



TREATMENT

Treating neglected tropical diseases



Adrian Hopkins

Director: Mectizan Donation Program, Georgia, USA. www.mectizan.org

The name neglected tropical diseases (NTDs) covers a range of diseases that cause disability, early death, and slowed physical and mental development. The first two in entries Table 1 are diseases that cause blindness. These diseases of neglected and impoverished peoples maintain a cycle of poverty and delayed development of the populations affected. The diseases themselves have been neglected in the push to control malaria, TB and AIDS.

The NTDs fall into two main groups. The first group, which we will deal with here, are those for which we have tools (easy community diagnosis or mapping, as well as the drugs or medicines). These NTDs can be treated – where safe to do so – in large populations of patients using a mass drug administration (MDA) strategy. Dosages are standardised, and a dose pole can be used to measure the height of a person in order to calculate the dose required.

The second group of diseases, which we will not discuss here, require either more difficult or costly diagnosis and the

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Lymphatic filariasis patients learn about the benefits of foot washing. SRI LANKA

people affected often need individualised treatment.

Treatment with drugs is important. Repeated annual or semi-annual drug distribution can lower the prevalence of a disease and, in some settings, eliminate transmission. However, in order to maintain these gains, more intensive

Table 1. Current treatment guidelines for the five neglected tropical diseases for which mass drug administration is possible

Disease	Drugs and Dosages	Threshold for implementation	Frequency of Intervention
Trachoma	Azithromycin 20 mg/kg, with a maximum dose of 1 g in adults. Use a dose pole to determine dose. Offer tetracycline eye ointment for children <6 months	<ul style="list-style-type: none"> • ≥10% to <30% TF (follicular trachoma) in of children aged 1–9 years: Treatment of total population in district for at least 3 years • >30% TF in children aged 1–9 years: treatment of total population for a minimum of 5 years • TF of 5–9% in children 1–9 yrs: targeted treatment based on sub-districts • TF <5%: S, F, E components only 	Annual. Must be part of an integrated SAFE strategy (Surgery, Antibiotics, Facial cleanliness, Environmental improvement)
Onchocerciasis	Ivermectin 150 µg/Kg using dose pole for everyone >5 years (or >90 cm), except the chronically ill and pregnant and lactating women during the first week after delivery	<p>For control: nodule prevalence ≥20% or skin microfilaria ≥40%</p> <p>For elimination: under discussion. APOC is using nodule prevalence ≥5%</p>	Annual or twice yearly. (Exceptionally quarterly)
Lymphatic filariasis	Albendazole 400 mg for children aged >2 years plus diethylcarbamazine (DEC) 6 mg/kg in countries where onchocerciasis is not co-endemic, or ivermectin 150 µg/Kg in countries where onchocerciasis is endemic	Prevalence of ≥1%	Annual. Treatment must be combined with limb care of patients with elephantiasis or hydrocoele surgery
Soil-transmitted helminths (STH) (Ascaris, hookworms and Trichuris)	Albendazole 400 mg for children above 2 years, or mebendazole 500 mg	<p>Prevalence ≥50%: treat school-aged children, and adults at high risk, twice yearly</p> <p>Prevalence >20% to <50%: treat school-aged children once per year.</p> <p>Prevalence <20%: individualised treatment. Pre-school children and women of child-bearing age should also be treated (as part of maternal and child health programmes)</p>	Annual or twice yearly depending on prevalence. Water and sanitation strategies must be implemented
Schistosomiasis	Praziquantel 40 mg/kg (using dose pole) for children over 4 years (or 94 cms)	<p>Prevalence ≥50%: treat all school-aged children. Adults at high risk may also be treated</p> <p>Prevalence >10% to <50%: treat children once every two years</p> <p>Prevalence <10%: individualised treatment</p>	Annual treatment Treatment holidays can be given if prevalence drops. Water and sanitation strategies must be implemented

Adapted from: 'Preventive Chemotherapy in Human Helminthiasis.' This book should be consulted before commencing any MDA, however, the situation is continually changing as new research leads to new strategies.



Why water, sanitation and hygiene matter

efforts need to be made to provide safe water, sanitation, and hygiene. Specific measures are also required in trachoma and lymphatic filariasis (LF) to address the symptoms and consequences of these diseases, e.g. trichiasis surgery to correct in-turned eyelashes and prevent corneal scarring in people affected by trachoma and hydrocoele surgery for male genital deformity due to LF. The existence of an MDA programme is not a reason to ignore these other measures.

Many of the drugs used in MDA can be given together, at one time, so making distribution much more efficient. In Africa, ivermectin should be given with albendazole to eliminate LF. Both these drugs have an effect on soil-transmitted helminths (STHs), and ivermectin also kills ectoparasites such as scabies. Where populations are treated for LF, onchocerciasis and STHs will be treated at the same time. Praziquantel can also be given with ivermectin and albendazole. At the present time, research is ongoing into co-administration of azithromycin with ivermectin and albendazole, but for the moment there should be an interval of 2 weeks between the administration of azithromycin and the other drugs.

Precautions

Drugs used in MDA have certain adverse effects and there are several precautions to be taken before using them. Where there is a high worm load in onchocerciasis, there will be symptoms of pain, fever, itching and swelling after treatment, depending on the number of parasites present. These symptoms last for up to 2 days and need symptomatic treatment. Second and subsequent rounds of treatments have far fewer side effects and after three annual treatments there are usually no further adverse effects.

In forested areas of Africa where the parasite *Loa loa* (tropical eye worm) is present, ivermectin should only be given following strict guidelines, otherwise the effects can be severe and sometimes life threatening. Praziquantel should not be given on an empty stomach and will provoke nausea and vomiting in some children, particularly if they have not eaten. Azithromycin also can cause some minor stomach problems. Apart from the *Loa loa* situation, the adverse effects are minor and are not contra-indications to treatment; however, in people who suffer with many different parasites, drugs should not all be given together at the first administration.

Reference

- 1 http://whqlibdoc.who.int/publications/2006/9241547103_eng.pdf

Georgia B Savage, Alison K Macintyre, James H Wicken

WaterAid Australia, Melbourne, Australia.

Yael Velleman

WaterAid, London, United Kingdom.

Virginia Sarah

Fred Hollows Foundation, London, United Kingdom.

Water, sanitation and hygiene (WASH) are crucial but often underplayed parts of the prevention and control of a number of neglected tropical diseases (NTDs).

Access to safe water and adequate sanitation, together with good hygiene practices, can reduce the transmission of some NTDs, for example trachoma and intestinal worms (page 29). Trachoma is transmitted by flies, fomites (e.g. skin, hair, clothing, or bedding) and direct contact. Preventing transmission of trachoma can be achieved through access to clean water, appropriate hygiene practices that promote face washing, and access to proper sanitation for the disposal of human waste. Intestinal worms, which affect nearly 900 million people worldwide, is most prevalent in communities where people have inadequate access to toilets and/or hand washing facilities. Worms are transmitted through faecal-oral contact or enter through the skin of the feet in areas of open defecation. Access to safe water and adequate sanitation will help communities affected by both trachoma and soil-transmitted helminths (STH) to escape from the perpetual cycle of infection and reinfection.

Some global¹ and disease specific² strategies have integrated WASH interventions into their programming guidelines. In the case of trachoma, for

example, the inclusion of the 'F' (face washing) and 'E' (environmental improvement) in the SAFE strategy formally acknowledges the strategic importance of incorporating WASH interventions for disease elimination.

Some practical opportunities for integration

The acknowledgment of the importance of WASH for comprehensive NTD control has not always translated into effective incorporation of WASH interventions in NTD control programmes. Reasons for insufficient integration include the lack of awareness and information sharing between the WASH and NTD sectors, and a short-term view of disease control which fails to recognise, and invest in, the necessary long-term comprehensive activities required for sustainable WASH implementation.

People involved in WASH and NTD programmes should work closely together, in a coordinated manner. This might involve forming local and global partnerships, sharing information and research about disease impact, combining efforts when advocating for resources and political commitment to action, and planning sustainable programmes that meet goals for both the elimination of NTDs and the provision of adequate water, sanitation, and hygiene.

Unless WASH issues are adequately addressed, neglected tropical diseases will not be eliminated in the long term. Control may be achieved by the year 2020, but to prevent continued transmission and re-infection, sustainable WASH interventions are a necessity.



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Adapted from Savage G, Velleman Y, Wicken J, NTD NGO Network. WASH: The silent weapon against NTDs: working together to achieve prevention, control and elimination. Australia: WaterAid Australia; 2012.

References

- 1 'Crompton DWT (Ed). Accelerating work to overcome the global impact of neglected tropical diseases: A roadmap for implementation. Geneva, Switzerland: World Health Organization; 2012 (p.9).
- 2 Solomon AW, Zondervan M, Kuper H, Buchan JC, Mabey D, Foster A. Trachoma control: a guide for programme managers. Geneva: World Health Organization; 2006.

Access to water can help to combat NTDs.

