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Advancing in the Fight against Neglected Tropical Diseases

Accelerating the elimination of leprosy

Leprosy - still a public health threat

By Ann Aerts

Significant progress in the fight against leprosy has been one of the greatest public health successes. Global figures from the World Health Organization (WHO) on leprosy highlight these early successes, showing that the global burden of leprosy has been reduced by 95% since the 1980s. But in recent years, the anti-leprosy work has become a victim of its own success: with patient numbers falling sharply, efforts to go the last mile in eliminating the disease have stagnated.



Thanks to MDT and the efforts of the WHO and the anti-leprosy

community, the number of new leprosy patients detected has reduced dramatically over the past 30 years (Photo: Novartis Foundation)

Cambodia, a country that diagnoses around 300-500 new leprosy patients each year, people like Pok Sokha, a former leprosy patient, had only heard frightening stories of the disease. Caused by a bacterium called *Mycobacterium leprae*, leprosy is a chronic infectious disease. So when Pok was diagnosed with leprosy a few years ago, he feared the stigma he had often felt toward others. His diagnosis taught him that early detection is imperative in preventing disability, "If I had received treatment in time, I wouldn't have this disability. I really understand that it is important to get diagnosed early and promptly treated." *M. leprae* multiplies slowly and the incubation period of the disease is about 5 years. Symptoms can take as long as 20 years to appear. During this time the carrier is infectious to others. Therefore, early diagnosis and prompt treatment are vital not only prevent the development of irreversible disabilities but also to prevent further transmission of the disease.

Progress has been made...

Significant progress in the fight against leprosy has been one of the greatest public health successes. Global figures from the World Health Organization (WHO) on leprosy highlight these early successes, showing that the global burden of leprosy has been reduced by 95% since the 1980s. This is in large part due to the widespread availability of multidrug therapy (MDT) which has reached 16 million patients since 1981. Supplied free of charge by Novartis through the WHO since 2000, MDT has played a frontline role in both reducing transmission rates and curbing the effects of the disease. In 2012, as part of the Novartis commitment to the London Declaration on Neglected Tropical Diseases (pdf), the company announced it would extend MDT donation through to 2020, facilitated and supported by the Novartis Foundation.

...but the Job is not finished yet.

Thanks to MDT and the efforts of the WHO and the anti-leprosy community, the number of new leprosy patients detected has reduced dramatically over the past 30 years. But in recent years, the anti-leprosy work has become a victim of its own success: with patient numbers falling sharply, efforts to go the last mile in eliminating the disease have stagnated. Since 2005, both the prevalence and incidence of the disease have plateaued. Today, with around 215,000 people worldwide diagnosed with leprosy every year, a more robust approach is needed to successfully go the last mile and bring leprosy transmission to zero.

The Novartis Foundation has been working towards improving health outcomes amongst the world's poorest populations for more than 35 years. This includes a long history in supporting programs for leprosy and we are proud to continue our ambitious work towards eliminating this disease.

A new strategy...

To define a new strategy to interrupt transmission, the Novartis Foundation convened NTD elimination and control experts in 2013, including leprosy, Guinea worm, yaws and tuberculosis. It was recognized that while progress on leprosy is one of the public health success stories of the last few decades, it has not been possible yet to finish the job, and new strategies are needed to combat leprosy.

The group reached a consensus that in addition to the cornerstone of early diagnosis and prompt treatment with MDT for all leprosy patients, a successful elimination strategy also requires tracing and preventative therapy for contacts of new leprosy patients, improvements in diagnostic tools, and strengthened epidemiological surveillance systems that are action-oriented.

New collaborations...

In response to this new strategy, a collaboration between the International Federation of Anti-Leprosy Associations (ILEP), including *Netherlands Leprosy Relief*, *FAIRMED*, the *American Leprosy Mission* and the *German Leprosy and Tuberculosis Relief Association*, several National Leprosy Programs and the Novartis Foundation was launched in 2014 to combine the introduction of contact tracing programs with appropriate therapy for those who have come into contact with newly diagnosed patients. *Erasmus University Medical Centre Rotterdam* and the *Swiss Tropical and Public Health Institute* are providing technical support, specifically on surveillance systems.

A new approach called contact tracing...

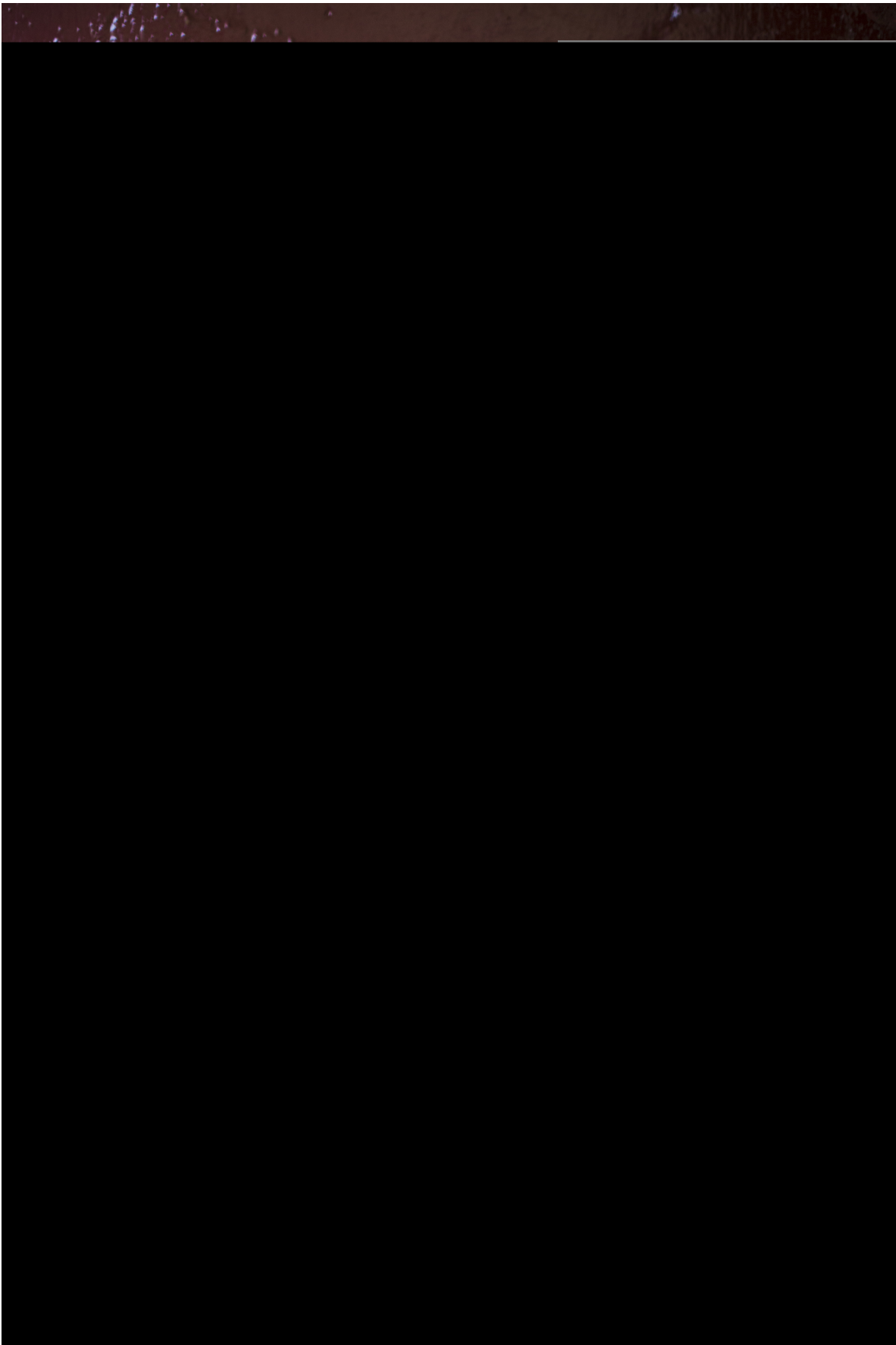
Called the LPEP (Leprosy Post-Exposure Prophylaxis) project, the collaboration aims to decrease the risk of developing leprosy, and reduce further transmission of the mycobacteria causing the disease. A part of this will be contact tracing, where the family, friends and other contacts of every newly diagnosed patient are also immediately examined for leprosy. They are provided treatment if they also have leprosy, or preventative therapy if they are asymptomatic.

This decreases the risk of contacts developing leprosy in the years following contact by as much as 50-60%. (Moet et al 2008) The collaboration draws from implementation research in Indonesia, where the program is being expanded as part of LPEP. Nepal, India, Myanmar and Tanzania have also launched LPEP and activities will soon begin in Sri Lanka.

As this approach requires a great deal of human and financial resources to implement, this preventative intervention is currently being piloted in seven countries across Asia, Africa and Latin-America to assess the feasibility and impact on the incidence of leprosy. LPEP also aspires to strengthen disease surveillance and the reporting systems in the pilot countries, while contributing to improved contact tracing strategies.

Contact tracing is at the heart of another pilot project supported by the Novartis Foundation in Cambodia, in collaboration with the Cambodian National Leprosy Elimination Program and the CIOMAL Foundation. The pilot project aims at determining the yield of early case detection when contact persons of formerly diagnosed leprosy patients are screened.

By extending contact-tracing in Cambodia and elsewhere, we hope to diagnose many more leprosy patients like Pok and treat them promptly to halt the spread of leprosy among their families and communities. This approach offers a potentially cost-effective way of conducting early leprosy diagnosis in areas where incidence is low, as it enables active case detection activities to be concentrated over relatively short periods of time.



A young boy in Ifakara detected with leprosy; almost 1 in 10 newly diagnosed leprosy patients are children, indicating continued transmission of the disease (Photo: Novartis Foundation)

...and finally new diagnostic tools would provide a robust step towards achieving zero transmission

Yet, contact tracing of newly diagnosed patients is only part of the equation. The path toward reducing leprosy transmission requires the development of new diagnostic tools, as well as strong epidemiological surveillance systems that are action-oriented and can monitor progress. With this consideration in mind, the Novartis Foundation is engaging with experts in leprosy along with developers of diagnostic tools to design a test for leprosy. While the project is at a very early stage, the goal is to be able to rapidly identify all those infected or sick with leprosy so they can be given preventative therapy or MDT as soon as possible. This would provide a more robust step towards achieving zero transmission, and the ultimate elimination of the disease.

In the meantime, the Novartis Foundation is also working with partners in the Philippines, including the *Department of Health (DOH)*, the Philippine Council for Health Research and Development, Metahelix, and Novartis Philippines to develop a digital health tool that enables healthcare providers to send pictures of potential lesions on their patients to specialists for diagnosis. Digital and mobile technology is widespread in low-to-middle income countries and is revolutionizing healthcare services as it can expand patient reach, centralize expertise, empower patients, train healthcare workers and improve quality of care in these geographies.

Called LEARNS (Leprosy Alert and Response Network System), the digital health tool in the Philippines works within existing leprosy control and monitoring initiatives, helping to reduce delays in diagnosis of new leprosy patients. From 2013 to 2014, LEARNS was successfully implemented in Iloilo province, leading to adoption of the tool in nine cities in Cebu province. To date, over 3,000 healthcare providers have been trained in LEARNS. In 2015, the DOH plans to expand LEARNS to three new regions.

We need to tackle the challenge collaboratively!

By partnering with like-minded organizations on projects like LPEP, contact tracing in Cambodia, LEARNS and development of other diagnostic tools we achieve far more than we could by working alone – both on the ground and in the laboratory. Now more than ever there is the opportunity to learn from experts from across the NTD community as well as include voices from private, public, civil and academic organizations to exchange ideas and best practice. The Novartis Foundation will continue to provide such platforms to catalyze new thinking, and has organized in Brasil as a Dialogue event this year. Only by tackling this challenge collaboratively can we finally eliminate this debilitating disease.

References

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