CNM Annual Conference for 2012

Control on Helminth in Cambodia

21-22 March 2013
Naga World Hotel, Phnom Penh

Dr. Chea Huch

National Centre for Malaria Control, Parasitology and Entomology
Outline

• The National Plan for Helminth Control Program
• Current Status of Helminth Control
• Main activities plan for 2013
Current status of the target disease

- Schistosomiasis (SCH)
- Soil transmitted helminth (STH)
- Strongyloidiasis (threadworm infection)
- Lymphatic filariasis (LF)
- Food Borne Trematodiasis (FBT), eg. Opisthorchiasis
The groups at risk of each disease

- **SCH:** People living along Mekong river in high risk focal ecological areas (Kratie, Stung Treng)
- **STH:** pre-school children, schoolchildren and women of child bearing age (WCBA).
- **Strongyloidiasis:** poor population segment in endemic provinces/districts, in particular young children;
- **LF:** the entire population in 6 endemic districts (this group has now received 5 rounds of mass drug treatment and may no longer be at high risk)
- **FBT:** children and adults eating raw food
National Plan for Helminth Control in Cambodia

• The Goal for the programme:
  - Elimination of LF
  - Elimination of Schistosomiasis from public Health problem
  - To reduce the morbidity of STH, FBT, Strongyloidiasis in Cambodia through an integrated control strategy by using preventive chemotherapy combined with health education
The distribution of Helminthiiasis in Cambodia

Legend:
Grey: areas where STH are transmitted (all Cambodia)
Yellow: districts with additional LF transmission
Red: districts where Schisto is transmitted
Orange: districts where in addition to STH, LF and STH are also transmitted

Cambodia is entirely endemic for STH. Lymphatic Filariasis (LF) is transmitted in 4 regions. Schistosomiasis (Schisto) is transmitted in 2 provinces on Mekong River.

Reasons for high transmission:
1. Hot & humid climate
2. Lack of sanitation
3. Hygiene behavior
Status of Schistosomiasis

• MDA for schistosomiasis is given every year to approximately 80,000 individuals in the two endemic provinces of Kratie and Stung Treng.

• Before the Ministry of Health began universal chemotherapy with praziquantel in 1995, severe morbidity and mortality in Kratie and Stung Treng were common.

• Throughout the 17 years that the program continued, MDA coverage reached between 62% and 86% of the population.

• After this intervention was instituted, prevalence decreased from an average of 72% to less than 5% in four sentinel villages over 10 years.

• No new severe cases have been reported since 2006.
Epidemiological survey and Monitoring

• Stool examination using Kato-Katz method
  • Stool samples collected in sentinel/selected villages:
    Kratie 1500, Stung Treng 1500 every year
  → Prevalence of S. mekongi has dramatically reduced from 70 % (1995) to < 5% (2011) in both provinces

• Serological test
  • Blood samples:
    Kratie 500, Stung Treng 150 every year
  → Prevalence of S. mekongi by ELISA test has reduced from 96.7 % (1997) to < 30% (2011) in both provinces
Follow-up the impact of MDA in the four sentinel site in Kratie province in 2012
# Infection: *S. mekongi* & *O. viverrini* Kato-Katz and FECT technique

<table>
<thead>
<tr>
<th></th>
<th>Char Thnaol (N=439)</th>
<th>Kampong Krobey (N=486)</th>
<th>Koh Phdao (N=627)</th>
<th>Sre Khoen (N=623)</th>
<th>Total (N=2175)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>n (%)</strong></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td><strong>Kato-Katz</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>S. mekongi</em></td>
<td>24 (5.5)</td>
<td>11 (2.3)</td>
<td>0 (0.0)</td>
<td>2 (0.3)</td>
<td>37 (1.7)</td>
</tr>
<tr>
<td><em>O. viverrini</em></td>
<td>2 (0.6)</td>
<td>0 (0.0)</td>
<td>2 (0.3)</td>
<td>1 (0.2)</td>
<td>5 (0.2)</td>
</tr>
<tr>
<td><strong>FECT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>S. mekongi</em></td>
<td>24 (5.5)</td>
<td>11 (2.3)</td>
<td>0 (0.0)</td>
<td>2 (0.3)</td>
<td>37 (1.7)</td>
</tr>
<tr>
<td><em>O. viverrini</em></td>
<td>3 (0.7)</td>
<td>0 (0.0)</td>
<td>2 (0.3)</td>
<td>1 (0.2)</td>
<td>6 (0.3)</td>
</tr>
<tr>
<td><strong>Combined Kato-Katz + FECT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>S. mekongi</em></td>
<td>24 (5.5)</td>
<td>11 (2.3)</td>
<td>0 (0.0)</td>
<td>2 (0.3)</td>
<td>37 (1.7)</td>
</tr>
<tr>
<td><em>O. viverrini</em></td>
<td>3 (0.7)</td>
<td>0 (0.0)</td>
<td>2 (0.3)</td>
<td>1 (0.2)</td>
<td>6 (0.3)</td>
</tr>
</tbody>
</table>
## Infection: Neotricula snail

<table>
<thead>
<tr>
<th>Intermediate host</th>
<th>Char Thnaol</th>
<th>Kampong Krobey</th>
<th>Koh Phdao</th>
<th>Sre Khoen</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neotricula collected</td>
<td>1140</td>
<td>1050</td>
<td>1350</td>
<td>1300</td>
<td>4840</td>
</tr>
<tr>
<td>infected N (%)</td>
<td>2 (0.17)</td>
<td>0</td>
<td>0</td>
<td>2 (0.2)</td>
<td>4 (0.08)</td>
</tr>
</tbody>
</table>
Soil-Transmitted Helminth

Initial situation

STH prevalence constantly over 50% since 1997.

Large areas of the country with prevalence over 70%
(NTF 2004)

Control strategy
Reach all primary school children with
• mebendazole (Two treatments year)
• Health education
Deworming Structure to the target group in Cambodia

WHO
UNICEF
World Vision
Other NGOs

CNM & SHD

PHD & PED (24)

78 ODs & 185 DHEs

J&J; MOH
Mebendazole 500mg &
Albendazole 400mg

CMS/MOH

OD Pharmacy

HC®
980 HCs

HC
8859 schools

School
Outreach

School
Outreach

School
Outreach

School
Outreach
Mebendazole/Albendazole Coverage to the target population at risk in 2012

<table>
<thead>
<tr>
<th>Target group at risk</th>
<th>No. of target group at risk</th>
<th>Target group at risk received deworming tablets (%) , round I</th>
<th>Target group at risk received deworming tablets (%) , round II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-school children (12-59 month)</td>
<td>1,386,453</td>
<td>1,289,402 (93%)</td>
<td>1,344,859 (97%)</td>
</tr>
<tr>
<td>School Age Children (6-14y)</td>
<td>2,628,381</td>
<td>2,444,394 (93%)</td>
<td>2,523,246 (96%)</td>
</tr>
<tr>
<td>Women of Child Bearing Age (15-45y) pregnancy women</td>
<td>3,571,430</td>
<td></td>
<td>1,038,495 (21.1)</td>
</tr>
</tbody>
</table>
Elimination of Lymphatic Filariasis

- Lymphatic Filariasis (LF) caused by *Wuchereria bancrofti* is endemic in 4 provinces (18 district).

- Cambodia completes five rounds of MDA in all its endemic IUs by the end of 2009.

- Stop-MDA surveys were conducted in all IUs (18 districts in 4 provinces) in 2010 using ICT survey sampling 900 in each IU (total 5,400 samples). It showed that transmission of LF has been reduced (0.1 – 0.6%) below critical levels in each IU. Thus further MDA will not be required.
Strongyloidiasis

• Threadworm in Cambodia:
  – What best diagnosis?
  – Unknown distribution, prevalence?
  – Impact on infection after regular treatment (MDA)?
Current Situation of Strongyloidiasis in Cambodia

• Swiss Tropical Institute of Public Health (Swiss TPH) supported the baseline assessment surveys in 2009/2010. Infection rates have ranged from 40 – 60% in the districts of two provinces surveyed (Preah Vihea and Takeo).

• It shows the disease is highly endemic in the assessed province affecting all age groups.

• Current treatment strategies particularly the treatment with ivermectin.
<table>
<thead>
<tr>
<th>Count (Percentage)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3560</td>
<td>Enroll</td>
</tr>
<tr>
<td>220</td>
<td>Did not submit any stool sample</td>
</tr>
<tr>
<td>3340 (93.8%)</td>
<td>1st Stool</td>
</tr>
<tr>
<td>592</td>
<td>Did not submit 2nd stool sample</td>
</tr>
<tr>
<td>2748 (77.2%)</td>
<td>2nd Stool</td>
</tr>
<tr>
<td>352</td>
<td>Missing for Baermann technique</td>
</tr>
<tr>
<td>2396 (67.3%)</td>
<td>2 Stool Samples analysed by KK, KA &amp; BM</td>
</tr>
</tbody>
</table>
Strongyloides stercoralis 2010

Koga-agar plate procedure and Baermann for \textit{S. stercoralis}

Kato-Katz, Koga-agar plate procedure and Baermann for Hookworms

Kato-Katz for other infections

Prevalence (%)
Current situation of Food Borne Trematode in Cambodia (2010-2012)

• Habits of eating raw or undercook fish:
  - Takeo, Kandal, Kampong Cham, Kg. Thom with prevalence range from 10% to 65%.

• No nationwide chemotherapy intervention is being implement, except the places where the survey were confirmed.
### Opisthorchis viverrini Survey in Kampong Thom, Kampong Cham and Prey Veng province in June and July 2012.

<table>
<thead>
<tr>
<th>Province</th>
<th>District</th>
<th>Commune</th>
<th>Village</th>
<th>No. stool sample</th>
<th>O.v positive (%)</th>
<th>Hookworm Positive (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kg. Thom</td>
<td>Baray</td>
<td>Tnaot</td>
<td>Kang Meas</td>
<td>183</td>
<td>89 (48.6)</td>
<td>33 (18.0)</td>
</tr>
<tr>
<td>Santouk</td>
<td>Tipau</td>
<td>Thlok</td>
<td></td>
<td>104</td>
<td>11 (10.6)</td>
<td>38 (36.5)</td>
</tr>
<tr>
<td>Kg. Cham</td>
<td>Kg. Siem</td>
<td>Srak</td>
<td>Lpeak</td>
<td>126</td>
<td>82 (65.1)</td>
<td>16 (12.7)</td>
</tr>
<tr>
<td></td>
<td>Preak Krabao</td>
<td>Pousalapi</td>
<td></td>
<td>105</td>
<td>22 (21.0)</td>
<td>6 (5.7)</td>
</tr>
<tr>
<td>Srey Santhor</td>
<td>Baray</td>
<td>Kamplak</td>
<td></td>
<td>102</td>
<td>5 (4.9)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Banteay</td>
<td></td>
<td>165</td>
<td>47 (28.5)</td>
<td>3 (1.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preak Por</td>
<td>Prey Tbes</td>
<td>160</td>
<td>1 (0.6)</td>
<td>26 (16.3)</td>
</tr>
<tr>
<td>Prey Veng</td>
<td>Baphnom</td>
<td>Theay</td>
<td>Torp Sdach</td>
<td>116</td>
<td>0</td>
<td>23 (19.8)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>1061</strong></td>
<td><strong>257 (24.2)</strong></td>
<td><strong>145 (13.7)</strong></td>
</tr>
</tbody>
</table>
Follow-up *Opisthorchis viverini* Survey in Kampong Cham and Takeo province after one year of treatment by Praziquantel in August 2012.

<table>
<thead>
<tr>
<th>Province</th>
<th>District</th>
<th>Village</th>
<th>No. stool sample</th>
<th>O.v positive (%)</th>
<th>Hookworm Positive (%)</th>
<th>Intensity average of O.v/Hw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kg. Cham</td>
<td>Kang Meas</td>
<td>Preak Kros</td>
<td>199</td>
<td>32 (16.1)</td>
<td>10 (5.0)</td>
<td>46/32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anglong Ak Khang Koeut</td>
<td>177</td>
<td>31 (17.5)</td>
<td>2 (1.1)</td>
<td>98/36</td>
</tr>
<tr>
<td>Takeo</td>
<td>Prey Kabas</td>
<td>Ang Svay chek</td>
<td>195</td>
<td>20 (10.3)</td>
<td>18 (9.2)</td>
<td>331/221</td>
</tr>
</tbody>
</table>
The percentage of population behavior to eat the raw fish in the O.v endemic areas in Angsvay Check, Prey Kabas district (Takeo province) and Preak Krous village, Korng Meas district (Kg. Cham province) by interview survey in August 2012.
The percentage of the right places that the people eating raw fish in two villages in Prey Kabas district, Takeo province and Korng Meas district, Kg. Cham province interview O.v survey in August 2012.
Activities plan for 2013

- **Schistosomiasis:**
  - Annual MAD for schistosomiasis
  - Monitoring the impact of the intervention by stool examination and serology in sentinel site and selected sites in Kratie and Stung Treng provinces.

- **Filariasis.**
  - Transmission Assessment Survey by using ICT card in 6 IUs.

- **Strongyloidiasis.**
  - Follow-up of all individuals treated in 2012, and additionally check on individuals negative in the 2012 survey.
  - Provide MDA to population at risk in Preah Vihea province

- **Opisthorchiasis.**
  - Epidemiological in O.v suspecte villages to define the distribution
  - Provide intervention (MDA+HE)
Activities Plan for STH in 2013: Monitoring STH Prevalence & Intensity

• Scale up MDA Coverage
• STH nationwide data was not collected for the last five years.
• Plan in Q1, 2013 to conduct Nationwide survey to reassess the prevalence and intensity of STH in the country following several years of successful MDA with school age children.
• The survey will be follow the protocol of WHO
Partnership for Helminth control in Cambodia

- Ministry of Health (HSSP2; ADB-GMS)
- Ministry of Education Youth and Sport
- Swiss TPH
- Sasakawa Memorial Health Foundation
- Dokkyo University and Tsukuba University, Japan
- UNICEF
- KAHP
- J&J; World Vision Australia
- WHO
- IDRC
- USAID
Thank you for your attention