THE
CARTER CENTER

Summary of the Twentieth Meeting of the International Task Force for Disease Eradication (II) November 27, 2012

The Twentieth Meeting of the International Task Force for Disease Eradication (ITFDE) was convened at The Carter Center from 8:30am to 4:00pm on November 27, 2012 to discuss the potential eradicability of yaws, and to receive an update on progress toward elimination of malaria and lymphatic filariasis from Hispaniola (Dominican Republic and Haiti). The Task Force members are Sir George Alleyne, Johns Hopkins University; Dr. Stephen Blount, Centers for Disease Control and Prevention (CDC); Dr. Mickey Chopra, UNICEF; Dr. Donald Hopkins, The Carter Center (Chair); Dr. Adetokunbo Lucas, Harvard University; Dr. Montserrat Meiro-Lorenzo, The World Bank; Professor David Molyneux, Liverpool School of Tropical Medicine (retired); Dr. Mark Rosenberg, Task Force for Global Health; Dr. Lorenzo Savioli, World Health Organization (WHO); Dr. Harrison Spencer, Association of Schools of Public Health; Dr. Dyann Wirth, Harvard School of Public Health; and Dr. Yoichi Yamagata, Japan International Cooperation Agency (JICA) (retired). Five (Blount, Hopkins, Lucas, Spencer, Yamagata) Task Force members attended this meeting, and three others were represented by alternates (Dr. Anne Pierre-Louis for Meiro-Lorenzo, Dr. Adrian Hopkins for Rosenberg, Dr. Jean Jannin for Savioli).

Presenters at this meeting were Dr. Kingsley Asiedu of WHO, Dr. Ron Ballard of CDC, Dr. Matthew Coldiron of Medecins sans Frontieres, Dr. Jean Jannin of WHO, Dr. Luz Mercedes of the National Center for Control of Tropical Diseases (CENCET) of the Dominican Republic, and Dr. Roland J. Oscar of the Ministry of Public Health of Haiti.

Yaws Eradication

Yaws is a non-venereal endemic treponematosis caused by *Treponema pallidum* (subspecies *pertenue*). It is transmitted by direct skin-to-skin contact among people with poor hygiene in certain humid tropical areas of Africa, Latin America and Asia/Pacific Islands. Children ages 2-15 years old are most highly affected, and persons with florid papillomatous lesions are the most infectious. Late lesions, which may occur 2-5 years after the infection begins, can be disfiguring and highly destructive of bones and cartilage. Latent periods during which patients show no signs of infection but are sero-positive occur commonly throughout the acute and chronic stages of infection. There may be two or more latent cases of yaws for each clinically obvious case in a community; yaws lesions tend to be more florid during the rainy season. Serologic tests in persons with yaws are indistinguishable from those of persons with venereal syphilis. Some cross immunity has been reported between yaws and venereal syphilis, with low frequency of venereal syphilis in communities with high prevalence of yaws, and reported increases in venereal syphilis as yaws prevalence declines.

Since the early 1950s yaws has been known to be curable by a single injection of long-acting penicillin, which eliminates infectiousness within hours, and reduces the active lesions dramatically within days, thereby enhancing the credibility of health care workers. A global campaign conducted by WHO and UNICEF from 1952 to 1964 administered over 50 million treatments in 46 countries and reduced the

prevalence of yaws by about 95% (to ~2.5 million cases). Subsequent integration of control efforts into weak public health systems was not successful, and yaws resurged in several countries during the 1970s.[1] The only resolution on this topic, adopted by the World Health Assembly in 1978,[2] called for increased control efforts, but was largely ignored.

The ITFDE first considered this topic in 1993 and concluded that political and financial inertia, not scientific barriers, were the biggest obstacles to interrupting transmission of yaws, but that the potential for emergence of penicillin resistance, the possible existence of an animal reservoir of the infection, and the inability to distinguish venereal syphilis and yaws serologically were also significant constraints. On reconsidering yaws in October 2007, the ITFDE commended the example set by India's successful elimination of yaws in 2003; lamented the lack of political will, inadequate funding and weaknesses of primary health care systems in other affected countries; noted the poor knowledge about the current extent of yaws; and concluded that the World Health Organization (WHO) and UNICEF were the best hopes for global advocacy for elimination of this Neglected Tropical Disease (NTD).[3] The latter meeting also suggested that a single dose oral drug for yaws would have obvious advantages over injectable penicillin and should be explored.

WHO convened consultations on yaws before and after the ITFDE meeting in 2007, culminating in a consultation held in Morges, Switzerland in March 2012 which recommended a new strategy to eradicate yaws. Under the new strategy, programs are advised to treat everyone with azithromycin in each affected community having an active case, regardless of the number of active cases found there. During repeat surveys, it is recommended that all active clinical cases and their contacts be treated. Other positive developments include announcement in January 2012 that a single dose of oral azithromycin (30 mg/kg body weight; maximum 2g) could cure yaws; simple, rapid, inexpensive serological tests that can be used in the field are available; and there is increased interest in combatting Neglected Tropical Diseases generally. The WHO meeting at Morges developed the strategy for reaching the 2020 target for eradication of yaws (interruption of transmission by 2017 and certification by 2020) that was set by the WHO NTD Roadmap.[4,5] WHO will lead the eradication efforts starting with selected endemic districts of Cameroon, Ghana, Indonesia, Papua New Guinea, Solomon Islands and Vanuatu to demonstrate the feasibility of its recommended new strategy in 2013.

This meeting of the ITFDE acknowledged the considerable progress in efforts to combat yaws since its discussion of this topic in 2007, and the decision by WHO/NTD to target yaws for eradication. WHO has thus included yaws as a second disease targeted for eradication in addition to dracunculiasis (Guinea worm disease) on its official list of 17 Neglected Tropical Diseases. Populations affected by yaws appear to be shrinking, but knowledge of the current extent of the disease is still very poor. For example, a survey conducted by *Medecins sans Frontieres* in a remote population of pygmies in the Republic of Congo in September 2012 that was presented at the meeting confirmed 183 cases among 6,728 children <15 years of age. Of 36 formerly endemic countries, only 11 have recently reported cases of yaws to WHO (*Table 1*), including Ghana, Papua New Guinea, and the Solomon Islands, which each reported over 20,000 cases in 2010 or 2011. Other potentially favorable factors include the increasing use of azithromycin (at 20 mg/kg) in mass campaigns to eliminate blinding trachoma and the existence of

[1] *Rinaldi, A. (2008). Yaws: a second (and maybe last?) chance for eradication. PLoS Neglected Tropical Diseases (www.plosntds.org), 2(8):e275.*
[2] *Control of endemic treponematoses (WHA31.58). Geneva, World Health Organization, 1978 (http://www.who.int/neglected_diseases/mediacentre/WHA_31.58_Eng.pdf)*
[3] *World Health Organization. (2008). Meeting of the International Task Force for Disease Eradication-11 October 2007. Wkly Epidemiol Rec, 83:77-81.*
[4] *World Health Organization. (2012). Eradication of yaws-the Morges Strategy. Wkly Epidemiol Rec, 87:189-194.*
[5] *Accelerating work to overcome the global impact of neglected tropical diseases: a roadmap for implementation—Executive Summary. Geneva, World Health Organization, 2012 (WHO/HTM/NTD/2012.1).*

experienced village volunteers from mass campaigns to combat onchocerciasis and eradicate dracunculiasis in parts of Africa. Existence of a simple curative treatment that is effective within days theoretically should make yaws eradication a rapid success. Unfavorable factors include the continued inability of serological tests to distinguish between yaws and venereal syphilis infections. Sophisticated genomic analysis using polymerase chain reaction (PCR) has demonstrated molecular differences between yaws and syphilis.[6] The apparent inadequacy of information to convincingly discount the existence of an animal reservoir of yaws in baboons, chimpanzees and/or gorillas[1] was also noted, and deserves more attention.

Table 1: Previous* and Current ** Yaws Status Worldwide

	Cases reported to WHO**	National program and/or assessment**
AFRICA		
Benin	N/D	Yes
Cameroon	789	Yes
CAR	243	Yes
Congo	167	Yes
Côte d'Ivoire	3,704	Yes
DRC	383	No
Ethiopia	?	No
Equatorial Guinea	?	No
Gabon	?	No
Ghana	20,525	Yes
Guinea	?	No
Liberia	?	No
Nigeria	?	No
Sierra Leone	?	No
Somalia	?	No
South Sudan	?	No
Togo	15	Yes
Uganda	?	No
AMERICAS		
Brazil	?	No
Colombia	?	No
Dominica	?	No
Ecuador	Eliminated (1993)?	No
Guyana	?	No
Haiti	?	No
Peru	?	No

[6] *Pillay, A., et. al. (2011). Laboratory-confirmed case of yaws in a 10-year-old boy from the Republic of the Congo. J Clin Microbiol. 49(11):4013-5.*

St. Lucia	?	No
St. Vincent	?	No
Surinam	?	No
ASIA/PACIFIC ISLANDS		
Cambodia	?	No
India	Eliminated (2003)	Yes
Indonesia	5,319	Yes
Papua New Guinea	28,989	Yes
Solomon Islands	20,635	Yes
Sri Lanka	?	No
Timor Leste	N/D	No
Vanuatu	1,574	Yes

**List of countries that reported cases previously (~ 1975-2000)*
***Status as of 2008-2012 (source: World Health Organization. (2012). Eradication of yaws-the Morges Strategy. Wkly Epidemiol Rec, 87:189-194.)*
N/D = known endemic 2008-2012; no quantitative data
? = current status unknown

Elimination of Malaria and Lymphatic Filariasis on Hispaniola

Hispaniola is the only Caribbean island where malaria persists, and it also contains over 90% of the lymphatic filariasis remaining in the Americas. After the ITFDE first recommended elimination of the two diseases from the Dominican Republic and Haiti in 2006, The Carter Center funded an 18 month long demonstration project in October 2008 to foster bi-national cooperation in controlling malaria in two adjacent communities on the border between the two countries (Dajabon, D.R. and Ouanaminthe, Haiti). A year later, both governments announced a jointly prepared US$194 million bi-national plan to eliminate malaria by 2020, and Haiti announced a US$49.4 million plan to eliminate lymphatic filariasis by 2020. The Dominican Republic expected to eliminate lymphatic filariasis in 2010. A single outbreak of malaria in 2004 cost the Dominican Republic an estimated US$200 million in lost tourism revenues.

Progress has resumed following a temporary lull due to the earthquake in Haiti in 2010, with the fight against lymphatic filariasis advancing more rapidly than that against malaria. Haiti, which provided annual mass drug administration (MDA) for lymphatic filariasis to about 66% of its targeted communes in 2009, launched MDA in Port-au-Prince for the first time in October 2011, and effectively extended MDA for lymphatic filariasis to its entire population at risk in 2012. Immuno-Chromatographic Tests (ICT) for circulating antigens conducted at six sentinel sites in Haiti have apparently shown significant reductions in lymphatic filariasis prevalence rates after 2-5 years of MDA, compared to levels before MDA. Haiti's main external partners in combating lymphatic filariasis are the United States Agency for International Development (support provided through RTI and IMA World Health), the Bill & Melinda Gates Foundation (support provided through the University of Notre Dame), the Centers for Disease Control and Prevention (support provided to Ministry of Public Health and Population), the InterAmerican Development Bank, AbbVie, Cargill, Inc., and an anonymous private family foundation. The Dominican Republic has interrupted transmission of lymphatic filariasis in two of its last three endemic foci, and will begin MDA in the final East focus in March/April 2013 with support provided by the Pan American Health Organization/WHO.

The Dominican Republic reduced its total number of reported cases of malaria by 35% between 2010 and 2011, from 2,482 cases to 1,616 cases. Haiti reduced its reported cases of malaria by 13%, from 84,153 to 72,875 over the same period. Haiti distributed 3.4 million long-lasting insecticidal nets in 2012 with funding from the Global Fund for AIDS/HIV, Tuberculosis, and Malaria. Both national programs have some funding for malaria from the Global Fund through 2014, but not enough to do all they need to do to achieve their goal. The two countries continue to cooperate in combatting malaria and sharing experiences, having convened three bi-national quarterly meetings in 2012 so far, with support provided by The Carter Center.

Conclusions and Recommendations

1. WHO's recent efforts to promote the eradication of yaws are commendable, although the ITFDE emphasizes that more aggressive action than is now evident will be required in order to accomplish this by 2017. WHO has now embraced yaws and dracunculiasis (Guinea worm disease) as the only two diseases targeted for eradication on its official list of 17 Neglected Tropical Diseases (NTDs). Both could be "quick wins" if successful. However, being targeted for eradication automatically demands a greater urgency than a control program, as well as sufficient funding and political support. We believe the distinction that yaws and dracunculiasis are targeted for eradication should be acknowledged explicitly in the expected resolution on NTDs to be considered at the World Health Assembly (WHA) in May 2013. We also recommend a separate resolution as soon as possible in which the full WHA endorses the new eradication campaign against yaws officially, since the existing resolution on yaws (WHA31.58) from 1978 only called for control of the disease.
2. The current geographic extent of yaws needs to be ascertained quickly, given the vast unknowns about where the disease still occurs. This information is critical for estimating the costs of the eradication campaign and for knowing which highly endemic areas need to begin their programs earliest. WHO should urge appropriate countries to make yaws an officially reportable disease immediately, and the Pan American Health Organization (PAHO) should add yaws to its list of 10 NTDs now slated for elimination in the Americas. WHO and PAHO should assess claims that some other countries such as Ecuador have eliminated the disease already.
3. WHO should prepare provisional estimates as soon as possible of how much yaws eradication is expected to cost, subject to adjustment with additional information, and seek funds to help appropriate countries implement their national programs. It would also be useful to evaluate the impact of control measures on reduction of the burden of disease.
4. The revised strategy for yaws eradication should stress that health education and community mobilization are also important, as are the key intervention (mass drug administration), and surveillance. Experience with village volunteers and their supervisors from African programs to eradicate dracunculiasis and control onchocerciasis may be helpful in this.
5. Programs in appropriate countries should investigate the possible impact on yaws of MDA with azithromycin in trachoma control programs and map the local distribution of yaws and trachoma to help plan interventions against both diseases. The difference in recommended dosage of azithromycin for the two diseases (20 mg/kg for trachoma vs. 30 mg/kg for yaws) is a topic that should be researched.
6. Other research needs are to document the burden of yaws, to monitor both treponemes that cause venereal syphilis and yaws for resistance to azithromycin, and to confirm whether evidence of yaws in non-human primates is epidemiologically significant for human infection or not.
7. WHO should seek to obtain a donation of azithromycin for yaws eradication.

8. Haiti and the Dominican Republic have made some progress toward eliminating lymphatic filariasis over the past few years, but less apparent progress towards eliminating malaria. Health workers in both countries are sharing technical protocols, conducting joint interventions at their international border, and sustaining bi-lateral collaboration on malaria.
9. In order to eliminate malaria and lymphatic filariasis by 2020, the programs in Haiti and the Dominican Republic need adequate resources available for the entire period, beginning immediately. Two of the ten years of the previously announced plans have passed already.
10. The ministries of health of the Dominican Republic and Haiti should prepare combined maps and graphs illustrating the current extent of malaria and lymphatic filariasis for the entire island and publish evidence of the significant progress that has been made so far.