

1. The Academy of Medical Sciences welcomes the opportunity to respond to DFID's consultation '*Eliminating World Poverty: Assuring our Common Future*'. The Academy promotes advances in medical science and campaigns to ensure that these are translated as quickly as possible into benefits for society.
2. We are aware that a considerable number of factors contribute to sustainable development, as reflected in the broad remit of the consultation document. However, the Academy has chosen to focus on selected topics that we consider underpin crucial advances in health, research and sustainable development. Our response is pertinent to questions posed in section two, '*Global Economic Growth*', in particular:
 - What more could the UK do to promote sustainable growth, jobs and livelihoods for poor people, building in resilience to the global challenges?

Investment in health research in low- and middle-income countries

3. The Academy strongly supports DFID's pledge to double investment in research to £220 million a year by 2010 and the overall commitment of £1 billion investment in development research over a 5-year period, outlined in the Research Strategy 2008-2013.¹ We welcome the inclusion of health research as one of six priority areas of investment in the coming years, but emphasise that there remains significant scope for enhanced investment in health research within low- and middle-income countries (LMIC). We hope that DFID and its partners will strengthen investment in researchers, institutes and infrastructure to catalyse advances in research, encourage the uptake and application of research, and contribute to sustainable development.
4. The Academy stresses the crucial role of investment in health research capacity in facilitating advances in the prevention, diagnosis and treatment of disease. In particular, investment in health research led and carried out by LMIC researchers, enables the targeted development of therapeutic and preventative interventions, health system reforms, and public health initiatives, which address the health burden according to local, regional and/or national health priorities and contexts. Whilst the import and application of findings from high-income settings can contribute much to improvements in health, there is a strong case for ensuring that research is more closely aligned to the needs and priorities of particular LMIC.
5. In many countries, high mortality and morbidity continue to slow economic development and much remains to be done if the Millennium Development Goals are to be achieved. For instance, a 30% HIV prevalence rate is estimated to lead to a reduction of 1.2% in GDP growth per capita per year,² whilst, overall losses from HIV/AIDS in sub-Saharan Africa have been

¹ DFID (2008). *Research strategy 2008-2013*. www.dfid.gov.uk/pubs/files/Research-Strategy-08.pdf

² Data collated from 80 LMIC between 1990-1997: UNAIDS (2000).
http://ucatlas.ucsc.edu/health/aids/econ_imp.php

reported to reach at least 12% of annual GNP.³ We consider that advances in health research can play an important role in addressing economic losses.

6. A recent Academy of Medical Sciences, Medical Research Council and Wellcome Trust-commissioned study, performed in the UK, quantified the economic returns resulting from investments in medical research over a 17-year period.⁴ The study estimated that health and GDP gains from public and charitable research investment in cardiovascular disease (CVD) and mental health research result in an annual rate of return of around 39% (37% for mental health research). In the case of CVD research, 30% of this return was accrued through net GDP gains to the UK, and 9% through health gains. Even assuming a lower return of 20%, the study estimated that £122 million of public and charitable investment in CVD research in 1992 alone yields £24 million of annual GDP *every year thereafter*.
7. Although this study assessed the economic impacts of research in the UK and is not directly applicable to low-income settings, the findings nevertheless highlight the potential impact of research on sustained economic development. Whilst a range of factors contributes to such benefits, one key consideration is the generation of a self-sustaining cadre of highly skilled individuals that can participate in the global knowledge economy. Whilst further studies are needed to evaluate the impacts of research in LMIC, the Academy considers that health research could bring a range of benefits to LMIC and help to buffer the impact of the economic downturn.

Research capacity and higher education

8. The Academy welcomes DFID's investment in the health research capacity strengthening initiative in Kenya and Malawi, in partnership with the Wellcome Trust and the International Development Research Centre (IDRC).⁵ We recognise the growing international support for LMIC-derived research and commitments from a number of governments in LMIC to strengthen investment in health research. In this regard, we stress the importance of reaching and maintaining levels of support for science and technology as pledged by governments in the Abuja and Algiers Declarations (2001, 2008).⁶
9. Nevertheless, we consider that there remains significant scope for greater investment in research institutions, infrastructure, and career pathways for young researchers in LMIC, by DFID, international funders, agencies and charities, as well as governments and organisations in LMIC. Comparatively low investment in tertiary education over a sustained period in LMIC has created substantial gaps between many LMIC and high-income countries in terms of research capacity and enrolment in HEIs. Countries in sub-Saharan Africa, for instance, have fewer than 300 researchers per million of the population, compared to at least 2001 per million in the UK, US and Australia.⁷

³ Commission for Macroeconomics and Health (2001). *Macroeconomics and health: investing in health for economic development*. <http://www.cid.harvard.edu/archive/cmh/cmhreport.pdf>

⁴ Academy of Medical Sciences, Medical Research Council and Wellcome Trust (2008). *Medical research: what's it worth?* <http://www.acmedsci.ac.uk/p99.html>

⁵ DFID Research4Development Research News (2009). <http://www.research4development.info/news.asp?ArticleID=50376>

⁶ Abuja Declaration on HIV/AIDS, Tuberculosis and other related infectious diseases (April 2001). http://www.un.org/ga/aids/pdf/abuja_declaration.pdf, Algiers Declaration (2008) http://www.afro.who.int/declarations/algiers_declaration_0708_en.pdf

⁷ http://www.uis.unesco.org/template/pdf/S&T/Factsheet07_No%20%205_ST_EN.pdf

10. The generation of a sustainable cadre of highly skilled individuals is necessary to develop and exploit innovative and locally applicable solutions to existing and emerging challenges, such as climate change and the growing burden of chronic disease. Investment in capacity also encourages the training and retention of staff, thereby addressing the 'brain drain' and creating sustainable cycle of capacity for research and the implementation of novel solutions.
11. Furthermore, investment in the stimulation of scientific enquiry in medicine and public health provides a robust basis for the critical appraisal of evidence by public health practitioners, clinicians and policy makers. The increased use of locally relevant evidence in decision-making processes on health and development in LMIC will yield substantial benefits over the long-term.
12. The Academy emphasises that efforts to strengthen research capacity should focus on the broad infrastructure required to support a thriving research centre. Effective research centres need appropriate physical infrastructure and equipment, but also rely on a range of supportive staff, such as laboratory technicians, statisticians, equipment engineers, IT support staff, and administrative teams.
13. One further consideration is the local context in which research is performed. For example, greater clinical research will be most beneficial (for instance, by improving staffing and methods of practice) where the infrastructural context of clinical health services supports effective health service provision. Similarly, clinical health services will benefit most where there is sufficient clinical research capacity to perform high quality research that will benefit the local population. Striking a balance between research and the local clinical context is essential if young graduates and skilled workers are to be retained in either discipline.

Institutional partnerships

14. The Academy emphasises the importance of investment in the initiation and/or scaling-up of North-South and South-South partnerships between research institutes and higher education institutions. Many such partnerships have been initiated and developed between institutions in the UK and their counterparts in Africa and Asia, such as the Wellcome Trust-Mahidol University-Oxford Tropical Medicine Research Programme; the Wellcome Trust-Oxford University Clinical Research Unit in Vietnam; and the Malawi-Liverpool-Wellcome Trust Clinical Research Programme.
15. Long-term commitments such as these enable a comprehensive approach to education, training and capacity strengthening in research, whilst catalysing the development of productive research hubs. In this way, partnerships provide a suitable infrastructural context for research advances and the development of reliable career pathways for aspiring scientists. Funds held by the partnering institutions can be invested directly according to the research needs and priorities of the institutions involved, which can substantially benefit local knowledge and healthcare.
16. South-South partnerships can be particularly effective where institutions that have developed strong research capacity develop partnerships with institutions in other LMIC lacking similar research expertise and tertiary education capacity. The strengthening of networks and research capacity in

the South will enable relevant knowledge to be produced and applied in policy, whilst encouraging the retention of staff.

17. Many Academy Fellows have extensive experience in the evolution and development of such partnerships and capacity strengthening initiatives in LMIC; several Fellows are based in participating institutions including Mahidol University, the Hospital for Tropical Diseases in Ho Chi Minh City; the University of Malawi College of Medicine; and the Kenya Medical Research Institute. The Academy would be pleased to discuss the evolution of such institutional partnerships and capacity strengthening activities further if it would be of interest to DFID.

International interchange and support for researchers

18. Advances in science increasingly require a broad approach that includes international partnerships and consortia, and a multi-directional exchange of knowledge, skills and expertise. As such, one further impact of investment in research capacity in LMIC is the facilitation and strengthening of international links and collaborations, which enable institutions to host mutually beneficial international interchanges between researchers and/or clinicians in different countries. In turn, interchange improves the effectiveness with which healthcare knowledge is generated and translated into practice.
19. Interchange can be effective where individual researchers are hosted in a laboratory, either in the same country or abroad, for several weeks or months to a learn particular technique or medical procedure, which can be implemented on return to the home laboratory. Where possible, reciprocal exchanges enable the development of sustainable, productive links and collaborations. The Academy of Medical Sciences currently administers a Fellowship Scheme of this kind between the UK and Middle East in partnership with the Daniel Turnberg Trust Fund,⁸ and is considering expansion of the scheme to include one or more LMIC.
20. Further to developing skills and expertise, the provision of support for researchers both in the early stages of research and through critical years of post-doctoral research can play an important role by encouraging retention. One-to-one and peer group mentoring can be particularly helpful during these stages, so that young researchers can obtain advice and guidance from peers and/or senior academics; discuss career development; and share ideas, experiences and contacts. The Academy of Medical Sciences administers a highly successful UK Mentoring and Outreach Scheme within the UK.⁹ The scheme provides one-to-one mentoring from the Academy's Fellowship, 'buddy groups' for peer support, and regional workshops around the UK, which bring junior and senior scientists together for discussion and knowledge exchange. We are currently seeking to expand this scheme internationally to provide support that is appropriate to particular research needs in LMIC.

Leadership and guidance on health sciences

21. The Academy considers that there remains scope for DFID to strengthen support for the translation of research findings into evidence-based policy. It is essential that novel innovations and technologies be effectively and

⁸ The Daniel Turnberg Trust Fund UK/Middle East Travel Fellowships
<http://www.acmedsci.ac.uk/p175.html>

⁹ <http://www.academicmedicine.ac.uk/mentoring/amsprog.aspx>

rapidly applied to meet emerging problems in health care in a way that meets the needs and priorities of specific countries.

22. Sufficient public health research capacity is needed in LMIC, to provide evidence-based advice and guidance to governments, and to bridge the gap between research findings and their implementation in practice. Scientists, science Academies, independent organisations, and science communicators can play a crucial role by acting as 'champions' of research and communicating findings to policy makers and civic society. In addition, scientists, academies and advisors can play a role in ensuring that national expertise can be brought to bear on international discussions and negotiations.

Areas of research

23. In strengthening investment in health research, the Academy emphasizes the importance of research into both infectious and non-communicable diseases (NCD). The rising incidence of NCD is likely to pose a substantial economic burden to LMIC and a broad research base will be needed to underpin advances in epidemiology, surveillance, diagnostics, treatment and management of disease. A recent study highlighted that almost 80% of investment in neglected disease research and development was allocated to HIV/AIDS, TB and malaria.¹⁰ Together with its partners, we consider that DFID could play an important role in addressing the imbalance so that research into NCD and other high-burden diseases is strengthened. Capacity in the techniques and skills required to perform clinical research (including clinical trials) will underpin cost-beneficial improvements in health and treatment for both infectious diseases and NCD.
24. Investment in the quantitative and analytical sciences related to health, such as demography, epidemiology, genetics and statistics, will further underpin advances in research and health care. Improvements in surveillance, and the collation and analysis of population data, enable the monitoring of disease outbreaks and their containment, where possible. Greater capacity for research of this kind also enables substantial advances in our understanding of the burden of disease in the regional, national and global context, whilst advancing the evaluation and improvement of public health programmes.
25. The Academy recently published reports that highlight the need for greater investment in mental health research and treatment in LMIC, and a greater focus on point-of-care rapid diagnostic tests.
26. The report '*Challenges and priorities for global mental health research*¹¹ identifies major gaps in research capacity and treatment for mental illness; the impact of stigma; and the importance of tackling mental illness in emergency and humanitarian settings. Critically, the report discusses research in LMIC that has evidenced the clinical effectiveness and affordability of community-based treatments for mental illness through task shifting, and the feasibility of scaling up such approaches to counter the growing burden of mental illness. Addressing these issues will have clear benefits to health and productivity.

¹⁰ Moran M et al (2009). *Neglected disease research and development: how much are we really spending*. PLoS Medicine e1000030.

¹¹ Academy of Medical Sciences (2008). *Challenges and priorities for global mental health research in low- and middle-income countries*. Symposium report. <http://www.acmedsci.ac.uk/p47prid64.html>

27. The report '*Global health diagnostics: research, development and regulation*' highlights the need for greater research and development – and improved access to – rapid point-of-care diagnostics tests appropriate to the needs and priorities of LMIC.¹² To date, the importance of diagnostics for tackling global health has been comparatively neglected at the expense of the development and delivery of vaccines and therapeutic interventions. As a result, current diagnostic methodologies are often inappropriate to needs and contexts of LMIC, and there remain a number of barriers to the development and delivery of safe, effective and affordable diagnostics.
28. Yet, diagnostics guide the majority of healthcare decisions and enable disease surveillance and screening; the identification of infectious disease outbreaks; evaluation of the effectiveness of interventions; certification of disease elimination; detection of markers of drug resistance; and the facilitation of clinical trials and epidemiological studies. The advent of rapid point-of-care diagnostics therefore holds significant promise for addressing the health burden in LMIC.
29. The Academy's report highlights the need for capacity strengthening in research and development in diagnostics; a greater focus on the priorities and contexts of LMIC during the design of diagnostics; and a tightening of regulatory requirements – potentially through a World Health Assembly resolution. The report also highlights scope for the development of a single body that represents researchers, clinicians, industry, funders, charities and stakeholders, which acts on behalf of the diagnostics research and development community, and holds responsibility for the implementation of regulatory policy and advocacy.

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The Academy of Medical Sciences

The Academy of Medical Sciences promotes advances in medical science and campaigns to ensure these are converted into healthcare benefits for society. Our Fellows are the UK's leading medical scientists from hospitals and general practice, academia, industry and the public service.

The Academy seeks to play a pivotal role in determining the future of medical science in the UK, and the benefits that society will enjoy in years to come. We champion the UK's strengths in medical science, promote careers and capacity building, encourage the implementation of new ideas and solutions – often through novel partnerships – and help to remove barriers to progress.

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¹² Academy of Medical Sciences (2009). *Global health diagnostics: research, development and regulation*. <http://www.acmedsci.ac.uk/p47prid65.html>

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