

Neglected tropic diseases: a reflexion in times of pandemic about how to intervene under the optics of one health*

Enfermedades del trópico desatendidas: una reflexión en tiempos de pandemia de cómo intervenir bajo la óptica de una salud

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On 31 May 2021, the Health Assembly, by its decision WHA74, recognized 30 January as World Day for Neglected Tropical Diseases (NTDs) as a day dedicated to the better diffusion of the devastating impact of these diseases on the poorest populations in the world. NTDs are a heterogeneous group of 20 diseases, prevalent mainly in tropical areas, affecting more than one billion people from impoverished communities¹. NTDs are called “neglected” because they have been erased from more developed societies, while they have persisted in the poorest and most marginalized. If left untreated, they can cause illness, suffering, disability and stigma, preventing children from attending school and hindering adult productivity².

The World Health Organization (WHO) recognizes 20 major NTDs, of which 19 are infectious diseases: American trypanosomiasis or Chagas disease, Buruli ulcer, dengue and chikungunya, dracunculiasis or guinea worm disease, echinococcosis, food-borne trematodes (clonorchiasis, fascioliasis, opisthorchis and paragonimiasis), human African trypanosomiasis -sleeping sickness-, leishmaniasis, leprosy or Hansen’s disease, lymphatic filariasis -elephantiasis-, mycetoma, chromoblastomycosis and other profound mycoses, onchocerciasis -river blindness-, rabies, scabies and other ectoparasites, schistosomiasis -snail fever-, soil-transmitted helminthiasis (ascariasis, hookworm and trichuriasis), taeniasis/cysticercosis, trachoma and yaws. Only one non-infectious disease, snakebite poisoning, is part of the list because of its burden and impact³.

An important concept to understand and intervene these diseases is the human-animal-environment interface defined as the continuous contact and interactions between people, animals and their products, and the environment. The human-animal-environment interface is a unique health-defining characteristic and represents the medium that enables transmission between human and emerging animal pathogens⁴. Policymakers and funding agencies have begun to recognize the economic and public health importance of NTDs, which has led to increased support for the use of existing tools (such as mass drug delivery to combat several NTDs simultaneously) and the development of more effective integrated programs to control, and in some cases eradicate, these neglected diseases of poverty⁵.

The strategy to intervene in neglected zoonotic diseases is under the perspective of One Health, which is focused on 5 steps. **Step 1**, recognizing that a multisectoral One Health approach can optimize resources and improve human, animal health and environmental health outcomes. **Step 2**, infrastructure mapping can help visualize informal and formal communication mechanisms, and collaboration and coordination occurring within and across sectors in the form of a network map. **Step 3**, strategic plans are usually long-term prospective documents (5 to 10 years) that must be drafted and approved with the same participation of all relevant sectors, and include a shared vision with achievable goals and objectives.

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Step 4, design a strategy to obtain missing resources, such as launching defense plans, requesting resources from private industry, or seeking out non-traditional partners, including the military, universities, or ministries that are not directly associated with health. **Step 5**, ideally, monitoring and evaluation should be established during the planning phase in order to track results of implementation and systematically assess programmed successes, challenges, scope and scale⁶. We face urgent challenges for the next decade: 1) elevating health in the climate debate, 2) providing health in conflict and crisis situations, 3) making health care fairer, 4) expanding access to medicines, 5) stopping infectious diseases, 6) preparing for epidemics, 7) protecting people from dangerous products, 8) investing in people who defend our health, 9) Keeping teens safe, 10) earning the public's trust, 11) harnessing new technologies, 12) protecting the medicines that protect us, and 13) keeping medical care clean. These challenges must have an intervention strategy addressed to neglected tropical diseases (NTD) that are associated in 12,6 millions people to unhealthy living environments, 6,5 millions associated with air pollution, 2,2 thousand millions of people that do not have access to safe drinking water, 4,2 thousands millions of people that do not have access to managed sanitation services and 96 millions of cases and 700 thousands deaths associated with the transmission of vector-borne diseases representing 17% of all infectious diseases⁷. We emphasize that the approach to face these NTDs is One Health approach and its four pillars: Communication, Coordination, Collaboration and Training. One Health is an integrated and unifying approach that aims to balance and sustainably optimize the health of people, animals and ecosystems. It recognizes that the health of humans, domestic and wild animals, plants, and the environment in general (including ecosystems) are closely linked and interdependent. The approach mobilizes multiple sectors, disciplines and communities at different levels of society to work together to promote well-being and address threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food⁸.

The development of new treatments and the optimization of those established for NTDs is also an obvious need. We have found as advances in the treatment of a NTDs in the Intravenous Treatment for Scrub Typhus (INTREST) clinical trial, researchers found that treating patients with severe scrub typhus with a combination of azithromycin and doxycycline was superior to the use of azithromycin or doxycycline alone with respect to the main composite outcome of death at day 28, persistent complications on day 7, or persistent fever on day 5. In this trial, the life-threatening nature of scrub typhus was evident with a mortality of 12.1% despite proper treatment. Although mortality was similar in combination therapy and monotherapy groups, the number of complications reduced on day 7 in combination therapy⁹.

What is the current trend of NTDs? The incidence rate and number of incident cases of NTDs increased between 1990 and 2019 but the mortality rate and alerts decreased¹⁰. In

special, for human rabies an intervention is necessary, looking to strengthen the systems of animal and human health, focused on education, vaccination, and evaluate seroconversion in animals, with a good intervention from primary care centers, and application of a good surveillance protocol. Finally, the NTDs were among the public health programs one of the most severely affected by the pandemic. Many countries delayed or even stopped community-based interventions such as chemoprophylaxis or active case-finding. We have to continue the struggle and doing an interdisciplinary and multiinstitutional management of the prevention, diagnosis and treatment of NTDs.

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