

# The Targeted Neglected Tropical Diseases (NTDs)

**Neglected Tropical Diseases (NTDs)** are a group of diseases that cause substantial illness for more than one billion people globally. Affecting the world's poorest people, NTDs impair physical and cognitive development, contribute to mother and child illness and death, and limit productivity.



Patient receiving treatment for LF. Photo Credit: The Carter Center/Emily Staub, Jos, Nigeria 2004

## LYMPHATIC FILARIASIS (LF, ELEPHANTIASIS)

Lymphatic filariasis (LF) is caused by a parasitic worm that is transmitted by mosquitoes. Over a billion people are at risk in 81 countries; over 120 million are already infected with LF. This disease can lead to permanent disability from swollen limbs and breasts (lymphedema), genital damage (hydrocele), or swollen limbs with thickened, hardened skin (elephantiasis). Control of LF consists of anti-parasitic drugs given annually for at least 5 years, which can break the cycle of transmission. Medication is either Mectizan™ (donated by Merck & Co., Inc.) or diethylcarbamazine (DEC, donated by Eisai) plus albendazole (donated by GlaxoSmithKline). LF is targeted for elimination by 2020.

## ONCHOCERCIASIS (ONCHO, RIVER BLINDNESS)

Onchocerciasis is caused by parasitic worms transmitted from person-to-person by blackflies. One hundred twenty million people in 37 countries are at risk, with almost 37 million currently infected. Infection causes intense itching, disfiguring skin lesions (called leopard or lizard skin), and eye disease that can result in blindness. A single, annual dose of Mectizan™ (donated by Merck & Co., Inc.) prevents infection and arrests eye and skin disease. The medication can interrupt transmission if given twice per year. 2017 is the current target date for elimination of onchocerciasis in the Americas.



Child leading man blinded by onchocerciasis. Photo Credit: WHO/TDR/Crump



Urine and stool tested for schistosomiasis. Photo Credit: CDC/Sonia Pelletreau

## SCHISTOSOMIASIS (SCHISTO, BILHARZIA, SNAIL FEVER)

Schistosomiasis is caused by blood flukes (worms) that use freshwater snails as an intermediate host. Seven hundred million people are at risk in 74 countries, and more than 240 million already have schistosomiasis. The disease can progress from early signs such as blood in the urine or stool and anemia and impaired growth and development in children, to life-threatening conditions including bladder cancer, kidney malfunction, and liver cirrhosis. Control can be achieved by treating infected people with praziquantel (partially donated by Merck KGaA) and by providing proper sanitation, including adequate disposal of human feces and urine.

# The Targeted Neglected Tropical Diseases (NTDs)



Man holding intestinal worms. Photo credit: CDC

## SOIL TRANSMITTED HELMINTHS (STH)

STH include ascariasis (roundworm), hookworm, and trichuriasis (whipworm). They are intestinal infections that are acquired through contact with soil contaminated with human feces. More than 4 billion people are at risk throughout the world, with over 1 billion already infected. STH cause anemia, vitamin A deficiency, stunting, malnutrition, impaired development, and intestinal obstruction. Control can be achieved by regular, twice-yearly treatment with albendazole or mebendazole (Vermox®, donated by Johnson & Johnson), which kills parasites and diminishes these health risks. Additionally, improved water supplies and proper sanitation may help protect people from STH infection.

## TRACHOMA

Trachoma is the world's leading cause of preventable blindness. The spread of trachoma is strongly related to overcrowding, lack of water for washing faces and hands, and inadequate disposal of human and animal feces. Five hundred forty million people are at risk in 57 countries, and 40 million are in need of treatment. Untreated infection causes scarring of the upper eyelid that can lead to blindness. Trachoma can now be controlled with a strategy called SAFE (**S**urgery, **A**ntibiotics, **F**ace Washing, **E**nvironmental change) that combines treatment with the antibiotic Zithromax® (donated by Pfizer) with surgery (if necessary), face washing, and environmental change such as available clean water. Trachoma is targeted for elimination by 2020.



Man blinded by trachoma. Photo credit: CDC/Sonia Pelletreau



A village volunteer inspects the length of a Guinea worm emerging from a man's calf. Photo Credit: The Carter Center

## GUINEA WORM DISEASE (GWD, DRACUNCULIASIS)

Guinea worm disease (GWD) is spread by drinking water containing copepods (water fleas) that have ingested Guinea worm larvae. Once inside the human host, the larvae mature, mate, and emerge from blisters in the skin. The infection has dropped from over 3 million cases per year in the 1980s to less than 2,000 cases in 2010 (including 10 cases from an outbreak in Chad). Transmission has been interrupted in all but four countries: Southern Sudan, Mali, Ethiopia, and Ghana; Sudan accounts for more than 94% of remaining cases. Successful simple interventions include preventing people with emerging worms from entering water, cloth or pipe filters for drinking water, and ABATE® application, a chemical that can be applied to drinking water. GWD is the next disease slated for eradication.