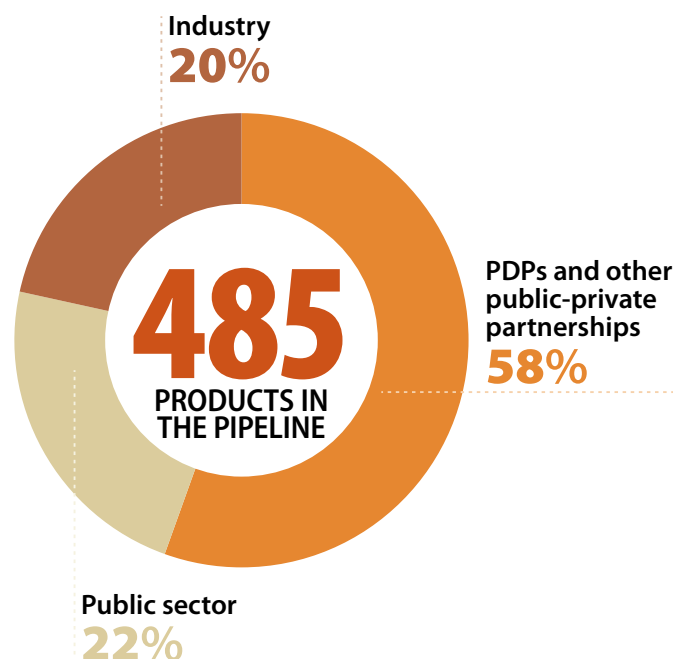


# THE UNRECOGNISED REVOLUTION IN GLOBAL HEALTH

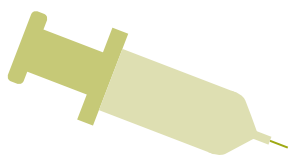
Every year, more than six million people in the developing world die from neglected diseases such as tuberculosis (TB), malaria and sleeping sickness – diseases that are neglected simply because of where they occur.

Before 2000, the situation was one of dire neglect, and the pipeline of potential new products was sparse. But this picture is changing as the global health community invests in the development of new tools.

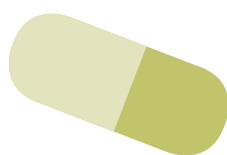
As a result of increased attention and investment over the last 15 years, there are now **nearly 500 neglected disease product candidates** in the pipeline.



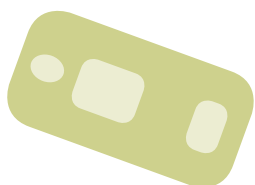
## Product candidates in the pipeline:



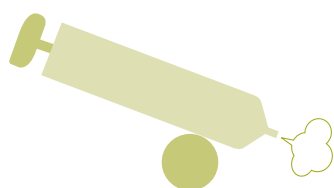
**203**  
VACCINES



**142**  
DRUGS



**~124**  
DIAGNOSTICS



**16**  
VECTOR CONTROL  
PRODUCTS

More than three-quarters of these product candidates are being developed by innovative collaborations between the public and private sectors, such as product development partnerships (PDPs), or through public sector organisations.

Because these groups are driven by public health goals, their products are designed specifically to be affordable and appropriate for developing countries.



## MALARIA

**124**  
candidates

Nearly a million people every year die from malaria, two-thirds of them children under the age of five.<sup>1</sup> For the many millions more who are infected but survive, repeated infections during childhood result in anaemia, stunting and other developmental delays.

In the absence of an effective vaccine, living under mosquito-repelling nets at night is still one of our most effective methods of preventing infection. Resistance is emerging to our front-line drug for the most common and deadly strain of malaria.<sup>2</sup> And our best drug for the less deadly *P. vivax* strain can be fatal when given to people who suffer from a common enzyme deficiency.

### A single pill to eliminate malaria

The ideal solution is a drug that could cure all types of malaria infection *and* prevent reinfection for some time afterwards. It would also be cheap, safe and suitable for children.

The Medicines for Malaria Venture (MMV), a PDP, has been working with academic researchers and pharmaceutical companies to develop just such a drug – the ‘Single Encounter Radical Cure and Prophylaxis’, or SERCaP. It has a number of promising candidates in the pipeline, each with the potential to revolutionise the management of malaria, and move us markedly closer to the goal of total malaria eradication.

Every 23 seconds someone dies from TB, making it one of the most deadly infectious diseases in the world.<sup>1</sup> It is also highly contagious – a single TB patient with active disease can infect up to 15 people simply by coughing, sneezing or talking.<sup>3</sup>

Our front-line drugs and diagnostic tests for TB are out-dated and often ineffective, and drug-resistant forms of TB are becoming increasingly common. This makes controlling the spread of TB by preventing new infections critical to bringing the epidemic under control.

The current TB vaccine is one of the most widely used vaccines in the world. But it was developed nearly a century ago and is ineffective at preventing TB in adults, who are responsible for most of the spread of TB.<sup>4</sup>

### A modern TB vaccine... that works

The most advanced TB vaccine candidate in the pipeline (M72/AS01<sub>E</sub>) is being developed to protect adults and adolescents against TB infection. Used alongside the current infant vaccine, it could prevent up to 50 million cases of TB in its first 25 years of use.<sup>5</sup>

The candidate was developed by the pharmaceutical company GlaxoSmithKline, who have partnered with Aeras, a TB vaccine PDP, to trial the vaccine in TB-endemic countries.

**TB**

**117**  
candidates





**HIV**

**82**  
candidates

Nearly 240 people become infected with HIV every hour, the majority of them in Sub-Saharan Africa.<sup>6</sup> And while HIV-infected individuals in developing countries have increasingly been able to gain access to antiretroviral treatment, they are largely denied the sort of HIV tests that are routine in wealthy countries.

The diagnostic devices used to identify HIV infections in infants or to monitor for drug treatment failure tend to be bulky, costly and require highly trained technicians.<sup>7</sup> As a result, their availability in developing countries is limited – meaning that babies born with HIV don't get started on treatment when they should, and millions of recipients of antiretroviral therapy go un-monitored.<sup>8,9</sup>

## An advanced HIV diagnostic for low-income countries

With funding from the US National Institutes of Health, US-based biotechnology company Thermal Gradient is one organisation seeking to address this inequality.

The FlashOne is a portable, rapid, point-of-care diagnostic and monitoring system for HIV that is designed to be operated by basically trained healthcare workers in remote settings. By essentially bringing the laboratory into the field, tests like the FlashOne have the potential to change the way HIV is managed in low-resource settings.

Together, malaria, TB and HIV account for more than two-thirds of the neglected disease pipeline. But innovative products and approaches are also needed for other neglected diseases, such as dengue.

In 1970, only nine countries had experienced severe dengue epidemics. The disease is now endemic in over 100 countries, and more than 2.5 billion people – a third of the world's population – live in areas at risk for infection.<sup>10</sup>

There is no dengue vaccine, and no specific treatment exists. Bednets – so successful in helping fight malaria – don't work for dengue because the mosquitoes that transmit it bite outside and during the day. Continued spraying with insecticides is expensive and contributes to growing insecticide resistance.<sup>11</sup>

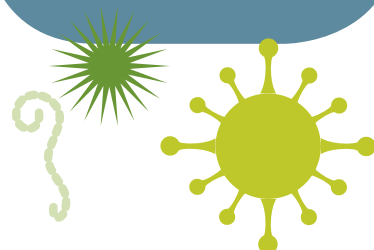
## Harnessing bacteria to beat dengue

The Eliminate Dengue project is a global, not-for-profit research collaboration involving 60 researchers from 10 countries who are developing and testing an innovative way of controlling dengue.

The group is infecting mosquitoes with natural bacteria called *Wolbachia*, which makes them much less likely to transmit the dengue virus. When released into the wild, the *Wolbachia* spreads through the entire mosquito population. If successful, this would provide a natural, low-cost and insecticide-free tool to reduce dengue transmission.

## Other neglected diseases

**162**  
candidates





Public and philanthropic funding, along with innovative partnerships between public health interest groups and industry, has delivered a robust pipeline of potential new tools that could dramatically improve the way we prevent, treat and diagnose neglected diseases.

The health of the current pipeline is the result of over a decade of increased attention for neglected diseases – from both the public and private sector – and represents a remarkable quiet revolution that deserves both recognition and support.

Increased investment in global health research and development is vital in order to help sustain this momentum for the development of new health tools, support the final stages of research, and deliver them to people in need worldwide. Sustained investment will deliver a steady stream of new innovative health technologies over the coming years, and ensure that the benefits of this quiet revolution in global health are realised.

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**PHOTO CREDIT:** iStockphoto

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The neglected diseases included in the pipeline are: HIV, malaria, TB, kinetoplastids, diarrhoeal diseases, salmonella infections, dengue, helminth infections, bacterial pneumonia and meningitis, leprosy, Buruli ulcer, trachoma, rheumatic fever, cryptococcal meningitis, hepatitis C genotypes 4, 5, 6 and leptospirosis. For more information, please refer to the G-FINDER matrix, at: <http://gfinder.policycures.org/staticContent/pdf/G-FINDER-disease-product-matrix.pdf>

