MEETING REPORT

SCHISTOSOMIASIS AND OTHER ZOONOSES IN SOUTHEAST ASIA - MEETING REPORT THE 6TH REGIONAL NETWORK FOR ASIAN SCHISTOSOMIASIS

Xiao-Nong Zhou[1], Lydia R Leonardo[2], Luz P Acosta[3], Maria Vang Johansen[4], Arve Lee Willingham III[5] and Remigio M Olveda[3]

[1]National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, Shanghai 200025, PR China; [2]College of Public Health, University of the Philippines Manila, the Philippines; [3]Research Institute for Tropical Medicine, the Philippines, [4]DBL – Institute for Health Research and Development, Denmark; [5]WHO/FAO Collaborating Center for Parasitic Zoonoses, Royal Veterinary and Agricultural University, Denmark

The 6th workshop of the Regional Network for Asian Schistosomiasis and other important helminth zoonoses (RNAS+; website: www.rnas.org.cn) was held from 11 to 15 September 2006 in Muntinlupa City and in Bohol Island, the Philippines. The objectives of the meeting were to: 1) mark the 100th year of discovery of *Schistosoma japonicum* in the Philippines, 2) provide an update on other important helminth zoonoses (cysticercosis, opisthorchiasis/clonorchiasis and fascioliasis) in the region, 3) formalize the governance of RNAS+, and 4) conduct a training course on the application of GIS in epidemiology and surveillance of parasitic diseases. The workshop was organized by RNAS+ in close collaboration with the Research Institute for Tropical Medicine (RITM), the National Center for Disease Prevention and Control, Department of Health, and the University of the Philippines, Manila. Funds for the meeting came from the Department of Health, the Philippines, DBL-Institute for Health Research and Development, Denmark, and UNICEF/World Bank/UNDP/WHO Special Programme on Research and Training in Tropical Diseases, and others.

The four objectives were achieved by three main activities held during a span of five days. The first event of the workshop was a two-day scientific meeting integrated with the International Symposium on Schistosomiasis to mark the discovery of *S. japonicum* 100 years ago in the Philippines. The meeting was held at the Bellevue Hotel, Muntinlupa City on September 11-12. A total of 109 participants from Asian member countries (Cambodia, China, Lao PDR, Japan, Philippines and Indonesia) and international partners (WHO, WPRO, Lonza Ltd, Canada, Brazil, Denmark, Sweden, Switzerland and USA) attended with 27 presentations on epidemiology, diagnosis, treatment, control, molecular biology, and vaccine development. The Honorable Dr Francisco T Duque, Secretary of the Department of Health, the Philippines, delivered the keynote address where he called for more efforts to sustain the control of schistosomiasis and other helminth zoonoses. Dr Remigio M Olveda, Chair, Regional Network for Asia Schistosomiasis Plus, Director of RITM, the Philippines, delivered the welcome remarks followed by Dr Jaime C. Montoya, Executive Director, Philippine Council for Health Research and Development, Department of Science and Technology, Dr Lester Chitsulo, Disease Research Coordinator-Schistosomiasis of TDR, World Health Organization, Dr Jean-Marc Olive, WHO representative in the Philippines, World Health Organization, Dr Zhou Xiaonong, Professor and Deputy Director, National Institute of Parasitic Diseases, China CDC, and Dr Arve Lee Willingham, Deputy Director, WHO/FAO Collaborating Center for

Parasitic Zoonoses, Royal Veterinary and Agricultural University, Denmark. The speakers stressed the importance of schistosomiasis as a re-emerging disease in Asia which cannot be controlled by chemotherapy alone. Hence the goal of eliminating this parasitic disease, set out by the MOH of member countries, will be very difficult to attain without the introduction of advanced technology or new control strategies in an integrated approach.

The second part of the workshop was a scientific and business meeting held in the evening of 12 September in Muntinlupa City and the afternoon of 13 September at Bohol Island. More than 30 participants attended the meeting. Several presentations on fascioliasis, cysticercosis, and clonorchiasis/opisthorchiasis in Southeast Asia highlighted the importance of these zoonotic helminth infections and the need for more information, which can be addressed by establishment of a surveillance system. The governance structure of RNAS+ was followed up from the previous meeting in Bali. It was agreed that RNAS+ would be registered as a foundation in the Philippines whose operation would be facilitated by a full-time secretary holding office at the RITM. Being registered as a foundation would enable RNAS+ to attract more funding from international foundations and agencies for new collaborative projects on research, surveillance and control. It was further agreed that future RNAS+ collaborative projects should focus on enhancing the current surveillance system in member countries by improving and standardizing diagnostic tools and seeking integration and broadening of schistosomiasis control to include other relevant helminth infections in order to more cost-effectively reduce morbidity and transmission of these parasites. It was finally decided that the next RNAS+ meeting would be held in China in September 2007, integrated with the annual meeting of GnosisGIS and a relevant training course.

The last event was a two-day training course entitled "Applications of Geographic Information Systems (GIS) and Remote Sensing (RS) in the Control of Parasitic Diseases". The course was held on Bohol Island on September 14-15 and was attended by 20 participants from the Philippines, Lao PDR, Cambodia, Indonesia, China and Denmark. The objectives of the training course were to: 1) introduce the participants to geographical information systems (GIS) and remote sensing (RS), 2) create distribution maps of Asian schistosomiasis based on participants' own data, and (3) analyze and forecast the potential risk areas for a schistosomiasis epidemic. The course employed a mixture of lectures, practicals and group work. At the end of the course, an Asian Schistosomiasis Map was developed with the hope that an updated map will be created annually under the framework of RNAS+.

The Regional Network for Research, Surveillance and Control of Asian Schistosomiasis (RNAS) was established in 1998. Its operation was facilitated by a collaborative research grant from TDR in 1999. The first RNAS working group meeting was held in the Philippines in 2000, with Dr Feng Zheng, former Director of IPD, and Dr Remgio Olveda, both acting as co-chairs of the network. The aim of RNAS is to strengthen communication, cooperation and coordination among scientists and control authorities concerned with control of schistosomiasis japonica at the regional level. More specifically, the major objectives of RNAS are to: 1) coordinate and secure support for research on surveillance and control of schistosomiasis transmission in humans and animals, 2) disseminate information about ongoing research and training activities, 3) develop standardized protocols for infection and disease surveillance, 4) evaluate current control strategies and assign regional research priorities, and 5) share plans for new studies and explore the potential for international collaboration.

The RNAS network has grown considerably from the 20 participants at the first RNAS working group meeting held in the Philippines in 2000, to the 38 participants in the second RNAS working group meeting in China in 2001, then to the 70 participants at the third RNAS meeting in Cambodia in 2002 and the fourth meeting in Lao PDR in 2004. The fifth RNAS working group meeting in Indonesia last year was attended by 80 participants. More international scientists and institutions in Asia and throughout the world also became involved in the research, control and surveillance of *S. japonicum* and *S. mekongi*.

In 2005, at the fifth meeting of RNAS in Bali, Indonesia, the scope of RNAS was reviewed and it was agreed that due to similarities regarding control of several of the major helminth zoonoses and the need for integrated parasite control due to limited resources in all the MOHs, RNAS should be expanded to include cysticercosis, clonorchiasis/opisthorchiasis, fascioliasis and other important helminth zoonoses in Southeast Asia. The network was henceforth renamed RNAS+. A consensus was also reached to focus on training activities, GIS mapping of the diseases in the region and advocacy in addition to research, control and surveillance. The inclusion of additional parasitic diseases in the scope of the network is expected to stimulate the interest of Vietnam, Thailand and Korea into joining the network. The success of RNAS is evidenced by the following facts.

1) RNAS has achieved its originally designed objectives to promote collaboration among scientists in the field of Asian Schistosomiasis research through: (1) strengthening communication among scientists working on Asian Schistosomiasis, (2) exchanging information between Asian scientists through regular scientific meetings, and (3) sharing technologies for the diagnosis and surveys of the distribution of schistosomiasis in Southeast Asia leading to improved control measures. More than 90% of all research institutions and control authorities working with schistosomiasis in Southeast Asia are currently represented in RNAS. A major outcome of 8 years of networking has strengthened communication among scientists and control authorities working on Asian schistosomiasis through RNAS and its website (www.rnas.org.cn).

2) More collaborative projects under the frame of RNAS were supported by additional fundings (*eg,* NIH, Welcome Trust, TDR, SIDA, DBL etc). The Chinese delegation assisted Cambodia and Lao PDR with field diagnosis of *S. makongi* infection by using a dipstick kit developed in China.

3) Several training activities have been conducted. Three training courses on the diagnosis of animal schistosomiasis, on standardization of ultrasound protocols in the diagnosis of schistosomiasis japonica, and on the basic ethical standards for health research were held in Denmark (2003), China (2004), and Indonesia (2005), respectively. A special training course was given to 12 field project managers from Indonesia on schistosomiasis control and prevention at the National Institute of Parasitic Diseases, Shanghai, PR China (2004). In addition, two international symposia on schistosomiasis were held through RNAS in Shanghai (2001) and in Manila (2006).

4) RNAS has informed local MOH's about its activities through press releases, public media (newspapers, radio and TV) as well as through international publications (Parasitology Today, Trends in Parasitology, Acta Tropica, etc). More than 20 peer reviewed research publications in international journals are a direct outcome of RNAS activities.

More information on Asian schistosomiasis

Schistosoma japonicum and *S. mekongi* are both parasitic worms transmitted between humans and a range of domestic and wild animals in China, Indonesia and the Philippines (*S. japonicum*) as well as in Lao PDR

and Cambodia (*S. mekongi*). People and animals become infected with the worms by contact with contaminated water. Eggs of the adult worms pass out with an infected person's stool, and if they contact fresh water the eggs hatch and larvae seek out a snail host for further development. In 1-3 months, each larva in the snail multiplies by 100-1,000 times and the new larvae leave the snails to stay in the water awaiting human or animal contact. While adult worms do little harm, their eggs cause pathology leading to blood loss, intestinal dysfunctions and liver fibrosis. Although the disease and its distribution are relatively well described in the humans in Asia where more than 1 million people are infected, very little is known about the burden of the disease in different animal species, their relative contribution to the transmission of disease, distribution of the disease and possible methods of control in animal populations. One major reason for the lack of information is a lack of diagnostic tools for animal schistosomiasis.