



Editorial

Towards zero leprosy: Dream or vision?

Leprosy is at a critical junction. For decades, much effort has gone into controlling the disease and reducing the disease impact. Targets have been set in the past, including the well-known ‘elimination as public health problem by the year 2000’¹. Since then, new targets and strategies have been formulated and implemented. There have been impressive achievements in many countries, including India, but the ultimate target that everyone longs for, the final disappearance of leprosy, has proven to be elusive. Recently, the World Health Organization (WHO) launched a new Global Leprosy (Hansen’s disease) Strategy 2021-2030, coined ‘Towards Zero Leprosy’¹. This phrasing indicates certain carefulness. The target is clear, but a final deadline is not given. It is basically aspirational; we want to move firmly towards ‘zero leprosy’. The question arises whether this is a realistic vision or only a dream?

There are many old challenges along the way of reaching zero leprosy. At the same time, there are also many new opportunities. Is it possible to tip the balance towards utilizing the opportunities effectively while overcoming the challenges? Moreover, what are crucial tipping points?

The classic challenge in leprosy is the deeply embedded stigma and discrimination of persons affected by leprosy and their families and communities, often causing mental suffering, delay in detection and treatment, chronic physical impairment and social exclusion. Many of us may remember the images of destitute people begging along the road, reaching out hands without fingers and showing dreadful plantar ulcers. Sadly, this is by no means a thing of the past, although less visible than it used to be. We have come a long way with effective medical treatment of the infection by multidrug therapy, better understanding and treatment of complications of leprosy and many

different interventions to increase knowledge of the disease in communities, decrease stigma, abolish discriminating laws and provide care for those affected by lasting physical, psychological and social difficulties.

Another important challenge of leprosy has been the unique properties of *Mycobacterium leprae* and its interaction with the host immune system. It was never possible to grow the bacterium in the culture in a laboratory, and its microbiological and immunological characteristics were therefore, difficult to establish. This has particularly hampered the development of effective vaccines and reliable diagnostic tests, and is a root cause of our ongoing leprosy situation. While we have been able to reduce the prevalence of leprosy with multidrug therapy, we have struggled to reduce the incidence of leprosy by interrupting transmission of *M. leprae* through preventive strategies. With the deciphering of the genome of *M. leprae* 20 years ago² and the rapidly evolving molecular biology technology, great strides have now been made in the development of diagnostic tools, preventive interventions such as vaccines and understanding the transmission of the bacterium through genotyping and molecular epidemiology. This is certainly a tipping point towards the goal of ‘zero leprosy’. However, not the only one!

A totally different development and potential tipping point was the introduction of the term ‘zero leprosy’, which has since been embraced by a wide variety of stakeholders in the field of leprosy and brought together in the Global Partnership for Zero Leprosy (<https://zeroleprosy.org/>). Simultaneously with the new Global Leprosy Strategy 2021-2030¹, the WHO also launched a new roadmap for neglected tropical diseases 2021-2030, in which leprosy features prominently as well³. The integration of leprosy in other neglected tropical diseases has increased both

visibility of and attention for leprosy. Zero leprosy is not just a catchy slogan. It stands for zero infection and disease, zero disability and zero stigma and discrimination. Thus, it goes beyond a mere biomedical perspective and represents an inclusive concept in which social and legal consequences of the disease are also addressed programmatically. Moreover, people and communities affected by leprosy are given a key role and thereby also ownership of the vision. Evidence, opportunities, ethics and the allure of zero leprosy have been discussed eloquently by Addiss⁴. In the WHO Global Leprosy Strategy 2021-2030, the concept of zero leprosy has been operationalized in four strategic pillars: (i) implement integrated, country-owned zero leprosy roadmaps in all endemic countries; (ii) scale-up of prevention alongside integrated active case detection; (iii) manage leprosy and its complications and prevent new disability; and (iv) combat stigma and ensure human rights are respected¹.

There is a saying that ‘the best is the enemy of the good’ and this appears true for the attainment of zero leprosy as well. Vaccine development for leprosy has been ongoing for years and proven very difficult⁵. There are some promising candidates in the pipeline, but these still need to be fully evaluated on safety and effectiveness. However, while waiting for these vaccines to become widely available, we should not neglect existing preventive options⁶. This includes the BCG vaccine against tuberculosis, which is known to protect against leprosy as well and should be promoted in leprosy-endemic areas where BCG coverage is not optimal. Another available option is post-exposure prophylaxis (PEP) of leprosy with single-dose rifampicin among contacts. This has been proven effective, safe, feasible and well accepted by both health staff and recipients⁷ and is recommended in the latest WHO guidelines for leprosy⁸. There are ongoing studies to improve prophylactic regimens and optimize its implementation, but delaying its roll-out is bound to lead to leprosy in many individuals that would otherwise have been prevented. The added value of a PEP programme is that it is accompanied by contact tracing and active case finding, which are also important interventions towards zero leprosy. In leprosy, everything is in slow motion, beginning with its long incubation period. Waiting for the ‘best’ above the ‘good’ that we already have in hand can easily delay our efforts towards zero leprosy by decades.

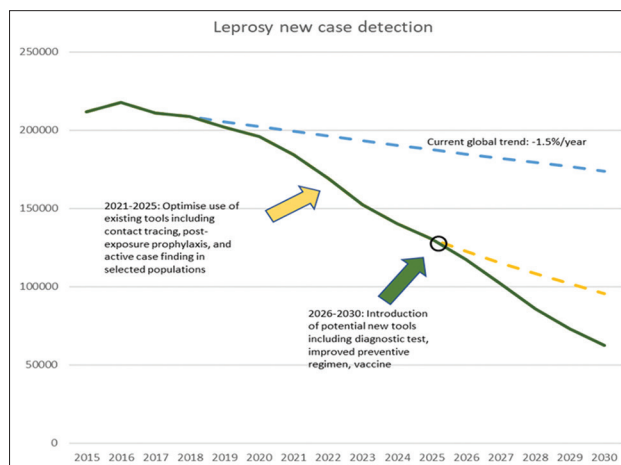


Figure. Prediction of the global new case detection of leprosy (in absolute numbers) up to the year 2030, and the impact of preventive tools and interventions on new case detection against the current global trend without additional interventions. *Source:* Ref 1, reproduced with permission.

The figure shows a prediction of the global new case detection of leprosy up to 2030 and the impact of preventive tools and interventions on new case detection against the current global trend without additional interventions. This figure is based on the notion that we start with optimizing the ‘good’ existing tools including contact tracing, PEP and active case finding in selected populations, replacing them in future with the ‘best’ new tools, including a diagnostic test for subclinical leprosy, improved PEP regimens and vaccines. There are several large studies ongoing to develop and refine these new tools as fast as possible and an ambitious agenda to support further research and development in leprosy⁹. The area in figure between the top line of the current trend and the bottom line of the enhanced trends represents the number of leprosy patients who can potentially be prevented over the years. This adds up to hundreds of thousands as the years go by.

There are now certainly options that can sway the balance towards ‘zero leprosy’. This is now a true and realistic vision and not just a dream. However, in the end, it is not only about knowledge, technology and funds. It is about human effort, compassion and commitment. It is about people who care, care about the stagnating leprosy situation and care for the people affected by leprosy. It is about the will to address the situation, about respecting each other’s role as professionals or lay people, and empowering all involved in their different expertise and experience.

It was Mother Teresa who said, 'I can do things you cannot, you can do things I cannot; together we can do great things'. Together, we can turn the dream of zero leprosy into a vision that can be achieved in a single generation.

Conflicts of Interest: None.

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