Enhancing collaboration between China and African countries for schistosomiasis control

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Schistosomiasis remains an important public health issue, with a large number of cases reported across sub-Saharan Africa, and parts of Asia and Latin America. China was once highly endemic, but has made substantial progress and is moving towards elimination of schistosomiasis. Meanwhile, despite long-term, repeated, school-based chemotherapy in many African countries, more than 90% of all schistosomiasis cases are concentrated in Africa, and hence, this continent constitutes the key challenge for schistosomiasis control. Opportunities and issues for international collaboration in the fight against schistosomiasis are outlined with a focus on China's experiences, including the role of public health authorities and intersectoral collaboration, use of new and effective snail control approaches and diagnostic tools adapted to the specific stage of control, as well as the strengthening of risk mapping and surveillance-response mechanisms. Training courses targeting African governmental officials and professionals, coupled with field visits of African scientists and control programme managers to China, and vice versa, are considered important for improved schistosomiasis control and elimination. The crucial question remains whether the Chinese experience can be translated and applied in African countries to improve the effectiveness of health interventions and scale-up.

Introduction

More than 250 million people worldwide are estimated to be infected by blood flukes of the genus *Schistosoma* and nearly 800 million people are at risk of schistosomiasis.[1,2] More than 90% of all cases are concentrated in sub-Saharan Africa where people live in settings characterised by scarce sanitation and limited access to clean water.[3] The infection is usually transmitted by the free-swimming cercaria of *Schistosoma*, which penetrate the skin of people that are in contact with infested water. Urogenital schistosomiasis, the infection of *Schistosoma haematobium*, can lead to fibrosis, stricturing, and calcification of the urinary tract, and bladder cancer is a late stage consequence. Infections with *Schistosoma japonicum*, *Schistosoma mansoni*, *Schistosoma mekongi*, and *Schistosoma intercalatum* can cause progressive liver fibrosis, portal hypertension, and ascites.[1,4] Several improvements in schistosomiasis control are urgently needed, including high-resolution mapping of schistosomiasis; improved diagnostics; widened drug coverage; implementation of integrated approaches to improve sanitation, effective information, education, and communication; and re-institution of snail control.[3,5] In the authors' view, schistosomiasis has to be controlled on a continent-wide scale; strengthened intercountry communication and cooperation would save time and allow limited resources to be allocated appropriately to explore suitable and effective approaches and strategies for national control programmes.

China has a history of successful schistosomiasis control.[6,7] An uninterrupted national control programme has been in place since the early 1950s and has resulted in a substantial reduction of schistosome-related morbidity and mortality. By the end of 2013, the transmission of schistosomiasis has been interrupted in five of the 12 originally endemic Chinese provinces, whereas four have reached the transmission control criteria (<1% prevalence in human beings and livestock; figure 1).[8] Over the past decades, China has accumulated a large amount of experience in schistosomiasis control in various settings.[9,10] Supported by the UK's Department for International Development, and in collaboration with African, European, and Chinese scientists and institutes, the China–UK Global Health Support Programme was initiated in 2013, aiming to distil, synthesise, and disseminate the Chinese schistosomiasis experience to endemic countries in Africa.

The key differences between African and Chinese schistosomiasis are related to the snail intermediate hosts and animal reservoirs (table). By contrast with all the different aquatic snail intermediate hosts in Africa (eg, *Biomphalaria* spp and *Bulinus* spp),[11,12] the only snail capable of transmitting schistosomiasis in China (*Oncomelania hupensis*) is amphibious. Although human beings are essentially the only end host for *S mansoni* and *S haematobium* in Africa, at least 40 domestic and wild animal reservoir hosts are associated with the transmission of *S japonicum* in China, and as such it is considered a zoonotic disease.[13] If anything, control and elimination of schistosomiasis would seem to be more challenging in China than in Africa. Nonetheless, Africa and China have many similarities with respect to disease control—eg, risk mapping and prediction, diagnostics, prevention, treatment, surveillance, and management. These similarities justify attempting to translate China's experience with schistosomiasis control and elimination to the African scene—facilitating and strengthening control activities there.

Conditions are favourable for cooperation between African countries and China

Extending present cooperation to schistosomiasis control

Cooperation between China and Africa around health promotion has a long history. Aid has been provided

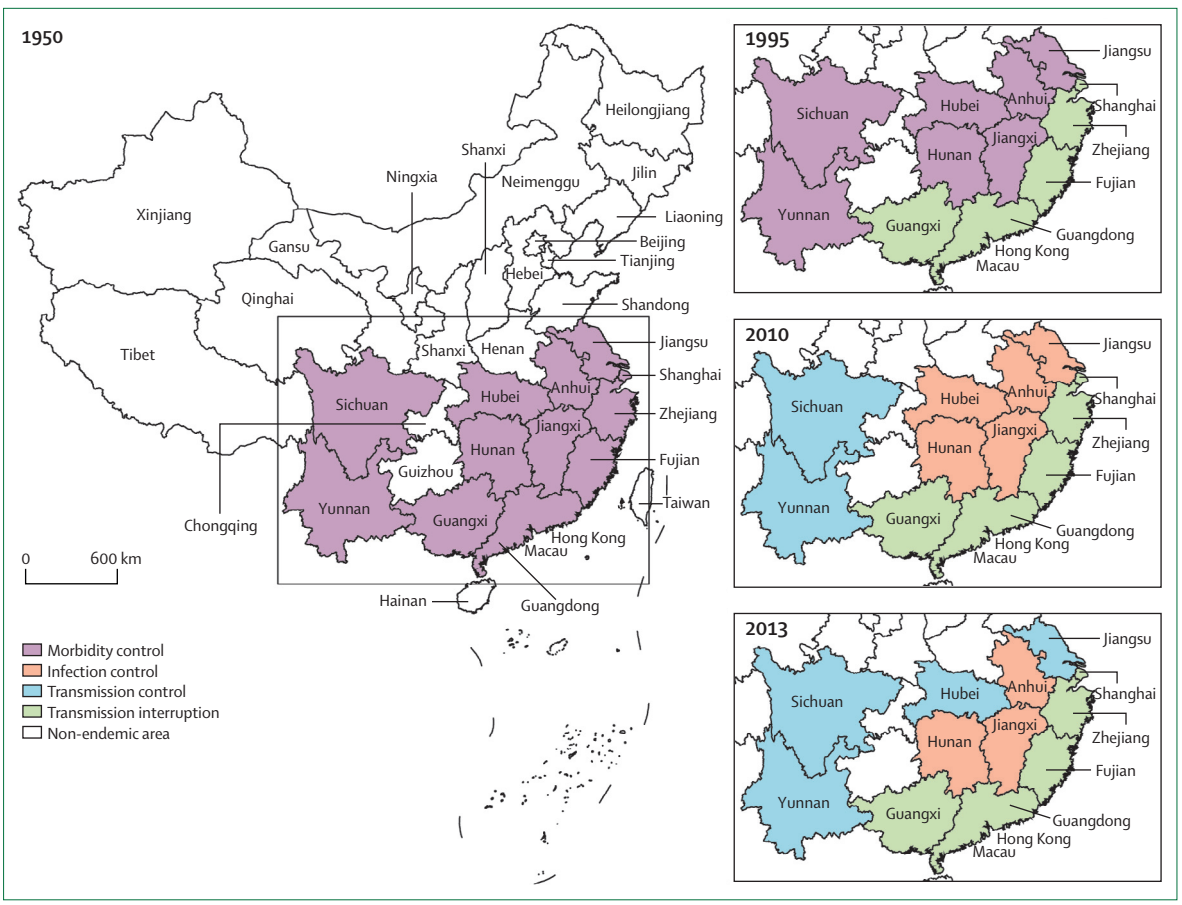

Figure 1: **Changes of schistosomiasis endemicity in China in the past 65 years**

through medical teams, establishment of health-care facilities, training of staff, support of malaria control, and donation of medicines.[14] In consideration of the wish by some African countries and WHO that China support schistosomiasis control in Africa, the Beijing Declaration of the Ministerial Forum of China–Africa Health Development, passed in 2013, agreed to joint pilot projects with African countries for schistosomiasis prevention, control, and elimination.[15] Collaboration between African countries and China through specific training courses and exchange visits by senior scientists sharing Chinese experience has been done through two existing networks: the Regional Network on Asian Schistosomiasis and other Helminth Zoonoses, and the Research Network on Schistosomiasis in Africa.[16] Technical support to help draft national plans and strategies, train staff, and guide control activities is planned to begin in the near future.

Commitments and achievements

Achievements for schistosomiasis control in previously highly endemic countries, such as China, Brazil, and Egypt, suggest that elimination is eminently feasible in countries with low prevalence, adequate resources, and sustained political commitment.[7] With the plummeting price of praziquantel and the increasing advocacy and provision of resources, a new regional strategic plan for neglected tropical diseases in the African region for the period 2014–2020 envisions the elimination of schistosomiasis as a public health problem by 2020 in target countries.[17] Some African endemic areas, such as Tanzania's partly self-governed province Zanzibar, have given voice to a willingness to attempt reaching this goal.[18] Meanwhile, supported by key funding and donor agencies, such as the US Agency for International Development, the UK Department for International Development, the World Bank, World Vision International, and Merck KGaA, many African countries are now implementing national schistosomiasis control programmes, either as a vertical programme or integrated with some of the other neglected tropical diseases. The number of people receiving preventive chemotherapy with praziquantel increased from 12·4 million in 2006 to 39·5 million in 2013, and several countries, such as Burkina Faso, Burundi, Malawi, Mali, Liberia, and Togo, have already achieved the 75% treatment coverage target for children aged 5–14 years.[19,20] In January, 2012, Merck KGaA increased its pledged donation of praziquantel to 250 million tablets per year

For the **Regional Network on Asian Schistosomiasis and other Helminth Zoonoses** see http://www.rnas.org.cn