

Vector control gets new impetus and direction

The WHO's plans to bolster global vector control measures blend audacious goals with a sensible approach that could save lives and stimulate economic growth and development in many of the world's poorest nations.

Over recent decades there have been impressive gains in tackling vector-borne diseases, including malaria, onchocerciasis, lymphatic filariasis and Chagas disease. For malaria in particular, the combination of insecticide-treated mosquito nets, indoor residual spraying and artemisinin-based combination therapy averted a predicted 663 million cases in sub-Saharan Africa between 2000 and 2015. Yet more than 700,000 lives are still lost each year to vector-borne diseases, which account for 17% of the estimated global burden of communicable disease. Faced with the spread of dengue and chikungunya viruses, recent outbreaks of Zika virus and yellow fever virus, the appearance of insecticide-resistant vectors and increasing urbanization and movement of people and goods, there is a real risk that much of the ground gained in controlling vector-borne diseases may be lost. In an attempt to reinvigorate national and regional approaches, the World Health Organization (WHO) recently released the draft Global Vector Control Response 2017–2030 (GVCR)¹, which provides strategic guidance to countries and development partners in strengthening their vector control measures.

Resulting from a consultation process with health ministries, researchers and public health experts, and jointly led by several WHO programmes, the GVCR sets out plans to assess how best to make use of existing vector control mechanisms and identify where improvements might be needed. Rather than simply tearing up current measures and starting from scratch, the GVCR aims to enhance them in key areas, principally improving human and infrastructural capacity where needed, and increasing basic and applied research, for instance through further developing *Wolbachia*-based biocontrol and gene drive approaches for insect population reduction. In particular, the consultation identified a lack of trained public health entomologists as a key limitation in realizing the full potential of vector control measures.

The GVCR is by no means the first attempt to coordinate vector control around the world. In 2004, the WHO released a global strategic framework for integrated vector management² that shared many of the themes of the current plan, but was hampered by 'insufficient

political buy-in' that the WHO put down to limited human capacity for advocacy, planning and implementation, as well as fragmented global and national systems for supporting a multi-disease approach. So why will the current plan succeed where previous efforts fell short? Working closely with national and international agencies to take an inventory of current capacities at the local and regional level, the GVCR will identify gaps where additional resources (human or otherwise) are needed and develop clear budgeted plans to fill them. Success here will in large part hinge on helping these often poor countries to recognize the economic and public health value in investing in vector control programmes. Money invested in vector control reaps among the highest returns across all types of public health intervention, as the decreased burden of mortality and morbidity associated with effective vector control also brings indirect benefits including greater economic productivity and growth. Indeed, aside from saving an estimated 10 million lives, the WHO's Global Technical Strategy for Malaria 2016–2030 (ref. 3) is anticipated to generate US\$ 4 trillion of additional economic output, which represents a 40:1 global return on investment, or a whopping 60:1 for sub-Saharan Africa. Furthermore, the calculations in the GVCR add up to needing a maximum additional investment between 2017 and 2022 of US\$ 330 million (not accounting for vector control commodities or the implementation of additional research and development), which is readily achievable if the burden is shared across the nations that fund and benefit from the WHO.

Driving the GVCR is a set of stepwise targets that would culminate in a 75% reduction in global mortality from vector-borne diseases by 2030, coincident with a 60% reduction in incidence. These are extremely ambitious goals that will be challenging to realize in just 12 ½ years. Then again, by comparison with the overlapping UN Sustainable Development Goals (SDGs)⁴, in particular Goal 3, which targets an end to the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases in the same time-frame, the GVCR goals have a somewhat greater sense of realism about them.

At the individual level, setting goals can lead to clear improvements in performance, and there is a direct relationship between the difficulty of a goal and the level of performance devoted to achieving it. However, this has limits and if a goal is set too high, motivation and dedication to achieving the target can suffer. Goals should therefore be challenging yet realistic. How this translates to a much larger organizational level is complicated, especially in the case of the SDGs and GVCR, when the goal-setting organization is distinct from the partners tasked with meeting them. In addition to using difficult yet achievable goals, it can also be beneficial for an organization to have so-called big, hairy audacious goals (BHAGs; pronounced bee-hag)⁵ as a mechanism to stimulate progress. BHAGs are akin to grand-challenges/moonshots and are the type of target that provides an organization with a 10–30-year mission that its members can engage with and take inspiration from while pursuing a series of realistic stepwise targets. The term originated from an analysis of the business sector that found greater evidence for a clear and compelling over-arching goal (to be #1 in their market, for instance) in a majority of the companies sampled that were deemed to be particularly visionary in their field as compared to their nearest competitor.

The UN target to effectively end many of the major infectious disease epidemics by 2030 is a perfect example of a goal that is indeed very big, potentially hairy and particularly audacious in its intent. The latest goals for vector control provided by the GVCR are only marginally less ambitious and certainly still fall in BHAG territory. However, both sets of goals can serve to stimulate progress and in the latter case, the specific plans laid out in the GVCR provide not only an audacious target but a route map for how that progress can be achieved. □

References

1. *Global Vector Control Response 2017–2030* (WHO, 2017); <http://go.nature.com/2r27LMp>
2. *Global Strategic Framework for Integrated Vector Management* (WHO, 2004); <http://go.nature.com/2r8VGVx>
3. *Global Technical Strategy for Malaria 2016–2030* (WHO, 2015); <http://go.nature.com/2t19Ftn>
4. *Sustainable Development Goals* (United Nations, 2016); <http://go.nature.com/2kW1xsY>
5. Collins, J. & Porras, J. *Built to Last: Successful Habits of Visionary Companies* (Harper, 1994).