Report of a WHO informal meeting on the development of a conceptual framework for Tungiasis control

Virtual meeting, 11–13 January 2021

World Health Organization

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Abbreviations and acronyms

DLQI	dermatological life quality index
Il-1β	interleukin-1 beta
IL-4	interleukin-4
KMnO4	potassium permanganate
NTD	neglected tropical disease
PAHO	Pan American Health Organization
RCT	randomized controlled trial
SSAT	severity score for acute tungiasis
SSCT	severity score for chronic tungiasis
TNF-α	tumor necrosis factor alpha
WASH	water, sanitation and hygiene
WHO	World Health Organization

Executive summary

As a first step towards developing a conceptual framework for the control of tungiasis, the WHO Department of Control of Neglected Tropical Diseases and the PAHO Regional Program of Neglected Infectious Diseases convened an informal virtual meeting of experts in tungiasis on 11–13 January 2021. Several aspects of the disease and its control were discussed and a number of recommendations were made by consensus. The agenda is attached as Annex 1 and the participants are listed in Annex 2.

It was established that the current situation in respect to mapping, surveillance, prevention and treatment of tungiasis is desperate compared to that for other diseases. In most countries, data on tungiasis are lacking and underreporting of cases is a major challenge. Currently it is impossible to deduce the prevalence of tungiasis from health system records because affected individuals rarely seek treatment from health facilities due to stigma, lack of access to health facilities and non-availability of standard treatment for the disease. In addition, national tungiasis surveillance systems are lacking in most countries. A single modelling approach has been recently undertaken to estimate the suitability of countries and regions for tungiasis transmission. However, this model was based on very limited data which were collected from confined locations at widely spaced time-points. Hence, the prediction map lacks accuracy. There is an urgent need to collect sufficient empirical data in all settings endemic for the disease in order to improve mathematical modelling.

Data on risk factors for tungiasis are limited, and risk factors such as the presence of animal reservoirs may vary among settings. Many of the risk factors with a potentially high population attributable fraction are intricately associated with severe poverty as well, hence the difficulty for affected communities to eliminate the disease at an individual level. The challenges for prevention relate also to the epidemiological characteristics of the disease and the biology of the parasite. There is a general lack of knowledge on the developmental biology and ecology of the off-host stages of Tunga penetrans.

Currently, there is no safe and effective treatment available in endemic areas, hence, due to desperation, affected individuals resort to traditional treatments which may cause more harm than good. Use of non-sterile sharp objects intensifies the inflammation and increases the risk of bacterial superinfection. It is also common in endemic communities to share sharp objects such as safety pins, which exposes them to transmission of viral pathogens including HIV and hepatitis B and C viruses. Studies to find suitable a treatment for tungiasis have been unsuccessful except for those on dimeticone oils. The test agents have shown either no or limited effect on embedded sand fleas or have had serious side-effects. However, a mixture of two dimethicones used to treat head lice[1] has shown a high efficacy in two randomized trials. It has been used in Brazil and Colombia to treat tungiasis with good results in small areas. The product is effective and safe, and all efforts should therefore be made to register and distribute it as the best treatment candidate for tungiasis to date.

Tungiasis is a dynamic disease that is affected by diverse factors including the environment, ecology, climatic conditions, social determinants and related factors due to poverty such as access to sanitation