



The Academy of  
Medical Sciences

## **Response to Department for Education and Skills' consultation on the reform of higher education research assessment and funding**

### **Summary**

The Academy of Medical Sciences is grateful for the opportunity to respond to the above consultation. This response was prepared with advice from the Academy's Officers, Sectional Committees and members of the Fellowship who contributed to previous Academy statements on this topic. The evidence presented here is endorsed by the Academy's Council.

The Academy welcomes the proposal for a metrics-based system to assess research quality and allocate QR funding for the biomedical sciences. Although peer-review enjoys considerable support, the process is becoming increasingly burdensome and complicated. With increasing complexity come new temptations for perverse behaviour. Moreover, the current system makes it difficult for institutions to plan ahead as future funding can be unpredictable.

A new metrics-based system should use a number of different indicators to avoid the perverse behaviour that would accompany over reliance upon a single metric. In such a system it will be important to choose the right metrics and weight them appropriately both within and between disciplines. Total institutional research income and funding council incomes are correlated, indicating that the former would be one useful metric. Others might be determined through the proposed 'shadow' metrics exercise that will be conducted in parallel with the next RAE, along with data from previous exercises. Metrics must measure research quality rather than volume. The Academy is particularly concerned that charitable support is given equal weight to that received from other sources in any system that uses research income as a metric. The Academy also wishes to express its strong support for the Charity Support Fund.

It is unclear when a new system might take effect, thereby increasing the uncertainty being experienced by institutions. HEFCE has issued a statement reaffirming that: 'RAE 2008 would substantially inform funding in England for a significant period from 2009-10 while any new model is being phased in.' However, this statement does not preclude a hybrid funding system being introduced in 2009-10 using RAE 2008 quality outcomes in concert with a metrics-based allocation system. The Academy believes that the outcome of the next RAE should determine QR funding for a reasonable amount of time (probably five years) given the considerable resources institutions have already invested in it. Further clarification is needed as to when a new system might be implemented and institutions given sufficient time to adapt.

**1. Which, if any, of the RAE 2008 panels might adopt a greater or wholly metrics-based approach?**

The Academy supports the use of metrics-based assessment for Units of Assessment (UoA) that make up most of the biomedical sciences: UoA's 1-16 and 18. Although peer-review enjoys considerable support, the process is becoming increasingly burdensome and complicated. With increasing complexity come new temptations for game-playing. Moreover, the current system makes it difficult for institutions to plan ahead as future funding can be unpredictable.

**2. Have we identified all the important metrics? Bearing in mind the need to avoid increasing the overall burden of data collection on institutions, are there other indicators that we should consider?**

Total institutional research income and funding council incomes are correlated indicating that the former would be one useful metric. However, research income should not be used as the sole indicator given the differing costs of research across disciplines and risk of the perverse behavior that accompanies over reliance on a single metric.

Some propose bibliometrics as an additional criteria as these are quantitative, indicative of quality and enable analysis of global trends. However, estimates of quality by citations or impact factor can be misleading, journal impact factors can obscure the impact of individual articles, data are difficult to compare across fields and disciplines, analysis is complicated by electronic and open access journals, and no consideration is given of the value of 'grey' literature. Moreover bibliometrics, like many other metrics, can be subject to game-playing. One useful bibliometric would be citations rebased on the average of the year in question in the particular discipline. Thus, a paper would be assessed by comparison with the 'average' paper within that discipline for a given year. This would give a measure of relative value within disciplines.

In considering research assessment the Academy would like to draw attention to the work of the UK Evaluation Forum whose remit is to explore how member organisations might share information and co-ordinate activity in evaluating and demonstrating the outcomes of research relevant to human health. Of particular interest is the Forum's recent report, 'Medical Research: assessing the benefit to society', jointly supported by the Academy of Medical Sciences (AMS), Medical Research Council (MRC) and Wellcome Trust (WT), that reviews research evaluation methods and recommends further action for funders, government and charities.

The Academy supports the development and use of discipline-specific metrics. For instance, better methods are needed to evaluate craft specialties<sup>1</sup>. The impact of work in these specialties can only be judged over a long time-span. The Academy is interested in helping identify and validate (a): indicators for translational research and (b): professional activity-based assessment criteria for clinical impact. Aspects of this are already being addressed through the AMS/MRC/WT Evaluation Forum.

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<sup>1</sup> Internal medicine and its specialities, paediatrics, surgery, obstetrics and gynaecology, ophthalmology, psychiatry, general practice, pathology, radiology, anaesthesia, intensive care medicine, dentistry

The Academy welcomes the proposed 'shadow' metrics exercise and proposes that a rigorous, quantitative and independent exercise is now commissioned with both retrospective and prospective data (i.e. in parallel with RAE) to identify by multivariant sensitivity analysis the combination of indicator metrics that would most closely match the RAE peer-review conclusions (including the outliers). The results from such modeling would inform future decisions on alternative assessment systems.

Whatever model is finally implemented the introduction of 'full economic costs' at the current rates will not provide the full costs of undertaking research. Thus, either more funds should be transferred from HEFCE to the Research Councils and Charities, or the metrics used should reflect the need to support the direct infrastructure of research. The general infrastructure in the UK, particularly equipment, is still in decline. Metrics based mainly on people or grant income, which is principally composed of salaries, will catalyse this decline.

### **3 Which of the alternative models described in this chapter do you consider to be the most suitable for STEM subjects? Are there alternative models or refinements of these models that you would want to propose?**

HEFCE has run models using data covering the period 1996/1997 – 1999/2000 referring to HEFCE grant allocations for 2002/2003 to illustrate the broader consequences of the approaches proposed in the consultation. The Academy believes that 2002/2003 is an inappropriate reference because the QR allocations made in that year were anomalous in not fully recognising 5\* departments. In every funding year since this was corrected by awarding QR supplementary premiums (5\*\*/6) to 5\* departments. It is therefore more difficult to interpret the HEFCE models as they cannot easily be compared with other years.

For Model B a standardised proxy quality indicator has been created by dividing research income by a volume measure. However, by using the full QR volume measure the same terms are effectively introduced into both the numerator and denominator of the quotient. Thus research income, including charity income, is in the numerator while charity income and number of research assistants, which is related to research income, is in the QR volume denominator. The resulting partial negation of the research income measure would undermine one of the metrics the Academy believes would be useful. A similar situation arises with regard to model D.

In model C, QR funding is allocated in proportion to research income but the 'pot sizes' for each UoA are constrained so that they continue at their level within the baseline QR allocations (2002/2003) rather than allowing the subject totals for each UoA to be determined by the modelling. The Academy is concerned that using research volume rather than QR-weighted research volume would disadvantage departments in UoAs that have a greater proportion of high-scoring departments.

Model E allocates QR in proportion to research income but with charitable income weighted less than other sources. This model would significantly disadvantage biomedical research, which receives substantial support from charities, and would effectively reverse many of the reforms brought about by the Charity Support Fund. The Academy believes that charitable peer-review is of the same standard as that conducted by other funders and therefore is as good an indicator of quality.

A study by the Government's Chief Scientific Advisor in 2004 bears testimony to the excellence of biomedical research in the UK; ranking it as second in the world after the US. Numerous high-level reports such as that of the DTI's Bioscience Innovation Growth Team and the recent joint Academy of Medical Sciences, Medical Research Council and Wellcome Trust report on research evaluation assert that biomedical research, much of which is supported by charities, contributes substantially to the health and wealth of the nation. The fact that biomedical research receives support from a number of sources only emphasises its value. It is therefore unclear to the Academy why charitable income should not be given equal weight to that from other sources.

Rather than advocate a single model the Academy has identified a number of principles based upon the above discussion that should underpin whatever new system is put in place:

- A new system should be metrics-based so as to reduce burdensome complexity and game-playing.
- A basketful of indicators should be used to discourage perverse behaviour and to take into account the heterogeneous costs across biomedical disciplines. It will be important to choose the right combination of metrics and weight them appropriately, both within and between disciplines.
- One useful indicator is total institutional research income. Others might be determined through a 'shadow' metric exercise in parallel with the next RAE along with data from previous exercises.
- Charitably funded work in the biomedical and clinical sciences is essential to the health and wealth of the nation. It is therefore important that charitable research income should be given equal weight to that from other sources. The contribution of other funders such as industry and the various European bodies should also be included.
- Research quality should be at the heart of any new mechanism. Departments in UoA's that include more highly-rated departments than the norm should not be penalised.

#### **4 What, in your view, would be an appropriate and workable basis for assessing and funding research in non-STEM subjects?**

The Academy is principally concerned with the biomedical sciences so believes others are better placed to respond to this question.

#### **5 What are the possible undesirable behavioural consequences of the different models and how might the effects be mitigated?**

Systems that use a single metric are likely to encourage undesirable behaviour as it will be easier for institutions to rearrange their affairs to maximise whatever particular indicator is chosen. A basketful of metrics would make such game-playing more difficult without the burdensome complexity that accompanies the current RAE. There will have to be some equivalence factor so that metrics can be translated between specialties.

It has been argued that assessment systems that use research income as a metric would substantially increase the number of grant applications by offering researchers greater incentives to seek funding. This might cause unnecessary work for both funders and researchers. It is the view of the Academy, however, that researchers

already tend to apply for the maximum number of grants possible and many institutions would not have sufficient resource, in terms of laboratory space for example, to take on substantially more research generated by new applications. The Academy therefore believes it unlikely that a marked increase in grant applications would be a consequence of using research income as a metric.

As set out in our response to question three, the Academy believes that volume measures should not be given unwarranted attention since research quality should be at the heart of any new assessment mechanism.

**6 In principle, do you believe that a metrics-based approach for assessment or funding can be used across all institutions?**

The Academy agrees that a metrics-based approach for assessment and funding can, and should, be used across all institutions. However, it is unclear when a new system might take effect, thereby increasing the uncertainty being experienced by institutions. HEFCE has issued a statement reaffirming that: 'RAE 2008 would substantially inform funding in England for a significant period from 2009-10 while any new model is being phased in.' However, this statement does not preclude a hybrid funding system being introduced in 2009-10 using RAE 2008 quality outcomes in concert with a metrics-based allocation system. The Academy believes that the outcome of the next RAE should determine QR funding for a reasonable amount of time given the considerable resources institutions have already invested in it. Further clarification is needed as to when a new system might be implemented and institutions given sufficient time to adapt.

**7 Should the funding bodies receive and consider institutions' research plans as part of the assessment process?**

Research strategies put out by institutions are often highly aspirational and take a local perspective so are difficult to map against national research assessment. Therefore institutional research plans should not be considered as part of the assessment process. Nevertheless, departments should be encouraged to prepare strategic plans as best practice.

**8 How important do you feel it is for there to continue to be an independent assessment of UK higher education research quality for benchmarking purposes? Are there other ways in which this could be accomplished?**

The Academy strongly supports the continuation of independent assessment of UK higher education research quality for benchmarking purposes.

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