

## Infectious disease research investments follow colonial ties: questionable ethics

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**Background:** International funding for global health research is not systematically documented. We have assessed the level of research funding awarded by UK funders of international research to low- and middle-income countries or research institutions in these countries.

**Methods:** We analysed 6165 studies; from these we selected 522 that matched our criteria and used them to evaluate research funding by pathogen, disease, research and development value chain, funding organisation and country.

**Results:** Investment in infectious disease research in the countries studied totalled £264 million. Distribution of research investments closely mirrored that of the UK's former colonial territories; the top five countries, and eight of the top 10, have historical links with the UK, being current or former members of the Commonwealth of Nations. HIV, malaria and neglected tropical diseases attracted the greatest investment (£219 million; 82.8%), with most studies focussing on operational and epidemiological research (£109 million; 41.3%).

**Conclusions:** International financing of infectious disease research by UK funding organisations follows former colonial ties. Funding institutions should review their funding policies to ensure that they also assist low- and middle-income countries without colonial ties to address their disease burden. A global investment surveillance system is needed to map and monitor funding for international research and guide the allocation of scarce resources to reduce the global disease burden.

**Keywords:** Commonwealth, Health financing, Infectious disease, Public health policy, Research and development, Research investments

### Introduction

The burden of disease is a major barrier to development in low- and middle-income countries.<sup>1</sup> However, health research is disproportionately concentrated in high-income countries and devoted to illnesses that affect richer populations. In 1999, a seminal paper by the Global Forum for Health Research documented the 10/90 gap: 10% of health research resources are devoted to the poorest 90% of the world's population.<sup>2</sup> Although funding for global health has substantially increased since 2000,<sup>3</sup> there remains a mismatch between burden and research financing.<sup>2</sup>

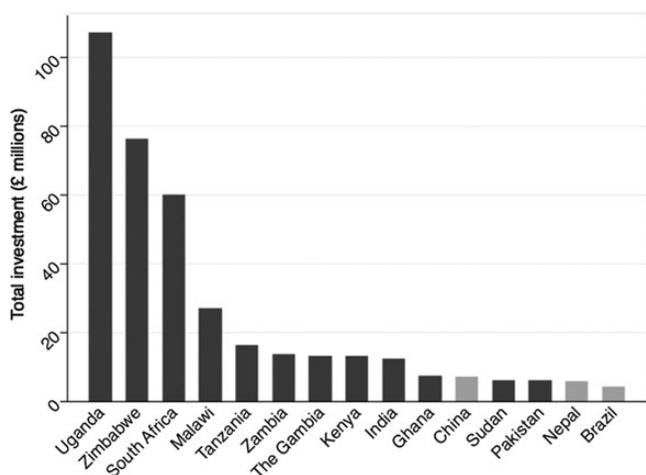
Analysis of the financing of health research is complex, as the agencies that invest in health research use numerous organisations, channels and methods to distribute resources. A recent study analysed the infectious disease research funding received by UK institutions and their global partners from public and

philanthropic sources, and highlighted substantial disparities between disease burden and funding.<sup>4</sup>

In this paper we explore the relationship between research funding provided by UK funding agencies and the colonial links of the recipient countries to the UK. Specifically we analyse funding for research in countries outside the UK where investments for infectious disease research were allocated to a global partner institution or where much of the actual research was performed. We believe that our study is the first to systematically analyse investment outside the UK in infectious disease research.

### Methods

We systematically searched databases and websites for information on investments in infectious disease research for the period



**Figure 1.** Top 15 countries by total investment in infectious disease research by UK funders 1997–2010. Dark grey: country gained its independence from the British Empire; pale grey: country never a formal territory of the European colonial empires.

1997–2010. Our initial search identified 6165 studies, of which 565 were selected for analysis. We created a comprehensive database of open-access infectious disease research projects and categorised studies and funding by disease, cross-cutting theme (defined as research relevant to two or more infectious diseases), and research and development (R&D) phase.<sup>4</sup> Full details of our methodology and search criteria, and the final database, are openly available from the project website (<http://researchinvestments.org/data>). Cross-cutting themes included: diagnostics, vaccine and therapeutics research, and microbiological categories such as virology, bacteriology, parasitology and mycology. R&D categories included: preclinical research, phase 1, 2 or 3 clinical trials, product development and operational research. Data collected included study title, project abstract, funding amount awarded to the study, lead institution, principal investigator and year of award. We included all studies for infectious diseases where the lead institution was based in the UK and collaborated with a global partner institution, including those in high-income settings. Veterinary infectious disease research was excluded unless there was a clear zoonotic component. We included open-access data from public and philanthropic funding organisations. Projects with funding starting in the years 1997 through to 2010 were included. We excluded open-access data from the pharmaceutical industry, as it was not accessible for all large companies and was clearly under-representative. All grant funding amounts were adjusted for inflation and reported in UK£ (2010 rate) (<http://www.oanda.com/currency/historical-rates/>).<sup>3</sup> Grants awarded in a currency other than UK£ were converted to £ using the mean exchange rate in the year of award. Statistical analysis and generation of figures and graphs were performed using Stata software v.11 (StataCorp, College Station, TX, USA).

## Results

In sum, £264.3 million was invested across 522 studies (see [Supplementary Table 1](#)). Research investments were allocated primarily to Uganda (£107.0 million; 40.5%), Zimbabwe

(£76.1 million; 28.8%), South Africa (£60.0 million; 22.7%), Malawi (£26.9 million; 10.2%), and Tanzania (£16.2 million; 6.1%) (Figure 1). These and four other African countries accounted for nine of the top 10 countries by total investment in the study period. India, the only non-African country in the top 10, was at number nine, with £12.2 million (4.6%). Research investment in countries with no colonial links to the UK was £29.8 million (11.3%).

HIV was the infection attracting the greatest investment (£133.3 million; 50.4%), followed by malaria (£44.5 million; 16.8%), neglected tropical diseases (NTDs; £41.0 million; 15.5%), tuberculosis (£20.0 million; 7.6%) and gastrointestinal infections (£14.3 million; 5.4%).

Analysis of funding along the research and development (R&D) value chain showed that operational research (£109.1 million; 41.3%), including epidemiological studies, was the major focus of funding, followed by clinical trials (£74.8 million; 28.3%), preclinical research (£60.0 million; 22.7%) and product development (£20.6 million; 7.8%). In terms of tools to tackle the burden of infectious diseases in low- and middle-income countries, vaccine research received £12.4 million, diagnostics £2.9 million and therapeutics £87.2 million (primarily for testing HIV antiretroviral regimens).

Analysis by funding organisation showed that the Wellcome Trust was the largest funder by size of investment (£120.4 million; 45.6%), followed by the Department for International Development (£77.2 million; 29.2%) and the Medical Research Council (£54.1 million; 20.5%).

## Discussion

The findings suggest that UK funding for infectious disease research mirrors colonial ties, with most of the funding awarded during the period from 1997–2010 going to countries with colonial ties to the UK. Earlier studies have demonstrated funding for diseases such as malaria following a similar pattern, with investment reflecting colonial ties rather than disease burden.<sup>5</sup>

Although prior colonial links and current collaborations through institutions such as the Commonwealth are important in establishing and maintaining collaborative links, it may be counter-productive to be allocating research funding to the countries where these links exist. Instead, research funding should be targeted to address the disease burden and be awarded on the basis of scientific excellence and implementation capability. Further work is needed to assess the extent to which these links are maintained in an effort to make reparation for past social and economic policies, which may have contributed greatly to the current local burden of disease, and is beyond the scope of this paper.

Investment of research funding is vitally important in addressing the disease burden worldwide and in fostering a greater sense of global solidarity, partnership and innovation. Unbalanced investment that directs resources primarily to countries with colonial ties, and those where wide use of the English language makes for ease of working and facilitates the maintenance of existing links, will neglect populations in great need elsewhere, and must be questioned on ethical and moral grounds.

Funding organisations and countries investing in health research should review their funding policies and assist countries without colonial ties or where English is not the official language

to combat the diseases they suffer and thus appropriately address the global disease burden.

## Supplementary data

Supplementary data are available at *Transactions Online* (<http://inthehealth.oxfordjournals.org/>).

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**Authors' contributions:** MGH designed the study; JRF undertook data analysis and created the graphs and figures with input from MGH and RA. JRF interpreted the data and wrote the draft and final versions with input from MGH and RA. All authors reviewed and approved the final version. JRF is guarantor of the paper.

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**Ethical approval:** Not required.

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