



Development  
Progress

## NEGLECTED TROPICAL DISEASES The case of Cambodia

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## Case Study Summary

*Health*

- Although Cambodia still lags behind its neighbours in many areas of development, including health, it has outperformed most in the reduction of the three most prevalent neglected tropical diseases: intestinal worms, elephantiasis and snail fever.
- In 2004, six years ahead of schedule, Cambodia became the first country to reach the WHO target of deworming at least 75% of school-aged children for intestinal worms.
- Following a programme of mass drug administration (MDA), the prevalence of elephantiasis had reached almost zero by 2010. Earlier, following nine years of MDA, the prevalence of snail fever dropped from 70% in 1995 to 0.5% in 2003.
- Despite scarce resources, MDA coverage is among the best in the region: in 2012 83% of school-aged children were treated for intestinal worms compared with the Western Pacific regional average of 29%.

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## Why explore NTDs in Cambodia?

Neglected tropical diseases (NTDs) represent the most common infections affecting the world's billion poorest people, causing a number of debilitating health conditions, chronic illnesses and pain, severe disability, disfigurement and malnutrition. They almost exclusively affect people living in conditions of poverty, with poor access to water and sanitation, poor hygiene conditions and weak health systems.

In Cambodia, intestinal worms (soil-transmitted helminths or STH), particularly hookworm, are endemic throughout the country, with an estimated 8.4 million people being at risk of infection (about half of the country's population). Snail fever (schistosomiasis) affects about 80,000 people in two provinces along the Mekong river (Kratie and Stung Treng) and elephantiasis (lymphatic filariasis) affects about 500,000 people in 18 endemic districts in four provinces (Rattanakiri, Stung Treng, Preah Vihear and Siem Reap).<sup>1</sup>

In barely more than a decade Cambodia has made tremendous progress in tackling these three NTDs. The country has complemented the distribution of drugs with health education and prevention strategies to improve

hygiene and sanitation practices. Although it still lags behind other countries in the region in many areas of development, including health, in 2004 Cambodia became the first country in the world to reach the World Health Organization (WHO) target for providing 75% of school-age children with regular anti-worm treatment, six years ahead of schedule. This progress is particularly important because hookworms contribute greatly to malnutrition, which affects most children (in 2010 40% of children under five years of age were stunted, 28% underweight and 11% wasted). Snail fever has been virtually eliminated and the country is currently in the process of obtaining WHO certification on elephantiasis elimination.

Cambodia's progress in tackling NTDs provides a working model of how, by taking advantage of the drugs, funds and strategies available, NTDs can be controlled with minimal resources. NTDs' cross-cutting linkages with many other areas of development, and particularly with poverty, makes this case study a useful contribution to understanding progress towards many of the 2015 Millennium Development Goals and beyond.

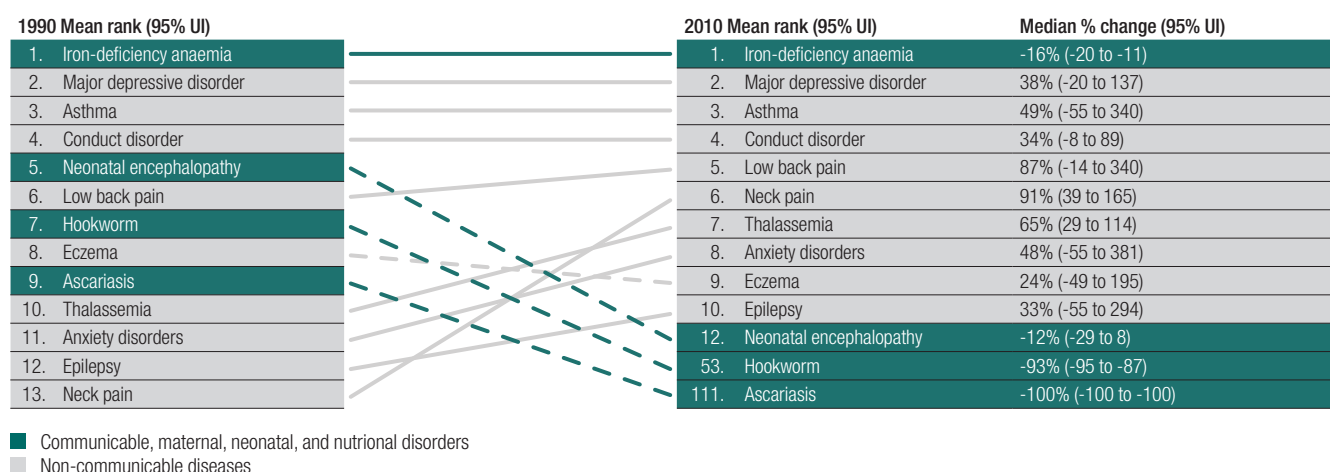


Children in Kampot, Cambodia. Photo: © Romina Rodríguez Pose for the Overseas Development Institute.

<sup>1</sup> While trachoma, food-borne trematodiasis and strongyloidiasis are recognised to be endemic in Cambodia, the exact levels of endemicity are still unknown. For further details see the full report at [odi.org.uk/developmentprogress](http://odi.org.uk/developmentprogress)



**Figure 1: Changes in Cambodia's top ten causes of morbidity (years lived with disability) – children 5 to 14 years old**



Source: Institute for Health Metrics and Evaluation, GBD 2010 Arrow Diagram (<http://vizhub.healthdata.org/gbd/arrow.php>)

## What progress has been achieved?

### Progress on three NTDs

#### Intestinal worms

Mass drug administration (MDA) for intestinal worms was first piloted in 1997 and went nationwide in 2003, primarily through deworming in schools. Deworming in schools has been gradually expanded to reach all primary schools in Cambodia, as well as pre-school children and women of child-bearing age. Between 1997 and 2005 two types of worms, roundworm and whipworm, saw their prevalence decline to levels close to zero, while hookworm prevalence saw a threefold to ninefold decrease, depending on the area. When the causes of 'years lived with disability' are ranked, worms have fallen remarkably in the past two decades. Hookworms went from being the seventh most common cause of childhood disabilities in 1990 to the 53rd in 2010 (a decrease of 93%) while roundworms dropped from ninth to 111th (a fall of 100%) in the same period (see Figure 1).

#### Snail fever

From 1995 MDA campaigns for snail fever progressively expanded following the identification of endemic villages. Since 2001 they have been implemented once a year, targeting the entire population of the two endemic provinces (Croce et al., 2009). Its prevalence rates dropped from as high as 70% in 1995 to 0.5% in 2003, when the programme went into maintenance phase (Croce et al., 2009). After nine years of MDA campaigns the few individual cases found positive for snail fever were of light intensity; in 1995 most infected individuals suffered from high or moderate intensity of infection.

#### Elephantiasis

MDA for the control and elimination of elephantiasis started in 2004. After five rounds it shifted to a surveillance

phase in 2009. MDA had high coverage levels from the start as it built on the programme already rolled out for the other two NTDs. As a result, by 2010 the prevalence rate was almost zero. Following two transmission assessment surveys, the last MDA will be undertaken in 2015, and if earlier results confirm this trend Cambodia may be officially recognised as having eliminated elephantiasis by the WHO in 2015/2016.

### A regional performer against the odds

A dedicated institutional structure within the Ministry of Health (MoH), and its National Malaria Center Helminths Sub-Unit (CNM/HSU), has seized upon the growing global focus on NTDs and with support from the WHO has put in place a sustainable policy framework for NTD activities. Cambodia's achievements in controlling NTDs have been made in spite of the challenges facing the country in rebuilding after genocide and dealing with serious health and human rights issues. With scarce resources, Cambodia has managed to successfully establish an NTD programme that outperformed those in almost every other country in the region in terms of its MDA coverage (Figure 2, overleaf).

### Progress in the health sector context since the civil war

Following the 1991 peace accords, Western financial and technical support started flowing into the country allowing the health care system to be reformed in the mid-1990s. In 1995 the MoH launched the Health Coverage Plan for extending primary health services through the decentralisation of health service delivery. By the end of 2007, the MoH had established 76 operational health districts, 69 referral hospitals, 942 health centres and 67 health posts (MoH and WHO, 2012).

Budget and administrative reforms were also put in place and in 1997 a Financing Charter introduced user fees, with an exception for vulnerable people, which

## ‘This strategy has a multiplicative effect as children go back home and tell their families what they have learned at school, becoming also an effective channel to reach mothers, families and the broader community’ - Key informant interview

improved the quality of care, enhanced staff motivation and improved access to public health services. Various financing schemes have since been put in place by the MoH and its partners, and more recently a strategic framework for health financing (2008-2015) has been developed.

### Achievements in behavioural change: the role of WASH

Access to safe water, sanitation and hygiene (WASH) is one of the five strategies recommended by the WHO for the prevention and control of NTDs. Although Cambodia still has a long way to go in terms of access to WASH, it is one of the few countries that has changed school curricula to incorporate education about intestinal worms. A recent impact evaluation shows a remarkable improvement

in both the knowledge of and practices related to the transmission, prevention, symptoms and long-term consequences of worms – not only among primary school students but also among their close relatives and community members (HKI, 2013).

### What are the factors driving change?

#### 1. Strong inter-sectoral collaboration between the health and education ministries

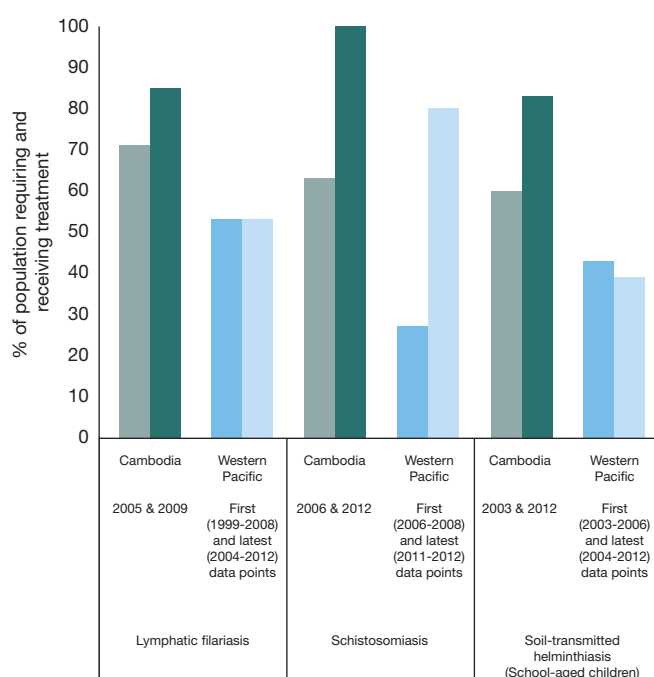
Perhaps the most interesting aspect of the fight against NTDs in Cambodia is the school deworming programme. As school-aged children are the main risk group for worms, the logical way to reach them was through the existing educational network. Schools offer the infrastructure and personnel to support the delivery of simple health interventions like deworming alongside health and hygiene education. Working in collaboration with the CNM/HSU, which takes overall responsibility for the programme, the School Health Department of the Ministry of Education, Youth and Sport (MoEYS) rolled out a nationwide campaign that effectively turns teachers into pharmacists or drug distributors twice a year (Chu, 2011).

Integrating a health intervention into the education system has been possible thanks to the strong collaboration between the MoH and MoEYS. High-level government commitment has also been crucial to this relationship since the MoEYS has had to take on a role outside its mandate, with teaching staff similarly taking on extra responsibilities with no additional pay. This collaborative and well-coordinated effort has allowed Cambodia to conduct one of the largest deworming programmes in the region at very low cost. Sinoun et al. (2005) calculated the cost of treating each school-aged child as 12 cents (\$0.12) during the pilot phase, 6 cents when extended to all schools, and 3 cents when drugs are distributed for the second time in an endemic area.

#### 2. Cost-effective integration of interventions into government health structures

A range of strategies were developed to complement the school deworming interventions. Children not attending school and those below the age of five, women of

**Figure 2: MDA national coverage for NTDs in Cambodia compared with the Western Pacific region average**



Source: WHO Global Health Observatory Data Repository (<http://apps.who.int/gbo/data/node.main.A1629?lang=en>).

## ‘Key to progress is both sectors, health and education, working together for STH in close collaboration’ - Interview with donor representative

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## **‘15 years ago the National Programme worked in very close collaboration with the WHO but now they are good enough, we are more like cheerleaders. The support is ongoing but it shifted’ - Donor representative**

child-bearing age, and the risk groups for snail fever and elephantiasis in the endemic provinces (everyone above two years old) were targeted through NTD interventions that were integrated into the health system through existing routine outreach activities, special village meetings and antenatal consultations at health facilities.

Integrating MDA and deworming into existing channels has allowed Cambodia to make the most of scarce resources to reach the maximum number of people. It is efficient in terms of staff time and training, while the logistics already in place contribute to the cost-effectiveness of the programme, particularly for reaching remote communities.

### **3. Nurturing the programme through bilateral, regional and global partnerships**

Collaboration with development partners working in the field of nutrition and NTDs has been instrumental in helping Cambodia to set up the CNM/HSU. These partners provided the technical assistance and support needed for the MoH to acquire ‘know-how’ on dealing with NTDs, leading to a gradual transfer of knowledge. Piloting allowed the CNM/HSU to become familiar with globally tested strategies and gradually build upon existing knowledge to find its own solutions on how to adapt international strategies to local contexts.

As countries in the region have launched NTD programmes, collaboration has become important not only for coordinating activities in border areas but also for sharing experiences and learning from each other. Cambodia is an active participant in the regional group forum to tackle NTDs. The WHO’s regional office has developed a Regional Action Plan for Neglected Tropical Diseases in the Western Pacific Region (2012-2016) as a step towards securing sustained financial and human resources for NTDs in endemic countries, integrating disease-specific plans, measuring progress and improving coordination.

The most important global partnership is with Children Without Worms (CWW), a donor partnership, which was initially responsible for overseeing the donation of drugs and later provided technical assistance through its local partner, Helen Keller International. Other partners include the Global Alliance to Eliminate Lymphatic Filariasis and the Partnership for Parasite Control. Partnerships with the pharmaceutical industry, which are usually mediated by the WHO, NGOs and other players, also remain crucial (Montresor et al., 2008).

### **4. Resource mobilisation: drug donations, external and domestic funding**

Cambodia has made good use of and intelligently combined both external and internal funding.

#### ***Drug donations and external funding facilitating the provision of free treatment***

Drugs from pharmaceutical donation programmes have been key in enabling Cambodia to provide NTD treatment free of charge and to reduce prevalence levels. External sources have also funded interventions needed for the distribution of the drugs. A range of partners have funded different programme activities, playing a key role in making the programme feasible. In recent years, the main source of funding for the programme to cover operational costs has come from the MoH’s budget supported by the Asian Development Bank’s Communicable Diseases Control Project and the World Bank’s Second Health Sector Support Program pooled funds. The funds received have been small but vital in sustaining the core programme activities.

#### ***The role of government funding***

The Cambodian Government has remained dependent on many small funding streams from an ever-changing landscape of donors. Yet the CNM/HSU has been proactive in seeking out partners to fund and collaborate with different components of the programme. Throughout the existence of the programme it has managed to secure most of the funding required, but it has also stepped in to purchase the drugs needed to cover all target populations for intestinal worms and snail fever when donations could not be secured. This represents a significant burden for the Cambodian Government, as the market price is usually 7 to 10 times higher than the production price (Chu, 2011).

Since the programme has been integrated into the health system, the Government has indirectly funded the programme through funds allocated to the health sector, including salaries for staff from both the MoH and MoEYS. There is also an implicit cost that is covered by the efforts made by the people working for the programme. This applies particularly to teachers, who are performing a role not covered by their job specifications.

### **5. Broader progress in the health, WASH and education sectors**

#### ***Broader progress in the health sector***

Because the NTD programme is fully integrated into the health system, it has benefitted from the broader progress achieved in Cambodia’s health sector. Significant increases since the mid-1990s in government, private and external donor investment in the health sector have

helped to rebuild human, physical and technical capacity. Government expenditure on health rose from \$30 million in 1995 to \$134 million in 2012 (US dollars, constant 2005 – WHO global health expenditure database), while its expenditure per capita increased from \$4 in 2000 to \$9.36 in 2009 (MoH and WHO, 2012). Development partners and the private sector have also increased their spending on health threefold in the same period. As a result, improved facilities, better incentivised health staff and the geographical extension of the health facilities network have contributed to the successful implementation of MDA campaigns.

### ***Progress in water, sanitation and hygiene (WASH)***

NTDs thrive in places with unsafe drinking water, poor sanitation and unsatisfactory hygiene practices. Cambodia has made progress in WASH in both urban and rural settings. Access to improved water sources reached 81% in 2008 in urban areas, surpassing the MDG target. In rural areas access went from 33% in 1990 to 56% in 2008. Progress has also been made in sanitation, although at a slower pace, and sanitation levels remain very low: between 1990 and 2008, access to improved sanitation went from 38% to 67% in urban areas, and from 5% to 18% in rural areas (SWA, 2010).

### ***Progress in education – high levels of school attendance***

Cambodia has made remarkable progress in education since the fall of the Khmer Rouge. Over the past decade, it has managed to re-establish an inclusive primary and secondary education system, with almost all children attending school. The high attendance achieved, particularly in primary schools, has contributed to the performance of the deworming campaigns, which have been able to reach the maximum number of school-aged children. This has also meant that more children are being reached by the health education curriculum.

## **What are the challenges?**

Although Cambodia's progress in tackling NTDs has been remarkable, there are still a number of challenges.

### **1. Dependence on external assistance and constant efforts to secure funding**

External funding for NTDs has been fragmented, and NTDs that do not attract much donor funding (trachoma, food-borne trematodiasis and strongyloidiasis) remain largely neglected. Likewise, drug donations have been secured only for certain diseases and target groups. As a result, taking programme activities forward has involved constant CNM/HSU efforts to secure funding.

### **2. Further progress still needed in WASH to achieve lasting behavioural change**

In spite of the notable progress achieved in this area, particularly in relation to health education in schools, much remains to be done to consolidate access to water and sanitation and behavioural changes – especially in relation to open defecation and hand-washing (HKI, 2013). The situation is particularly severe in rural settings: as of 2012, 82% of Cambodians living in rural areas practised open defecation (Spears, 2012). Government interventions through the Ministry of Rural Development (MRD) have been limited and rural sanitation has not been prioritised in sector or programme budgets while small-scale projects have made only a marginal impact (WSP, 2012).

### **3. Limited inter-sector collaboration with other ministries**

Collaboration with the MoESY has been key to the success of the CNM/HSU. However, links with other key ministries are still at an incipient stage, particularly with the ministries responsible for WASH. This collaboration is complicated by the fact that responsibilities are distributed between various ministries, without clear divisions of roles. The MRD, in particular, appears to be weak in terms of institutional organisation, particularly at lower administrative levels where implementation takes place.

### **4. Remaining inequalities in access to health services**

Although improvements in the health sector have facilitated NTD programme performance, barriers to accessing health care still remain. In 2010 the majority of Cambodians cited prohibitive costs as a barrier to health access, with rural residents, less-educated women and those belonging to the poorest wealth quintiles reporting more difficulties.<sup>2</sup>

2 Based on data from Cambodia's Demographic and Health Surveys for 2000, 2005 and 2010. See: <http://dhsprogram.com>.

## Lessons learned

The Cambodian experience illustrates that by tailoring international guidelines to the local context, it is possible to establish an integrated, cost-effective programme to control and eliminate NTDs even in countries facing limited health budgets and recovering from conflict. The four key lessons are:

- **Horizontal integration through strong inter-ministerial collaboration.** Integrating activities between the MoH and the MoEYS, two ministries with different mandates, institutional structures and hierarchies, requires not only strong collaboration but also high-level political commitment to ensure that inter-ministerial partnerships work smoothly and use the comparative advantages of each institution.
- **Integrated NTD control via existing government structures ensures cost-effective impact.** Cambodia has managed to integrate NTD interventions by leveraging existing government health and education structures. It has designed complementary strategies and made the most of scarce resources, while increasing the number of people reached. Efficiencies in terms of staff time and training contribute to the cost-effectiveness of the programme.
- **Development partners have a role to play in transferring technical knowledge.** Until local capacity is fully developed,

there is an important transitional role for development partners in building technical knowledge and providing access to strategies and guidelines on how to deal with NTDs. In Cambodia national partnerships provided the initial technical assistance that led to a gradual transfer of knowledge. International guidelines and recommendations were jointly piloted, allowing the local management and staff to familiarise themselves with the problems and develop their own solutions. The programme could gradually grow and improve over time, leading to a transfer of ownership.

- **Continuous multiple outreach efforts can help to secure funding and drug donations.** To ensure uninterrupted drug supplies and funding to cover operational costs, the programme has continuously sought to engage multiple donors to contribute to different components and activities. While external funding and drug donations have made the programme possible, the Cambodian Government has demonstrated how a sustained effort to network with parallel funders can pay off. The CNM/HSU has shown a tenacious capacity to adapt to a range of different funders and to work with multiple small external partnerships.



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This summary is an abridged version of a research report and one of a series of Development Progress case studies being released at [developmentprogress.org](http://developmentprogress.org)

Development Progress is a four-year research project which aims to better understand, measure and communicate progress in development. Building on an initial phase of research across 24 case studies, this second phase continues to examine progress across countries and within sectors, to provide evidence for what's worked and why over the past two decades.

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