Regional Approaches to NTD Control in the Americas

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Workshop “The Causes and Impacts of Neglected Tropical and Zoonotic Diseases”
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22 September 2010
Neglected Tropical Diseases in Latin America and the Caribbean

- At least 180 million below “poverty line” in LAC
- NTDs disproportionately affect the poor, marginalized, indigenous and ethnic minorities
- NTDs contribute to perpetuate the Poverty Cycle

- Social determinants of health do impact the NTDs
  - Water, sanitation, housing, poverty, education, conflict...

- Some NTDs as a historical legacy of slavery: onchocerciasis, lymphatic filariasis, schistosomiasis.

- Ethical and moral imperative to eliminate NTDs and help address the Unfinished Agenda of Health in LAC
Neglected Tropical Diseases: General Impacts

- **Acute and Chronic Diseases with Life-cycle Impacts, Disabling**

- **Children and Women**
  - Reduce school attendance, attention in class, and test scores
  - Adversely affect children's' physical and cognitive development
  - Adversely affect pregnancy outcome, birth weight, neonatal survival

- **Adults**
  - Reduce labor productivity
  - Reduce income-earning capacity
  - Create social stigma: leprosy, filariasis, leishmaniasis
  - Incapacity and Premature death
Elimination of Neglected Diseases in Latin America and in the Caribbean

PAHO Resolution CD49 R.19 (October 2009) for the Elimination of Neglected Diseases and other infections related to poverty

Presentation of:
- **Background**, objective, concept, classification
- **Examples** of disease-specific epidemiological data, goals, strategies
- **Opportunities** for integrating actions, overlapping, framework and common approaches, current tasks
Background

Examples of success in the LAC Region

- Elimination of smallpox, poliomyelitis, measles
- Interruption of onchocerciasis transmission in 7 out of 13 foci
- Reduction in the vector-borne domestic transmission and blood transfusional transmission of Chagas disease (below, left)
- 90% reduction in the number of cases of human rabies transmitted by dogs (below, right)

<table>
<thead>
<tr>
<th>Chagas Epidemiological parameters</th>
<th>1990</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual deaths</td>
<td>&gt;45,000</td>
<td>12,500</td>
</tr>
<tr>
<td>Human cases of infection</td>
<td>30 million</td>
<td>15 million</td>
</tr>
<tr>
<td>New cases per year</td>
<td>700,000</td>
<td>41,200</td>
</tr>
<tr>
<td>At-risk population</td>
<td>100 million</td>
<td>28 million</td>
</tr>
</tbody>
</table>

Number of human cases transmitted by dogs, Latin America, 1990 – 2007

Over the past two decades, the total number of rabies cases was reduced by nearly 90% in both humans and dogs.
PAHO’s Epidemiological Profiles of Neglected Diseases of Poverty in Latin America and the Caribbean

- 10 diseases in 14 countries (1st admin level mapping)
- Focus on identifying strategies, collecting epidemiological data on presence and prevalence, and
- Mapping “hot spots” of disease overlap

- Published 2009
- Find at www.paho.org
Member States committed in 2009 to:

- **Objective**: Eliminate or reduce neglected diseases and other infections related to poverty (NIDs) for which tools exist, to levels such that these diseases are no longer considered public health problems - by 2015

- Review existing plans or develop new national plans to control or eliminate these diseases
Concepts

Elimination:

§ Reduction to zero of the incidence of a given disease in a defined geographic area as a result of deliberate efforts; requires continued surveillance and interventions.

Elimination as a public health problem:

§ Drastic reduction of the burden of disease to a certain level considered as acceptable given the current available tools and the Region’s health situation.

§ This level should be such that it does not constrain social productivity nor community development.

§ Specific goals for each disease are established.
Classification of NIDs and other poverty-related infections

- **Group 1:** Diseases targeted for elimination

- **Group 2:** Diseases whose burden can be drastically reduced with available tools

- **Others:** Diseases for which the burden of the disease needs to be further assessed, tools need to be developed, and methods and strategies for achieving cost-effective control need to be established.
Group 1: Elimination Targets

- Lymphatic filariasis
- Onchocerciasis
- Trachoma
- Chagas disease*
- Malaria**
- Human rabies transmitted by dogs
- Plague
- Leprosy
- Neonatal tetanus
- Congenital syphilis

Availability of cost-effective strategies and tools

Evidence of feasibility in other countries or areas in Latin America and the Caribbean

Global or regional mandates to reach elimination
Lymphatic Filariasis

Presence at subnational level, 2005–2007

Map showing the presence of Lymphatic Filariasis in the Americas, with different colors indicating evidence of presence, no evidence at sub-national level, no evidence in country, no data, and country limits.
Onchocerciasis

Onchocerciasis: Progress towards the elimination of ocular morbidity and interruption of transmission (02/2010)

<table>
<thead>
<tr>
<th>Focus</th>
<th>Has blindness been eliminated?</th>
<th>Has ocular morbidity disappeared?</th>
<th>Transmission status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa Rosa, GU</td>
<td>Yes</td>
<td>Yes</td>
<td>Interrupted in 2006</td>
</tr>
<tr>
<td>Lopez de Micay, CO</td>
<td>Yes</td>
<td>Yes</td>
<td>Interrupted in 2007</td>
</tr>
<tr>
<td>Escuintla, GU</td>
<td>Yes</td>
<td>Yes</td>
<td>Interrupted in 2007</td>
</tr>
<tr>
<td>North Chiapas, MX</td>
<td>Yes</td>
<td>Yes</td>
<td>Interrupted in 2007</td>
</tr>
<tr>
<td>Huehuetenango, GU</td>
<td>Yes</td>
<td>Yes</td>
<td>Interrupted in 2008</td>
</tr>
<tr>
<td>Oaxaca, MX</td>
<td>Yes</td>
<td>Yes</td>
<td>Interrupted in 2008</td>
</tr>
<tr>
<td>Esmeraldas, EC</td>
<td>Yes</td>
<td>Yes</td>
<td>Interrupted in 2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Interrupted in 2009</td>
</tr>
<tr>
<td>South Chiapas, MX</td>
<td>Yes</td>
<td>Yes</td>
<td>Suspected interrupted</td>
</tr>
<tr>
<td>Central, GU</td>
<td>Yes</td>
<td>Yes</td>
<td>Suspected Interrupted</td>
</tr>
<tr>
<td>Northcentral, VZ</td>
<td>Yes</td>
<td>No (1.6%)</td>
<td>Suspected Interrupted</td>
</tr>
<tr>
<td>Northeast, VZ</td>
<td>Yes</td>
<td>No (4%)</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Amazonas, BR</td>
<td>Yes</td>
<td>No (6.5%)</td>
<td>Ongoing</td>
</tr>
<tr>
<td>South, VZ</td>
<td>Yes</td>
<td>No (16.8%)</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
Trachoma
Group 2: Drastic reduction of disease burden

- Schistosomiasis (S. mansoni)
- Soil-transmitted helminths: Ascaris, Trichuris, hookworms

- Persistence of areas or sites with a very high prevalence
- Limited knowledge of epidemiological situation
Soil-transmitted helminths
Prevalence according to available studies, 1998–2007
Soil-transmitted helminths: How are we doing?

Pre-SAC and SAC coverage deworming, AMRO all countries, 2005-2009 (Estimate of all Pre-SAC and SAC population)

<table>
<thead>
<tr>
<th>Year</th>
<th>Pre-SAC AMRO Region all countries</th>
<th>SAC AMRO Region all countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>12.64%</td>
<td>34.76%</td>
</tr>
<tr>
<td>2006</td>
<td>10.90%</td>
<td>23.39%</td>
</tr>
<tr>
<td>2007</td>
<td>1.89%</td>
<td>6.67%</td>
</tr>
<tr>
<td>2008</td>
<td>2.13%</td>
<td>5.46%</td>
</tr>
<tr>
<td>2009</td>
<td>10.53%</td>
<td>30.75%</td>
</tr>
</tbody>
</table>

Mexico's data missing

SAC = School-age Children
AMRO = Americas Region
Soil-transmitted helminths: How are we doing?

Pre-SAC and SAC coverage deworming, AMRO all countries, 2005-2009
(Estimate of all PreSAC and SAC population)

<table>
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<th>SAC AMRO Region all countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>12.48</td>
<td>33.75</td>
</tr>
<tr>
<td>2006</td>
<td>10.74</td>
<td>23.62</td>
</tr>
<tr>
<td>2007</td>
<td>1.89</td>
<td>23.17</td>
</tr>
<tr>
<td>2008</td>
<td>5.29</td>
<td>21.60</td>
</tr>
<tr>
<td>2009</td>
<td>10.90</td>
<td>33.15</td>
</tr>
</tbody>
</table>

With Mexico’s data added
Diseases for which new strategies & tools are needed for sustainable control

- Cysticercosis/Taeniasis
- Leishmaniasis
- Echinococcosis (Hydatid disease)
- Food-borne trematodiasis
- Certain other parasitic zoonoses
What are we doing 2009-2010?

**NIDs in general:**


**Epidemiological profiles of 12 NIDs, PAHO (2009)**

Analysis of progress, priorities and lines of action for five NIDs in LAC 2010-2015 (draft 2010)

**NID Trust Fund in progress: Sabin Vaccine Institute/GNNTD, IADB, PAHO as partners. Fund in IDB.**

**Demo projects in process: PAHO, IADB, Sabin/GNNTD**

- Chiapas, Mexico: developing operational plan, from PoA
- Recife, Brazil: draft of integrated plan of action (PoA): Leprosy, lymphatic filariasis, schistosomiasis, STH

**NID Plans of Action (PoA): in process GUY, HON, SUR....**

**Mapping ongoing:**

- Direct mapping projects in several key countries
- Disease Mapping and Modeling for Neglected and Other Poverty-Related Diseases in Latin America and the Caribbean – 3 countries. Forecasting areas, prevalence.
- Social determinants of health and NIDs in 2 communities, Yucatan, MEX.
5 NTDs

Analysis of Progress, Priorities and Lines of Action for Control and Elimination of Neglected Diseases in Latin America and the Caribbean, 2010 - 2015

Pan American Health Organization
### Neglected Infectious Diseases in Latin America and the Caribbean (Towards Elimination)

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>FOCI</th>
<th>POPULATION AT RISK</th>
<th>POPULATION INFECTED/ELIGIBLE FOR TREATMENT</th>
<th>DRUGS AND FREQUENCY</th>
<th>TREATMENT COVERAGE 2009</th>
<th>STATUS</th>
<th>REGIONAL TARGETS (Resolution PAHO CD49.R19)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Onchocerciasis</strong></td>
<td>13 Foci located in Brazil, Colombia, Ecuador, Guatemala, Mexico and Venezuela</td>
<td>542,945</td>
<td>326,253</td>
<td>Ivermectin Twice per year</td>
<td>&gt;=85% in all foci</td>
<td>Transmission interrupted in 7 foci: 2 in Mexico, 3 in Guatemala, 1 in Colombia, 1 in Ecuador</td>
<td>To eliminate ocular morbidity - 2012 (Resolution PAHO CD48/10)</td>
</tr>
<tr>
<td><strong>Schistosomiasis</strong></td>
<td>Foci in 4 countries: Brazil, Venezuela, Suriname and Saint Lucia. Suspected transmission in Dominican Republic</td>
<td>25,000,000</td>
<td>7,127,425</td>
<td>Praziquantel Once or twice per year</td>
<td>Brazil 83% cases treated of cases detected; Guyana 23.4% coverage; Suriname 21 cases treated; Saint Lucia no data available</td>
<td>To implement preventive chemotherapy for at least 75% of SAC that live in at-risk areas; and improvements of excreta disposal systems and access to drinking water, education</td>
<td>To reduce prevalence and parasite load in high transmission areas to less than 10% prevalence as measured by quantitative egg counts.</td>
</tr>
</tbody>
</table>

1. DEC: Diethylcarbamazine,
2. MDA: Mass Drug Administration.
3. SAFE: Surgery, antibiotic, face cleanliness and environmental improvement.

Parasitic and Neglected Disease Program, Pan American Health Organization/WHO
Neglected Infectious Diseases in Latin America and the Caribbean (Towards Elimination)

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<th>STATUS</th>
<th>REGIONAL TARGETS (Resolution PAHO CD49.R19)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lymphatic filariasis</strong></td>
<td>Foci in 4 countries: Brazil, Dominican Republic, Haiti and Guyana</td>
<td>9,000,000</td>
<td>3,714,442</td>
<td>DEC+Albendazole¹</td>
<td>Haiti 3 million people treated; Brazil 177,000; Guyana 129,189</td>
<td>Trinidad &amp; Tobago, Suriname and Costa Rica have interrupted transmission: waiting for certification/verifica</td>
<td>To eliminate the disease as a public health problem (less than 1% prevalence of microfilaria in adults in sentinel sites and spot-check sites in the area).</td>
</tr>
<tr>
<td><strong>Trachoma</strong></td>
<td>Foci in 3 countries: Brazil, Guatemala and Mexico</td>
<td>50,000,000</td>
<td>Brazil has detected nearly 7,000 cases²</td>
<td>Azithromycin</td>
<td>No data available</td>
<td>The “SAFE” strategy in progress³</td>
<td>To eliminate new cases of blindness caused by trachoma (reduction in the prevalence of trachomatous trichiasis to less than 1 case per 1,000 (general population) and reduction in the prevalence of follicular or inflammatory trachoma (FT and IT) to less than 5% in children aged 1-9 years).</td>
</tr>
<tr>
<td><strong>Soil-transmitted Helminthiasis -STH</strong></td>
<td>All countries</td>
<td>13,000,000</td>
<td>13,000,000</td>
<td>Albendazole or mebendazole</td>
<td>4,800,000</td>
<td>Regular administration of preventive chemotherapy/(MDA)² for at least 75% of SAC at risk</td>
<td>To reduce prevalence among school-age children in high risk areas (prevalence &gt;50%) to less than &lt;20% prevalence as measured by quantitative egg count</td>
</tr>
</tbody>
</table>

¹DEC: Diethylcarbamazine, ²Mexico and Guatemala under revision or in progress mapping to define prevalence value, ³SAFE: Surgery, antibiotic, face cleanliness and environmental improvement, ⁴Pre-SAC: Pre-school Age Children, ⁵SAC: School Age Children, ⁶MDA: Mass Drug Administration.
### Group classification of LAC countries to address technical cooperation for control or elimination of onchocerciasis, schistosomiasis, lymphatic filariasis, trachoma and soil-transmitted helminths

<table>
<thead>
<tr>
<th>GROUP</th>
<th>POPULATION AT RISK</th>
<th>APPROACH OF TECHNICAL COOPERATION TO NIDs</th>
<th>COUNTRIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>66.8% of Pre-SAC and 67.4% of SAC at risk for STH of total in LAC</td>
<td>Countries that need technical cooperation to fully develop integrated, inter-programmatic and inter-sectoral plans to combat NIDs.</td>
<td>Bolivia, Brazil, Dominican Republic, Ecuador, Guatemala, Guyana, Haiti, Mexico, Peru, Saint Lucia and Suriname</td>
</tr>
<tr>
<td></td>
<td>421,000 for onchocerciasis (Targeted for elimination)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25 million for schistosomiasis (Targeted for elimination in Saint Lucia)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 million for trachoma (Targeted for elimination)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>More than 9 million for lymphatic filariasis (Targeted for elimination)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>26.8% of PreSAC and 26.1% of SAC at risk for STH of total in LAC</td>
<td>Countries that need technical cooperation to improve inter-programmatic and inter-sectoral coordination and include STH into NIDs integrated actions.</td>
<td>Colombia, El Salvador, Honduras, Belize, Panama and Venezuela</td>
</tr>
<tr>
<td></td>
<td>115,070 for onchocerciasis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A focus of schistosomiasis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5.4% of PreSAC and SAC at risk for STH of total in LAC</td>
<td>Countries that need technical cooperation to focus activities for NIDs at local level and rural areas</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>4</td>
<td>1.03% of PreSAC and 1.1% of SAC at risk for STH of total in LAC</td>
<td>Countries that need technical cooperation on monitoring and evaluation</td>
<td>Antigua and Barbuda, Bahamas, Barbados, Chile, Costa Rica, Cuba, Dominica, Granada, Jamaica, Trinidad and Tobago, Uruguay, Saint Kitts and Nevis and Saint Vincent and Grenadines</td>
</tr>
</tbody>
</table>

* Bolivia is included on group 1, but has border in The Chaco area

More information on Preliminary document: Analysis of progress, priorities and lines of action for control and elimination of Neglected Diseases in Latin America and the Caribbean, 2010-2015


Contact Dr. Steven Ault aultstev@paho.org

Consult our Web site [www.paho.org](http://www.paho.org)
Opportunities for integration

Overlapping of diseases

Principles and common approaches

Tasks ahead
Overlapping of six neglected infectious diseases
Overlapping of diseases: Opportunities for integrated action

275 administrative units at first subnational level in 14 countries, 6 selected NIDs

β 3 units with presence of 4 of 6 selected diseases: Maranhão, Pernambuco and Sergipe (Brazil)
  β STH, schistosomiasis, onchocerciasis, lymphatic filariasis, trachoma, human rabies transmitted by dogs

β 12 units with presence of 3 of 6 diseases
  β The majority in Haiti, followed by Brazil and Guatemala

β 41 units with presence of 2 of 6 diseases

β Of the 580 million inhabitants of LAC, 241 million live in units with the presence of at least one of these diseases
Principles for integrating actions

- Available plans, guidelines and tools
- Evidence-based decisions
- Reduction of inequalities in health
- Primary health care system
- Community participation
- Gender and ethnicity
- Interprogrammatic and intersectoral interventions to address the social determinants of health
- Cooperation between countries
- Global partnerships in the fight against neglected infectious diseases
Approaches for integrating actions

**Common Interventions**

- Screening, Drug treatment/Mass Drug Administration
- Morbidity (case) management (LF, leprosy/Hansens)
- Integrated Vector Management
- Water Supply, Sanitation, Hygiene, Education (WASHED)
- Education and School Health for deworming
- Vitamin A + Deworming Medicine Distribution
- Other Micronutrients (Fe, I, Zn, multi-vitamin) + Deworming
- Food vouchers, complementary nutrition to combat undernutrition +
- Food Security Programs to Reduce Undernutrition and Anemia
- Integrated Population, Health and Environment Programs
  - Agroforestry, home gardens, aquaculture, beekeeping...
  - Primary environmental care
Approaches for integrating actions

### Common Interventions
- Screening, Drug treatment/Mass Drug Administration
- Morbidity (case) management (LF, leprosy)
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- Food vouchers, complementary nutrition + deworming (to combat undernutrition and anemia)

### Integrated Population, Health and Environment Programs
- Agroforestry, home gardens, aquaculture, beekeeping...
- Primary environmental care
Approaches for integrating actions

**Common Delivery Platforms (MoH programs) for Neglected Diseases Services:**

- Primary Health Care
- Vector Control
- Nutrition/Micronutrients
- Immunizations (children, adolescents, pregnant women)
- Maternal-child Health, Family Health and Wellness
- Skin disease clinics, Diabetes/chronic diseases clinics
- Food Security, Food Safety
- Healthy Schools, Healthy Cities

**Multi-disease Approach:** two or more overlapping NTDs (i.e., NTD “hot spots”); plus malaria, dengue
Elimination and control of NIDs in LAC

Integrated plans of action (POAs)

Identifying stakeholders:
- International
- National
- Local

Mapping of disease and their overlapping (“hot spots”)

Identification of common platforms for delivery of services and drugs (for MDA)

Delivery of health services

Social and environmental services to control or eliminate the determinants of diseases (disease-specific).

Identification of minimum packages currently used

- Safe water in schools and houses
- Ventilated Improved Pit (VIP) latrines
- Improvement of the house and its surroundings
- Control and recycling of solid waste
- Use of shoes
- Health Education and social mobilization
- Interventions (e.g., COMBI, others)
- Microcredit

Health sector
Other sectors:
- Education
- Environment
- Water and sanitation
- Community leaders
- Infrastructure
- Poverty reduction
- Community development
- Agriculture and livestock
- Nutrition
- Gender
- Human rights/indigenous peoples’ rights
- Nutrition

Information and planning

Delivery of services
Tasks Ahead to Combat Neglected Infectious Diseases in LAC

Collaboration of partners is key: PAHO/WHO with endemic countries, GAELF, IADB, Sabin/Global Network for NTDs, CDC, Carter Center, O EPA, TFGH, CWW, ITI, pharma & other partners to:

- Develop evidence-based guidelines and demonstration projects for integrated control/elimination.
- Develop models and interventions to address social determinants.
- Strengthen, scale-up and intensify existing programs of control and elimination through technical cooperation.
- Develop integrated national plans of action (POAs).
- Plan for WHO certification of elimination of diseases in countries: onchocerciasis, lymphatic filariasis, trachoma.
- Get IADB/PAHO Regional Trust Fund for NIDs “open for business”.
- Address research gaps.
Conclusions

- NIDs can be eliminated in the Americas
  - oncho
  - LF (and LF+Malaria in Hispaniola)
  - trachoma
  - schisto in Suriname and St. Lucia
  - Chagas (certain vectors)

- Keys include mapping, integrated national action plans, using existing tools, financing and partnerships, M&E

- It’s an ethical and moral imperative!
Thank you!

www.paho.org

Keyword: Neglected Diseases