**Lessons from the field: Integrated programmes for neglected tropical diseases**

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Programmes for the control of Neglected Tropical Diseases (NTDs) have achieved tremendous progress in the last decade with substantial scale-up of interventions worldwide. However, challenges remain to reach the ambitious targets of control, elimination and eradication set by the World Health Organization. The first decade of progress against NTDs was characterised by predominantly vertical programmes, especially for those NTDs targeted for mass drug administration (MDA). These vertical programmes drove mapping, implementation and surveillance for individual NTDs. In turn, public health infrastructure reflected these vertical programmes, from diseases-specific Medical Officers at WHO headquarters, to in-country disease-specific programme leads and, frequently, dedicated single programme supply chains supported by large scale pharmaceutical donations.

Most of these vertical programmes have been highly successful, but there has been acknowledgement of opportunities missed. First, many communities are co-endemic for a number of NTDs, and infrastructure for control of one NTD could be leveraged across multiple diseases with minimal additional cost. Second, vertical programmes may contribute less to broader health system strengthening, a missed opportunity within the context of Universal Health Coverage. The new WHO Roadmap explicitly recognises the need for a new approach to NTD control in the coming decade, and the call to ‘intensify cross-cutting approaches’ represents one of the three major pillars of the new Roadmap [1].

How can programmes be integrated across multiple NTDs, within the broader public health system and outside of the health sector? And how can these integrated programmes best be delivered? The rationale and experience of integrated mapping for NTDs is discussed in a separate article. In this article we consider integration to be the delivery of multiple programmatic activities at the same time, and not merely the co-ordinated planning of activities. We focus instead on other major areas where integration has been successful, including MDA, programmatic co-ordination and skin NTDs, drawing on field experience in multiple countries including Vanuatu, Benin and Latin America.

Integrated MDA has been conducted in a number of countries, allowing the simultaneous targeting of multiple NTDs through a single combined intervention. A number of countries have gone further and have explicitly combined distinct interventions into a single delivery system. For example, the Nigerian NTD programme has delivered integrated MDA combining ivermectin, albendazole and praziquantel as a single strategy targeting lmphatic filariasis, onchocerciasis, schistosomiasis and soil-transmitted helminthiasis [2]. By leveraging a single platform to target all disease simultaneously the programme was able to reduce the cost of delivery by 50% whilst maintaining high coverage. Integration can be of particular benefit in areas where the cost of delivery is high, such as the Pacific. In Fiji, the National Lymphatic Filariasis Programme adopted the WHO recommended combination of ivermectin, albendazole and diethylcarbamazine for MDA against lymphatic filariasis, an approach also potentially effective for treating soil-transmitted helminthiasis and scabies. In Vanuatu, the Ministry of Health integrated treatment with azithromycin, albendazole and benzyl-benzoate lotion to treat yaws, soil-transmitted helminthiasis and scabies, alongside screening for non-communicable diseases. This integrated package was able to achieve high treatment coverage and provide improved access to care especially in remote areas with lower access to health services. Successful delivery of these programmes has relied on co-ordination not only at the level of community drug delivery but across programme supply chains, programmatic management at the Ministry level and from funders. Future opportunities for integrated MDA, both between NTD programmes and with disease control efforts such as chemoprophylaxis or MDA for malaria control, should continue to be explored.

Some regions and countries have looked for opportunities for integration beyond the NTD portfolio. In Tanzania the Ministry of Health combined MDA for STH with delivery of vaccination programmes, an innovation that allowed them to increase programmatic coverage whilst reducing overall costs. The Vaccination Week in the Americas[3], implemented since 2003, is an example of a multinational coordinated effort implemented to reduce inequities in health. This initiative has provided a useful platform to integrate other health interventions, including deworming. This experience shows that coverages achieved by integrating different interventions -such as vaccination and deworming, were high for both.

Multiple NTDs affect the skin. There are increasing efforts to integrate public health control of skin NTDs [4]. This development recognises similarities in the approach to diagnosis of these conditions, shared impacts on stigma and disability, overlapping needs for delivering wound care, and for some an amenability to control with MDA. To date, these efforts have been particularly focused in West and Central Africa via integrated approaches to tackling Buruli ulcer, yaws and leprosy. Scaling up this approach is now an explicit aim of the new WHO roadmap[1].

An early adopter of this strategy has been the Benin NTD department, which has been taking steps to bring together these separate disease programmes into a single unified strategy delivering integrated training for community health workers and district level health staff. This approach has attracted the attention of new funders who have recognised the value to be gained from such cross-cutting strategies in particular in improving equity and access to care and, by focusing on all skin problems, reducing discrimination and stigmatization. Scale-up of this approach is achievable but there are challenges. First, the absence of specialist dermatologists in most low-income settings meaning there is a need for a considerable investment in building diagnostic capacity. Secondly, aside from notable exceptions including scabies, most skin-NTDs are uncommon and screening exercises may uncover a large burden of more frequent skin diseases, such as eczema and superficial fungal infections, that require treatment and therefore may present considerable additional costs for programmes [5]. Effective roll-out of the skin-NTD strategy, not just in West Africa but globally, will require programmes and their partners to develop novel approaches to deal with these issues.

What common lessons can we draw from the above examples? Firstly, efforts at integration predominantly reflect innovation on the part of countries, programmes and partners rather than specific guidance from WHO. Changing WHO guidance for some activities, such as integrated MDA, will likely require expensive, large scale trials but many countries may make pragmatic decisions where existing data are sufficient to support such approaches. Secondly, many countries have benefited from transferring knowledge and approaches developed in other areas, such as immunization or NCD programmes, to NTD programmes allowing them to accelerate program roll-out and reduce costs, for example through adaptation of microplanning or monitoring and surveillance tools across programmes. Thirdly, detailed planning and high-quality community engagement is required to make a success of cross-programme integration. It is vital to ensure appropriate overlap in the populations targeted by each intervention, that the activities can be practically conducted alongside each other and that communities are aware of the full range of health interventions being delivered. Development of appropriate training packages for integrated programmes is an important consideration as healthcare workers are asked to move away from traditional single disease approaches.

Finally, integration requires action beyond single disease priorities. Success requires us to find common interests between different programmes and to align strategies, targets populations, goals and resources. This may not always be as simple as it seems. For example, integration may result in some programme managers losing their positions which might create reluctance to integrate. Each partner in an integrated programme must perceive that integration will be a win-win approach providing an opportunity to improve programme performance and reduce inequity. A greater emphasis on country-ownership of programmes would allow NTD programmes to encourage funders to support broader, integrated platforms even when they fall outside funders strict purview and to provide funding to support the logistical and planning work required for countries to reshape their vertical programmes into integrated strategies.

The period covered by the first roadmap has delivered transformative change for NTD programmes and affected populations worldwide. Our challenge now is to ensure that integration of NTD programmes alongside the scale up of worldwide access to Universal Health Coverage agenda can achieve even greater progress for endemic communities in the next decade.

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