

Changing the Landscape: The Transformative Impact of Public-Private Partnerships on the Fight Against "Neglected Diseases"

Ross Wallace
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From the very beginning, my fellowship has always been focused on neglected diseases – those pandemics that disproportionately impact the global poor.¹

My application was based on an informed hypothesis – that the landscape of neglected disease drug development was mired in market failure, and that neither the public sector nor the private sector was investing in the fundamental research and development required to create a new generation of essential medicines. And so I embarked on an analysis of the current state of the battle against neglected diseases – and what I found was a landscape not only far different than what I expected, but also far different than even five years ago.

Yes, neglected diseases still kill more than 3 million people every year – with children and pregnant women the most vulnerable populations - and cost the equivalent of almost 100 million years of lost life. Since the late 1990s, however, the emergence of a critical mass of public-private partnerships (PPPs) has revolutionized the discovery, development and deployment of pharmaceuticals designed to mitigate these diseases.

Today there are more than 70 different drug research projects currently underway, each with the potential to revolutionize the battle against neglected diseases. Over $\frac{3}{4}$ of these projects are being driven by one of the five PPPs involved in the neglected disease space:

- **The Institute for One World Health (One World).** San Francisco-based One World bills itself as the US' first non-profit pharmaceutical company, and backed by extensive funding from the Gates Foundation, One World has assembled a team of 40 with experts with more than 400 years of drug development experience.
- **The Drugs for Neglected Disease Initiative (DNDi).** DNDI was formed by *Médecins Sans Frontières* (MSF) and five public sector health organizations in the developing world, and focuses both on drug development and policy advocacy.

¹ *The most commonly cited neglected diseases are tuberculosis and malaria. However, there are a host of other diseases that are far less well known – and hence far more neglected. The World Health Organization's Special Program for Research and Training in Tropical Diseases focuses on 10 diseases, including notable examples like chagas, visceral leishmaniasis and leprosy.*

- **Medicines for Malaria Venture (MMV).** The pharmaceutical industry's global trade organization IFPMA has been involved with MMV from its inception – as has the World Bank, the WHO and the Rockefeller Foundation. The ongoing support of these institutions makes MMV the most “traditional” PPP.
- **TB Alliance.** Although similar to MMV in its focus on a single disease, the TB Alliance emerged out of a conference held in Cape Town in 2000 and attended by 120 representatives from the research, business, policy and donor communities.
- **The WHO's Special Programme for Research and Training in Tropical Diseases (TDR).** TDR is an independent scientific research collaboration driven by the WHO, the World Bank, UNICEF and the UN Development Program (UNDP). As well as its R&D focus, TDR is also involved in building scientific and commercialization capacity in developing countries – a systems-based approach that's a key distinguishing characteristic.

Apart from the WHO program, none of these PPPs has been around longer than eight years – and DNDi is barely four. And yet, in less than a decade, these PPPs have completely transformed drug development in the neglected diseases space. As I write, more than a dozen drugs are in the midst of clinical trials, and two new products have been launched in the last year alone – one by DNDi and one by One World. And based on drug development product probabilities, another 6-8 drugs should move into the market before 2012.

Contrast this landscape to the roughly three decades to 2000: from 1975 to 1997, only 13 new drugs were developed to combat neglected diseases during a time when the WHO was the only institutional actor active in this space. Now, thanks to new initiatives that leverage the drug research expertise of multinational corporations with the regulatory and clinical trial knowledge of public sector partners, the story is dramatically different – and remarkably improved.

The first phase of my research, then, involved **(1) A comprehensive global analysis and evaluation of drug development PPPs.** My research – conducted under the able mentorship of Dr. Prabhat Jha of the University of Toronto and St. Michael's Hospital – led to an overview of the global PPP space, and a focused dissection of future strengths, weaknesses, opportunities and threats, as well as a series of detailed case studies on the 5 PPPs outlined above.

I mapped out the key developments in the last decade that led to the emergence of these key actors – and in so doing my thinking coalesced around a key set of conclusions, including:

- **PPPs are a transformative development in the fight against neglected diseases.** Their emergence has already revolutionized drug development, and delivered impressive results at minimal costs.²
- **The five PPPs outlined above are succeeding because they leverage the intrinsic strengths of both sectors.** They rely on the private sector for early-stage pharmaceutical research, and on public sector partners for their expertise in developing country clinical trials and regulatory approval.
- **However, too many policymakers are still trapped in a 1990s mindset.** Many global health advocates continue to argue that companies need to be financially incentivized to engage in neglected disease R&D to overcome miniscule and impoverished markets. In fact, the multinational firms involved in the neglected disease space operate under a “no profit, no loss” formula and focus instead on non-financial benefits around corporate social responsibility.³
- **Despite their promise, the success of PPPs may be undermined by chronic shortfalls in funding.** The Gates Foundation has played an incredibly influential role in offering strategic and financial support to PPPs – but the backing of national governments has been sorely lacking, Canada included.

Although few of the leading PPPs have a direct Canadian connection, my research demonstrated that Canada is actually home to a critical mass of researchers who are among the world’s leading global health visionaries – including Dr. Jha and Dr. James Orbinski, one of the co-founders of *MSF* and one of the driving forces behind the creation of DNDi. Unsurprisingly, a disproportionate number were connected to the University of Toronto and its affiliated research and teaching hospitals.

At the same time, however, I was also surprised by how little effort had gone into not only mapping these global health vital assets but also communicating their relevance, excellence and impact to both the broader development community –and to Canadians themselves. This realization led to the second stage of my Fellowship: **(2) An asset map of the global health initiatives located across Toronto’s “Discovery District.”**

This work kept bringing my focus back to the MaRS Discovery District, the innovation and commercialization complex where I work as the Director of Strategic Partnerships. MaRS is an organization that is itself a PPP – and that has defined its mandate as “unlocking the social and economic potential of Canadian innovation.” MaRS is also an entity that has maintained its institutional independence, while

² Since 2000, PPPs have spent roughly \$150 million on over 50 different drug development projects. Contrast this spending with the fact that it costs a for-profit drug company over \$400 million to successfully bring a single commercial drug to market.

³ Eight pharma companies are extensively involved in the neglected disease space, while four – AstraZeneca, GlaxoSmithKline, Sanofi Aventis and Novartis – have dedicated research centres dedicated to neglected disease R&D.

developing a wide set or close partnerships with the University of Toronto, its affiliated hospitals and the broader life sciences policy community.

MaRS profile and its mission – coupled with a position at the nexus of researchers, investors and entrepreneurs – left me convinced that the organization can play three distinct roles in the global health space: as a convenor of key local and global players; as a bullhorn to achieve an increased media spotlight on global health issues, challenges and successes; and finally, as a source of commercialization expertise for organizations in the developed and developing world furthering the fight against neglected disease. **(3) An action plan for MaRS' evolving role in this space**, then, formed the final element of my Fellowship.

These three deliverables mirror the evolution of my thinking over the past year – and represent three different analytical frames. The first is a macro-level international analysis of a novel response to a pressing global health challenge. The second is a regional-wide map of critical assets with the potential to cement Canada's increasingly prominent role in the global health space. The third is an institutional analysis that urges MaRS to leverage its mission and mandate in new and complementary ways.

Taken together, they also illustrate the intellectual and personal path I've taken over the same period – and hopefully offer more than a few glimpses of the knowledge I've gleaned, the thinking I've done, and my intense belief in the potential of public-private partnerships to revolutionize the battle against neglected diseases.