

AUSTRALIA'S GLOBAL HEALTH R&D INVESTMENT:

ACHIEVING ITS POTENTIAL

Around three-quarters of funding goes to public and population health research, and basic research



Papua New Guinean children (Credit: iStockphoto)

Diseases like AIDS, tuberculosis (TB), malaria and sleeping sickness – also known as ‘neglected diseases’ – afflict millions of the world’s poor. Global health research and development (R&D) is the key to combatting these diseases more effectively, from researching their impact on developing country populations, to laboratory studies, to making medicines for their eradication.

In 2012 Australia invested over \$80mⁱ into global health R&D, with the majority (72%, \$58m) going to academic public and population health research and basic research, and a little over a fifth to product development.

- Public and population health research is the study of health and disease at the community level, for example, the spread of drug-resistant malaria in the Mekong region
- Biomedical research focusses on health and disease in individual patients including:

- Basic research: scientific and laboratory research to increase our knowledge about diseases
- Product development: the process of translating basic research into new medicines for patients in the developing world. This includes both early stage product development (developing a lead in the laboratory); and late stage product development (converting these leads into life-saving drugs, vaccines and diagnostics, usually in partnership with a pharmaceutical company).

This report focusses on biomedical research (called neglected disease R&D in this report), an area that has often been forgotten in the past. For instance, TB is still diagnosed using a test from 1882, while patients are immunised with a vaccine from 1921 and treated with drugs developed in the 1940s-1970s.¹ These tools are failing in the face of TB today, with emerging TB drug resistance and increasing TB in AIDS patients.

ⁱ All neglected disease R&D funding figures are from the G-FINDER survey. Public and population health research funding figures are estimates of National Health and Medical Research Council, and Department of Foreign Affairs and Trade (formerly Australian Agency for International Development) funding based on available information. All amounts are adjusted for inflation and reported in 2012 AUD, unless indicated otherwise

WHY SHOULD GOVERNMENTS INVEST IN NEGLECTED DISEASE R&D?

Replacing old and failing tools with better ones is a priority if we want to combat neglected diseases. The problem is that there is no commercial driver for pharmaceutical companies to create new tools for developing world diseases, which almost entirely affect populations with little purchasing power. In this not-for-profit space there is an important role for the public sector. Government funding – working in conjunction with philanthropy and industry – is key to discovering and developing new life-saving products for those who desperately need them.

Investing in neglected disease R&D makes good economic and health sense for governments. For example the invention of Vaccine Vial Monitors – which show whether a vaccine is still safe and effective after exposure to high tropical temperatures – have saved governments \$135m over the last decade by preventing the discard of undamaged vaccines.² Likewise, the recently developed meningitis A vaccine, MenAfriVac™, is projected to save 44,000 lives and prevent 105,000 long-term disabilities in the African meningitis belt in its first 10 years of use alone.^{3,4}

AUSTRALIAN FUNDING FOR NEGLECTED DISEASE R&D

Australia has consistently been one of the world's leading funders of neglected disease R&D, ranking in the top 10 government funders since 2007, and moving up to number six with new funding announced in 2012.



However, not all diseases, research areas and sectors have benefitted equally. Malaria receives four times more R&D funding than any other neglected disease, and more than twice as much as AIDS and TB together. Basic research and early stage product development receive more than fifteen times as much funding as late stage product development. And between 2007 and 2011, virtually all Australian funding (>99%) went to domestic academic and research institutions, with almost no funding for product developers who specialise in turning this research into new medicines for the developing world.

organisations who are responsible for more than 70% of the new neglected disease drugs and vaccines created since 2000. This was a significant shift in focus, with increased funding for TB and their first ever funding for product development.

Recently, we have started to see more balanced investment patterns. In 2013, Australia's aid agency disbursed its first funding to overseas Product Development Partnerships (PDPs), the

Figure 1. Australia's neglected disease R&D funding 2007-2012

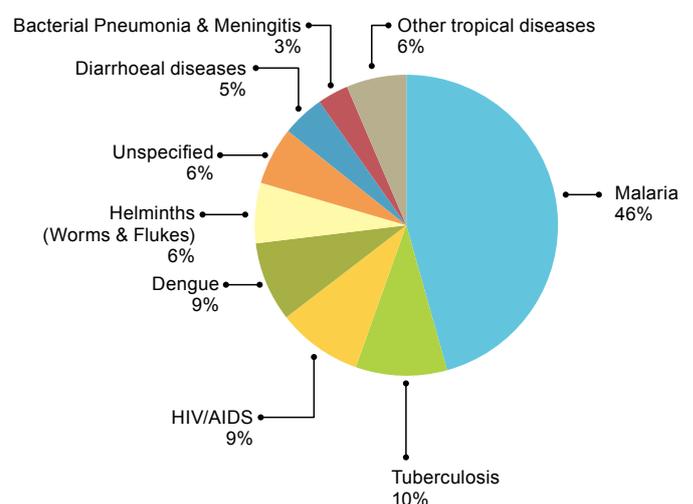
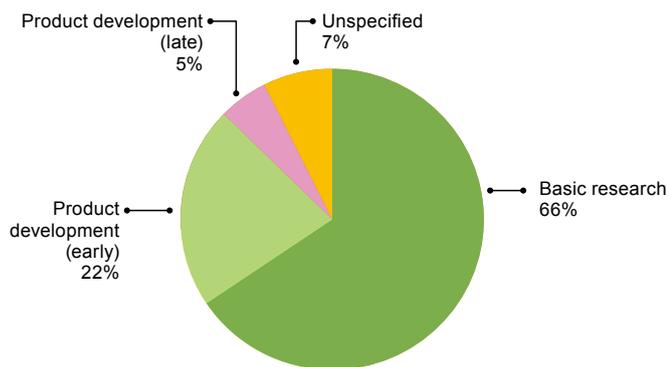


Figure 2. Australia's neglected disease R&D funding by research area 2007-2012[^]



[^] The breakdown between early and late stage product development is an approximation based on the information available

In 2014, the government further improved Australia's investment profile with a commitment of \$30m per year to global health and medical research, including \$10m per year to PDPs making new medicines for the poor.

Australia's share of global neglected disease R&D funding in 2012

1%

ROOM FOR IMPROVEMENT

Despite these recent changes, Australia's investments into global health R&D are still not achieving their full potential.

Strategic areas remain underfunded

Australia's funding of neglected disease R&D does not correspond with our aid priorities (or with regional disease threats). For instance, between 2007 and 2012, an average of only \$3.6m per year was allocated to TB research, despite a growing crisis of drug-resistant TB on our doorstep in Papua New Guinea (PNG). The problem is that there is **no strategic masterplan** to guide the government's R&D investments, with Australia's R&D funding largely reflecting researcher interests rather than government priorities.

An imbalanced funding allocation

Funding needs to be allocated appropriately across the research process so that there are not only funds to make discoveries but also to translate them into medicines that can save lives. But, because **Australia spends less than a third on product development**

compared to two-thirds on basic research, research bottlenecks are being created with insufficient funding to carry ground-breaking ideas through to life-saving products.

Inefficiencies in aid spending

Spending on rolling out current ineffective tools instead of investing in better ones does not make economic sense for Australia's aid programme. Malaria programmes have already benefitted from investment in new R&D tools, with insecticides for malaria nets and development of new malaria drugs cutting malaria deaths in Africa by a remarkable 30% in the past 10 years⁸ – thus greatly reducing the funding needed for malaria management. This approach can be extended to other areas. For instance, as well as funding the current old and less-effective treatments for drug-resistant TB, at the cost of up to US\$5,000 per patient, Australia should also invest in developing the new US\$50-\$90 six-month cure that could revolutionise drug-resistant TB treatment as early as 2018.⁹

TB in PNG

PNG has the highest TB rate in the Pacific with 541 cases per 100,000 of the population.⁵ Each patient infects up to 10-15 others per year⁶ and drug-resistant TB is on the rise.

Today's old TB tools mean patients need to be treated with a cocktail of pills for months or even years, with no guarantee of success. Patients with drug-resistant TB must be managed in TB isolation wards for

months, with many months more of painful injections and a treatment failure rate of over 50% in 2010.⁷

New drugs are in development that will cut treatment times from years to weeks and will remove the need for hospitalisation and injections. Australia's support for this R&D is vital for TB patients in PNG, and sensible for our aid programmes.

INCREASING THE IMPACT OF AUSTRALIA'S SPENDING

Australia can increase the health impact of its neglected disease R&D funding now by:

- Aligning government R&D investment with its aid and economic priorities, and with regional threats
- Improving the funding balance between basic research and product development to ensure that ground-breaking research can be translated into life-saving medicines, vaccines and diagnostics
- Balancing investment in existing tools with the development of new, more effective ones.



A mother and child, Phnom Penh, Cambodia (Credit: iStockphoto)

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