Response to the Office of Science and Innovation's Review of Science in the Home Office

Summary

1. The Academy of Medical Sciences welcomes the opportunity to contribute to the Office of Science and Innovation's 'Review of Science in the Home Office' and would be happy to expand on the points made in this submission or provide further assistance if required. This response has been informed by the Academy's recent meeting on 'The Science of Violence', the recent report of the working group chaired by Sir David Weatherall on the use of non-human primates in research, the continuing deliberations of the Academy's committees on Brain Sciences, Drugs and Addiction, the work of its Non-Experimental methods committee and the Academy's report 'Calling Time'. [1] [2] [3] Copies of the 'Science of Violence' meeting report and the Weatherall report are enclosed with this response.

2. The Academy's response comes from the perspective of the medical sciences and it recognises that some of the topics encompassed by this consultation are beyond its remit. With regard to the terms of reference of the Review, this response is principally concerned with: science strategy, horizon scanning, the extent to which the Home Office reviews and harnesses existing research, commissioning and management of new science, the quality and relevance of Home Office research, the use of science to formulate policy, the management of relevant evidence and Home Office research capacity and capacity building.

3. In summary, the Academy supports the strategic aim of the Home Offices' Science and Innovation Strategy to provide high quality science that is fit for clearly defined purposes and to positively encourage the external science and technology community to help drive innovation.[4] While much of the Home Office's strategy focuses on the social and physical sciences, medical science has much to offer. The Academy particularly wishes to emphasise the need to:

    - Implement the recommendations of the Davidson Review in order to reduce the regulatory burden associated with the use of animals in scientific procedures while maintaining the highest standards of animal welfare.
    - Implement relevant recommendations from the Weatherall report.
    - Improve the quality and quantity of applied research conducted by the Home Office by establishing a dedicated fund for research into services, increasing the use of randomised and other controlled types of research methodology and establishing a field trials unit.

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[1] Weatherall D (2006) *The use of non-human primates in research.* An independent working group report sponsored by the Academy of Medical Sciences, Medical Research Council, Royal Society and Wellcome Trust.
[2] Further details of the Brain Sciences, Drugs and Addiction and Non-Experimental methods projects can be found at: http://www.acmedsci.ac.uk/p47prid47.html
[3] Academy of Medical Sciences (2004) Calling Time: the Nation's drinking as a major health issues. http://www.acmedsci.ac.uk/p48prid16.html
[4] Home Office (2005) Science and Innovation Strategy 2005-08 http://www.homeoffice.gov.uk/documents/science-strategy.pdf (accessed January 2007)

- Increase capacity and improve training for those undertaking applied research relevant to the Home Office by establishing university police and offender management schools, based upon the medical school model, that bring together research, training and service delivery.
- Develop a national cadre of crime analysts in Crime and Disorder Reduction Partnerships.
- Strengthen the culture of evidence-based policy within the Home Office.
- Establish an 'Institute of Excellence', equivalent to the National Institute for Clinical and Public Health Excellence, to guide delivery of public services by the Home Office.

Animal research

4. Medical research improves the understanding and treatment of disease. Despite advances in other methodologies, the Academy believes that research using animals is sometimes essential.[5] The Academy supports the '3Rs' that seek to: replace the use of animals where possible, reduce the number of animals used and refine procedures in order to minimise suffering. [6] In discussing animal research, particularly that which involves primates, the Academy acknowledges that the Home Office is principally concerned with the regulation of this work rather than carrying it out.

5. Research using animals in the UK is regulated by the Home Office, which is advised by the Animal Procedures Committee (APC). The current system seeks to ensure the highest possible standards of welfare for animals in scientific procedures. The Academy endorses the verdict of the Davidson Review, which concluded that UK legislation governing the use of animals in scientific procedures goes beyond the requirements of European Directive 86/609/EEC, and recommended that statistical returns process, personal and project licenses, should be simplified.[7] [8]

6. In the case of non-human primates, the Academy wishes to draw the OSI's attention to the Weatherall report that concluded that there is a strong scientific case for the carefully regulated use of non-human primates in research where there are no other means to address clearly defined questions of particular biological or medical importance. [9] Of particular relevance to the use of science in the Home Office are recommendations to:

    - introduce retrospective reporting on the severity of procedures for non-human primates;
    - accelerate work towards improving and applying current best-practice regarding housing of non-human primates;
    - further efforts to improve interactions between regulatory bodies at national and international levels and between regulatory bodies and the scientific community;

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[5] Academy of Medical Sciences (2004) *The Use of Animals in Medical Research.* http://www.acmedsci.ac.uk/p101puid54.html (accessed January 2007)
[6] Russell WMS and Burch RL (1992) The principals of humane experimental techniques. Universities Federation for Animal Welfare.
[7] Cabinet Office (2006) *Davidson Review Final Report.* http://www.cabinetoffice.gov.uk/REGULATION/reviewing_regulation/davidson_review/ (accessed January 2007)
[8] EU (1986) Directive on the approximation of laws, regulations and administrative provisions of the Member States regarding the protection of animals used for experimental and other scientific purposes (86/609/EEC) http://ec.europa.eu/food/fs/aw/aw_legislation/scientific/86-609-eec_en.pdf (accessed January 2007)
[9] Weatherall, 2006 (as footnote 1)

- act on the recommendations of the forthcoming National Centres for the 3Rs and Association of the British Pharmaceutical Industry study on regulatory toxicology and re-examine responses to the 2002 APC report;
- urgently examine concerns that the costs and harassment by activists are forcing scientists and research companies to purse non-human primates work overseas; and
- give careful consideration of the creation of UK centres of excellence for non-human primate research.

Research methodology and training

7. Health and criminal justice are hugely important services that are encountered by almost everyone and rightly receive substantial resources from government. The quality of these services is, in part, dependent upon the knowledge and information that underpins them. Research that is relevant to the Home Office's mission of 'building a safe, just and tolerant society' is organised and integrated with its services in a fundamentally different way from the organisation of medical science and its subsequent integration with health services. [10] These differences not only relate to the quality, management and use of science, but also apply more widely in university departments and in public services relevant to Home Office functions.

8. Similarly, the production of evidence fundamental to the roles of the Home Office is organised very differently from evidence production in the medical sciences. Research can be thought of as a continuum from basic to applied. In the health services these categories of research have a similar status, but in the Home Office there is much more emphasis on the theoretical, which considers matters such as the causes of crime, rather than on applied research, which considers matters such as interventions to prevent crime.[11] A continuum between fundamental and applied research in the Home, as is the case the medical sciences, is important.

9. A principal symptom of this imbalance – and lack of emphasis on applied science - is the absence of university police or offender management schools and a lack of recognition of police science or offender management science in research-intensive universities. [12] [13] This model contrasts sharply with the situation in the medical sciences where clinical academics at medical schools, within or closely associated with hospitals and universities, integrate research, training and service delivery. The success and widespread support for this approach in the medical sciences perhaps indicates that it would be appropriate for other fields such as criminal justice that would benefit from the translation of basic research into applications.[14] [15]The Home Office should lead the recognition and development of police and offender management science in the Home Office, the higher education sector and in police and offender management services.

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[10] Further details of the mission and objectives of the Home Office are available from: http://www.homeoffice.gov.uk

[11] Farrington D (2003) British Randomized Experiments on Crime and Justice. *The Annals of the American Academy of Political and Social Science*, 589 (1): 150-167

[12] Sanders C (2006) *A quiet revolution in law and order.* http://www.thes.co.uk/search/story.aspx?story_id=2032272 (accessed January 2007)

[13] Academy of Medical Sciences (2007) *The Science of Violence.* Available from: www.acmedsci.ac.uk

[14] Academy of Medical Sciences (2003) *Strengthening Clinical Research.* http://www.acmedsci.ac.uk/p99puid22.html (accessed January 2007)

[15] Bioscience Innovation Growth Team (2003) Bioscience 2015. http://www.bioindustry.org/bigtreport/ (accessed January 2007)

10. From a medical science perspective, both the quality and quantity of evidence relevant to Home Office functions could be improved. [16] A range of controlled experimental approaches have been developed within the health sciences that could be used in more rigorous evaluations of criminal justice and crime reduction interventions. [17] The volume of applied research should increase and that which considers interventions should be based far more on randomised and other controlled experimental methodology used in the medical sciences. A review of the Cochrane and Campbell databases shows a very marked discrepancy in the extent to which the health and criminal justice services are based on high quality evaluations and randomised controlled experiments.[18]

11. In the past criminal agencies have often been unwilling to allow researchers to assign experimental subjects to case or control status in randomised controlled trials of criminological interventions. [19] However, there is a growing consensus among scholars, practitioners and policy makers that crime control practices and policies should be rooted in randomised experiments. [20] It has been argued, convincingly, that there is a moral imperative for this approach. This is clearly a sensitive issue that requires careful consideration.

12. Other barriers to greater Home Office investment in randomised controlled experiments include the lack of status of applied social research (which is surprising from a medical science standpoint), a lack of training in quantitative experimental approaches among social scientists, and, as discussed, a lack of integrated university schools for practitioners who deliver Home Office services. [21] [22]

13. The Academy therefore considers that the Home Office should increase its investment in randomised experiments of potential interventions and build research capacity both within and outside the Home Office. This should involve greater integration of basic and applied science, for instance through investment in applied statistics and the development of a Field Trials Unit with the Economic and Social Research Council (similar to the Clinical Trials Units supported by the Medical Research Council). [23]

14. Over the past five to eight years crime analysts have been appointed to both the police and Crime and Disorder Reduction Partnerships (CDRPs). These analysts are already the basis of what could become a national specialty of 'crime epidemiology' which, if it is recognised as such, would help to ensure that the activity of crime reduction services is based on reliable science in a manner similar to the way in which public health services help to ensure that efforts to prevent disease are evidence based. The Academy believes that this national cadre of analysts should be developed by establishing formal training programmes and a national association to represent them in order to further root Home Office policy in quantitative and experimental methodology.

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[16] Shepherd JP (2003) Explaining feast or famine in randomised field trials: medical science and criminology compared. *Evaluation Review*, 27 (3), 290-315
[17] Shepherd, 2003 (see footnote 16)
[18] Shepherd JP (In press) The management of evidence for public service reform. *Evidence and Policy*
[19] Farrington D (1983) Randomized Experiments on Crime and Justice. *Crime and Justice*, 4: 257-308
[20] Weissburd D and Petrosino (2004) Experiments, criminology. In: Encyclopaedia of Social Measurement San Diego Academic Press: San Diego
[21] Shepherd, 2003 (see footnote 16)
[22] Academy of Medical Sciences, 2007 (see footnote 13)
[23] Shepherd, 2003 (see footnote 16)

15. A major difference between services led by the Home Office and those provided in healthcare is the organisation of service-specific research. In the NHS, formal research and development is well established and is funded by a dedicated, ring-fenced budget. At present, no Home Office services are supported in this way. There is widespread agreement that the reforms described in *'Best Research for Best Health'* and the Cooksey Review will improve R&D within the NHS and impact positively on NHS effectiveness and cost effectiveness. [24] [25] Furthermore, the recent NHS adoption of the recommendations of the Walport Report on the training of clinical academics is increasing research capacity further still.[26] The Academy believes that similar steps need to be taken by the Home Office to introduce productive research and development schemes in the police service, offender management services and in criminal law.

16. The Academy believes that services led by the Home Office should be far more reliant on concise, readable, science-based guidelines distributed to service managers and practitioners. The culture of 'evidence-based' policy within the NHS is cultivated in clinical schools, in continuing professional development and through publications such as the British National Formulary and Clinical Evidence (published by the British Medical Journal). [27] The work of CDRPs strongly suggests that local crime reduction initiatives are rarely based on reliable evidence and evaluation, if it takes place at all, occurs only after the initiatives have been implemented.

17. The Academy considers that the public services led by the Home Office should be guided by an 'Institute of Excellence', perhaps equivalent to the National Institute for Health and Clinical Excellence (NICE). In the NHS, Primary Care Trusts have a statutory obligation to fund the recommendations of NICE technology appraisals within three months of publication. It is striking that in policing and elsewhere within criminal justice services there are no such institutes or indeed any substantial commitment to science-based policy-making. [28]

18. The Academy has convened a working group, Chaired by Sir Michael Rutter FBA FRS FMedSci, to consider the use of non-experimental methods in biomedical research that may make recommendations relevant to the use of science in the Home Office. [29] This project is expected to report later in 2007.

19. Lessons learnt from the medical and health sciences are relevant not only to the Home Office, but also to the way in which relevant science is commissioned, organised and integrated with public services across the board. The Home Office is in a position to lead applied social science reform in research-intensive universities, and to develop the structures necessary to move towards interventions that are supported by rigorous scientific evidence and away from

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[24] Department of Health (2006) *Best Research for Best Health: A new national health research strategy.* http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance (accessed January 2007)
[25] Cooksey D (2006) *A review of UK health research funding.* http://www.hm-treasury.gov.uk/media/56F/62/pbr06_cooksey_final_report_636.pdf (accessed January 2007).
[26] UKCRC (2005) *Medically and dentally-qualified academic staff: Recommendations for training the researchers and educators of the future.* http://www.ukcrc.org/PDF/Medically_and_Dentally-qualified_Academic_Staff_Report.pdf (accessed: January 2007)
[27] Further details are available from: http://www.bnf.org/bnf/ and http://www.clinicalevidence.com/ceweb/index.jsp
[28] We note that the National Centre for Policing Excellence is about to be submitted into the National Police Improvement Agency.
[29] Further details are available from http://www.acmedsci.ac.uk/p47prid50.html

those that are not. A move to a more scientific approach, in terms of methodology, capacity and structures, would have significant implications for cost-effectiveness, and could eventually reduce overall research and service costs.

Brain sciences, drugs and addiction

20. The Academy supports the Home Offices' mission to ensure that fewer people's lives are ruined by drugs and alcohol. [30] At the end of 2005, the Government invited the Academy of Medical Sciences to undertake an independent review of the issues raised in the Foresight report, *'Drugs Futures 2025?'* Informed by 15 'state-of-the science' reviews, the Foresight project explored the likely impact of advances in the sciences and social sciences in relation to: legal and illegal 'recreational' drugs; medicines for mental health; and 'cognition enhancers'. [31]

21. The Academy has convened an expert Working Group, chaired by Sir Gabriel Horn FRS, to take this study forward. The Working Group are considering, in consultation with experts and the public, a broad range of issues around brain science, addiction and drugs and will publish a final report by the end of 2007, to include recommendations for future research needs and public policy.

22. A dedicated Cross-Government Advisory Group, including a representative from the Home Office, has been set up to follow and advise on the strategic direction of the project, ensuring its relevance to Government as a whole. The Working Group's deliberations and recommendations with regards to recreational drugs, for example issues around estimating trends in drug misuse, punishment, or drug classification, may prove most relevant to the use of science in the Home Office. The Government is expected to give a written response within 18 months of the report's publication.

23. The Academy therefore wishes to draw attention to its report 'Calling Time' that considered the overall national consumption of alcohol, the evidence that this is a major determinant of harm and the opportunities for effective public health intervention that follow from this. [32] The report concluded that the scientific evidence indicates that, for the health of the public, action is required to reduce consumption of alcohol at a population level.

Conclusion

24. In order to deliver the best possible public services, decision making within the Home Office needs to be informed by high quality research evidence. Medical science has much to contribute to the body of knowledge underpinning Home Office policy, key elements of which are illustrated in this response. The Academy hopes that the evidence presented here is useful and would be pleased to assist the OSI further in its inquiries.

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[30] Home Office, 2005 (see footnote 4)
[31] Foresight (2005) *Drugs Futures 2025.*
http://www.foresight.gov.uk/Previous_Projects/Brain_Science_Addiction_and_Drugs/Reports_and_Publications/DrugsFutures2025/Index.htm (accessed January 2007)
[32] Academy of Medical Sciences, 2004 (see footnote 5).

Acknowledgements
The Academy of Medical Sciences is most grateful to Professor Jonathan Shepherd FMedSci for preparing this response. Our thanks also to Sir Michael Rutter FBA FRS FMedSci, the Officers, Laurie Smith, Dr Helen Munn and Dr Robert Frost for their contributions.

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