

Health Protection Agency response to the Cooksey consultation on the review of UK Health Research

Background comment

The Health Protection Agency (HPA) with a staff of 3,000 and with main Centres at Porton Down (Emergency Preparedness and Response), Colindale (Centre for Infections), Chilton (Radiation, Chemicals and Environmental Hazards) and a distributed network of Local and Regional Services, welcomes, in general, the proposal to bring together the R&D budgets of the NHS and the MRC.

It also appreciates that NHS/MRC funds are but one component of total health R+D funds, that DH needs substantial funds to enable it to effectively deliver its own statutory, regulatory and policy needs and that, additionally, there are major public health R+D needs. It is important to note that at present the NHS R&D budget does not fund public health R&D and that the MRC budget focuses on underpinning basic research. The HPA has to find its R&D funds from within the overall DH core budget or externally. Additionally the HPA focus is towards the D end of the R&D spectrum, for example in determining new vaccine efficacy, emergency planning, new product generation, on antibiotic and antiviral resistances and in developing enabling technologies for local needs. If these additional needs are not also appreciated then an opportunity to better use the totality of the MRC/NHS budget will have been lost

1. What are the strengths and weaknesses of the MRC and NHS R&D programmes at present? How do each of these support the research and training needs of the NHS, social care, industry and academia? Does more need to be done?

In general, the MRC and NHS current R&D Programmes are complementary but fragmented^{1[1]}. The bulk of MRC activity is at the basic science end of the R&D spectrum, whereas NHS activity is mainly in applied research. Neither are particularly active at the Development end of R&D.

The basic science research base of the MRC, in general, is world class, has a good peer review process of funding applications and high quality well managed MRC teams.

It is less easy to determine the quality of NHS R&D. What is clear is that some very able people work in the NHS. For NHS R&D overall, peer review mechanisms are less well developed than those of the MRC. This may be related in part to the need to take rapid action to effect solutions. There is a perception that the funds are not being effectively used to support R&D but to support other parts of the NHS.

The opportunity to strengthen public health research should be taken. Public health research funding infrastructure in general, and health protection research structure in particular, are insufficient to adequately deliver the

^{1[1]} UK Clinical Research Collaboration – UK Health Research Analysis *(20-06)
www.ukcrc.org

necessary infrastructure for the future. This requires attracting young researchers to the field, providing training for them and meaningful career pathways, and ensuring access to leadership and support from appropriately trained senior colleagues in health protection. The Health Protection Agency should be supported to take a leading role in this, and its research infrastructure further supported. Expertise in getting research into practice within the NHS and its partners is also in need of development. Again, the HPA would be a critical partner in this.

2. What do you believe are the key scientific and organisation challenges facing health research, and underpinning training, in the UK over the next decade? How might the UK Government best help address those challenges? What do you believe should be the Government's objectives for health research, and why?

There are three requirements: recognised international centres/research groups, seed-corn funding, and a need to identify and support priority areas across the totality of the system.

Additionally there has to be an upsurge in support for public health R&D.

A specific key scientific challenge is how to apply new developments to treatment, disease reduction and health protection. For example the application of genomics to infectious disease and environmental exposures to toxicants, including gene-environment interventions and the development of biomarkers of susceptibility and disease progression. Another challenge is the need for a better understanding of societal level psycho-social factors that shape the response of the public to risk perception and risk taking.

Of particular importance is strengthening the quality and not just the volume of the evidence base for health protection. Few randomised controlled trials (RCTs) of population level interventions have been carried out. As a consequence control measures have developed from observational studies. Developing RCTs in Health Protection will need policy makers to allow policies on topics such as Port Health to be properly trialled.

The academic capacity to undertake health protection research is limited across the country. Few academic centres are well-known for their work in health protection, despite a major MRC "Health of the Public" initiative five years ago.

3. What should be the Government's priorities for health research? Is there anything it should stop doing or funding? What is it not doing or funding that it should do, and, in the absence of further sources of support, what can it lower in order to release the necessary funds?

It is not adequately funding public health research. It has to build on the existing base and to ensure identification of clear delivery targets.

Overall it should promote partnerships working at the scientific level. The HPA is developing a public health consortium with NIBSC and university groups, to improve the nations capability to deliver high quality public health research as

R&D funds are made available in this area. In any new arrangement, funding of public health R&D should be given priority attention.

A number of priority areas for action, which have R&D needs, have already been identified by the Government e.g. in infectious diseases there exist Chief Medical Officer action plans for TB, hepatitis, and hospital acquired infections, and antibiotic resistance and antiviral resistance are also of paramount importance.

A key question should be “what mechanism will the UK Government adopt to identify priorities for research”. Key criteria would include current and projected disease burden, health impact and economic impact. Public concern is also a critical factor, for example the anxiety about power cables and the work undertaken by the HPA to produce evidence for guidance and rational debate.

Health protection funding should embrace the need to describe and monitor population level disease and exposure, and not be restricted to hypothesis testing.

The Health Protection Agency has identified a number of priorities for health research in the areas of infectious diseases and risks from chemical, poisons and radiations^{2[2]}. Amongst other things, this has highlighted the commonality across all areas for research into behaviour and factors which influence behaviour change. Two other areas where evidence to underpin Government policy or action is weak are chronic effects of exposure to chemical agents and the contribution of various healthcare environments to hospital acquired infections (HCAI). These three areas of behaviour, chronicity and HCAI merit particular funding attention. It has also highlighted the importance of near patient testing. This, with remote diagnostics and monitoring, is a key area for Government investment and is likely to have a profound effect on how healthcare is delivered.

- 4. How should decisions be taken on the balance between the long-term economic and social benefits of a high quality biomedical research base; and the needs for research to improve healthcare and other public services? What is the appropriate balance between public funding for investigator-led and priorities led research? How do we balance funding for basic science, translational science and applied science? Is this something that should vary over time? What mechanisms should be used to make judgements about this balance?**

The focus should be on potential benefits to the population within specific time-frames and then focus on how and whether these are likely to be delivered and by whom.

Judgements on the balance between basic, translational and applied science at any time may be made, based upon rates of successful translation of research into applied outcomes and on need. The MRC and NHS could form the basic components of fundamental and applied (treatment and healthcare) programme Boards respectively, and the HPA the core component of a health protection Programme Board, in a tripartite R&D commissioning body.

^{2[2]} http://www.hpa.org.uk/hpa/publications/research_strategy/research_strategy.pdf

- 5. In your experience, how have the results of publicly-funded health research in the UK been used, both in the development of new treatments and to influence / change wider policy and healthcare practices? What lessons can usefully be learned to improve the uptake of advances in science and medicine.**

Publicly-funded health research in the UK has made substantial impacts on the development of new or improved treatments of disease and more general improvement in health. In the areas of public health covered by the HPA there are good examples of high impact UK research on infectious diseases, multifactorial chronic disorders and the potential risks to health posed by environmental exposures to radiation and chemical agents. Advances in animal sciences, cell biology, genomics/ proteomics, epidemiology and health-related modelling are major contributing factors. Examples of such impacts include: the interactive roles of inherited genes, diet and other lifestyle factors in cardiovascular disease, cancer and other chronic disorders and the setting of evidence-based exposure standards/guidelines for ionising/non-ionising radiations and environmental chemicals.

A key message from the last decade is that the publicly-funded UK science base remains sufficiently strong to continue to make major contributions to public health research but tensions remains on: A) the establishment of appropriate balances in the support of basic, translational and applied research; B) the extent to which research is driven by burden of disease and health impact considerations or public/media/political attitudes; C) where public monies for research is best placed and the need (or otherwise) for the establishment of centres of excellence; and D) The quality and equity of scientific interactions associated with public and commercial monies.

- 6. How might better links be forged between 'basic', translational and applied researchers, working across the whole field of health research, from the laboratory bench to the front line of the NHS? How might better links be forged across disciplines, e.g. with engineers, physicists, and social scientists?**

The forging of stronger links between basic, translational and applied research is crucial for the further improvement of UK public health. Although this need has been evident for many years it may be argued that the progress has been piecemeal and lacked clearly identified drivers and mechanisms. For example, the HPA has productive interactions with the MRC and the NHS for research on infectious diseases and radiation/chemical hazards. However, in the main, these interactions tend to be set in the context of the R&D policies of each body rather than via a clear common vision of contributions to basic, translational and applied research on agreed topics.

- 7. How can the Government encourage translation, entrepreneurship and innovation in health research to improve public services in the UK?**

For this to be successful, a number of linked elements need to be in place.

First, and most important, there needs to be a culture amongst health researchers in which innovation and entrepreneurship is valued and celebrated by peer groups and the nation. Schemes to enable appropriate proportions of the wealth created to feedback to researchers need to be embedded.

Commercialisation of public sector research should not be used simply to replace government funding.

Second there needs to be an effective infrastructure and mechanisms for early stage finance to support innovative ideas through to the stage that commercial funding is a possibility. Projects need to be sharply focused on real commercial opportunities, perhaps aided by mentoring from experienced entrepreneurs. At present this kind of finance and business support is patchy and it needs revamping.

- 8. How can UK health research funding be most effectively used to provide the appropriate infrastructure for basic, translational and applied research, whether funded by the UK public sector or other sectors? How can UK health research funding be most effectively used to support the work of NICE, facilitate innovation and collaboration with industry, and address market failures in the application of healthcare?**

Clinical excellence is promoted above. Public health research involves much more than clinical excellence.

A number of specialised centres with specialist facilities, training, and first class researchers who provide specialist services are required, working on a national or regional basis, for example at HPA Porton Down, Colindale or Chilton.

- 9. What lessons should the UK learn from other countries in making the proposed changes to the institutional arrangements for the funding of health research?**

Large facility funding should be made more available to the health sector, as for the physical sciences. There is a need for serious upgrading of public health research facilities. This should be a priority.

The UK could learn from the USA in organisation of health research. e.g. NIH/NIAID funding arrangements use a multi-site collaborative approach to problem solving. The UK Home Office has adopted a multi-site approach, but not in an open network model. Other examples are the EU. Programmes with teams brought together to focus on particular tasks and problems (e.g. the TB vaccine development programmes TB- VAC or MUVAPRED, integrated projects relating to environmental hazards, and the virtual zoonoses institute Med-Vet-Net^{3[3]}).

- 10. In implementing the single fund for health research, to what extent should the MRC and DH / NHS R&D be merged or brought together? And to whom should the single, ring-fenced fund be accountable? Please provide reasons and any supporting evidence for your response.**

MRC/NHS budgets could be merged but merging the MRC/DH/NHS budget is a non-starter because of the DH requirement to address its statutory, regulatory and policy functions. Whether the funds are held by either MRC or DH or jointly some of the current NHS funds have to be targetted at public health R&D.

^{3[3]} <http://www.medvetnet.org/cms/>

A single step merger of R&D carries major risks to the bio-medical science base in the UK and in all likelihood would lead to a poorer health provision by government in the short term.

11. To what extent do the success of recent innovations in health research (e.g. Clinical Research Networks) and the proposed structures rely on the new *Connecting for Health* NHS IT system, and to what extent should it do so?

The HPA can form the basis of a public health protection and prevention network

The Connecting for Health (CfH) vision, particularly the Secondary Uses Service and the National Patient Records (NPR), provide the potential for unprecedented levels of access to clinical and demographic information, and the ability to link that information to other information from clinical trials, bioinformatics databases, and environmental data sources. The CfH systems should also provide improved communications facilities that will facilitate collaborative working.

As such, it offers significant opportunities for innovations in health research, particularly in the areas of: epidemiological studies that require large study populations (e.g. applied research such as technology assessment, public health and social care research); modelling studies to assess the potential value/impact of translational research; and the application of new technologies such as bioinformatics. These potential benefits will only be realised, if current uncertainties about data protection, confidentiality and the ethical issues of using health data for medical research are clarified and resolved. In addition, innovative research involving laboratory or non-NHS organisation collaboration will only be supported by the Connecting for Health NHS IT system if those systems are either integrated or made interoperable with Connecting for Health systems e.g. currently pathology IT systems are classified as being outside the core systems to be provided for CfH. This needs to be rectified. It is unlikely that these systems will be able to deliver real benefits for health research before 2010/11.

12. Given that NHS R&D is currently devolved, but that the work of Research Councils is not, how can these functions work best together to maximise the health and economic benefits to the UK?

MRC funding should remain UK wide and DH and the devolved administrations should retain funds necessary to deliver statutory and regulatory functions.