Malaria volunteers fight to protect the best weapon

The dedicated work of volunteer village malaria workers is essential to prevent resistant malaria spreading from Cambodia to Africa, but the challenges are great. Yin Soeum and Gozde Zorlu report.

For 33 year-old Cambodian Khut Ros, the battle to stop the spread of resistant malaria is fought farmer by farmer and child by child. Living in the remote village of Suo Sdei in the former Khmer Rouge stronghold of Pailin province in western Cambodia, Ros – a farmer himself – is a poor man with little education. But standing in the corn field that surrounds his simple wooden house, he talks with great conviction of his work. "I have some difficulties and problems because patients are far away, and sometimes I have to go to their houses directly because they have no transport, but I am very happy that I can help my family and my community," he says.

Ros is one of two volunteer malaria workers in the village, which is home to some 715 people, most of them rice and maize farmers. Many of his patients are loggers who work in the nearby forests for days on end and return home to the village with malaria. He received a basic training at a nearby health centre and in the Pailin provincial hospital, where he was also supplied with medicines and diagnostic tests.

For Najibullah Habib, Malaria Containment Project Manager with the World Health Organization (WHO) in Cambodia, the essential kit of tools that Ros and his fellow volunteers use is a strength: "Many of the workers do not have a public health training and many of them are illiterate, but they can be effective because of the simplicity of the tools they are using and, through the rapid diagnostic tests, they can diagnose malaria to a good degree of accuracy," Habib says.

If patients test positive for malaria, Ros gives them a three-day treatment course of artemisinin-based combination therapy (ACT) with simple drawings to remind them to complete the prescribed course even if their symptoms go away. If patients test negative, Ros refers them to the local health centre.

These medicines represent the most effective treatment for falciparum malaria; in Cambodia and most other countries, where widespread resistance to antimalarial medicines has occurred in the past, they are virtually the only effective treatment against falciparum malaria left in the arsenal. But now these combinations are also at risk.

"Resistance has developed before with other antimalarial medicines," says Habib. It was in this region, on the border between Thailand and Cambodia, where the most dangerous form of malaria (*Plasmodium falciparum*) first developed resistance to chloroquine and sulfadoxine-pyrimethamine, common antimalarials at the time, which then spread to India in the 1970s and East Africa in the 1980s. And it was in Pailin where scientists confirmed the first cases of falciparum resistance to artemisinin and its derivatives in 2008. Scientists say that new antimalarial combinations with equivalent levels of efficacy are not likely to become available for another six or seven years.

Indeed resistance has developed often enough for the Mekong sub-region to earn the unenviable title of "the cradle of malaria drug resistance".

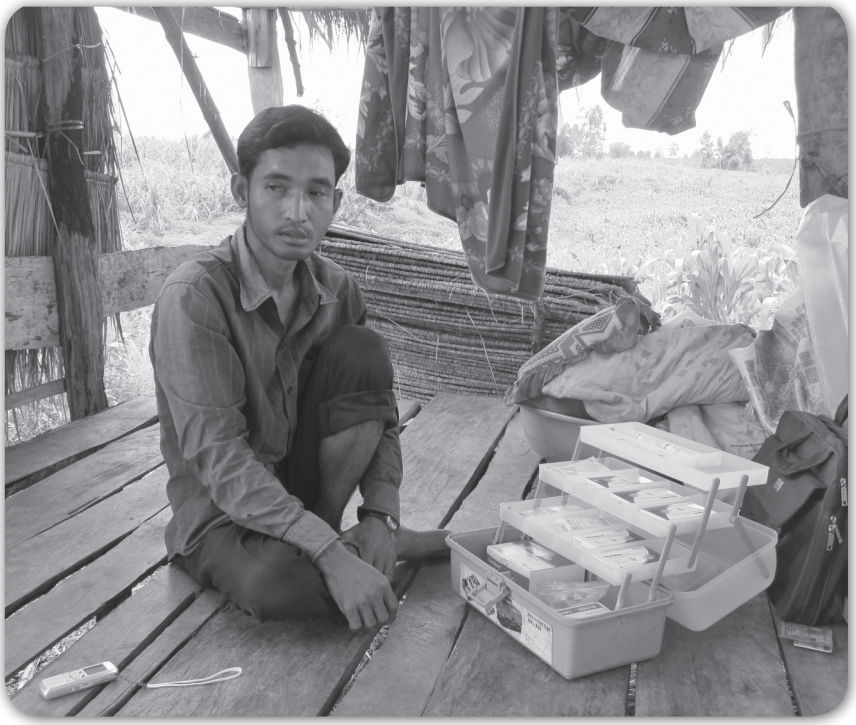
Regina Rabinovich of the Bill & Melinda Gates Foundation, which funds the WHO Containment project, calls it "a quiet emergency": "If resistance jumps from Cambodia and Thailand to India and then over to Africa, we're going to lose all of the gains that we have made over the past decade."

In the Mekong area it is the inappropriate use of antimalarials that is fuelling this "quiet emergency". That is when patients take single artemisinin tablets without the partner medicine or when chemists and other outlets sell only a couple of doses of artemisinin or substandard combination therapies to patients.

Says volunteer Ros, "We give patients artemisinin combination therapy. This medicine is very important to treat malaria because it is not a fake drug and it has been introduced by the national-level ministry."

But patients are not always motivated to take combination medicines because single artemisinin tablets are often cheaper, have fewer side-effects and may quickly relieve symptoms, even if the patient is not cured. That is one reason why volunteers like Ros are so important, as they explain to their fellow villagers the importance of completing the prescribed course with an ACT.

So why is it essential to take these medicines in combination? Robert Newman, director of the WHO Global Malaria Programme, explains. "When administered as part of an artemisinin-based combination therapy regimen, the partner drug kills the parasites that were not killed by the artemisinin."



WHO/Yin Soeum

Malaria volunteer Khut Ros

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One way to make sure patients do take combination medicines is to manufacture them in a single tablet, something some manufacturers already do. But it is the sheer volume of unregulated self-medication with single artemisinin tablets that threatens the efficacy of a whole generation of medicines.

Says Habib: "The spread of artemisinin resistance would not be just a public health emergency but also a tragedy because we would lose one of our best weapons against malaria."

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>
> *Robert Newman*

WHO/Chhean Nariddh Moeun

Justice Officer Nuth Tith visits a medicines outlet

In recent years, Cambodia has taken several steps to tackle the problem. It banned the import and sale of separate artemisinin tablets, known as oral artemisinin monotherapy, in September 2008. To enforce the move, the Ministry of Health created a new cadre of 200 law enforcement officers known as the "Justice Police" and gave them unique powers to crack down on illegal, counterfeit and substandard medicines.

It's an uphill battle for men like Nuth Tith, a Justice Officer in Pailin. He describes how tough it is to stop highly motivated people from selling illegal medicines to a population of 70 000 people. "There are not enough resources for health care and the people need medicine, so we cannot stop the private sector from doing the business," Tith says. "We close the front door, and they go through the back door," he says.

WHO/Chhean Nariddh Moeun

Justice Officer Nuth Tith inspecting medicines

Another challenge is the reluctance of pharmaceutical companies to stop marketing these medicines. To date, out of the 80 manufacturers involved in their production and distribution identified by WHO since 2005, only 46 have ceased marketing such products.

Malaria has long been a major cause of disease and death in Cambodia. In recent years, the number of people getting sick or dying from malaria has decreased in most provinces. The number of deaths from malaria in Cambodia fell by 54% in 2010, compared with the previous year, according to the Ministry of Health.

In March of this year, Prime Minister Hun Sen launched a government plan to eliminate malaria in the country by 2025. The goal, he told the 32nd National Health Congress, was "a Cambodia without malaria".

Newman praised the country's efforts: "Cambodia has shown real leadership in using a multi-pronged approach to tackle this difficult problem," he says, adding: "The Cambodian government's use of regulatory powers to limit the development of resistance to antimalarials is exemplary. We hope other malaria-endemic countries will quickly follow suit." ■