

The Academy of Medical Sciences welcomes the opportunity to respond to this consultation on the Government Chief Scientific Adviser's '*Guidelines on scientific analysis in policy making*'. The Academy's core mission is to promote advances in medical science and to ensure these are translated as quickly as possible into benefits for society. This mission incorporates many of the issues considered in this consultation: the need for policy-makers to use the best available scientific evidence; the role of scientists in advising the Government; the processes by which the Government collects and interprets evidence; and the methods by which the Government implements policy changes.

Our 944 elected Fellows represent the UK's best medical researchers, drawn from hospitals, academia, industry and the public sector. They work to connect science, government, policy and society, both as individuals and as contributors to the Academy's own policy activities. In putting together this response we have consulted with some of the many Academy Fellows who have worked as advisors to Government, for example as members of scientific advisory groups.

Summary

Much progress has recently been made in embedding independent scientific advice into policy. The '*Guidelines on scientific analysis in policy making*' have contributed much to this progress, but they could be improved and we welcome the Government's desire to strengthen them. We would like to see the Guidelines:

- More clearly define the conduct of both government *and* scientists, and emphasise the need for understanding and respect of each other's roles and responsibilities.
- Reassure scientists that a government advisory role will not compromise their freedom to continue active research and to communicate their work.
- Clearly state the need for openness and transparency around the advice given and the Government's response.
- More clearly define the manner in which evidence-based policy changes should be introduced, which should include robust piloting and rigorous evaluation.
- Be accompanied by case studies that demonstrate best practice.
- Encourage evidence on which policy is based to be subjected to robust scientific peer review.
- Clarify the way in which scientific advisory committees should include sufficient representation of relevant fields and breadth of judgement.
- Recognise the role that National Academies and learned societies can play in the scientific advisory process.

The need for public policy-makers to use the best available scientific evidence

To source and make use of scientific evidence most effectively, Government must actively seek and encourage authoritative, independent scientific advice at the earliest stages of policy development. The Guidelines on the use of scientific analysis play an important role in setting out both how

scientific evidence should be used in developing policy and the government's commitment to evidence-based policy making. While we believe the Guidelines could be improved (as outlined in subsequent sections), we support their key messages, namely that departments and individual policy-makers should: think ahead and identify early the issues on which they need scientific advice and early public engagement, and where the current evidence base is weak and should be strengthened; get a wide range of advice from the best sources, particularly when there is uncertainty; and publish the evidence and analysis and all relevant papers. (Question 1)

To further improve implementation of the Guidelines, we would like to see them accompanied by case studies that illustrate best practice. These could be taken from the reviews on the use of science by Government departments that have been carried out periodically since 2004, or be identified by the departmental Chief Scientific Advisors (CSAs). (Question 1)

The role of scientists in advising the Government

While scientific evidence is not necessarily the only factor that must be considered when making policy, scientists do have a vital role to play in providing and interpreting evidence.¹ Expert advice should always be sought when reviewing the evidence base that underpins a particular policy or set of policies. In seeking advice from scientists, the government must ensure that it consults a sufficiently wide range of expert sources, whether this is on an *ad hoc* basis or via more formal mechanisms, such as advisory committees. There are two facets to this. First, departments must ensure that those consulted include scientists (and social scientists) from a sufficient range of disciplines. It is rare that a policy question can be addressed by looking at the evidence provided by a single discipline. Second, those that are consulted should represent the breadth and weight of scientific opinion. The '*Guidelines on scientific analysis in policy making*' currently refer to selecting a group of advisors whose 'breadth of judgement is sufficiently balanced to reflect the diversity of opinion amongst experts' (paragraph 13). This latter term implies that equal representation of opinions is required, but the composition of the group of experts should reflect the weight of scientific opinion that exists. In both cases the relevant departmental CSAs, advisory committee members, scientific staff in the department and professional bodies (such as the National Academies) can identify or provide expert sources of advice. (Question 3b)

As highlighted above, the National Academies and learned societies, whose Fellows represent the elite of UK science and scholarship, are a particularly useful resource, as currently noted in paragraph 13 of the Guidelines. These organisations can provide external advice on committee membership and identify experts who might be consulted as required on particular topics, particularly when a rapid response is required to new evidence or data that apparently challenges current policy. Further, through activities such as working groups and fellowship schemes for young scientists, these organisations have access to an extensive network of scientists outside of their Fellowships, from all sectors and throughout many scientific fields. In addition, the National Academies, jointly or individually, could play a more active and formal role in training and guidance for scientists (and Government officials) in developing evidence-based policy. (Question 3b)

The recent dismissal of the Chair of Advisory Council on the Misuse of Drugs has caused concern among the scientific community and led to widespread debate about the role of scientists in advising Government. An effective relationship between scientists and policy-makers requires

¹ Academy of Medical Sciences (2009). *Response to the House of Commons Science and Technology Committee inquiry: Principles for the treatment of independent scientific advice*. <http://acmedsci.ac.uk/p100puid169.html>

mutual trust. The current '*Guidelines on scientific analysis in policy making*' have improved the way that Government departments seek and use scientific advice, but we believe that they would benefit from defining the expected roles and responsibilities of both scientists *and* Government in developing well informed policy. This could contribute towards building trust and demonstrating the two way relationship between government and scientists. We recognise and welcome the intention to do this in the high level '*Principles of scientific advice to Government*' instigated by Lord Drayson and published by the Department of Business, Innovation and Skills in December 2009. However, the statement in these Principles that advisors and government should 'work together to reach a shared position' is open to misinterpretation and could be seen to undermine the independence of advisors and advisory committees. (Question 1)

Safeguarding the independence of scientific advisors and advisory committees from undue influence from government is essential if the advice they give is to be credible to the public and other stakeholders. This should be a core theme of both the Guidelines and the high level Principles. Scientists must be seen as independent from any influence but the weight of the scientific evidence. We believe the Guidelines would benefit from highlighting that scientists should strive to make judgements and give advice based only on the scientific evidence and that they should acknowledge the uncertainties surrounding their conclusions, including minority views within the committee. We welcome the fact that the management of conflicts of interest has improved in recent years, but the Guidelines would benefit from providing more detail here; in particular, on how potential reputational (as well as financial) conflicts of interest are handled and on how long a declared interest remains relevant. (Question 3b)

Protecting the freedom of academics to publish and promote their own work is an important part of ensuring that advisory committees and advisory positions attract the best scientists and allow them to remain at the forefront of their discipline. In addition to traditional scientific conferences and journals, there is now an increasing expectation upon scientists that they will take their work into public forums, as demonstrated by the inclusion of these activities in the 'Impact' criteria of the Higher Education Funding Council for England's recent Research Excellence Framework proposals for assessing the quality of UK academic research and in the secondary criteria for assessing Research Council grants. It is vital that scientists do not feel that a government advisory role will compromise their freedom to continue active research and to communicate their work. It would be helpful for the Guidelines to refer more explicitly to the need for expert advisors to retain their academic freedom. (Question 1)

It is important that both government departments and scientists have a clear understanding of how breaches to these Guidelines will be handled. The Guidelines would benefit from offering clarity around such circumstances. (Question 1)

The processes by which the Government collects and interprets evidence

Government departments should ensure that all scientific evidence on which policies are based has been scientifically peer reviewed. Much of the evidence considered by policy-makers will have undergone such review via the normal channels, such as prior to journal publication. However, if this has not been carried out, the Department concerned should seek independent scientific peer review. Advisory committees clearly have an important role to play in identifying the extent to which an evidence base has undergone peer review and whether further evaluation is necessary. This is also an area where the government can again benefit from the expertise, authority and independence of the National Academies and the networks of scientists to which they have access,

particularly where rapid peer review is required. There will be occasions where it is beneficial to seek peer reviewers from outside the UK. (Question 5)

The '*Guidelines on scientific analysis in policy making*' should acknowledge the fact that few departments have either the resources or the skills in-house to undertake full systematic evaluations of the evidence that will inform policy decisions about particular issues. It is helpful for staff to maintain an awareness of the current trends in the literature and for CSAs to ensure they maintain informal contacts with a range of scientists in disciplines related to the work of their department. However, recognition of the limits to departmental expertise in the Guidelines would highlight to departments the value of their scientific advisory committees and of external bodies, such as the National Academies. A number of our Fellows have highlighted the vital role played by civil servants who have a scientific background, in ensuring that requests for scientific advice are properly formulated and the resulting advice is properly communicated and utilised (e.g. as the secretaries to and as observers on advisory committees). Our Fellows also noted, with concern, their perception that the numbers of such individuals within the civil service is falling. We trust that the members of the Head of Science and Engineering Profession network, led by the Government's Chief Scientific Adviser, will keep this under review and that the new Government Science and Engineering Community will help develop and maintain the skills of scientists and engineers in the civil service. (Question 3a, Question 4)

Ensuring a co-ordinated scientific advisory structure for cross departmental policy issues is vital. As we highlight in our recent report, '*Reaping the rewards: a vision for UK medical science*', major policy problems such as obesity or climate change cut across many government departments.² Political support is required at the highest level to coordinate, facilitate and incentivise cross-departmental working along with appropriate inter-departmental structures and funding. Proposals from the Cabinet Secretary to create single budgets for cross-departmental challenges, such as obesity and Alzheimer's disease, and to make Ministers responsible for delivery across government could incentivise more effective coordination. We welcome the recognition in the Guidelines of the need for departments to design and implement appropriate strategies at the early stages of issue identification, to promote effective collaboration. The Guidelines could also illustrate, through the use of case studies, how collaboration can work effectively throughout the process of using scientific evidence in policy making across departments. (Question 4)

The scientific evidence base for most policy issues is rarely sufficient and is continually evolving, but for some issues, conclusive evidence is particularly lacking. Departments must consider whether there is enough time to gather further evidence before government needs advice; or whether the urgency is so great that advice must be given on the currently available evidence. In circumstances where new evidence emerges, the Academy reviewed the conditions under which new evidence might demand policy action in more detail, with respect to the causes of disease, in its 2007 report, '*Identifying the environmental causes of disease: how should we decide what to believe and when to take action*'.³ A number of the points raised are applicable beyond this specific context, in particular, decision makers should bear in mind that: it is very rare for a single breakthrough study to make any causal inference certain; the impacts of an issue must be considered for both the individual and at a collective (population) level; and the efficacy of interventions based on evidence must be assessed following implementation. Furthermore, the National Academies are a useful resource for providing scientific and evidence-based advice and

² Academy of Medical Sciences (2010). *Reaping the rewards: a vision for UK medical science*. <http://acmedsci.ac.uk/p99puid172.html>

³ Academy of Medical Sciences (2007). *Identifying the environmental causes of disease: how should we decide what to believe and when to take action*. <http://acmedsci.ac.uk/p99puid115.html>

government should use them to obtain *consensus* views, particularly in scientific areas that are complex, emerging or without a large evidence base. (Questions 5 and 6)

Even well-evidenced policy decisions may not bring about the expected benefits. It is crucial that policy changes are supported by evidence-based decision-making and introduced in a manner that includes robust piloting and rigorous evaluation, for which funds must be provided.⁴ (Questions 3a and 6)

The Departmental research and development budgets are an important source of funding both when there is time to seek new evidence and in order to evaluate the impact of evidence-based policy decisions. Ring fencing these budgets will enable them to be available to underpin evidence-based policy making.⁵ As in all areas of research, in spending departmental R&D budgets, peer review should be used to assess the quality of proposals and evaluate outcomes. (Questions 4 and 5)

The need for openness and transparency in these processes

We feel that more emphasis should be placed on the importance of transparent processes in the Guidelines. With a few notable exceptions (e.g. threat to national security or public health) the evidence underpinning the recommendations of advisory bodies and the Government's response should be placed in the public domain. We welcome the recognition of the need for openness and transparency outlined in the high level '*Principles of scientific advice to government*' published by BIS in December 2009. The '*Guidelines on scientific analysis in policy making*' outline that the judgements made by decision-makers should be publicly accessible, both physically and in a form that is meaningful to most citizens. The Guidelines should continue to stress the need for such an explanation and importantly, must make clear that this standard should apply whether or not the advice given is eventually followed. We agree with the high level Principles that Government should demonstrate that it has properly considered the advice (e.g. by taking time between the advisory committee's report and its response). The Guidelines on the use of scientific analysis should also acknowledge this and reinforce the fact that Government departments should not prejudge the expected conclusions of a committee's activities. (Questions 1 and 4)

Transparency and openness are clearly necessary for effective public engagement and dialogue. We therefore welcome the fact that the Guidelines acknowledge the importance of public opinion in policy making and efforts should continue to ensure that public dialogue is part of the process. Public engagement cannot change the scientific evidence, but it can ensure that advisory groups fully address the issues that are of concern to the public and it provides additional information to decision makers (e.g. the particular importance that sectors of the public might apportion to different risks identified by the advisory committee). Giving relevant umbrella organisations representing the views particular people, such as patient groups, an opportunity to present their views to advisory committees; or exploring the possibility of undertaking a period of consultation on committee reports can also be valuable. Occasionally, there are tensions between scientific evidence, immediate political concerns and public opinion, and the Government will need to show care and leadership in addressing such conflicts. (Question 3d)

⁴ Academy of Medical Sciences (2010). *Reaping the rewards: a vision for UK medical science*. <http://acmedsci.ac.uk/p99puid172.html>

⁵ Academy of Medical Sciences (2010). Response to the House of Commons Science and Technology Select Committee Inquiry: The Impact of spending cuts on science and scientific research.

Further references

In response to the request in the consultation document, the Academy suggests the following references might be useful:

Academy of Medical Sciences (2007). *Identifying the environmental causes of disease: how should we decide what to believe and when to take action*. <http://acmedsci.ac.uk/p99puid115.html>

Both the House of Lords and House of Commons Science and Technology Select Committees have published reports on the subject of scientific advice. Of particular interest is:

House of Commons Science and Technology Select Committee (2006). *Scientific advice, risk and evidence based policy making*.
<http://www.publications.parliament.uk/pa/cm200506/cmselect/cmsctech/900/900-i.pdf>

The Academy of Medical Sciences

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

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

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