

DFID RESEARCH STRATEGY 2008-2013
Working Paper Series: Better Health



THIS WORKING PAPER ON BETTER HEALTH IS ONE OF A SERIES OF 10 PAPERS PUBLISHED ALONGSIDE DFID'S RESEARCH STRATEGY 2008-2013. IT PRESENTS THE CASE FOR DFID-FUNDED RESEARCH ON BETTER HEALTH – DRAWING ON THE RESPONSES GIVEN DURING A GLOBAL CONSULTATION THAT DFID CONVENED IN 2007 ABOUT ITS FUTURE RESEARCH.

The purpose of the Working Papers is two fold: to record the key issues raised during the consultation; and to spell out DFID's decisions on new directions, as informed by the consultation. As such, they constitute an important part of the feedback process, and provide an opportunity to clearly articulate DFID's strategic response to the consultations and to other global drivers of research. They also provide guidance to those implementing DFID's research strategy in the future.

Each Working Paper reviews the current state of DFID's research on a given theme, highlights the key questions asked during the consultation process, and documents the main feedback received. The Papers then tease out the implications of the consultation findings on DFID's work, and end by spelling out DFID's future directions on each priority theme. Where possible, each Paper makes clear how DFID has drawn upon the consultation responses to shape its plans.

Other titles in the series are: Inclusive Growth, including Infrastructure; Sustainable Agriculture; Climate Change; Education; Political and Social Science Research; Stimulating Demand for Research; Research Communication; Capacity Building; and Mainstreaming Gender in Research. Note that issues which are not directly addressed under this paper may appear in others (for example the impact of agriculture on climate change is largely addressed in the paper on Agriculture).

More information on DFID funded research can be found on the website www.Research4Development.info. This also offers the facility to sign up for e-mail alerts covering different sectors.

SUMMARY

The current DFID health strategy underlines the importance of generating new knowledge to deliver health services more effectively and efficiently and supporting scientific breakthroughs to provide new medicines and vaccines for tropical diseases and HIV and AIDS. In 2006-2007 DFID invested around £45 million in health research, over 40% of the entire central research budget. By 2010 this is set to double, making DFID one of the largest donors in international health research. DFID funds research directly, supports multilateral organisations and international initiatives, and works jointly with the UK Medical Research Council, the Wellcome Trust and other partners.

Overall, the responses to the consultation process suggest that DFID is broadly on the right track with its current health research portfolio. A key message is that DFID should continue to remain focused by restricting the scope of research to a few carefully selected and well defined areas and evaluating success in terms of the practical impact of research on policy and practice in poor countries. Yet major challenges to meeting the three health MDGs remain, necessitating improvements.

Over the next five years, DFID will therefore target its health research investments to unlock and accelerate progress towards the health MDGs – placing a special emphasis on exploiting the linkages between different health challenges. While maternal and child health, HIV, TB and malaria and gender will continue remain central to DFID research, the new strategy will include a new emphasis on non-communicable diseases. This is in recognition that the burden of ill health is changing rapidly, with developing countries increasingly facing a double burden of communicable and non-communicable diseases.

DFID will also prioritise and co-ordinate better with others in supporting global health innovation, and deepen and apply its knowledge and expertise about the environments where health technologies and interventions are delivered, in order to help maximise the uptake of technology, whether existing or new.

Three interlinked and mutually-reinforcing priority areas have been identified for refocusing DFID investments in health research to achieve the MDGs: Operational and implementation research to make interventions more effective; Health systems; and Global health innovation systems. Additionally, and as part of a systems approach to health, DFID will focus on building health research capacity, especially in Africa.

WHERE WE ARE NOW

1. The current DFID health strategy underlines the importance of generating new knowledge to deliver health services more effectively and efficiently and supporting scientific breakthroughs to provide new medicines and vaccines for tropical diseases and HIV and AIDS. In 2006/7 DFID invested around £45 million in health research, £1 for every £10 spent directly on health and over 40% of the entire central research budget. By 2010 this is set to double, making DFID one of the largest donors in international health research.
2. DFID currently funds research on how proven interventions can be delivered more effectively – for instance for better coverage, cost-effectiveness and user uptake. DFID supports 11 research programme consortia in health and HIV. This type of research is funded through consortia of North/South research institutions working across a number of partner countries to provide comparable findings and draw out lessons. These programmes typically run over five years, covering questions in the following four broad areas:
 - Communicable disease (e.g. TB, malaria, HIV and AIDS and other neglected tropical diseases)
 - Maternal and child health
 - Health systems
 - Non communicable disease (tobacco control and mental health)

3. There is good evidence that public private partnerships are more effective than private and public sectors alone at stimulating drug development for neglected diseases. There remains a significant need and funding gap for vaccines, microbicides, drugs and diagnostics for a wide range of neglected diseases. For this reason DFID has been a significant investor in Product Development Partnerships (PDPs) working closely with other funders (such as the Gates Foundation and Wellcome Trust) and other bilateral donors.
4. In addition to the above, DFID has committed a further £45 million to clinical trials run by the Medical Research Council (MRC) in Africa, concerning microbicide development, the delivery of antiretrovirals, and antiretrovirals for children.

WHAT THE CONSULTATION ASKED

5. The consultation asked respondents whether DFID's focus so far was broadly right and how we could build upon our current research portfolio. It asked how we could best respond to the changing pattern of global diseases and the emergence of non-communicable diseases. It also asked whether and how DFID could develop its work on building the capabilities of individuals and families to better enable them to overcome health challenges. Finally it asked what potential there is for inter-disciplinary research to bring DFID's health and education research together to make a bigger contribution to human development in our partner countries.

WHAT WE HEARD

6. The research consultation took place over six months and involved multiple sources, including: e-consultation respondents (n=165); in-country consultations across Africa and Asia, each with an average of 100 participants¹; consultations with DFID health advisors in London and country offices; and discussions held at a one day HIV and AIDS meeting in London with leading researchers. While the following is not a comprehensive summary of everything that was said, it attempts to capture the common themes and key messages generated.
7. Five major categories emerged from the e-consultation: HIV and AIDS, health care systems, primary health care, disease prevention and partnerships/ interdisciplinary research. These themes are added to those generated from other sources to arrive at key headings. Quotes are provided throughout to give a flavour of typical responses to particular themes.
8. One overall message from respondents is that DFID should remain focused. Many said one reason we have a good reputation for funding relevant and effective research is because we restrict the scope of research to a few carefully selected and well defined areas and we evaluate research success in terms of the practical impact of research on policy and practice in poor countries.

¹ Ethiopia, India, Bangladesh, China, Uganda, Nigeria

DFID has a proven track record in supporting excellence in health related research. It is one of the few funding agencies that supports health related research to inform policy and practice that is relevant to the MDGs. We believe that DFID should build on its existing success and not dismantle mechanisms in favour of another approach. E-consultation respondent.

HIV AND AIDS AND COMMUNICABLE DISEASES

9. Many respondents strongly agreed that HIV and AIDS, TB and malaria remain significant and challenging causes of mortality and DFID should stay engaged. Many also agreed the focus should now be on how to translate and implement research.

Thanks to the Global Fund for Aids TB and Malaria (GFATM) and the President's Malaria Initiative, funding for control programme commodities and activities at the national level has increased substantially, and thanks to the Bill & Melinda Gates Foundation, some aspects of research on new drugs, vaccines and insecticides have also received increased support. Unfortunately, there has been no such increase in support for the operational and implementation research needed to ensure that all this new programme funding is used well, and not wasted. E-consultation respondent.

10. We asked participants at the AIDS consultation day to focus on those research questions which could potentially make the biggest impact on changing the course of the epidemic (DFID 2007). Many respondents said we need to generate better evidence for which interventions work and which programmatic elements make these interventions successful in different contexts. Specific questions raised included how to reach socially isolated girls and other vulnerable groups and mechanisms for supporting long-term social change research. Participants asked for more policy research on the mechanisms and blockages to the flow of AIDS funds from the national to grass-roots level. E-consultation respondents said more evidence was urgently needed on existing and new prevention technologies. Many emphasized the need to continue seeking a cure, to provide cheaper drugs and disseminate information more widely.
11. Internal respondents wanted to know much more about the structural drivers of the epidemic (gender inequality, stigma and discrimination, norms around sexuality) and the factors that influence people's behaviour and (lack of) choices. They also called for more research to develop better measures of stigma and discrimination, which are crucial for monitoring and evaluation of the impact of interventions. They wanted a greater research effort on the spread of the epidemic at national and sub-national level. This should include efforts to "know your last 1,000 infections". In generalised epidemics, more effort should be put into understanding concurrent relationships that lead to sexual networks. Internal respondents were keen to have more information on the links between nutrition and HIV and AIDS as well linkages between AIDS and malaria and the potential contribution of palliative care.

Treatments can prolong life, but they are not a cure. Similarly, present prevention options can reduce rates of HIV incidence but will not end the epidemic. Without new prevention options that can better meet the needs of people most at risk of being infected, continued HIV incidence will place higher and higher demands on resources, making comprehensive programmes unsustainable. E-consultation respondent.

HIV AND AIDS AND COMMUNICABLE DISEASES

12. Participants at the Uganda country consultation called for more research on nutrition and food fortification (supplements) and its effects, including how to balance combinations of different foods for vulnerable groups. They also suggested that more impact studies on research outputs and recommendations are needed. How far have the results and recommendations from research (e.g. male child circumcision) been applied, or why they are not applied? We need to understand the barriers to access for different services and ensure that research results inform policy and programming. The South Africa consultation spoke to the need to develop capacity from the “bottom up” and to strengthen the capacity of agencies implementing HIV and AIDS programmes.

The malaria research centre gave an example of using treated mosquito nets which had the potential to reduce the malaria burden by up to 75% but their use is very low even among the educated society. Medical professionals in the private sector too cited an example that only 30-40% of the mothers who attend antenatal services in hospitals come back to give birth in hospitals. The reasons why such mothers don't come to deliver in hospitals are not known. Similar examples can be drawn from the family planning options and HIV and AIDS prevention measures. This type of applied research is needed to enable effective delivery of health services especially to the poor. Uganda Country consultation report.

13. Many respondents spoke of the need to continue work in developing new vaccines. Several respondents encouraged us to seek closer co-ordination with other health funders, particularly in order to identify and fund research for critical knowledge gaps/ neglected diseases. The Product Development Public-Private Partnerships (PDP) model was endorsed by many respondents. Fast developing countries such as China are likely to become an important source of innovations in basic research, the development of technology-based products and the organisation of health services. Mechanisms are needed to ensure that other countries have access to evidence on the performance of these innovations.

Among UK funders, DFID has a unique capacity to provide large-scale, long-term funding for the PDPs. This model of developing health products to serve developing countries has proven highly effective, and DFID's move to doing more with fewer staff makes this an especially suitable way for it to make a difference with its health research funding. Other UK health research funders... are more constrained in their abilities to provide direct support for PDPs, leaving a niche for DFID to be the main UK supporter of this proven innovation model. E-consultation respondent.

... in relation to cheap, rapid-impact packages that could address neglected tropical diseases along with HIV, it is important that DFID create an umbrella that catches and transforms the 'silo' approach used as a default when resources are limited. E-consultation respondent.

NON-COMMUNICABLE DISEASES (NCD)

14. Many respondents agreed strongly with our assessment that we need to better acknowledge the changing global pattern of disease towards non-communicable diseases. Lifestyle-related diseases such as diabetes and hypertension are becoming more important. Respondents in Uganda argued that there is still minimal research on addressing non-communicable diseases in resource poor settings.
15. Cancer, cardiovascular disease, diabetes, mental health and injury were all emphasised in responses. For people aged 5 to 45 years, trauma is second only to HIV and AIDS as a cause of death. Heart disease kills nearly three times as many people as AIDS, malaria, and tuberculosis combined. In China, cerebrovascular disease alone is responsible for nearly 18% of all deaths. One respondent argued that on injury control and trauma most of the current research is not conducted in developing countries, yet this is where most of the burden occurs. On mental health suggested research questions included evaluating the cost-effectiveness of basic mental health care packages in different countries. Respondents from China, where the NCD agenda is increasingly pressing, emphasised a need for research on new approaches to primary care as one entry point to tackling the disease burden. The issues raised included health promotion and training of health workers.

The ageing of the population, in combination with a rising prevalence of hypertension and diabetes associated with changes in diet, the use of tobacco and alcohol, and a sedentary lifestyle, has contributed to a growing burden of NCD... There has also been a rapid growth in the problem of trauma, including traffic accidents. A health system designed to address quite different health problems is struggling to adapt to these new needs by developing innovative approaches to health promotion and the provision and financing of services. Research is needed on all aspects of this adaptation. China country consultation report.

MATERNAL AND CHILD HEALTH

16. Maternal and child health is a continuing priority for many respondents. External respondents and those within DFID are keen to see operations research and robust evaluations on what has worked and how this has been scaled up. One respondent said that remarkably little is still known about the causes of still births and early neonatal deaths. Respondents suggested a range of researchable questions including: how have countries reduced maternal mortality on a large scale; what is the optimum skill mix at the primary care level to impact on maternal health and how best to scale up effective nutritional interventions and research into reproductive health and demographic change.

Maternal health – again we would welcome operations research. Robust evaluations about what has worked, and how this has been scaled up - how countries have reduced maternal mortality rates (MMR) on a large scale plus service delivery models. This could include cultural and social issues, barriers to service use, behaviour change whilst recognising that these are often context specific health care seeking... On newborn health there is a need for more evaluations of programmes in the region. A recent USAID exercise pointed as much to the gaps in the availability of evidence as its presence. DFID Country Office - India.

Diseases that continue to cause major infant/child mortality, including diarrhoea, pneumonia and ARI (Acute Respiratory Infection). This should also include strategies for management of the sick child in resource-limited settings. A focus on diseases causing major infant mortality should also stress the importance of supporting vaccine research, as many of these diseases should be vaccine preventable. E-consultation respondent.

NUTRITION

17. Respondents noted that while nutrition is the single most important determinant of child survival, it is a neglected area for donors. We need to know more on how to scale up effective interventions and how to translate research into action through public, private, community and household initiatives. We also need to gain a better understanding of the links between nutrition and disease (e.g. HIV and AIDS) and the importance of nutrition in scaling up treatment. The Uganda consultation stressed the need for research into the prevalence, impact and management options of malnutrition. Nutrition is seen as a critical priority for India and South Asia and any research has to address the non-health and non food aspects and integrate with health led interventions.

... there is a strong linkage between the low status of women in India (and South Asia) and poor child nutritional outcomes. Do we have best-practice examples of successful ways to address this?
DFID Country Office - India.

HEALTH SYSTEMS AND FINANCING

18. Health systems and health financing emerged as a strong theme from both external respondents and from within DFID. Suggested research topics were wide and encompassed financial and human resources, organisation and delivery of health services, governance, knowledge management and global influences. One research gap is systematic information on the impact of different health financing mechanisms as well as different aid instruments. Several internal respondents said we need solid evidence to challenge some of the models being advocated by other partners (e.g. community based health insurance). We also need more evaluative research on the impact of specific health system interventions. Suggested research questions included: what works in responding to the human resources crisis for health and how best to scale up community health worker interventions and integrate them into formal health systems.

DFID should support African-led research which assesses the extent to which general budget impacts upon health at a local level and the ways in which communities can monitor and track local budget allocations and expenditures. E-consultation respondent.

19. Access to medicines (beyond vaccines) is another area where DFID has a growing interest in policy research. We need a better understanding of how drug systems and pricing work at country level, linked to innovations (e.g. Medical Transparency Alliance - MeTA) which aim to lower prices and increase access. Questions under this theme might include drug pricing differentials across developing countries. Research on access to medicines needs to be grounded in a strategic framework. This would map the various incentive arrangements (such as Advanced Market Commitments) against a "product profile" for high priority medicines, vaccines or diagnostics.

As China accelerates the implementation of health system reform the need for evidence on the impact of particular initiatives and on the emergence of unintended consequences will become increasingly important. The evidence on the performance of a variety of innovations will be of interest to low and middle-income countries. China consultation report.

20. How countries adapt to new technologies was also a common theme. Participants at the India consultation emphasised that we need more understanding of the factors which facilitate early acceptance and adoption of newer technology among medical fraternity as well as barriers which prevent acceptance. For example, how and why do service providers adopt certain proven best practices or new technology and not others?
21. Several respondents argued that we should strengthen research capacity on health management information systems and statistics including, for example, monitoring, surveillance, pregnancy registers and pharmacovigilance. In Nigeria there was also demand for better data collection on health personnel, especially on migration statistics, and research into how best to retain more health professionals in the country. Consultation participants were keen to know about the infrastructural constraints to health care delivery, and mechanisms to tackle this. We also heard a call for more research on what service delivery models work in fragile and conflict-affected settings and whether and how health services can be used as a stabilising intervention in those settings.

Participants did not always feel that the 'hard numbers' and statistics currently available in the health domain were adequate to lay the groundwork prior to research into treatments and policies. Bangladesh country report.

PRIMARY CARE

22. Strengthening primary care emerged as a strong theme in the e-consultation. Several respondents commented on the basic principles of primary health care such as the need for clean water, sanitation and basic education. This was echoed by respondents at the Nigeria country consultation who asked for more attention to be paid to the use of effective advocacy and communication. Another issue concerned the role of community groups and how they engage in new health approaches to understand individual and family concerns related to health and health services. Respondents also said that more research is needed on the potential impact of community health workers (see box). Respondents at the China consultation asked for more research on ways to integrate vertical programmes into new ways of organising community health care.
23. More generally, developing country respondents emphasised the need to prioritise research on poverty and the factors associated with vulnerability to disease and the consequences of ill health on household livelihoods. Research designed to tackle the consequences of TB, malaria and other infectious diseases must also acknowledge that they are primarily diseases of poverty.

The evidence from available data on the impact of engagement with Community Health Workers from Gambia, South Africa, Tanzania, Zambia, Madagascar and Ghana suggests that these workers enhance the performance of community level health programmes and that they are cost effective. CHW with minimal additional training can deliver treatment for important diseases, such as malaria, HIV and TB. However research has commonly been limited to relatively short-term studies in selected populations. Far more research is needed to assess the factors involved in sustaining CHW performance over years and at scale. E-consultation respondent.

TRADITIONAL MEDICINES

24. Participants at the country consultations in China, Ethiopia and Nigeria asked that we make better use of indigenous knowledge on traditional and alternative medicines in the provision of low cost health services. This could involve systematic assessment of the outcome of the use of traditional medicines on their own or in combination with western medicine. Nigerian respondents called for more research that documents and analyses the effectiveness of indigenous approaches to health care research (especially cultural, religious, social factors preventing access to existing and new knowledge). The availability of numerous traditional healers has the potential to extend health services to the rural areas, but evidence is needed on the real impact.

Ethiopia is endowed with different medicinal plant species and 85% of the population use traditional medicines. But the potential has not been fully exploited. Therefore, it is important to evaluate and validate the effectiveness, and capture indigenous knowledge related to them. Especially, effort is needed to link producers, traditional healers, researchers and industries. Ethiopia country consultation report.

NON-MEDICAL AND INTERDISCIPLINARY RESEARCH

25. The consultation asked whether non-medical research could hold the key to overcoming difficult health challenges such as children's education and HIV and AIDS and how women's incomes affect the survival and nutrition of their children. Primary school education for all was highlighted by e-consultation respondents and several respondents indicated that HIV awareness should be a mandatory part of the curriculum. Some respondents also indicated that pre-primary education in this area was important as children at this age would be ready to learn. Evaluation of programmes was stressed as necessary with action research suggested as one way to assess effectiveness. Internal respondents voiced support for exploring how interventions outside the health sector and those which tackle structural inequalities (e.g. life skills training for girls) can affect health outcomes.

26. On women's incomes and child survival, one academic institution suggested that this was already a well-researched area and further descriptive research is not what is needed. Rather, we should maintain our focus on evaluating potentially effective interventions and the organisation and delivery of health care and policies. More broadly, there was support for DFID promoting interdisciplinary research. One respondent thought bringing together DFID's health and education research could help stimulate research capacity building. They argued that DFID should continue to capitalise on the very considerable strengths and breadth of the UK research base as well as seeking to strengthen capacity in the South.

CLIMATE CHANGE

27. On climate change, e-consultation respondents said that there is a need to focus on research that identifies factors leading to vulnerability to climate change and assesses adaptation strategies. We heard that research is needed to document impacts in situations where climate change has already led to or is leading to impact on health. Respondents urged us to look at the impact of climate change on people's health, in terms of their access to health services in areas affected by drought and flood as well as the challenges brought about by epidemiological changes. Climate change is dealt with more comprehensively in the Climate Change Working Paper.

In the short term, climate change per se is likely to impact health through catastrophic events (e.g. extreme weather events, increased famines, floods, droughts etc possibly also leading to conflicts and sudden population movements)... In the longer term it is likely to have a major impact on zoonoses and on changing vectors of disease. E-consultation respondent.

CAPACITY BUILDING FOR HEALTH RESEARCH

28. Some respondents said that DFID currently does well to build capacity through research programmes which encourage collaboration with southern academic partners. But some internal respondents questioned whether our capacity building really goes beyond encouraging superficial partnerships between northern and southern institutions. To make a real difference in health research capacity building we need to address not just individual capacity strengthening, but move towards creating proper career pathways, strengthening southern institutions and enhancing the research regulatory environment and networks. Respondents said our new research strategy provides an opportunity to fundamentally change the way we work. They asked whether we are using this opportunity to consider what changes are necessary to really build the capacity and incentives to identify, commission, produce, communicate and use data.

We should be working towards a situation whereby African countries are fully able to identify their priority health needs and respond accordingly, including health research. To do this, there needs to be research capacity and leadership in Africa – both in setting the research agenda to meet African health needs and in doing the research (including financial management, governance etc). E-consultation respondent.

29. Respondents urged us to build the environment where data are used to challenge the current practice. Respondents at the Nigeria consultation in particular emphasised that this needs to start with supporting countries to determine their own research priorities as well supporting indigenous researchers to do good research. A key question is to what extent are we building the environment for researchers, governments and civil society to work together to allow relevant high quality research to take place. Internal respondents asked whether we can introduce more flexible ways in which research support and capacity can be made available to country partners. How is DFID able to respond to nationally and regionally relevant research questions?

There was the view by most respondents across actor groups that donor funding for research often did not fall within national priorities, but instead was donor-driven and often followed global trends which were often imposed on the health sector in Nigeria. Nigeria country consultation report.

IMPLICATIONS AND FUTURE DIRECTIONS

30. Overall, the responses to the consultation suggest that we are broadly on the right track with our current research portfolio. We will learn from our experiences to date and build upon our successes and demonstrate how and why further investments will produce tangible impacts. We will build on our current portfolio of RPCs to reflect emerging trends in the burden of disease in developing countries. We will take account of our areas of comparative advantage and how our health research funding fits into the wider scene. This is not just about carving out a niche for DFID health research, but how can DFID best work with others to achieve our development goals.
31. We recognise that the abilities to plan, undertake, access and use research are inextricably linked. Countries need the capacity to not only do research, but also commission and use the results of that research. Nowhere is this more urgent than in Africa. We will bring research capacity development to the centre of our health research effort. We will address research capacity issues in a much more systematic way, paying special attention to critical research skills gaps, the coordination of the national research environment and how research findings are translated into practice. In particular, we will support two discrete health research capacity strengthening programmes with the Wellcome Trust and Canada's IDRC in Kenya and Malawi. We will be guided by the evidence on what has made research capacity programmes successful in the past, as well as what our research partners say they value most.

20. How countries adapt to new technologies was also a common theme. Participants at the India consultation emphasised that we need more understanding of the factors which facilitate early acceptance and adoption of newer technology among medical fraternity as well as barriers which prevent acceptance. For example, how and why do service providers adopt certain proven best practices or new technology and not others?
21. Several respondents argued that we should strengthen research capacity on health management information systems and statistics including, for example, monitoring, surveillance, pregnancy registers and pharmacovigilance. In Nigeria there was also demand for better data collection on health personnel, especially on migration statistics, and research into how best to retain more health professionals in the country. Consultation participants were keen to know about the infrastructural constraints to health care delivery, and mechanisms to tackle this. We also heard a call for more research on what service delivery models work in fragile and conflict-affected settings and whether and how health services can be used as a stabilising intervention in those settings.

ACCELERATING PROGRESS TOWARDS THE MDGS

32. Our research programme will continue to be set in the context of our overarching goals of attaining the MDGs, in particular those that relate to the improvement of health. These include the reduction of child mortality by two thirds between 1990 and 2015 (Goal 4, target 5), the reduction of maternal mortality by three quarters (Goal 5, target 6), halting by 2015 and beginning to reverse the spread of HIV and AIDS (Goal 6, target 7), halting by 2015 and beginning to reverse the incidence of malaria and other major diseases (Goal 6, target 8), and, in cooperation with pharmaceutical companies, providing access to affordable essential drugs in developing countries (Goal 8, target 17).
33. There are also other goals that bear directly on improving health outcomes. In particular the overarching goal, halving the proportion of people living in extreme poverty or hunger (Goal 1, targets 1 and 2), is central to the improvement of health status in developing countries. Achieving universal primary education (Goal 2) and eliminating gender disparities in education (Goal 3, target 4) are similarly critical for achieving improved health, particularly among girls and women.
34. Environmental sustainability, in particular providing sustainable access to safe drinking water and basic sanitation, and improving the lives of slum dwellers, are also directly linked to the reduction of waterborne and other diseases related to poor living conditions (Goal 7, targets 10 and 11). Global warming and environmental change will intensify threats to health, through higher temperatures, reduced rainfall, droughts and other extreme weather. There will be significant health implications as vector borne and water-related diseases are influenced by temperature and rainfall. Our research programmes in these areas will take account of the health implications.

35. Progress towards MDG 4, 5 and 6 will be at the core of our research activities in health. Progress has been made in Asia, but Africa is way off track. Despite massive increases in resources to tackle HIV and AIDS, TB and malaria their impact is growing and they remain significant and challenging causes of mortality and morbidity.
36. We will focus on three priority areas which are inter-linked and mutually reinforcing:
- Operational and implementation research to make interventions more effective
 - Health systems
 - Global health innovation systems

I) OPERATIONAL RESEARCH TO MAKE INTERVENTIONS MORE EFFECTIVE

37. HIV and AIDS remains the greatest research challenge, every day over 6,800 people are infected with HIV and over 5,700 die from AIDS-related illnesses; and, for every person put on treatment, another 3 people are infected. Prevention programmes grounded in the local reality have proved decisive in slowing or stopping the epidemic. We will focus on operational research to accompany scale up of effective interventions. In sub-Saharan Africa, the major focus is on sexual transmission as the major route for most new infections. We will support research on how best to promote and support robust contextual analysis of social, cultural, economic and behavioural factors and understand gender specific social and economic barriers to accessing health services. We will promote and fund research and monitoring and evaluation efforts that help fill existing knowledge gaps around HIV stigma and discrimination. We will renew our support in the search for an AIDS vaccine. We will continue to support research on improving female controlled prevention strategies, including microbicides, and we will also seek to promote ways of better engaging people living with AIDS in the research process.
38. In 2005 there were 14.1 million cases of TB and 1.6 million deaths. Countries have made some progress against TB, but we still need more tools to combat co-infection (where people are infected with both TB and HIV) and drug resistant TB. On malaria we know that widespread use of Insecticide Treated Nets (ITNs) and indoor residual spraying, together with more effective treatment regimens promise rapid progress but we still need more knowledge on scaling up interventions. Other diseases such as pneumonia and diarrhoeal diseases attract even less research funding but investments are likely to have greater returns.
39. We need to know much more on effective interventions to reduce maternal and child mortality on a large scale. The current political climate and lack of funding in reproductive and sexual health mean that family planning (including prevention of teenage pregnancy) and unsafe abortion will continue to be priorities for DFID and provide good rates on return on research funds.

40. Malnutrition contributes to 50% of child deaths yet is a badly neglected area by donors. Under-nutrition, especially in the first couple of years of infancy, leads to lifelong compromise of development and capacity, with serious economic consequences as well as human suffering. We will aim to support implementation research on scaling up known effective interventions and how to translate the results into action through public, private and community and household initiatives.
41. Finally, the burden of world disease is changing. Developing countries now face the double burden of communicable and non-communicable diseases, which are now responsible for more than 50% of deaths in adults in all developing countries outside of sub Saharan Africa. Although not yet formally included in the MDGs, the Lancet recently re-emphasised that no serious conversation about global health can now take place without acknowledging their future impact (Horton 2007). More adults are overweight which means that there will be far more people with diabetes and cardiovascular disease. Unchecked, tobacco-attributable deaths are projected to double from 3.4 million to 6.8 million in low and middle income countries by 2030. Mental ill health already accounts for 11% of the total global burden of disease and the burden is growing. Road traffic accident deaths are projected to increase from 1.2 million in 2002 to 2.1 million in 2030, primarily due to increased motor vehicle fatalities associated with economic growth in low and middle income countries (Mathers & Loncar 2006). Our research needs to provide evidence on how we can provide better preventative and treatment regimes which take account of the resource-constrained conditions in developing countries.

DFID'S ROLE

42. Today there is more money available for delivering vaccines and medicines for the major diseases affecting developing countries. Initiatives include the Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM), UNITAD, the international drug purchase facility, and the GAVI Alliance. As a result there is new funding for the provision of drugs, vaccines and insecticide-treated nets. While we have strong evidence for what basic services should deliver, we know much less on how available interventions should be implemented that improve coverage and utilisation. DFID's comparative advantage is in providing support for the operational and implementation research necessary to ensure that new programme funds are used effectively. We also have a crucial part to play in strengthening links between research and policy, including how policy makers are informed of research findings. To what extent do we effectively utilise existing research to feed into programmes and policy? What are the main bottlenecks in translating research into practice? We need to encourage a greater dialogue between researchers and policy makers so that evidence is presented in an accessible, timely and concise way.

II) HEALTH SYSTEMS AND FINANCING

43. Health systems constraints continue to impede the implementation of major global initiatives for health and the attainment of the MDGs. Strengthening health systems is vital for scaling up the coverage and quality of essential interventions to create maximum impact. We know there is a need for health-systems research to inform decisions at local, national, and international levels.

KNOWLEDGE GAPS

44. A WHO convened task force on health systems research identified four key knowledge gaps relevant to attainment of the MDGs (see box). We need to know much more on how to make the best use of financial and human resources. For example what is the best approach in responding to the human resource crisis? Evaluative research along side major interventions has a potential major role here. Research is also needed on how to organise and deliver health services and how to improve governance and stewardship. We are only now starting to gather more information on the effects of global initiatives and policies on health systems and we need more data on the impact of trade and donor activities on health.

HEALTH SYSTEMS RESEARCH GAPS

FINANCIAL AND HUMAN RESOURCES

Community-based financing and national health insurance
Human resources for health at the district level and below
Human resource requirements at higher management levels

ORGANISATION AND DELIVERY OF HEALTH SERVICES

Community involvement
Equitable, effective and efficient health care
Approaches to the organisation of health services
Drug and diagnostic policies

GOVERNANCE, STEWARDSHIP, KNOWLEDGE MANAGEMENT

Governance and accountability
Priority setting and evidence- informed policy making
Effective approaches for intersectoral engagement in health

GLOBAL INFLUENCES

Effects of global initiatives and policies (including trade, donors, international agencies) on health systems

Source: Task Force on Health Systems Research, Lancet 2004; 364: 997–1003

DFID'S ROLE

45. There are still relatively few funders willing to support health systems research and DFID has a strong track record and comparative advantage in this field. In addition to the two health systems RPCs we support the WHO-based Alliance for Health Systems which provides competitive grants to more than 300 partners associated with it. We also support MeTA which aims to increase transparency around the selection, regulation, procurement, sale and distribution of medicines. This will strengthen governance, encourage responsible business practices and reduce inefficiency in the pharmaceutical market and in many countries' commodity supply systems.
46. Many research questions require information about specific conditions in a particular country and judgements that take into account the values of the country. Health systems research is moving towards more international collaboration and sharing of experience from different settings. The International Health Partnership (IHP) commits us to harmonising our aid with other donors in ways that strengthen health systems. We will emphasise more evaluative research that runs in parallel to this and other innovative health interventions to feed new experiences. DFID has a role to play in not only supporting research but investing more in routine independent evaluations of policies and programmes. Finding ways of improving access to medicines which address the cost, availability and quality of drugs will be another key theme.

III) GLOBAL HEALTH INNOVATION SYSTEMS

47. Although there is a great need for new products to prevent and treat diseases and conditions that mainly affect developing countries, there is a lack of market demand which means that the private sector has few incentives to invest in R&D on these diseases. Because most public sector health research takes place in universities and public research institutions in developed countries, this is also overwhelmingly devoted to research directed at the health needs of developed countries. Between 1975 and 2004 only 21 new drugs (1.3% new drugs registered) were for tropical diseases, which amount for 12% of the global burden of disease. Similarly investing in the development of new technologies for neglected diseases is disproportionately beneficial to poor people.
48. In the past decade new initiatives have developed to address this gap. Notably, a number of PDPs have come into being to accelerate research on prevention and treatment of these diseases. A major impetus has been the funding provided by the Bill and Melinda Gates Foundation but DFID has invested in PDPs since 1998, when it was the first government to provide funding for the International Aids Vaccine Initiative (IAVI). The UK is one of the largest Government donors to PDPs, giving around £25 million in 2007/8 (£70 million between 2005 and 2008). Apart from the development of PDPs, there is also a recognition of the growing capacity in several developing countries (such as India and China) to undertake biomedical research cost-effectively.

49. While the PDP approach is promising there are a number of issues relating to the setting of priorities, coordination, and duplication of some activities that might be better done collectively. There also remains an issue of how the products of PDP research can be made available to people who need them in developing countries.
50. The UK has supported the use of Advanced Market Commitments (AMCs), including the establishment of a pilot for pneumococcal vaccine, to accelerate the development of new vaccines. A second pilot for an “early stage” AMC is currently under consideration. Neither AMCs nor PDPs are likely to achieve their objectives in isolation: “push” and “pull” mechanisms need to work together to meet the financing gap and overcome bottlenecks at different stages in the drug and vaccine development chain. There needs to be coherence in the choice of tools necessary to advance R&D in the case of each drug or vaccine, based on analysis of each context.

KNOWLEDGE GAPS

51. There are a wide range of unmet needs in developing countries for vaccines, diagnostics, drugs and other products to address their specific burden of disease and their specific economic, social and cultural circumstances. Some of these are currently addressed through DFID funding of PDPs which focus on HIV and AIDS, TB, malaria and neglected tropical diseases. Specific future priorities include:
- Meeting the financial needs of products in the development phase (e.g. cost of Phase III trials)
 - Areas of research not currently well covered by current initiatives (e.g. paediatric medicines)
 - How to address effectively the growing burden of NCDs in developing countries where most research is attuned to circumstances of rich countries (e.g. how to address cancer prevention and treatment in poor countries).

DFID'S ROLE

52. Amongst bilateral donors, the UK has played a catalytic and, to some extent, leadership role both in push funding, particularly PDPs, and in developing innovative pull mechanisms. The rapid expansion of our research funding over the next few years provides an opportunity to build on our existing portfolio and to develop promising new lines of priority research. This needs to take account both of the changing disease burden in developing countries and the growing capacity in some developing countries to do good research. It also provides a good basis for seeking to persuade other donors to contribute more resources to this field.

53. The Gates Foundation provides around 50-60% of aggregate PDP funding. The proportion has fallen over the last two years as more Governments, notably Ireland and the Netherlands have increased their investments. Continued public sector finance is crucial, not least because most PDPs are constituted to require a mix of public and private donations. As regards push funding, we believe public/private PDPs are catalysing drug and vaccine R&D in helpful ways and providing good rates of return on donor investment. We will increase and diversify our funding – for instance by paying more attention to TB and health technologies such as diagnostics – and to create synergies (and the right sequencing) between our investment in PDPs and AMCs.

Priorities for the strategy period include:

- Consolidating our funding of existing PDPs and identifying new candidates based on an assessment of priorities
- Seeking to improve the volume and sustainability of funding by investigating new mechanisms to attract more funding and new donors
- Improving the cost-effectiveness of funding by promoting mechanisms to improve coordination, performance monitoring and the sharing of common tasks
- Identifying new funding opportunities, particularly in areas that are currently under-researched including paediatric medicines and chronic disease conditions in developing countries.

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The Department for International Development (DFID) will spend up to £1 billion on research between 2008-2013. DFID's Research Strategy describes how the money will be used for maximum impact on reducing poverty in developing countries.

This paper is one of ten Working Papers which were produced to accompany the Strategy. Their purpose was twofold: first to record the key issues raised during a global consultation that DFID convened in 2007 about its future research; and second to spell out DFID's decisions on new directions, as informed by the consultation.

Each Working Paper reviews the current state of DFID's research on a given theme, highlights the key questions asked during the consultation process, and documents the main feedback received. The Papers then tease out the implications of the consultation findings on DFID's work, and end by spelling out DFID's future directions on each priority theme. Where possible, each Paper makes clear how DFID has drawn upon the consultation responses to shape its plans.

The full series of Working Papers are: Economic Growth, including Infrastructure; Health; Sustainable Agriculture; Climate Change; Education; Political and Social Science Research; Stimulating Demand for Research; Research Communication; Capacity Building; and Mainstreaming Gender in Research.

More information on DFID funded research can be found on the website www.research4development.info. This also offers the facility to sign up for e-mail alerts covering different sectors.

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