

DISCUSSION

The aim of the G-FINDER report is to describe the global funding landscape for neglected disease R&D. Following the 2014 outbreak of Ebola in West Africa, there was no question that the significant new global investment in R&D for this hitherto neglected disease should be tracked, and so Ebola was included in the scope of last year's report. But emerging infectious diseases like Ebola are different to 'classic' neglected diseases (those traditionally tracked by G-FINDER); the nature of the threat they pose to global health is different, and so too is the nature of the R&D investment this drives.

In this year's G-FINDER report we have treated neglected diseases and Ebola and other African VHFs as separate, distinct categories, in order both to acknowledge the differences between them, and to avoid these differences distorting our understanding of neglected disease R&D funding. But whether considered separately or together, the international response to the Ebola epidemic informs our understanding of – and is inseparable from – the global funding landscape for neglected disease R&D. It is also one of the biggest stories of this year's G-FINDER report.

The scale and nature of the global R&D funding response to the West African Ebola outbreak is now truly apparent

The rapid escalation of the 2014 Ebola epidemic captured global public and media attention. Ebola's status as a bioterror threat ensured military and government interest, and meant that there were existing (if semi-dormant) research programmes. The need to develop tools to combat the growing epidemic – followed by the need to conduct clinical trials before the epidemic subsided – provided a sense of urgency. Together, this helped catalyse the massive global investment in R&D seen in this report.

The global R&D funding response to the Ebola epidemic was impressive in both its scale and its speed, especially given the negligible level of investment prior to 2014. In 2015, a total of \$631m was invested in R&D for Ebola and other African VHFs – more than in any neglected disease except for HIV/AIDS. And the *increase* in funding in 2015 for Ebola alone (from already significant levels in 2014) was larger than the *collective* global investment in 2015 in developing country-relevant R&D for dengue, bacterial pneumonia & meningitis, helminths, salmonella infections, hepatitis C, leprosy, cryptococcal meningitis, trachoma, rheumatic fever, Buruli ulcer and leptospirosis combined.

As is the case for neglected diseases, R&D funding for Ebola and other African VHFs is heavily reliant on the public sector; in 2015 this was again dominated by the US (which provided 78% of all public funding), despite a more than five-fold increase in Ebola R&D investment from European public funders. But after this, the picture diverges: Ebola and other African VHFs received comparatively little philanthropic funding, and intermediaries such as PDPs played little to no role – replaced instead by direct funding of researchers, including to industry. There was also massive investment by industry, which invested far more in Ebola and other African VHFs than in any neglected disease: industry's \$226m investment in Ebola and other African VHFs in 2015 was \$80m more than they invested in malaria (the neglected disease that received the most industry investment), and was larger than their combined investment in all neglected diseases other than malaria and TB.

Global funding for neglected disease R&D reached historic lows in 2015, driven by declining public sector investment

Unlike the dramatic increase in R&D funding for Ebola and other African VHFs, funding for neglected disease R&D in 2015 fell to its lowest level since 2007, with YOY global funding \$180m lower than at its 2012 peak. This drop has been driven by the ongoing decline in public sector funding for neglected disease R&D, which in 2015 also fell to its lowest level since 2007.

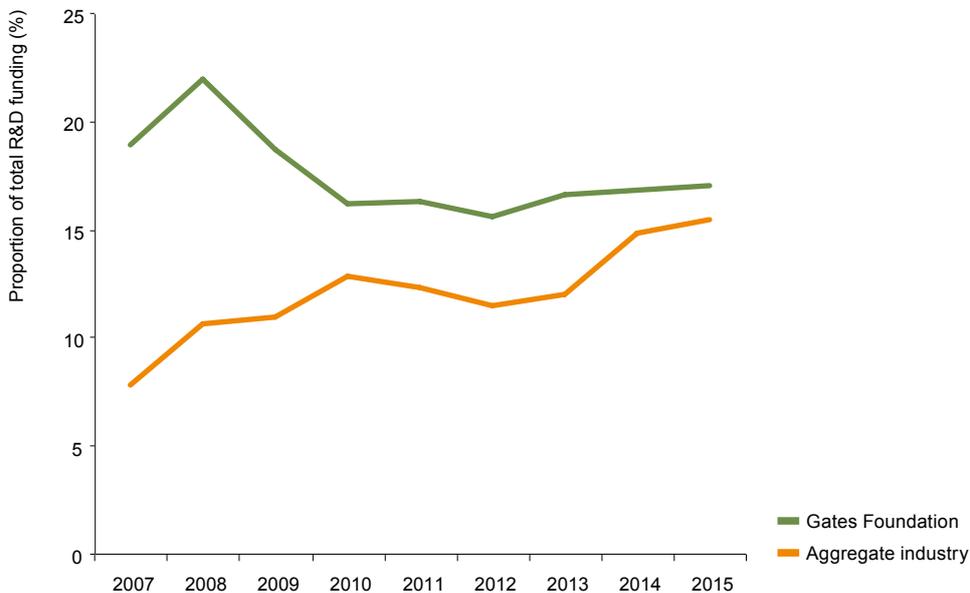
The decline in public funding has primarily been driven by the US. US Government funding for neglected disease R&D fell again in 2015 (down \$44m, -3.0%), to the lowest level ever recorded in the history of the G-FINDER survey. It is however worth emphasising the outsized role played by the US Government, which is still by far the largest contributor to neglected disease R&D globally; it provided 46% of total global funding in 2015, and contributed twice as much as a proportion of GDP as the next largest government funder (the UK).

There are positive signs from the next two largest public funders behind the US. Increased funding from the EU (up \$21m, 20%) made it the second-largest public funder of neglected disease R&D globally in 2015 – an increase that is likely to be sustained, given the expanded budget of Horizon 2020 (and EDCTP2 in particular). UK Government funding fell in 2015 (down \$22m, -18%), but recently announced funding commitments for global health R&D should see the UK's contribution grow over the coming years.

In sharp contrast to the public sector, industry investment in neglected disease R&D reached historical highs

In a positive development, industry consolidated its status as a significant funder of neglected disease R&D in 2015. The small increase marked the fourth year in a row that industry has increased its investment in neglected disease R&D – the only sector to have recorded year-on-year growth for such a stretch – and confirmed that the sharp increase in industry investment in 2014 was not an anomaly. Taken collectively, the share of global funding contributed by industry is now comparable to that of the Gates Foundation. And all of this is without taking into account the major industry investment in Ebola and other African VHFs.

Figure 28. Comparative share of total R&D funding 2007-2015



It remains to be seen whether this level of industry contribution will be sustained. Industry funding is less concentrated than public and philanthropic funding – there are a large number of companies active in the field, with a relatively even spread of investment between them – and so has the potential to be a more stable funding source. But in the non-profit field of neglected diseases, industry involvement depends on adequate levels of public and philanthropic funding. A continued decline in public funding would likely put this level of involvement at risk.

It is important also to note that industry funding is limited to only a subset of neglected diseases, with malaria and TB alone accounting for more than half of all industry investment in neglected disease R&D in 2015.

The highly concentrated nature of neglected disease R&D funding remains an area of concern

Researchers and developers continue to rely upon a small number of large funders, particularly the US Government (the US NIH especially) and the Gates Foundation. While having a limited number of dependable funders can reduce the administrative burden for recipient organisations, it also makes them more susceptible to the vagaries of external political, economic, and other forces.

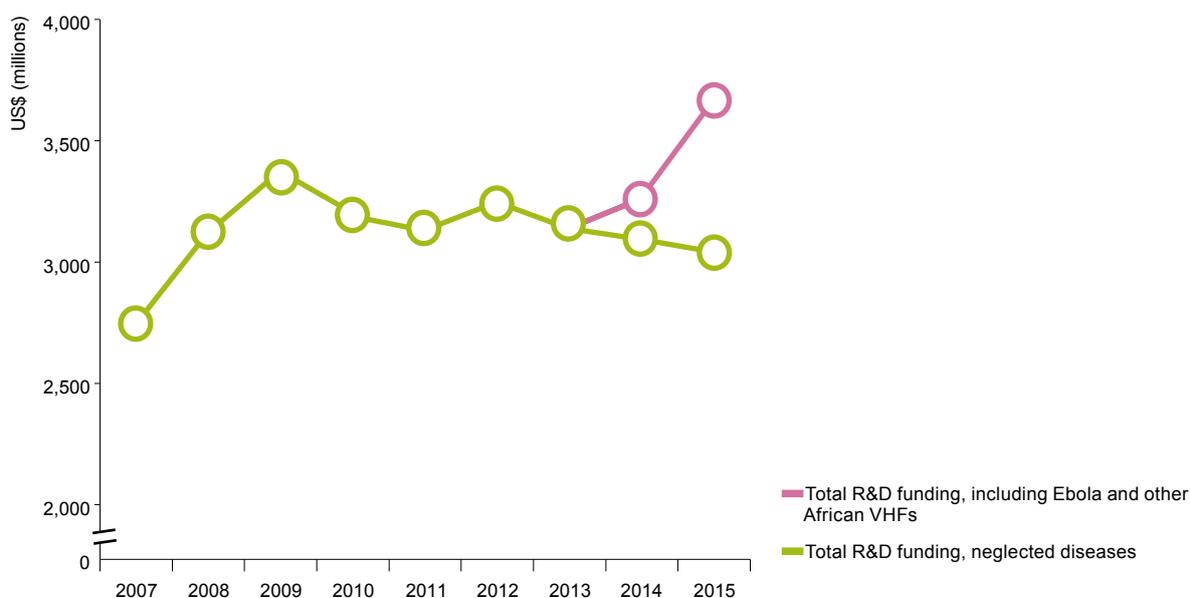
For example, 40% of all neglected disease R&D funding goes to organisations that receive more than 80% of their funding from the US Government, which has reduced its funding for neglected disease R&D by a quarter of a billion dollars since 2012. Similarly, PDPs are highly reliant on the Gates Foundation; in 2015, nearly half of all PDPs received more than half their funding from the Gates Foundation.

The reality is that this reliance on a small number of major funders is largely a product of the limited pool of organisations who invest large sums in neglected disease R&D – something that is especially true for PDPs, as some of the largest funders (for example the US NIH and the EU) prefer to fund researchers directly. Recipients will only be able to diversify their funding sources if other funders scale up their investments.

Conclusion

The findings presented in this report show that significant additional financial resources are available – including from the pharmaceutical industry – for R&D into infectious diseases that largely exist only in the developing world. When funding for Ebola and other African VHFs is added to that for neglected diseases, global investment in R&D increased by \$396m (up 13%) in 2015 – the largest single year increase ever recorded by G-FINDER – with public funding growing by \$210m (up 10%) and investment by industry nearly doubling (up \$201m, 44%).

Figure 29. Total R&D funding with Ebola and other African VHFs 2007-2015



The impressive funding response to the Ebola epidemic has been accompanied by policy and coordination frameworks, including the release of the WHO *R&D Blueprint for action to prevent epidemics*, and the launch of the Coalition for Epidemic Preparedness Innovations (CEPI) – which in January 2017 had already secured \$460m in funding commitments. With mechanisms like this in place, and growing global concern about the threat of bioterrorism, there is reason to hope that R&D funding for Ebola and other African VHFIs will be sustained long enough (and at a sufficient level) to deliver the tools we currently lack.

It is critical, however, that the (vital) attention and funding given to emerging infectious diseases like Ebola does not come at the expense of neglected diseases – which are responsible for more mortality and morbidity, but rarely generate the same sense of urgency, or capture the same political and media attention.

There is an opportunity to capitalise on the lessons learned from the global response to the Ebola epidemic – not only to ensure that we are better prepared for the next emerging infectious disease outbreak, but also to secure adequate and sustainable R&D funding to address the existing and much larger challenge posed by neglected diseases.