

THE PARTNERSHIP FOR PARASITE CONTROL (PPC)

The Second Meeting - Rome - 25-26th April 2002

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Section I: General Overview

Aim of the meeting

This was the second meeting of the *Partnership for Parasite Control* (PPC) and as the Secretariat, the World Health Organisation (WHO) briefly summarized how the PPC came into being, its approach, its philosophy and its key activities.

Two objectives for the meeting were given:

- To share the progress and developments since the initial meeting in June 2001.
- Second, and an issue which becomes increasingly relevant as the partnership expands, was the need to define each partner's commitment and that of the partnership in general.

The scale and burden of a 'neglected disease'

For many diseases, their control or elimination is often expensive and heavy in terms of equipment, expertise and drugs, while for others there are cheap, effective and easy-to-administer solutions. And yet paradoxically many diseases which fall into this latter category, worm infections are one, have been forgotten, they have become the 'neglected diseases', often overlooked and rarely a high priority.

And yet the burden of disease caused by soil transmitted helminths (STH) and schistosome infections is enormous. More than **2000 million people are affected world wide**, of whom more than **300 million suffer from associated morbidity** and according to the World Health Report 2000, infectious and parasitic diseases - most of which are preventable or treatable - are the primary causes of death world wide. In 1999, WHO estimated that schistosomiasis and STH represented **more than 40% of the disease burden** due to all tropical diseases, excluding malaria.

Table 1: ESTIMATES OF GLOBAL MORBIDITY AND MORTALITY CAUSED BY STH AND SCHISTOSOMES

Parasite	Prevalence of infection (millions)	Morbidity (cases, millions)	Mortality (deaths, thousands)
Soil Transmitted Helminths			
Ascaris lumbricoides	1450	350	60
Hookworms	1300	150	65
<i>Trichuris trichiura</i>	1050	220	10
S. haematobium	112	70 (haematuria) 10 (kidney damage)	150
S. mansoni	54	8 (liver damage) 1 (late stage fibrosis)	130

Using mathematical modelling, the total DALYs (Disability-Adjusted Life Year) lost to STH can be calculated starting from extrapolations from available epidemiological estimates and aggregating them to the national, regional and global levels¹. Global figures of DALYs lost to STH and schistosomiasis in comparison with some other infections are summarized in Table 2.

Table 2: GLOBAL DISABILITY ADJUSTED LIFE-YEARS (DALYs) LOST TO STH, SCHISTOSOMIASIS AND SELECTED OTHER INFECTIONS

Infection	DALYs (millions)
Total intestinal helminthiasis	39.0*
Hookworm disease	22.1*
Ascariasis	10.5*
Trichuriasis	6.4*
Schistosomiasis	4.5
Measles	34.1
Malaria	35.7
Tuberculosis	46.5

* Adapted from Chan (1997); DALY estimates are for the year 1990.

¹ Chan M-S. The global burden of intestinal nematode infections - Fifty years on. *Parasitology Today*, 1997, 13:438-443

The PPC 'Package'

PPC advocates a simple 'package' for controlling schistosomiasis and STH, which has two main thrusts:

The 'Package'
▪ Making anti-helminthic drugs accessible in health services ◊ <i>Reduces and contains clinical morbidity.</i>
▪ Regularly treating high risk groups ◊ <i>Improves nutritional status (especially anaemia) and cognitive development and school attendance. Reduces subtle morbidity and prevents irreversible morbidity in adults.</i>

Delivery: Using existing channels

One of the driving principles of PPC's approach is that this package should be delivered using the existing and established networks in a country as opposed to setting up new vertical systems. In this way deworming is 'piggy-backed' onto existing health services, the school system or special health campaigns, like immunization days. This means that the programme is not only intrinsically more stable, but precious resources are not spent duplicating already very efficient delivery channels.

How much does it cost: the economic argument for deworming

Using the school system for delivery, the treatment per child per year costs *less than 10 cents for STH and less than 30 cents for the treatment of both schistosomiasis and STH*. Even without taking into account the massive impact in terms of reduced morbidity, improved nutritional status, improved cognitive development and school attendance - this is truly an exceptional return on investment and an economic argument which needs to be made more forcefully. The case can also be made from the standpoint that if a child is not dewormed, then child-feeding programmes are in essence, feeding the worms, not the children. A rough calculation was made, which estimated that the World Food Programme (WFP) loses \$8.1 million by feeding the worms inside infected children.

Who are the PPC Partners and outreach

The PPC was launched in June 2001 following WHO's World Health Assembly Resolution (WHA 54.19). In Diagram 1 below, the names of the first wave of partners are underlined. However, as stressed at this meeting, this is not a static group and it is vital that new partners who are committed to action are attracted and that PPC's outreach is expanded.

Who is eligible to join PPC ?

Anyone who is committed *and who can act and contribute*, can join the PPC. Furthermore contributions can come in many different guises - for example training, capacity building, fundraising, drug provision, and so forth. However, the principal target for all energies and resources should remain the countries in need and not diverted along the way to other areas. DBL re-emphasized its support to the partnership with the offer of research, capacity building and extensive networks in Africa. FAO said they would be very interested in joining the PPC and would be especially interested in the information PPC would collate and share (see New PPC Databank).

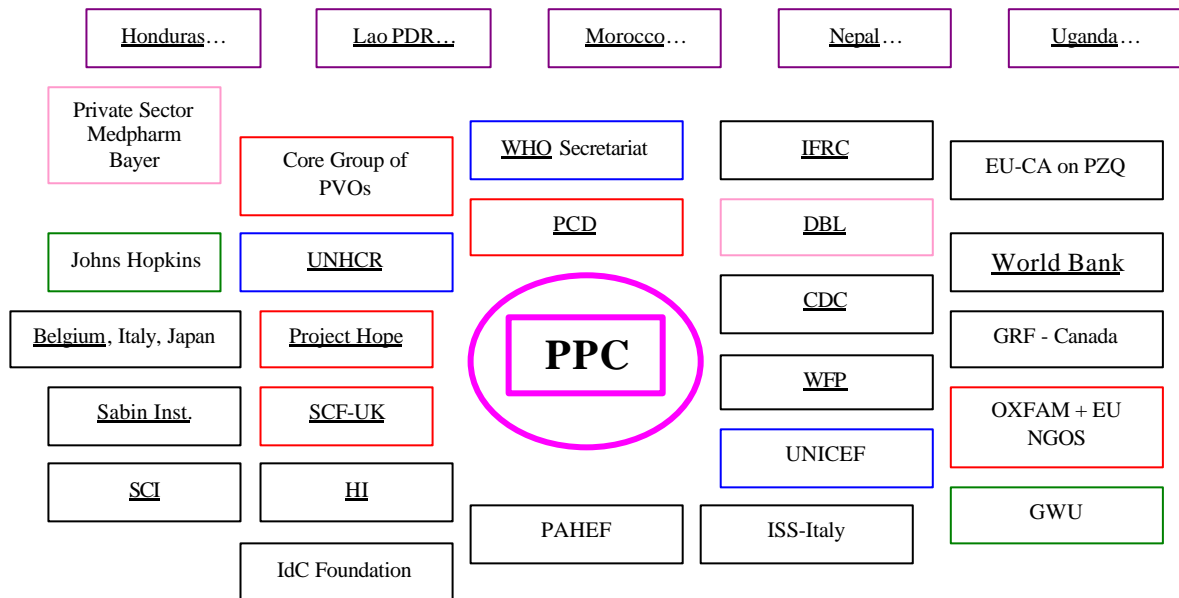
Potential new partners

While there are several potential new PPC partners, more involvement by the private sector and a wider reach of NGOs will be especially important as the PPC expands its operations. Potential new partners might include the International Union of local Authorities, the Red Cross, the girl and boy scouts, the International Division of Co-operatives, the ILO and large employers, the Lions Club and Kiwanis. The WFP is also working to create an International School Feeding Group which would have 150 country focal points.

Outreach

Taking just two of PPC's partners, the outreach is potentially enormous. UNHCR for example, works in 150 countries world-wide and reaches 11 million children through its refugee camp schools. In 2001, WFP fed over 15 million children in schools in 57 countries. With the additional contacts of each of the other partners plus the connections of newly recruited partners, the web becomes more complete and the ability to meet the global target by 2010 more realistic.

Who are the PPC Partners ?

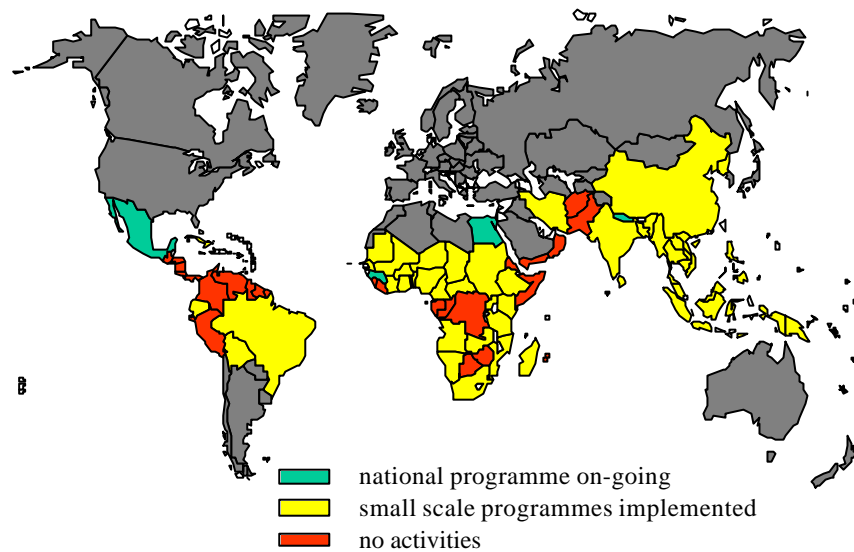


Short and long-term objectives and worm control worldwide

PPC's short-term objective is to progressively integrate parasitic control activities into each of the partner's existing country activities. Its long-term objective is to scale up all the programmes to a national level in all endemic countries (there are approximately 100 in total).

As the map below shows, there are only four countries which currently have programmes nearing the national level. They are Nepal, Guinea, Egypt and Mexico. The rest are carrying out small scale initiatives and the remainder have no activities at all.

WORM CONTROL ACTIVITIES WORLD WIDE



The new PPC Databank

One of the PPC Secretariat's responsibilities is to track the progress and activities in all endemic countries. A PPC Databank will therefore be set up by Henrietta Allen (allenh@who.int) which will include information ranging from epidemiological survey data, to who is working where, if there is a National Plan of Action, which at-risk groups are being reached and how the drugs are being paid for and accessed. This information will be collated and made accessible to all PPC members and health policy makers and should also help to catalyse governments into action.

Two country examples - Nepal and Guinea - scaling up

- **Nepal** was the first country where a deworming programme was initiated which is now being successfully scaled up to a national level. The first step was to carry out a survey of school-aged children in 1996 which revealed both a high prevalence and intensity of worm infections. In 1998 the WFP began deworming in 12 districts covering a total of 250,000 children. In 2000 a second survey was carried out which found that not only had the number of severely infected children substantially decreased, but that the overall haemoglobin level had risen by 1g/dl. In 2002 the MOH incorporated deworming into the standard preventive intervention package for pregnant women and at the same time the WFP extended its school feeding programme to 25 districts and the Japan Co-operation (JICA) agreed to cover the costs of deworming in all the remaining districts. The overall coverage was further extended when in the same year UNICEF agreed to add deworming to its Vitamin A distribution campaign covering pre-school-aged children.

Nepal offers a model example of how a small scale pilot programme can be scaled up to a successful national programme. It also clearly demonstrates how collaboration and complementarity between different organisations can work, very practically on the ground, to cover all the needs of a country.

- **Guinea** offers a slightly different picture of how a programme can be scaled up using partnerships. In 1996 a World Bank loan enabled a survey to be carried out which found a high prevalence and intensity of worm infections. The following year, deworming combined with nutritional supplementation began in 6 districts covering 200,000 children with the NGOs taking the lead in the more remote districts. In 1999 a second survey was carried out to assess the impact of the programme which found a significant improvement in both the number of infections and the nutritional indicators. In 2000 the programme was scaled up to the national level and by 2002, 1,600,000 tablets of mebendazole and 2,000,000 of praziquantel were ordered for distribution.

PPC's philosophy in summary

Built on 6 clear principals

1. A clear and shared vision.
2. A clear public health agenda.
3. The belief that country governments must own/hold the stewardship role for any programme.
4. Activities should be built on the comparative advantage of each partner's strengths.
5. Transparency.
6. A 'light governance': there is no steering committee or heavy procedural system. This means that the group can respond quickly and efficiently. It is as lean a structure as possible.

3 main characteristics

1. **Pragmatic** (low cost, not vertical, use existing channels).
2. **Partnership focused**.
3. **Collaborative and capacity building**.

Section II: Overview of PPC's Activities

PPC's activities can be divided into three main areas:

1. **Technical support to implementation**
2. **Start-up activities**
3. **Extending the Partnership**

1. **Technical Support to Implementation**

This is an area which predominantly involves WHO and covers 3 main areas, strategies, guidelines and materials and tools.

Strategies

For countries to be able to confidently design control programmes, some fundamental strategic questions needed to be answered, for example:

- *When is treatment necessary and how frequent should it be ?*
- *What are the expected results ?*
- *Can pregnant women be safely treated ?*
- *Can a one year old child be safely treated ?*
- *Can non health service staff (eg teachers) distribute the drugs ?*
- *How can these activities be integrated into existing delivery structures ?*

All these questions were subsequently addressed by WHO during two meetings. One was an Expert Committee Meeting (2001) and the other was an Informal Consultation on the use of praziquantel during pregnancy/lactation and the use of mebendazoles for children under 24 months (2002). The participants reviewed all the new available evidence and research and reached two important conclusions, both of which dramatically change the previous policy guidelines which were written when there was substantially less information available.

- Infected pregnant and lactating women should be considered high risk groups and should be offered treatment individually or during treatment campaigns.
- Women of child-bearing age should not be excluded from population based schistosomiasis treatment programmes and specific steps should also be taken to guarantee the coverage of pre- and post- pubescent females.
- There is growing and persuasive evidence that STH detrimentally affect the growth and development of children under 24 months old. The consultation recommended that children from one year onwards should therefore be included in systematic deworming programmes.

Guidelines for Implementation & Health Education Materials

Several documents are currently in press which range from the very technical to the very practical.

- The first is the report of the above mentioned Joint WHO Expert Committee meeting : 'Prevention and Control of Schistosomiasis and soil transmitted Helminthiasis'. This is one of **WHO's Technical Report Series (TRS)** and has therefore been subjected to the scientific rigour, cross-checking and consensus demanded by all TRS publications.
- A more practical and programmatic publication is '**Helminth control in school-age children - A guide for managers of control programmes**'. This describes how to set up a control programme beginning with how to bring the key players together, the importance of collaboration (especially between the MOH and MOE), how to design a prevalence survey and train fieldworkers, and how to procure and distribute the drugs. This publication is a synthesis of several different previous documents, all brought into one.

- A teaching aid booklet has also been produced called '**Drug Distribution - Instructions for teachers**'. This is a simple, cartoon-illustrated set of steps describing how to organize a school deworming day.
- Another educational health tool is a set of **flip charts** specifically designed to help teachers explain a subject they normally do not teach or may be unfamiliar with. Each chart depicts a typical village scene with 'healthy' and 'unhealthy' behaviours. The concept behind the charts is that a teacher can raise each child's awareness about health in a participative way. So for example, healthy behaviours include a child washing its hands before eating, someone sleeping under a mosquito net, a child going to a latrine, another washing food before eating it. Unhealthy behaviours include a little boy defecating behind a house, another smoking etc.

Tools and materials

- **The DOSE POLE²³:**

This is a practical and easy-to-use tool to estimate the number of praziquantel tablets to administer. Ideally one calculates praziquantel doses according to the individual's weight. However in many situations, weighing scales are often faulty or simply unavailable and the dose pole then offers a simple, robust and low cost alternative. Made from wood, the pole is painted up to different heights with different bands of colour, each with a corresponding number. According to the height of the child, the matching number is the number of tablets which must be given. The dose pole has been evaluated in various populations of sub-saharan Africa.

- **LOW COST LABORATORY SURVEY MATERIALS**

These include boxes of Kato Katz stool filter kits and boxes of urine filter kits for schistosomiasis both of which were produced at a negotiated price. Each Kato Katz box holds 400 tests which means each test costs approximately US\$0.10. For the urine filters, 500 tests can be carried out for an estimated unit cost of US\$0.12 each.

- **GEOGRAPHICAL INFORMATION SYSTEMS**

Ideally one would build up the schistosomiasis and STH picture for a country using epidemiological survey data. Unfortunately however, this information is very often sketchy and localized and comes from a wide range of different sources. The Geographical Information System (GIS) which is a collaborative effort between the Partnership for Child Development (PCD), the Schistosomiasis Control Initiative (SCI), (both based at London's Imperial College), the World Bank and WHO, tries to overcome this by using 'layers' of different information to create a map of each country's situation. So for example the first layer is any epidemiological data available, on top of that climatic information is superimposed from which one can make a good judgement on where infection rates are most likely to be heaviest. Possible additional layers might include water development schemes and drug distribution patterns. The end result is that GIS can build up a more coherent picture, in an easily digestible image, of each country's situation and the potential risk of schistosomiasis and STH.

² Field test of the 'dose pole' for praziquantel in Zanzibar. Short Report. Transactions of the Royal Society of Tropical Medicine and Hygiene (2002) 96, 1-2

³ Development and validation of a 'tablet pole' for the administration of praziquantel in sub-Saharan Africa. Short Report. Transactions of the Royal Society of Tropical Medicine and Hygiene (2001) 95, 532-544

2. Start-up Activities

For each country beginning a control programme, WFP provides US\$50,000 in 'start-up' funds to cover the cost of launching a pilot phase programme. This is designed to cover approximately 50,000-100,000 children and allows each country to assess what skills are necessary, where the gaps are and what works for their particular situation - all on a relatively small-scale before expanding to the national level. This is an area which predominantly involves the WFP, UNHCR, the World Bank and country governments.

▪ TRAINING: Managers and the 'Mobile Regional Technical Resource Team'

One of the most important initial activities in any start-up programme is training. To date, 3 workshops in Africa have been organized by WFP in collaboration with WHO and the World Bank. They were funded in part by Canadian International Development Agency (CIDA) and included anglophone, francophone and lusophone speakers. From each country, a representative from the WFP, the Ministry of Health and the Ministry of Education attended. In total over 80 managers from a total of 21 countries have been trained.

In addition, a Regional Technical Resource Team has also been trained, made up of 30 technical personnel from the endemic countries of Africa who can be called upon by any of the PPC partners for technical advice, assistance and help.

▪ DEWORMING

Ideally de-worming follows swiftly on the heels of the training sessions. De-worming activities within WFP-supported school feeding have started in 7 countries (Tanzania, Kenya, Malawi, Uganda, Zambia, Eritrea and Gambia) and reach 520,000 children. In another 14 countries (Angola, Benin, Burkina Faso, Central African Republic, Chad, Cote d'Ivoire, Guinea, Guinea Bissau, Madagascar, Mali, Mauritania, Mozambique, Niger and Senegal) de-worming activities have been planned. In Cambodia 250,000 pupils are reached and in Cape Verde, Guatemala, Haiti, Laos and Nicaragua, de-worming activities are being planned.

3. Extension of the Partnership

As the PPC gains momentum, the number of partners will expand more rapidly. Since June 2001 when PPC was launched, the initial number of partners has risen from around 12 to approximately 26, ranging from international organizations, universities and research institutions to NGOs and PVOs, donors and the private sector. To attract new partners will certainly be one of the PPC's objectives over the coming year, but with the important caveat of not losing sight of the fundamental essence of what the PPC is about and how it wants to function.

Questions which arose from the PPC Secretariat presentation:

Q: Could the Secretariat expand on the new policy to treat children as young as 1 year old ?

A: Although infection is less prevalent at this age, the new policy to treat children as young as 12 months is an extremely exciting and important change to the previous recommendations. The discussion around this age group mostly centred on what the appropriate dose should be which was agreed to be 100mg of mebendazole twice per day for 3 days or a single dose of 500mg. The aged upon albendazole dose was 200mg for children between 12 and 24 months and 400mg for those over 24 months.

Q: How available is the Mobile Resource Team ?

A: The idea behind the Mobile Resource Team is that they are available to assist across the region. One recent concrete example comes from the WFP Niger office who needed assistance conducting a baseline survey. One of the consultants is now in Niger helping train survey teams and using the experiences from his own country and from the training workshops. For more information contact the PPC Secretariat.

Comment: Joint co-ordination during the start-up and implementation phase is extremely important both on the ground and between the PPC Secretariat and each country. The Nepal experience for example shows how the initial partnership between the WFP and Japan snowballed to include multiple partners making deworming possible across the entire country.

Response: The PPC Secretariat completely agrees with this idea: one of the reasons for creating the PPC Database is to fill the information vacuum on what is happening in each country. This should identify what resources and people are on-hand, how they can be used most efficiently and effectively, and what new partnerships could be useful. It will also identify the gaps where they exist. But again, country ownership of the control programme is essential for any intervention to be sustainable.

Comment: With regard to the new PPC Databank to be established at the Secretariat. The WFP also has an on-line database covering 153 countries and a wide range of issues from WFP school feeding programmes, health education in schools to evaluations and other studies.

Section III: Country progress

1. *Uganda*

The background: Schistosomiasis

Schistosomiasis is well documented in Uganda. The first account was in 1903 followed by more serious reporting in 1958 and then in the last 3 years Vector Control Disease (VCD) surveys have provided enough information for a comprehensive control strategy to be planned. Of the schistosomes, *Schistosoma mansoni* is the most prevalent type and mostly affects the north-western areas, reaching 100% in some places and affecting 38/56 districts. In contrast, *Schistosoma haematobium* is confined to 2/56 districts and transmission areas are typically found along the water ways and shores and especially around Lake Victoria, Lake Albert and the Nile in the north western part of the country, Lake Cyoga in the centre and near irrigation schemes. Altogether an estimated 1.7 million people are affected by schistosomiasis - the equivalent of 7.8% of Uganda's entire population with 13% of the country estimated to be at risk of infection. Although information on morbidity is sketchy, the available figures are high: 35% have very heavy infections (>1000epg) in Butiaba and similar figures can be found in other locations.

The background: STH

Unlike schistosomiasis, most of the STH data is scanty and based on hospital surveys which have often used different diagnostic techniques making it difficult to compare between the studies. However, a survey in eastern and southern Uganda (2001) found the combined prevalence of hookworm, *Ascaris lumbricoides* and *Trichuris trichiura* was over 50% in 14/18 districts surveyed in 5-7 year old children.

Control activities in Uganda

Despite the magnitude of the problem in Uganda, no concerted control efforts were put in place until quite recently. In 1990 the MOH was keen to start a national programme and in 1992 a Plan of Action was drafted, but never materialised. In 1998 the plan was reviewed once more and finalized at a workshop attended by representatives from the MOH, the Ministries of Agriculture, Fisheries and Water Development and Education and district health and educational workers from 15 of the most affected districts. UN Agencies included WHO and UNICEF, and DBL, the Italian Cooperation and DANIDA.

Some conclusions reached were that:

- Uganda has a good de-centralized system therefore control should be district based.
- Morbidity can be controlled with praziquantel and mebendazole or albendazole.
- Supportive measures like health education, water supply, sanitation and snail control should be put in place.
- The drugs should be available in all existing health facilities and distributed passively.
- Mass deworming of primary school children should be carried out where the prevalence of any nematodes is $\geq 50\%$ and/or heavy intensity is $\geq 10\%$.
- Remote endemic communities which are poorly covered by health and educational services should be reached from the nearest health units.
- Formal approval was given by the participants to start a National schistosomiasis/STH Control Programme.
- Most districts cannot afford to purchase sufficient amounts of drugs, even at the current prices and would therefore need extra funding.
- The MOH will purchase drugs for health facilities, for under-served remote communities and special occupational groups.
- A cost recovery system could be used to raise funds.
- External financial assistance is needed for the school based treatment and WHO has been asked for assistance in mobilizing these required funds.
- Epidemiological mapping of schistosomiasis and STH should be completed for all the districts.
- Disease specific expertise needs to be further built up in the districts. For example clear case definitions are especially needed for *Schistosoma mansoni*.

- Where there is no laboratory, patients will be diagnosed based on locally defined case definitions. Thus each district will gather clinical evidence to use for case definition considering the epidemiological level. For example a person with visible haematuria or with positive reagent strip will be diagnosed as suffering from haematobium. A person with non-specific abdominal symptoms, blood in their stool, or hepatomegaly, will be diagnosed as having *Schistosoma mansoni*. Importantly, the probability of these non-specific symptoms increases as the endemicity level of an area increases.

Uganda's Hurdle: continued funding

Uganda's story is full of success stories, for example STH surveillance has been completed along the lakes and in all the target districts, technical teams have been trained in 10/23 districts and the last 5 districts will be covered by June 2002, new partnerships are emerging and being consolidated and control activities have started in some districts (Table 3) - **and yet Uganda's National deworming programme has become stalled because it has not been possible to secure sustainable funding.**

Uganda has recognized the necessity of addressing schistosomiasis/STH and has outlined a control strategy, but has failed to overcome financial constraints.

Table 3: THE DISTRICTS AND ACTIVITIES BY SOME OF UGANDA'S PARTNERS

Partner	Districts	Achievements/planned co-operation
The New Covenant Church of Bournemouth, UK	Lira and Apac	Working with local health teams, 12,646 children have been treated (8128 for schistosomiasis and 4,128 for STH). Another 1,400 infants (less than 2 years old) were given Vitamin A.
NGO MAEE under the Italian Cooperation, CUAAM	Arua and Nebbi	Assistance and deworming was carried out in primary schools covering 24,000 pupils in Nebbi and 64,000 in Arua districts.
WFP	Kotido, Moroto, Arua, Moyo, Adjuman, Kitgum, Gulu and Bundibugyo	Praziquantel and mebendazole were donated to treat school children in 8 districts covering a total of 250,000 children in WFP food supported schools.
	Lira and Katakwi districts	The Lymphatic Filariasis Elimination Programme is being integrated with schistosomiasis/STH Programme. The former uses Mectizan and albendazole; the latter will supply an additional dose of albendazole so that school children are de-wormed every six months.
Carter Center - USA	Nebbi, Moyo and Adjuman.	In April 2002 the Carter Center agreed to implement mass schistosomiasis treatment in districts where they are currently distributing Mectizan for onchocerciasis. Initially 3 districts, known to have particularly high prevalences, will be targeted, the programme will then be expanded.
The Government of Japan, via the Hashimoto Initiative		The Government of Japan has expressed interest in parasitic control in Africa.
VCD, sponsored by DBL	23 districts	District personnel have been trained in epidemiological data collection and how to plan and implement a control programme. By the end of December 2002, it is estimated that training will have been completed in all 23 districts.
WHO	15 of the worst affected districts	WHO provided funds and the necessary Kato and filtration kits for the completion of epidemiological mapping.
VCD in collaboration with DBL and WHO		Training of district personnel was carried out.
DBL		DBL is covering the cost of district training workshops and has also provided microscopes for two districts with more planned.

2. Tanzania - Combining school-feeding and deworming

Tanzania's School Feeding Programme

Since 2000 Tanzania has run a *School Feeding Programme (SFP)* (providing breakfast and lunch) which has successfully covered approximately 90,000 school children in 215 primary schools. This scheme has focused primarily on the drought-prone and pastoral areas in 10 districts (Dodoma Rural, Kondo, Mpwapwa, Singida Rural, Iramba, Manyoni, Monduli, Ngorongoro, Kiteto and Simanjiro) in 3 regions (Arusha, Dodoma and Singida). The results, showing a dramatic increase in enrolment and pupil attendance and substantially fewer drop outs, were so encouraging that the SFP was formally incorporated into Tanzania's 5-year Country Programme (2002-2006).

Piggy-backing deworming onto school feeding

Early in 2001, the WFP working jointly with the MOH, MoEC and with technical support from WHO initiated a *School Deworming Programme (SDP)* which would initially be piggy-backed onto the *School Feeding Programme (SFP)* as a pilot programme and then expanded to the schools outside the pilot area and will eventually include non-enrolled children.

Training

In April 2001 WFP in collaboration with WHO and the World Bank organized and conducted a 3 day training workshop in Uganda for SDP Co-ordination Teams from 8 different participating countries. From each country 3 members attended representing the Ministries of Health and Education and the WFP country offices.

Funding for the SDP Pilot Initiative

Based on this workshop, the Tanzanian SDP Co-ordinating Team submitted a funding proposal for a 2 year pilot SDP survey which was subsequently approved and the start-up funds of \$50,000 were received. Almost half of the funds were allocated for drug procurement and the remainder for a baseline survey, sensitisation and training, IEC materials, drug distribution, monitoring and evaluation and administrative support.

Activity 1: Sensitisation sessions

Prior to the baseline survey, sensitisation sessions were conducted to obtain the approval and support of the Regional and District Authorities for the SDP since they would be playing a key implementing role. As well as discussing the deworming strategies, encouragement was given to integrate the SDP activities into the district development plans and budgets as a key way to expand and ensure the stability of the initiative.

Activity 2: Baseline Survey

Next a baseline survey was carried out which collected parasitological data and knowledge attitudes and practices (KAP) data among school children. This revealed both a high prevalence of STH and schistosomiasis and poor KAP related to helminthic infections and their control. All of which further justified the SDP.

Activity 3: Regional School Health Co-ordinators - Training

For the regional level training, the goal was to build each person's capacity to coordinate and facilitate the SDP activities in their respective areas, including the training that they would have to carry out for the next level down of health workers, the District School Health Co-ordinators. The benefits of the SFP were discussed and how it acted as an incentive for pupil enrolment, attendance, retention and performance. With regard to the SDP, the discussion covered a general background to STH and schistosomiasis, diagnosis, the baseline survey, the effects of deworming, non-enrolled school-aged children, teacher training, drug management and monitoring and finally, costs.

Activity 4: District School Health Co-ordinators - Training

The district level School Health Co-ordinators were then trained by the regional School Health Co-ordinators. Again the importance of expanding and sustaining the SDP by integrating it into the regular plans and budgets of each district was stressed.

Activity 5: School teacher and health worker - Training

The final layer of people to be trained were the school teachers and health workers. Twenty different venues were located, 204 school teachers participated and 19 health workers - the equivalent of a 94% attendance rate. The main objective of these training sessions was to equip the participants with the necessary knowledge about STH and schistosomiasis, the prevalence and consequences for the health of school-aged children if they are infected, what the control measures are and what the recommended drugs are, how to administer them, how to teach and promote healthy behaviours and environmental sanitation, and finally how to complete the reporting forms for SDP's monitoring and evaluation. Community participation was emphasized and that teachers should brief their colleague teachers who were not directly involved as well as each school committee and the village committee members on SDP activities.

Activity 6: Drug distribution in schools

The anthelmintic drugs (mebendazole and praziquantel) for the SDP initiative in Tanzania were jointly donated by WFP and WHO and shipped to each participating school including extra supplies for the treatment of the school staff who are often powerful role models with influence over their community's acceptance of programmes.

Monitoring of the SDP Activities

To facilitate the monitoring of the SDP, a number of reporting arrangements and forms were created and distributed to the School Health Co-ordinators and school teachers at the district and school levels during their training sessions. At the school level, each pupil's name, their height, the number of tablets administered and if teachers, other school staff and community leaders had been treated was recorded. If any health education had been carried out was also reported and a school summary sheet with the total number of drugs received, the teachers who distributed them, the health workers involved and any community participation in the activities. At the district level summary reports of each of the school reports were prepared. At the national level annual progress reports will be generated with both the process and impact of the programme detailed.

Recommendations

The following recommendations summarize the comments of various people who were directly involved with Tanzania's SDP.

- At the national level the collaboration which has been established between the **MoH, the MoEC**, the WFP and WHO, should be maintained. The MoH for its part should continue with its lead role with the MoEC continuing its role in advocacy, planning, implementing and monitoring. WHO and WFP should continue to provide the necessary technical and financial support to the programme.
- Both the MoH and MoEC should include school deworming in their **Ministerial Plans and budgets**, especially in order to scale up the programme to a national level.
- Other **donors** should be approached and sensitised.
- **Advocacy** for school deworming is urgently needed at all levels to ensure its acceptance and support.
- **National guidelines** for the planning, implementation, monitoring and evaluation should be formulated.
- **IEC materials** and other reference materials need to be developed and distributed to sensitise and disseminate appropriate information on school deworming at all levels.
- **Regional and district level leaders** need to be informed about the importance of school deworming.
- District and local authorities should **integrate SDP activities into their plans and budgets** to ensure expansion and sustainability.
- More **training** is necessary for the district level staff.
- **Reporting** on the SDP needs to be well developed and integrated into the existing reporting channels.
- School authorities and staff need to be **better informed** and trained on the need for school deworming. Similarly health workers need training and encouragement to support the SDP.
- **Non enrolled children** around the schools need to be identified and whenever possible included.

3. Egypt - The School Health Programme in Behera: An integrated helminth control programme at governorate level

The National Schistosomiasis Control Programme:

1988	The National Schistosomiasis Control Programme (NSCP) was started with Government Health facilities providing free praziquantel to <i>all diagnosed</i> cases.
1997-	Following a ministerial decree authorizing the distribution of praziquantel <i>without prior diagnosis</i> , the control programme intensified its efforts by conducting annual universal treatment of all primary school children in all 26 Governorates plus treatment for the entire population of 538 villages with an estimated prevalence higher than 20%.
Today the NSCP has achieved remarkable successes and is now operating in 8 governorates where transmission is still present, while the other 18 have been declared schistosomiasis free.	
Two significant financial loans were obtained. One from the African Development Bank (from 1983) for US\$16 million and one from the World Bank for US\$36 million (from 1992).	

The School Health Programme in Behera

In Egypt a pilot School Health Programme has been implemented for the past 6 years in Behera, the largest and most populous governorate of the Nile Delta. The Programme integrated additional activities for the control of STH, human fascioliasis and anaemia into the NSCP, currently implemented in every school of the governorate and in 10 villages where the prevalence is higher than 5%. To facilitate the planning and direct action, a strong monitoring system was developed to generate useful information for the schistosomiasis programme. To date 3 rounds of monitoring have been carried out (2000, 2001, 2002) following the baseline survey in 1996.

In 1994 the MoHP invited the Italian Cooperation which was implementing the *Strengthening Rural Health Services (SRHS)* Programme, a bilateral health initiative in 3 governorates (Behera, Qena and Dakahlia) to focus its support specifically on the control of STH in Qena. The Italian Cooperation first proposed to conduct a baseline survey to assess the prevalence and intensity of worm infections in each of the 3 governorates and based on the results, design and implement appropriate operational recommendations followed up with monitoring and evaluation including costings.

QENA (1994) and DAKAHLIA (1998):

For Qena, the results from a sample of 2657 children (aged between 2 and 12 years) found a prevalence of hookworm of 0.4% and of the *H. nana*, *Enterobius*, *A. lumbricoides* and *T. trichiura* of 6.9%, 3.8%, 2.4%, 0.6% respectively (1994). For the Dakahlia survey (1998) which covered 1125 children (5-15 years old), the prevalence of *S.mansoni* was 3.4%, *H.nana* was 3.9%, *Enterobius* 5.4%, *A.lumbricoides* 4.5%, *H.heterophyes* 3% and *Fasciola* spp was 0.4%. Following these results, it was recommended that passive case detection should be carried out which required that lab technicians were trained, drugs made available and health education targeted particularly at mothers and children.

BEHERA (Population 4.5Million) (1996):

Compared to the other two Governorates, the results from Behera showed a much more severe situation. Children of 6 months to 12 years were surveyed (1996) (sample size of 1783) and a prevalence of 20.7% for *S. mansoni* was found, 7.7% for *H.nana*, 6.9% for *A. lumbricoides*, 3.3% for *T. trichiura*, 3% for *Fasciola* spp and 0.6% for *H. heterophyes*.

The operational recommendations were that mebendazole should be immediately targeted where the problem was particularly severe and at the same time a comprehensive plan of action must be developed for Behera. This plan entitled '*Strengthening Rural Health Services for Integrated Diseases Control among School Children in Behera (1998)*' was accordingly finalised and aimed to support the NSCP being implemented in Egypt as well as in Behera by providing a better monitoring system and

integrating the additional needed activities in Behera. The School Health Programme in Behera consisted of 3 major interventions:

- **Annual monitoring** of schistosomiasis, STH and anaemia and targeted administration of praziquantel to primary school-aged children (around 430,000) according to the MoHP timetable.
- **Targeted administration of STH chemotherapy** (albendazole) every 12 months and weekly iron supplementation to primary school-age children (44,000 children) in the two coastal districts most at risk.
- **Annual screening and selective treatment of human fascioliasis** using Triclabendazole, and iron supplementation, to primary school-age children of the most affected villages in 6 endemic districts.

In addition to monitoring and control activities, the School Health Programme included:

- **Additional supervision** of the mass praziquantel distribution conducted by the NSCP in the primary schools.
- **Training of lab technicians and doctors** and workshops for district officers to discuss the results of the annual meeting.
- **Health education activities** including the production and distribution of posters and educational leaflets, the training of primary school science teachers, religious and community leaders and health education sessions at schools before the distribution of anthelmintic drugs.
- **Operational research component** focused on fascioliasis to identify age and sex distribution of the human infection, risk factors, transmission mode and the associated morbidity.

The cornerstone of this programme is the annual monitoring which aims to correct inefficiencies, identify successful strategies and direct the MoHP staff more efficiently. There are 3 major components: process, parasitological and nutritional.

What the two rounds (2000 and 2001) of monitoring clearly showed in comparison with the 1996 baseline survey was both a dramatic drop in the prevalence of all STH, schistosomiasis and fascioliasis and at the same time a substantial reduction in the intensity of infection (for the complete results see: Filippo Curtale *et al* 'The School Health Programme in Behera: an integrated helminth control programme at governorate level in Egypt, Acta Tropica, 2002, in print).

Costs of the Behera School Health programme and future funding

The breakdown of the costs for the Behera programme for the year 2000, were as follows: 81% was spent on the National Schistosomiasis Control Programme, 3% on the control of STH, 5% on anaemia control, 3% on screening for fascioliasis, 4% on monitoring, 3% on additional training and 1% on additional training. In total the cost of the additional control activities was less than 20% of the NSCP. For the coming years the MoHP will cover the cost of the Behera School Health Programme at an estimated US\$10-20,000 per year and it is hoped the donor community will provide sufficient resources for the programme to be expanded to all the Delta Governorates. The estimated cost will be US\$70-80,000 per year.

Conclusions and recommendations from the Egyptian experience

1. A baseline assessment should always be conducted before planning control measures.
2. Activities can be gradually integrated into an already existing programme, with mutual benefits for the old programme and the new initiative.
3. Even if activities are implemented in different areas and use different drugs, it is possible to have common monitoring and delivery system.
4. Operational research and health education are important components of any control activity, but the former should always follow clear objectives.

Questions which arose from Egypt presentation:

Q: Do you have information on snail control which was previously used extensively in Egypt ?

A: Snail control is still part of the national control strategy, but such environmental control is only used in the specifically high-risk areas which now include just 20 villages and the adjacent canals (the 'hot spots').

4. Ecuador - using the school feeding channel

Ecuador's Programa de Eliminacion de Parasitos Intestinales, or PEPIN was launched in 1994. The approach was to integrate deworming into the national school feeding programme which provides micronutrient fortified biscuits and drinks to 600,000 students in some 6000 schools. The partners involved in the PEPIN programme included the National School Feeding Programme of the MOE, the Ministry of Public Health, WFP and the Pan-American Health Organization.

Key points of PEPIN

Helminth surveys in rural areas showed a prevalence of over 70% of *Ascaris lumbricoides* in children.

A 1996 study of the School Feeding Programme recipients found 95% were infected with parasites.

A subsequent baseline survey found that hookworm infestation was highest in the Amazon lowlands.

In addition, 37% of school children were anaemic.

The PEPIN Objective

PEPIN had two main objectives. One was to control the transmission of intestinal parasitic diseases in the 600,000 school children who were participating in the school feeding programme. The second was to improve the knowledge, attitudes and practice (KAP) of the school children on how intestinal parasites are transmitted.

Additional objectives were to:

- Reduce anaemia prevalence from 35% to 25%.
- Reduce the incidence of helminthiasis by 20%.
- Reduce the transmission of intestinal helminths by a 50% reduction in worm loads.
- Ensure that 90% of school children 6-14 years knew about hygienic habits to reduce the transmission of intestinal parasites.

The materials and activities

Some of the elements of this campaign were as follows:

- 2.2 million albendazole tablets (400mg) were distributed.
- 20 provincial committees were organised and information given to them and the 6000 schools.
- 20,000 posters were printed and distributed.
- 27,000 instructions and flyers were distributed.
- 3 radio spots were created and transmitted.
- Haemoglobin, retinol and worm counts were carried out.

Outcomes and Impacts

A total of 400,000 school children received 3-4 doses of albendazole (400 mg) over a 2 year period - the equivalent of 67% of the target population. More than 50% of the school children knew about proper hygiene. A key finding was that this was an extremely popular health programme with all the participants which at the same time achieved its goal of significantly decreasing worm loads.

The prevalence of Helminths before treatment was 49.4% (% negative) and 6 months after treatment, had risen to 72.8% (% negative). *Ascaris* prevalence fell from 37% to 12%, *Trichuris* from 29% to 17% and *Necator* from 7% to 4%. Re-infestation occurs within 4 months. Hookworm prevalence decreased from 7% to 4% and nearly all the cases were found in the Amazon lowlands. Before treatment 9% were anaemic (Hb <11mg/dl, adjusted for altitude) and after 9 months of treatment, just 5% were anaemic. Unfortunately the sample sizes to detect the postulated changes in anaemia was not met and there was no evaluation of KAP.

Financing

PEPIN was financed from several different sources: A grant from Canada paid for the deworming tablets and the micronutrients, MedPharm donated a further 200,000 tablets, WFP managed funds of \$184,000. At the province level petty cash funds were established to help mobilize the programme.

Lessons Learnt

Several lessons were learnt from the PEPIN programme:

- The school feeding programme is an ideal vehicle for this type of intervention.
- Central level support was important for successful, provincial-level committee operations.
- Provincial committees were essential for day-to-day initiatives, but did not take important initiatives to redefine and enrich the programme.
- Such programmes can use volunteers without many extra resources.
- The provincial committees were catalysed by the presence of deworming tablets.
- The programme lasted as long as the pills held out.
- The follow up and monitoring of the findings was weak.
- Distributing pills and education materials via the school feeding programmes was effective.
- Albendazole administered by teachers was a very effective delivery channel, but resisted/questioned by the MOH.
- Insufficient guidance was provided on how to use the educational materials.
- Attitudes and practice do not follow knowledge. No behaviour models were used and there was no consistent follow-up.
- Educational materials were not locally developed and were insufficient in quantity.
- The KAP survey was not implemented.
- Insufficient guidance was given on institutional competencies - ie, who does what ?
- Weak information subsystem (poor flow, inadequate processing, no feedback).
- Parents could have been more involved.
- MOE and MOH did not adopt PEPIN as a policy or permanent activity.

Questions which arose from Ecuador presentation:

Q: Is information on deworming included in the standard teacher training courses ?

A: Parasite training is not provided in the standard teacher training courses but this would be an especially important input to ensure the long-term durability of the deworming programme opposed to a more ad-hoc approach.

Q: Should deworming interventions be promoted as a 'family package' or a 'household package' rather than just targeted at school-aged children ?

A: \$1 million would buy enough drugs to treat all the family members of the school-aged children. An integrated package would still be necessary in order to make this work-able, but by capitalizing on the current deworming activities, a 'package intervention' marketed at families and schools would be a good idea, especially as parents and communities can be very persuasive and influential on political decision makers.

Q: In certain countries, there are work based programmes, called 'Employment based Programmes'. Would it be feasible for parents to take deworming drugs home, especially for the treatment of non-school-aged children ? Has there been any marketing or experience along these lines ?

A: There have been several studies where the benefits of deworming in terms of increased productivity and output have been clearly documented. This is certainly information that could be very usefully shared with employees to make the case that deworming not only has massive health benefits, but also economic returns as well.

Comment: It is especially important to mobilise communities and use multi-sectoral approaches if deworming programmes are to take on a life of their own. Once parents understand the benefits and ease of deworming, they can become a powerful voice demanding services from the Government, who are then more obligated to provide such services.

Comment: The Ecuador story demonstrates just how powerful parents can be to the success of a deworming programme. Having seen the effect of treatment just 24 hours after the administration of the drugs, they wanted treatment not only for the school children, but also for non-school-aged children and adults. Presidential election platforms all included deworming as part of their campaign messages knowing it had strong support.

Comment: With the positive results of deworming so rapidly apparent to parents, the value of community mobilisation and empowerment spills over in that parents can become more open and supportive of other health interventions.

Comment: In order for worm control to be successful, a comprehensive and integrated package must be offered. For example, giving people the knowledge of what to do and what not to do in order to avoid worm infection has a limited impact if the facilities do not exist to allow them to change their behaviour. In other words, telling school children to wash their hands is redundant if there are no taps.

5. **Cambodia - from district pilot project to National Control Programme**

Cambodia's National Helminth Control Programme focuses on three areas - the control of schistosomiasis, the control of STH and the elimination of Lymphatic Filariasis (LF). Some of the key dates are as follows:

1995	A <i>pilot</i> schistosomiasis control project was launched.
1996-7	Schistosomiasis control was scaled up to cover all the endemic districts.
1997	A <i>National Helminth Control Programme</i> was established, with STH control incorporated into it.
1998	Schistosomiasis control began in over 12 provinces across the country.
1998	A Lymphatic Filariasis (LF) assessment was carried out.
2000	Activities for LF elimination began.

Partnership

A wide partnership of different organizations is now involved in Cambodia's Helminth control programme including the Ministry of Education, Médecines Sans Frontières, SASAKAWA Memorial Health Foundation, WHO, UNICEF, WFP, the PCD and other NGOs.

For schistosomiasis: A Baseline Survey

First an epidemiological assessment was carried out and based on this data, a universal treatment campaign was launched with the objective of covering 70% of the target population (N=80,000). Since 1995 praziquantel and mebendazol have been administered every year in Kratie and from 1997 in Stung Treng. The final data showed that the annual coverage reached 65-75% of the target population. Surveillance and monitoring were built into the package as well as individual case management, including surgery where necessary.

Health education for schistosomiasis and IEC materials

The health education 'drive' used a variety of channels to increase awareness. For example local radio broadcasts were developed and health education sessions were carried out in the Pagodas and schools. In parallel with these initiatives environmental sanitation schemes were launched and a programme to construct latrines and water supply installations.

IEC materials included 'The School Kit', a box containing teacher reference books, story books, flipcharts, posters games, a quantity of 1000 mebendazole tablets and report forms.

The impact on schistosomiasis prevalence

Between 1995 and 2001, data from four sentinel villages in Kratie and from the sentinel village of Sdau in Stung Treng between 1997-2001 - showed a steady and dramatic decline in the prevalence of schistosomiasis. In Sdau the prevalence was 71.4% in 1997, in 2001 it had dropped to 2.7%. For residual severe cases of schistosomiasis, of which there have been seven in Kratie since 2000, these were successfully operated on. For another 120 severe cases of advanced schistosomiasis, ultrasonography was used for follow up. For passive case detection and clinical management, guidelines were developed.

Future control plans

The long term plan for schistosomiasis control is to shift from universal treatment to more targeted campaigns and in parallel with this, emphasize better case detection, management, increased surveillance and the introduction of more rapid diagnostic methods. Two studies are also planned, one on new and more sensitive and specific methods and one to study the animal reservoir and snail habitats.

For STH control, the plan is to combine the STH treatment strategy with the schistosomiasis treatment strategy. In addition, mebendazole distribution will be integrated into other ongoing public health activities, for example the WFP school feeding project, the measles immunization (EPI) campaign, the iron supplementation for women of reproductive age initiative, the Vitamin A distribution to children and the insecticide bed-net distributions.

Cambodia's National Lymphatic Filariasis Elimination Programme

Following the 1997 World Health Assembly Resolution (WHA 50.29), 2020 was set as the date for the global elimination of LF. In Cambodia however the date for elimination has been set for 2015 with a strategy which includes a situational analysis, training and capacity building at all levels to provide mass drug administration, morbidity control, prevention techniques (for example, local hygiene, health education, treatment of supra infection and surgical intervention) and how to interrupt transmission.

Key dates in the LF Elimination Programme are as follows

- Strategic plan of LF elimination by September 2002.
- Mapping for the disease distribution by July 2002.
- Identify risk factors through case control studies.
- Start mass chemotherapy in pilot areas by June 2003.
- Train health staff between 2003 and 2005.
- Implement the clinical management by January 2003.

Section IV: Reaching the Global Target

The 2001 World Health Assembly Resolution

At the 2001 World Health Assembly, Resolution 54.19 was passed which urged Member States to 'ensure access to essential drugs against schistosomiasis and STH infections in all health services in endemic areas for the treatment of clinical cases and groups at high risk of morbidity such as women and children....' In reality 'groups at high risk' include pre-school age children, school-aged children, women and people working in certain occupations, for example, fishermen who are constantly exposed to water.

For school-aged children the following goal was set:

THE GLOBAL TARGET

The regular treatment of at least 75% of all school-aged children at risk of morbidity for schistosomiasis and STH infections by 2010.

The World Health Assembly Resolution (WHA 54.19) May 2001

What does it cost to treat a child ?

In order to calculate the price of treating one child, a number of different components were taken into account. The dis-aggregated breakdown for these are shown in Table 4 below. This information however can be distilled to the following simple message:

In an average situation where schistosomiasis and STH have to be treated (for example in Sub Saharan Africa), it will cost **0.30 US\$ per child/year.**

In a situation where only STH need to be treated, the price drops to **0.10 US\$ per child/year.**

Table 4: COST MENU FOR TARGETED DEWORMING OF SCHOOL CHILDREN WITH ALBENDAZOLE OR MEBENDAZOLE AND PRAZIQUANTHEL
(adapted from Guyatt, personal communication)

		Base units	Base unit cost (C)	Quantity per child or school (Q)	Unit cost per child or school (T=C*Q)
PER CHILD					
Drug	Albendazole	Per tablet	0.02	1.1 ¹	0.022
	Mebendazole	Per tablet	0.02	1.1 ¹	0.022
	Praziquantel	Per tablet	0.07	2.5 ¹	0.175
	Insurance, freight and clearance	Per tablet	0.007	3.6	0.02628
PER SCHOOL					
Equipment	Height poles	-	-	-	3.5
Health education	Adaptation and duplication of materials	-		1	10
Training	Stationary	-	-	-	3.5
	Trainers per diems	per person	25	0.1	2.5
	Trainees allowances	per person	2.5	3	7.5
Drug distribution	Officers training allowances	-	-	-	0.25
	Instruction forms	per form	0.05	4	0.2
	Treatment forms	per form	0.05	10	0.5
	School officer collection allowance	-	-	-	5
	Senior officer collection allowance	-	-	-	0.2

¹ including approximately 10% wastage

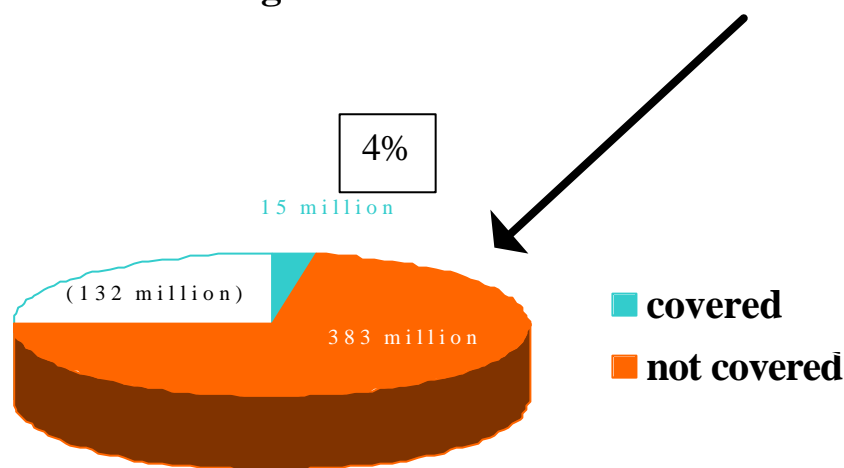
The number of children who need to be covered

In the Year 2002, it is estimated that there are 530 million school-aged children in 95 countries globally who need to be treated (excluding China or India). Seventy-five percent of this figure, brings us to 398 million. Existing programmes currently cover 15 million, the equivalent of 4% - demonstrating the amount of work which lies ahead.

In order to reach the global target and taking into account the projected population growth rates, the number of children who will need to be covered in 2005 will be 404 million; by 2010 it will be 415 million. Table 5 below gives the projected target population by each region, by year.

WHERE DO WE STAND TODAY IN 2002 ?

530 million school-aged children X 75% = 398 Million



2002	○	2010
398 million		415 million

Table 5: PROJECTION OF TARGET POPULATION BY REGION AND YEAR IN 95 COUNTRIES

(75% of school age children - not including China and India)

Region/country	2002	2003	2004	2005	2006	2007	2008	2009	2010	Growth rate
Africa + Iraq, Yemen	143	146	149	152	155	158	161	165	168	2%
South East Asia	85	83	81	80	78	77	75	74	72	-2%
Western Pacific	41	41	41	41	41	41	41	40	40	-0.20%
Latin America	84	85	86	87	88	88	89	90	91	0.10%
Middle East	45	45	45	44	44	44	44	44	44	-0.20%
TOTAL	398	400	402	404	406	408	410	413	415	

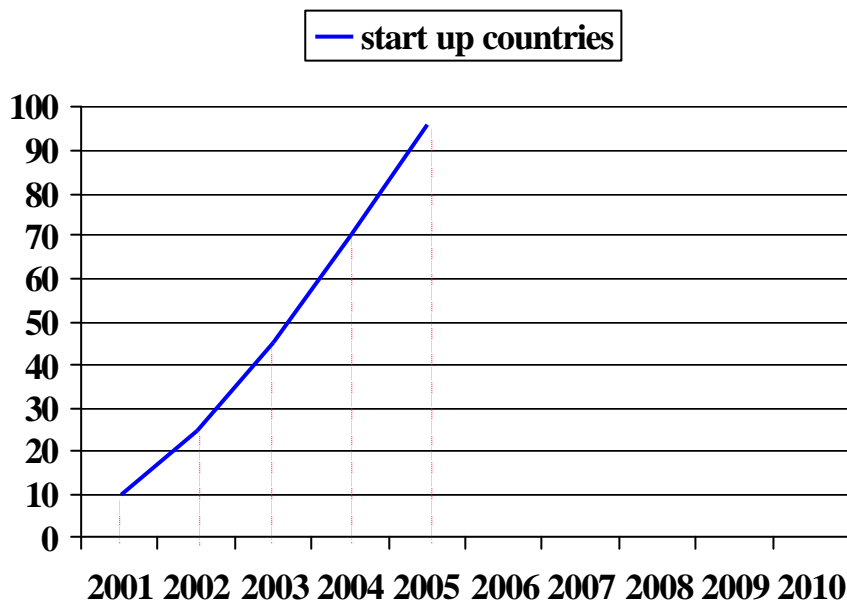
The Start-up Phase

As mentioned, each country starting up a control programme receives US\$50,000 start-up funds to cover the cost of launching the pilot phase programme - initially covering 50,000-100,000 children. For the start-up phase there are certain pre-requisites:

- A National Plan of Action (recommended by WHO).
- All components of the strategy should be implemented.
- The MOH and MOE should be fully involved.
- Over 70% of the funds should be spend on drugs and their delivery using existing infrastructures.

In 2001, 10 countries completed their start-up phase activities - national managers were trained, local capacity was strengthened so that worm control activities could be carried out in the field and political commitment from both the MOH and MOE was secured. By 2005, the number of countries which need to have completed their start-up phase will be 95.

START UP SCENARIO US\$50,000 Start-up funds to launch (pilot phase) programmes covering 50,000 to 100,000 children



How much will the Start-up Phase cost ?

Assuming the projected number of countries start-up each year (10 in 2001, 15 in 2002, 20 in 2003 , 15 in 2004 and 35 in 2005), the cost to cover these 95 countries by the year 2005 will be US\$ 1.75 million (ie, 95 X US\$50,000 start-up funds) (Table 6).

Table 6: COST OF START-UP COMPONENT OF GLOBAL PLAN

	2001	2002	2003	2004	2005
Yearly # of countries	10	15	20	25	35
Cumulative # of countries	10	25	45	70	95
Yearly # of children covered (millions)	0.5-1.0	0.75-1.5	1.0-2.0	1.25-2.5	1.75-3.5
Cumulative # of children covered (millions)	0.5-1.0	1.25-2.5	2.25-4.5	3.5-7.0	5.25-10.5
Yearly cost (million US\$)	0.5	0.75	1.00	1.25	1.75

The Expansion Phase

The expansion phase involves scaling-up the pilot start-up activities to the national level with the goal of reaching **415 million school-aged children** with regular treatment in almost **100 countries** by the **year 2010**. Clearly one can calculate this several ways and present the data according to different criteria. Below are just some of the ways of looking at the total cost.

To reach the Global Target will cost:

- An annual cost of US\$ 75 million.
- A total cost of US\$ 270 million.
- This is equivalent of 1.4 billion full treatments delivered for a unit cost of < US\$ 0.20.

**Table 7: COST OF EXPANSION COMPONENT OF GLOBAL PLAN
(without China and India)**

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Africa + Iraq, Yemen									
# (million) children covered	4.3	6.6	13	26	53	79	119	154	168
Cost US\$ (million) 0.30\$/child	1.3	2.0	3.9	7.8	15.9	23.7	35.7	46.2	50.4
Middle East, Latin America, South East Asia, Western Pacific									
# (million) children covered	10.4	12	18	29	48	78	130	203	247
Cost US\$ (million) 0.10\$/child	1.0	1.2	1.8	2.9	4.8	7.8	13	20.3	24.7
TOTAL									
# (million) children covered	15	19	31	55	101	157	249	357	415
Yearly cost in US\$ (million)	2.3	3.2	5.7	11	21	32	49	67	75
% of the global target covered	4	5	8	14	25	38	61	86	100

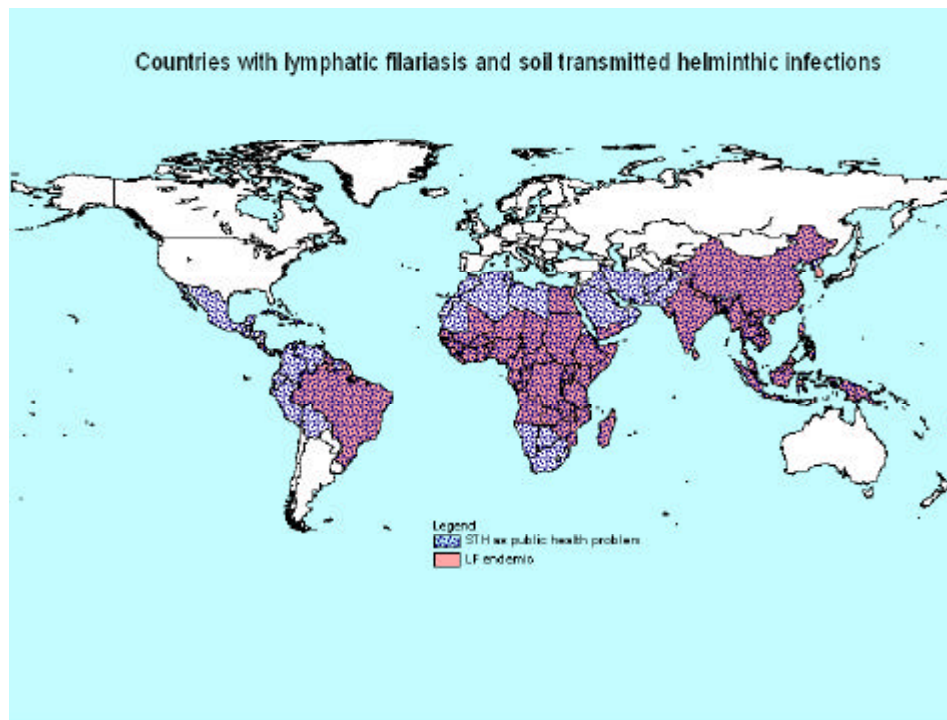
Linking schistosomiasis/STH control with Lymphatic Filariasis

Lymphatic Filariasis, like schistosomiasis and STH is another of the neglected diseases and shares several characteristics. For example, it affects the poorest people in endemic countries, there is an affordable cure which is easy to administer and until fairly recently it has elicited little interest from either country governments or the international health community. At the 1997 World Health Assembly however, the situation changed and a Resolution (50.29) was passed which urged Member States 'to strengthen activities towards eliminating lymphatic filariasis as a public health problem.....' and requested 'the Director-General..... to mobilize support for global and national elimination activities.' What followed was a series of key agreements with private industry. GlaxoSmithKline offered to donate its product albendazole (which prevents new young worms being produced when it administered with DEC or ivermectin) free of charge 'for as long as it was needed to eliminate LF'.

Merck & Co Inc. followed suit and announced it would provide its drug ivermectin (Mectizan) to African countries where river blindness (onchocerciasis) and LF co-exist.

The scale of the LF Public Health Problem

- LF puts **1.1 billion people at risk**
- LF **affects over 120 million** people
- LF is endemic in more than **80 countries**
- LF is the second leading cause of **permanent disability**
- LF causes impairment, disables and handicaps
- The **cost** of managing the acute and chronic manifestations of LF are a massive drain for endemic countries



The Two Global Initiatives: The PPC and LF Elimination

There are certainly several overlapping characteristics between PPC's work to control schistosomiasis and STH and the LF Elimination campaign which could be capitalized on. There are also important differences which are summarized in Table 8 below. Some of the similarities are that they are generally endemic public health problems in the same countries. Second, LF control involves treating populations at risk with either albendazole + diethylcarbamazine or with albendazole + ivermectin. Albendazole is also one of the preferred drugs of choice in the treatment of STH.

Table 8: DIFFERENCES BETWEEN LF AND SCHISTOSOMIASIS/STH PROGRAMMES

LF	Schistosomiasis/STH
<ul style="list-style-type: none"> ▪ Elimination: time limited ▪ Mass drug administration to all pop/districts at risk ▪ Drug donations + regulatory and normative WHO direction in DEC procurement ▪ One dose per year 	<ul style="list-style-type: none"> ▪ Control: long-term intervention ▪ Regular targeted treatment of selected populations ▪ Ensuring access to affordable drugs ▪ At least two doses per year

Questions which arose from The Global Target presentation:

Q: Can non-medical personnel distribute the drugs ? What are the safety margins ?

A: The drugs have been shown to be extremely safe, even with an unintentional double doses. With regard to non-medical personnel distributing the drugs, it has been clearly shown that this is feasible. School teachers are well poised to distribute the drugs and at the same time, can educate school-aged children with health messages. Moreover combining education with the administration of drugs is a very effective way of changing attitudes and behaviours.

Q: What about prevention ? Is this not equally as important as treatment ? Is deworming effective without water sanitation programmes ?

A: While environmental sanitation is certainly important and the PPC could learn from the 'Healthy Schools' programme in this respect, we need more partners on board who are water specialists. More critically, *water sanitation initiatives take time*. While we know re-infection will occur after treatment if the environment is still contaminated (1-2 years for schistosomiasis, and maybe 6 months for STH), the critical message is that regular treatment means that *the irreversible sequelae in later life are avoided*. *Drugs must therefore be made available to the high risk groups*, and at the same time prevention activities need to be made part of the overall strategy. In addition, it is important not to forget that worm infections are diseases of poverty and the climb out of poverty is a long one for most countries.

Q: How will the PPC balance WHO's requirement for a National Plan of Action as one of the pre-requisites for a successful deworming programme, with the situation we find in many countries where several NGOs are all working on small scale projects ?

A: The reason behind WHO's encouragement for countries to develop a National Plan of Action is that a programme with political commitment at the national level is intrinsically more stable. The work of NGO's, while extremely valuable, is still vulnerable to abruptly ending if the NGO pulls out of the country. On the other hand, small scale initiatives are often the catalyst which convince governments that it is worth scaling up such programmes to a national level.

Q: The Ministry of Agriculture has an important impact on the worm situation in any country and they should be included in any control programme.

A: Yes, this is certainly true. The Global Plan presentation however only concentrated on school-based interventions and the most immediate need to control morbidity.

Information: An interesting resource might be the 'Poverty Reduction Strategy Papers' (PRS) at the World Bank. These are country driven papers and very social sector focused.

The WHO Technical Report Series (TRS) on schistosomiasis and STH recommends that before a water project is implemented, an assessment is made on the impact it will have on health is carried out beforehand, they are called Health Impact Assessments (HIAs).

Questions which arose from The LF presentation:

Q: With regard to LF elimination drugs, what is its toxicity versus those used in deworming campaigns and secondly, are the LF drugs donated ?

A: The side effects associated with the LF drugs are transient and minor. Interestingly it seems that side effects are less connected with the drugs themselves, but the intensity of infection in that person. For each new programme we set up a surveillance system which follows 2000 people for a period of one year. So far the results from this surveillance have not demonstrated raised levels of side effects. With regard to the question on whether the drugs are donated. WHO has a Memorandum of Understanding with Glaxo who donate the drugs via WHO to the endemic countries. WHO plans the logistics for shipping and delivery. In countries where LF and Oncho co-exist the drugs will also be donated.

Comment: Using chemotherapy at a mass level can be a complex procedure. This returns to the discussion on the issue of transmission versus treatment. We should remember that while there are certainly areas where LF and PPC deworming activities overlap and complement each other, there are also some fundamental differences. For example, the LF programme is an elimination programme: the approach can be likened to a sprinter - a massive concerted amount of energy is expended for a short amount of time. The PPC STH and shistosomiasis programme is much more like the long-distance runner: it has nearly a 10 year implementation timetable and is fundamentally developmental and capacity building in its approach. Therefore practically the LF and PPC programmes are very different creatures on the ground.

Section V: Reports by PPC Partners

The Core Group

The 'Core Group' (now a formal NGO) is comprised of 37 USA-based NGOs working in 150 countries world wide with an annual turnover of \$2 billion, all USAID funded. They range from larger organizations, for example, CARE, SCF-US and World Vision to smaller members. Most work in an inter-sectoral manner combining health programmes with other initiatives, but what binds them all together, is their focus on child survival. Surprisingly, deworming has never been a standard element of the Child Survival Package and has so far only been carried out in a very piecemeal way.

CORE'S Outreach

Using the example of *Hope*, one of CORE's medium outfits, the potential outreach is easily demonstrated: *Hope* has established field offices, personnel and infrastructures in 30 countries world-wide and contacts in 65 countries.

Why has de worming only been carried out in a sporadic manner ?

There are probably several reasons why deworming has not been made a regular element in every Child Survival Package: there has not been a strong enough 'push' from Hope's HQ, it was not widely known that drugs were cheap and available and there was no consistent access to funding.

How can PPC encourage deworming is fully integrated into CORE's work ?

- An advocacy letter to the CEOs explaining the PPC framework and its objectives would be a critical first step. It would also be useful to have an entry and exit strategy to the PPC outlined.
- If deworming is to become institutionalised, some of the smaller NGOs would need start-up funds at the beginning.
- Competitive funding via a trust fund for example is a process that is well liked by the CEOs and 'fund-matching' is then a possibility.

What do NGOs have to offer the PPC ?

Many NGOs are good at capacity building, they are experienced at problem solving and finding creative answers, they are often very good at social mobilisation, health education and training. They also work at all levels within countries, from the local to the national. All these qualities are essential ingredients as the PPC scales up its activities both to the national level within countries and as the number of countries itself expands. Following the March 2002 meeting in Washington, the CORE group can confirm that is fully committed to the work of the PPC.

The Pan American Health & Education Foundation

The Pan American Health and Education Foundation is not an international foundation, but a US public foundation. It does not have a single resource source, but several donors and thus retains its independence with a board of trustees. These trustees mostly come from the business world, they are not on the whole medical professionals, but as an organization, PAHEF has close ties with PAHO due to the similarity of their mandates.

What could the PAHEF bring to PPC ?

The PAHEF could potentially bring the following skills to the PPC: resource mobilisation, advocacy to a variety of stakeholders and PAHEF's representative very much hoped that there would be further collaboration.

The World Bank

The World Bank Group is comprised of the International Bank for Reconstruction and Development (IBRD), the International Finance Corporation (IFC), the International Development Association (IDA), the International Centre for Settlement of Investment Disputes (ICSID) and the Multilateral Investment Guarantee Agency (MIGA).

1. De-worming - the economic investment

For the World Bank, there are three main rationales for integrating de-worming into programmes: 1) the concentration of worm infection in the poorest countries, communities and individuals; 2) the demonstrated impact of infection on health, nutrition, learning, school attendance and educational outcomes, and 3) the remarkably low cost and high return on investment of de-worming interventions. For example, the Bank's work in Kenya on the educational benefits of de-worming concluded that for US\$4 one can purchase an extra year of schooling, which compares with investments of greater than \$50 for uniform purchase and other forms of subsidy. De-worming in the Kenya setting offers a ten fold return on investment.

2. De-worming - achieving the Millennium Development Goals

The Millennium Development Goals were endorsed by 189 countries at the September 2000 UN Millennium General Assembly, and have been adopted as the major corporate goals of the World Bank. De-worming offers a potentially important contribution to the achievement of at least 6 of the 8 goals.

DE-WORMING, WORM INFECTION AND THE MILLENNIUM DEVELOPMENT GOALS

1. **Eradicate extreme poverty and hunger** – infection is associated with poverty and malnutrition
2. **Achieve universal primary education** – infection is associated with absenteeism and impaired learning, and constrains the goal of Education for All (EFA)
3. **Promote gender equality and empower women**
4. **Reduce child mortality** – Ascariasis, hookworm infection and schistosomiasis are associated with mortality
5. **Improve maternal health** – hookworm infection in pregnancy is deleterious
6. **Combat HIV/AIDS, malaria and other diseases** – helminthiases are amongst the most prevalent of all human infections
7. **Ensure environmental sustainability**
8. **Develop a Global Partnership for Development – the PPC brings together strong global partners**

3. De-worming - 'FRESH'

The FRESH framework - **F**ocusing **R**esources on **E**ffective **S**chool **H**ealth, hygiene and nutrition programmes - is a multi-sectoral and multi-agency partnership and was launched in Dakar at the World Education Forum in April 2000. The partnership includes UNESCO, UNICEF, WHO, WFP, Education International and the World Bank. UNESCO has declared FRESH to be a flagship programme that is intrinsic to the achievement of the goal of Education for All (EFA). The FRESH partnership has developed a consensus framework for integrating parasite control and de-worming into school health programmes.

FRESH'S intervention activities include:

- Clear health policies for schools - which include the role of teachers in delivering anthelmintic treatment under the supervision of the health sector.
- Safe water and sanitation for all schools - which reduces parasite transmission.
- Skills-based health, hygiene and nutrition education - which helps children to maintain life styles that prevent infection.
- School-based health and nutrition services (including de-worming, micronutrients and malaria prevention).

<i>Countries in Africa with FRESH school health programs</i>		
<i>Financing for school health</i>	<i>Target</i>	<i>Countries</i>
Current funding of US\$45 (of US\$905) million for social programmes in implementation	48 million children (6-17yrs)	Burkina Faso, Cape Verde, Chad, Cote d'Ivoire, Eritrea, Guinea, Madagascar, Mali, Mauritania, Senegal, Tanzania, Uganda, Zambia
Planned support from the US\$995 million from social programmes in preparation	90 million children (6-17yrs)	Benin, Ethiopia, The Gambia, Ghana, Kenya, Mozambique, Niger, Nigeria, Sierra Leone

4. De-worming - 'Food for Education' Programmes

The World Bank works in parallel with other PPC partners in the WFP's 'Food for Education' programmes. In 2001 a partnership between WFP and WHO together with CIDA and the World Bank was formed with the objective of adding a deworming component to WFP's 'Food for Education' Programmes which has the following objectives:

- To improve attendance and reduce absenteeism.
- To increase girls enrolment and retention.
- To enhance the attention span and learning capacity of students.
- To reduce the prevalence of parasitic worm infections.
- To raise the awareness of parents/communities.

Two workshops were held, one in Uganda (also attended by Kenya, Gambia, Tanzania, Malawi, Nepal, Eritrea and Zambia) and another in Cote d'Ivoire (also attended by Angola, Benin, Burkina Faso, CAR, Guinea-Bissau, Mozambique, Niger, Chad, Guinea, Madagascar, Mali, Mauritania and Senegal).

Questions which arose from The World Bank presentation:

Q: How many people at the World Bank are well briefed on the global severity of worm infections and especially in terms of the economic impact and implications they have ?

A: WHO and the World Bank are currently developing a joint initiative within the PPC to ensure that the Task Managers who assist client countries in developing projects are comprehensively briefed on this subject.

Comment: When client countries develop FRESH programs with World Bank project support, they typically consider de-worming as a standard component of the program.

The Hashimoto Initiative

Japan's presentation outlined the Hashimoto Initiative's (HI) Global Parasite Control Initiative which has 4 parasite control strategies:

- Strategy 1: Effective international co-operation for the efficient implementation of parasite control.
- Strategy 2: Active pursuit of research that provides a scientific basis for parasite control.
- Strategy 3: Active implementation of effective parasite control projects.
- Strategy 4: Strengthening the G8 countries' capabilities to deal with parasite diseases.

The basic components of parasite control by the HI are as follows:

- Component 1: Project technical co-operation, the dispatch of experts, equipment supply, training of counterparts.
- Component 2: Third country training, region-wide technical co-operation.
- Component 3: Grant aid and related investments for effective parasite control.

HI's main activities:

With the emphasis on south-south co-operation, three centres have been established, (the Asian Centre of International Parasite Control at Mahidol University in Thailand, the Kenya Medical Research Institute in Kenya and Noguchi Memorial Institute for Medical Research in Ghana). These centres primarily provide bases for training and research in the countries with the aim that multi-bilateral co-operation initiatives follow suit.

1. The Asian Centre of International Parasite Control (ACIPAC)

ACIPAC's objective is to strengthen parasite control programmes in South east Asia in terms of developing human resources and information systems. Some of the tools to achieve this include training courses, parasite control models and establishing strong human and information networks. For example an international training course was held in 2001 with participants from Cambodia, Lap PDR, Myanmar, Thailand, Vietnam, Kenya plus two UNICEF observers.

2. The Kenya Medical Research Institute in East Africa (KEMRI)

The KEMRI/JICA Technical Co-operation has progressed through 5 stages since its establishment in 1979.

- Phase 1: (1979-1990) A Communicable Diseases Research and Control Project.
- Phase 2: (1985-1990) The Kenya Medical Research Institute Project.
- Phase 3: (1990-1995) Research and Control of Infectious Diseases (I).
- Phase 4: (1996-2001) Research and Control of Infectious Diseases (II).
- Phase 5: (2001-2006) Research and Control of Infectious & Parasitic Diseases.

A workshop was held in 2002 entitled 'Programme Design and Course Organization' which trained scientists in parasitology so that they could, in turn, become trainers for different levels of regional participants who would initiate parasitic disease control projects in their home countries. Later this year the first training course on Global Parasite Control Strategy for Policy Makers will be held.

3. The Noguchi Memorial Institute for Medical Research in Ghana (NMIMR)

The schedule for NMIMR is as follows:

- April 2001: JICA mission for preparation
- October 2001: 1st Workshop for HI in West African countries.
- November 2001: Organized committee meeting at NMIMR.
- January 2002: Visiting invited countries by Japanese side.
- February 2002: 2nd Policy Makers Workshop
3rd Country Training (Global Parasite Disease Control).

Autumn 2002: Preparation for next training.

January 2002: 2nd Third Country Training (Global Parasite Disease Control).

January 2002: 3rd Third Country Training (Global Parasite Disease Control).

Difficulties NMIMR has faced as a center of Global Parasite Control

Problems on the Japanese side:

- No project-style support scheme by JICA.
- No fixed budget for supporting activities.
- No fixed plan for JFY 2004.
- Lack of French-speaking experts.

Problems from the NMIMR side:

- Lack of adequate experience in control activities.
- Field practice is not available (need for greater co-operation with the MOH)
- Inadequate capacity for logistic management.
- Lack of staff enthusiasm (brings in ownership of the course)

Questions which arose from The Hashimoto Initiative presentation:

Q: The three regional training and research centres established by the HI in Bangkok, Kenya and Ghana, offer an unique opportunity to disseminate standard training materials, tools and curriculum. How feasible is this and how can HI's work be incorporated into PPC's work ?

A: The HI is still very much at the stage of developing its human resources. At the same time it is looking for more collaboration with WHO, FAO, WFP etc.

Section VI: The Rome Declaration

Although it was hoped that an overall PPC framework would be agreed upon, no concrete decision was reached on this point. Since PPC is still in its fledgling first year, it may be too early to definitively assign responsibilities. However, as the partnership expands it will become increasingly important to clearly outline each partner's role and commitment and it is envisaged that at the third PPC Meeting in 2003, more watertight pledges and delineated undertakings with time-lines can be agreed upon so that planning for the years ahead is more structured and stable.

Partnership for Parasite Control (PPC)*

Rome Declaration - 26th April 2002

Statement

In 2000 the World Health Report pointed to infectious and parasitic diseases - most of which are preventable or treatable - and ranked them as the primary cause of death in the world today. In fact the burden due to soil-transmitted helminths (STH) and schistosome infections is enormous: more than 40% of the tropical disease burden, excluding malaria, are due to this group of infections. Over **2 billion people are affected** world wide, of whom more than **300 million suffer from associated severe morbidity**. Summed together STH and schistosome infections are the most prevalent parasitic infections in the world.

- For schistosomiasis, over **200 million** people are infected: 85% of these live in Africa where an estimated **280,000** people may die of schistosomiasis every year⁴.
- For STH, **2 billion are infected** and **135,000** are estimated to die every year.

Poorer families are perpetually those who suffer the most and within that group pre-school and school-age children, adolescent girls and pregnant women - all at critical phases of life - are put at the highest risk. The impact in terms of individual suffering is silently devastating while in economic terms, the productivity of entire countries is dampened and for each new generation of children, their schooling and healthiness are compromised.

In many of these countries where schistosomiasis and STH infections are endemic, there is still no control programme.

Cont...

⁴ M.J. van der Werf, S.J. de Vlas, S. Brooker, C.W.N. Looman, N.J.D. Nagelkerke, J.D.F. Habbema and D. Engels. Quantification of clinical morbidity associated with schistosome infection in sub-Saharan Africa. Acta Tropica, in press.

Today, several converging issues make it a vitally propitious time to act:

- Cheap, safe, non-toxic and effective drugs that can be delivered by non-medical personnel are available to treat STH and schistosomes.

The cost of treating a child for both infections is less than US\$ 0.30 per year.

- Governments are increasingly convinced and committed to tackling the problem.
- A clear vision with a practical and proven control approach exists.
- Massive positive spin-offs, which stay with the country, are direct and indirect: early intervention far outweighs the cost of late treatment; the quality of life for those treated is drastically improved; local business partnerships are stimulated leaving a tangible, sustainable basis for development. Children's ability to learn and grow healthily and women's ability to give birth to well, full-term babies without compromising their own health are substantially boosted.
- **In short, controlling these parasitic infections has immense, social, health, educational and economic returns.**
- The PPC brings together key professionals and countries and is active and alive, the vital issue is to *maintain and expand this momentum*.

Goals and Vision

Our vision is of a world free of the scourge of the diseases caused by STH and schistosomes. We estimate that this target can be reached at a total cumulative cost of US\$270 Million.

The way forward

Mindful of the Millennium Development Goals aimed at eradicating extreme poverty and hunger, reducing childhood mortality, combating disease and developing global partnerships for development

The PPC will:

- Campaign for and implement the Global Plan for schistosomiasis and STH Control making sustainable regular anthelmintic treatment available to 400 million children in 100 countries by 2010 and other high risk groups.
- Increase its advocacy drive and convince key decision makers of the critical need for parasite control.
- Collate and share information on parasite control activities around the globe.
- Build a global network of partnerships extending down to the local level.
- Encourage inter-sectorial collaboration (health, education, agriculture, safe water and Sanitation) for sustainable parasite control.
- Mobilize resources for parasite control.
- Provide economies of scale on drug procurement and delivery.

Cont...

**The Partnership for Parasite Control (PPC) is an informal forum which includes national governments, NGOs , UN Agencies and other public and private actors. It is open to all with an interest in supporting and implementing programmes that contribute to sustainable STH and schistosome control.*

The Second PPC Meeting, held at the World Food Programmes Headquarters in Rome (April 25th-26th 2002), was attended by representatives from:

The Governments of Cambodia, Japan, Tanzania and Uganda
The World Food Programme (WFP)
The World Health Organization (WHO)
The World Bank (WB)
The United Nations International Children's Emergency Fund (UNICEF)
The Food and Agricultural Organization (FAO)
Project HOPE
The CORE Group
The Pan-American Health and Education Foundation (PAHEF)
The Ivo de Carneri Foundation
Imperial College of Science, Technology and Medicine
The Danish Bilharziasis Laboratory (DBL)
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