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Cooksey Review Secretariat  
HM Treasury  
1 Horse Guards Road  
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Dear Sir David

**Re: Invitation to Submit Comments**

Thank you for your invitation to submit comments on your impending review of the arrangements for a new single fund for health research. The following observations are made from our position as Directors of Research & Development at Moorfields Eye Hospital NHS Foundation Trust and the Institute of Ophthalmology – together forming one coherent site for eye research in London. While specifically related to the sub-specialty ophthalmology, we believe that aspects of the following comments would be applicable to other health care areas within the UK. We make three general comments before addressing the specific issues raised in your invitation to comment.

Firstly, public funds should be directed towards research that has, as its ultimate goal, the public good and in relation to your terms of reference – national health, science and economic objectives. Benefit to the public could therefore be improvements to clinical treatments for NHS patients, increased capacity and / or improvements to service delivery and income generation through successful exploitation of innovation. The Kings Fund Report (Wanless Report) noted that it was difficult to trace monies used to fund peer reviewed research that resulted in improvements in health care. It pointed to the failure to recognise and adequately support the significant development ‘gap’ between innovation (traditionally basic science funded by organisations like the MRC) and market product available for the benefit of patients (eg. clinical trials within the NHS and assessment by NICE). What fills this gap is in essence translational research. Adequate funding for this activity is essential and it will not be achieved effectively by simply merging basic science and clinical research funding. This innovation - development ‘gap’ can be considerable in terms of both finance and time and the success of both the Best Research for Best Health Strategy and the Science and Innovation Investment Framework will depend on a robust strategy to address this as currently –

- Virtually all technologies are at an extremely early stage

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- Clinicians, in particular, lack time and resources to reduce ideas / innovation to practice
- Industry wants products, not ideas
- Companies and investors want low risk, high return (factors above suggest high risk)

Secondly, research funding for any of the NHS recognised sub-specialities should be proportional to the monies spent by the NHS on that speciality, the activity and the socio-economic burden of disease. This process of prioritisation can be refined by involving utility values for disability in any of those speciality areas. Using data from the UKCRC – UK Health Research Analysis, the Department of Health Annual Report and the WHO Global Burden of Disease Project a comparison of the relative spends is attached at Appendix 1. In addition the health economic costs of visual loss and blindness in the UK have been established by the RNIB report. (The Prevalence of Visual Impairment in the UK – a Review of the Literature). There needs to be a very clear system for prioritisation of R&D funding. The simplest system would be to follow that established in other countries and specifically the USA where there are speciality areas recognised each with its own ring-fenced funding. Any alternative which makes generic awards is prone to squeeze out the smaller sub-speciality areas and those that are not politically sensitive yet clinically important.

Finally, there is no doubt that while the available funding may be inadequate for the purpose as described in the first comment, the efficiency and effectiveness of available funding could be maximised by the development of collaborative research networks within the UK. While it is recognised that the UKCRN is not supporting further topic specific networks there is the opportunity to develop virtual networks within the comprehensive research network. To this end Moorfields and the Institute of Ophthalmology are developing a network with other academic eye units within the UK to maximise collaboration opportunities, research support services and to develop comprehensive programmes of research activity focused on clinical need.

## Specific

1. Strengths – MRC funding supports basic science research of the highest scientific quality and at the opposite end of the spectrum the NHS HTA, SDO and HSR programmes are focused on the potential clinical and service impact and benefits to patient and public health. NHS R&D Support Funding provides the infrastructure for research programmes focused on Support for Science and the Priorities and Needs of the NHS.

Weaknesses – for the MRC the relevance to the NHS is not always clear and followed through – translational research is not a focus, nor has the average cost of funding the development of innovation through to clinical trials / practice ever been formally analysed. At the other end of the spectrum there is a potential for cross-subsidisation with clinical service delivery but even where this is not an issue the large middle ground (‘gap’) is largely unsupported. Yet taking from the ‘extremes’ of the research spectrum to fund the middle ground will leave basic science and clinical research support underfunded.

Social care – a translational research focus might exclude social care and in particular health economic issues. This aspect of ‘need’ should be strengthened in research planning. Industry and academia – the Lambert Review makes many recommendations that would facilitate the involvement of industry in translational research and its relevance to the healthcare sector should be carefully considered within this review.

2. The key scientific challenges facing health research over the next decade relate to a) prioritisation according to clinical need – see Appendix 1; b) development of collaborations and partnerships (networks) between academic disciplines, healthcare professionals and

industry / SMEs; c) spreading the available funding too thinly vs. excluding some organisations from research; d) addressing the need to train, support and protect the time / career pathway of clinical academics.

Organisationally the biggest challenge will be funding, particularly the infrastructure to support research activity. Centralising research support through the comprehensive research networks needs to be thought through very carefully with a clear understanding of the 'co-ordination' vs. administrative / governance role. Supporting the innovation development 'gap' in addition to the existing requirement for basic science and clinical trial support will be a major challenge without additional funding.

### Government objectives

- a) Seamlessness between University and NHS - because of the need to apply basic scientific discoveries to clinically relevant technology and simultaneously generate scientific questions based on clinical observations and patients views. This seamlessness needs to include an agreed strategy for the exploitation of innovation to benefit the economy as a whole. The underlying philosophy should be to serve the public good and technology transfer options should not set the price of IP too high and focus too heavily on spin-out as opposed to licensing with industry partners.
- b) Development funding – adequate initial funding for successful exploitation of innovation – essential activity that is currently unfunded. Early success in this area should result in sufficient income generation to fund the development of the next innovation in the pipeline.
- c) Networks to eliminate duplication of effort and encourage collaboration not competition. Maximise IT capability.
- d) Balancing need with research spend taking into account the need for academic freedom on the one hand with patient involvement on the other and the long term socio-economic need with short term political expediency.

### 3. Government priorities

- a) Re-align and prioritise in line with the histogram as per Appendix 1. For example a small reduction in 'infection' and 'cancer' research funding would free up funding for some of the areas such as 'respiratory', gastroenterology' and 'ophthalmology' where the current funding does not reflect the activity or DALY measurements. A great deal could be achieved by rewarding networks and 'bio-incubators'.
- b) Eliminate cross subsidisation between research support funding and clinical service delivery
- c) Achieve strategic alignment with University partners in terms of performance measures, funding and costing. For instance the Universities are currently rewarded for publications and grant income regardless of impact on patient care or the nation's health.
- d) Funding the 'innovation development gap' referred to previously and facilitating links with the DTI.

4. There is a clear need to do more to achieve a balance between investigator-led and priorities-led research and long-term socio-economic benefits and short-term impact on healthcare. This will only be achieved by a change in both the culture and the behaviour of scientists and clinical academics which in turn will only happen with a change in the reward structure. To achieve 'technology pull' as opposed to 'technology push' requires

multidisciplinary teams of scientists and clinicians focusing their individual expertise on relevant clinical problems from both the patient and the doctors perspective. This behaviour should be rewarded and the support for a 'pipeline' of research activity at varying stages from the laboratory to the patient should be developed within networked research programmes.

5. To date the development of new treatments and healthcare policies / practice as a result of publicly funded health research has been very ad hoc with sometimes years lapsing before the uptake of innovation eg. streptokinase in the 1980s. Publicly funded research in the UK suffers from being polarised between basic science and clinical trials. There has, until recently, been little recognition of the hugely important step from innovation to technology / product that can cost a lot of development funds and take several years. There is a need for direct funding of 'pipelines' of innovation.

Clinical practice should be evidence-based and global research contributes to the evidence. More should be done to ensure access to up-to-date clinical guidelines / protocols / SOPs – this could benefit from the development of research networks – and the process of authorisation from organisations like NICE should be speeded up.

6. See 4. Strategic alignment and the alignment of reward systems would result in a change in behaviour.
7. To encourage translation, entrepreneurship and innovation requires an increase in 'development funds' and a decrease in the perceived need to generate huge profits from exploitation. The benefit to the NHS is better treatments for patients. The big profits belong in the private sector to boost the economy.
8. Research in a sub-speciality area should recognise that projects and programmes may be short, medium, long term or 'blue skies'. The NHS arm of the national R&D spend should concentrate on the short to medium term projects which are entirely clinically based; translational research which, because of the logistic and regulatory hurdles to be overcome needs to be longer term in concept with a clinical trial as proof of principle. The laboratory research as well as the preliminary part of any translational research should come from the MRC component of the allocated funds. Bringing these streams together as co-ordinated funding of basic science to clinical pipelines probably represents the most efficient way of streamlining the transition of laboratory innovation to improvements in clinical practice. Programmes of research should give evidence of national collaboration to ensure the greatest exposure to patient groups as well as the best possible laboratory and clinical skills available.
9. The impact of bureaucracy and its negative impact on conducting research should not be underestimated. What works is flexibility and networks with industry and investors. The differences between the USA as world leaders in getting innovation to market and the individual member states of the EU are mainly focused around a cultural attitude to 'failure' and the funding available to support an entrepreneurial approach. Lack of funding for the development phase of innovation leads to a perceived over valuation of IP and missed market opportunities while holding out for substantial income that never materialises. Innovators in the USA are also much more likely to 'bounce back' from negative experiences.
10. See also 8. The most appropriate infrastructure for basic, translational and applied research is a dynamic organisation that arranges researchers around break-through disciplines ie.

complexity is addressed by interdisciplinary teams. Scientists, investigators and clinicians need to re-connect. The development of future researchers should involve exposure to laboratory science, epidemiology, biostatistics and research methods while training – this is in direct conflict with new training methods. Collaborative networks will benefit interdisciplinary work and initiatives and will support isolated researchers away from academic centres of excellence. Interdisciplinary teams should be dynamic and include less traditional partners at different stages of the R&D process eg. entrepreneurs, pharmacists, industry, investors and policy makers.

11. The major benefits of IT solutions should be efficiency and effectiveness of process that frees up precious and scarce resources. Given that inadequacy of resources for the development phase has been a recurrent theme and flexibility and ‘light-touch’ bureaucracy are essential, effective IT solutions could make a real difference to the process.
12. Already covered above.

In summary, the close intellectual and geographic links between Moorfields Eye Hospital NHS Foundation Trust and the Institute of Ophthalmology mean that we are able to function as a single unit and address research problems within eyes and vision as they arise. Our close links with City University complement this relationship. This postgraduate institute model has been shown to be efficacious in other areas within UCL and is clearly a model that should be rolled out into other speciality areas. The establishment of a Research Network within ophthalmology means that collaborations across the UK can be developed and maintained.

### **Main Points**

- Fund technology transfer but not at the expense of basic science and clinical research
- Research funding for any of the NHS recognised sub-specialities should be proportional to the monies spent by the NHS on that speciality, the activity and the socio-economic burden of disease.
- Encourage and support development of research networks
- Address the need to train, support and protect the time / career pathway of clinical academics.
- Develop integrated reward structures that support interdisciplinary teams of scientists, clinicians and others to focus on clinical problems.

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