, 2015) Amerindians (n=176)
- Mexico: Autlan, Jalisco (Roman, 2010) Nahuas (n=147)
- Mexico: Nayarit (Roman, 2010) Huichol (n=159)
- Peru: Amazon (Ormaeche, 2012) 6 indigenous groups (n=899)
- Venezuela: Amazon State (Duarte, 2010) Piaroa (n=412)
- Venezuela: Amazon State (Duarte, 2010) Yanomami (n=231)
- Venezuela: Zulia (Monsalve-Castillo, 2008) Japreira (n=149)

Low endemicity: < 2%; High endemicity: > 8%
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

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

- EMTCT of HBV goal: 23% (05/22)
- HBV routine testing in ANC: 71% (20/28)
- HBIG to exposed infants: 75% (18/24)
- HepBD to all infants: 42% (22/52)
- HepBD to infants of HBsAg+ mothers: 27% (14/52)
Hep B vaccination policy for newborns (within 24 hours from birth), as of 2016

- Belize, Dominica and Grenada planned for 2017
- St. Vincent and the Grenadines for 2018

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)

Source: Country reports through PAHO-WHO/UNICEF Joint Reporting Forms (JRFs) and CDC vaccination coverage estimates
Testing of pregnant women for HBV
# Antenatal screening for HBV in the Americas: 2014

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

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

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

**Vision**
Generations free of HIV, congenital syphilis, hepatitis B and Chagas

**Goal**
Achieve and sustain elimination of mother-to-child transmission of HIV, syphilis, Chagas and perinatal hepatitis B in the Americas by 2020

**Impact Targets**
- MTCT of HIV \(\leq 2\%\) and, \(\leq 0.3\) new MTCT cases per 1,000 live births;
- \(\leq 0.5\) congenital syphilis cases per 1,000 live births;
- HBsAg prevalence among 4-6 y/old <0.1%;
- 90% of Chagas infected neonates diagnosed and treated

- 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