Response to the consultation for the review of compensation levels, incentives and the Clinical Excellence and Distinction Award schemes for NHS consultants

Main recommendations

- **The UK should maintain a system of Clinical Excellence and Distinction Awards for which outstanding contributions to research, medical education and clinical leadership are key criteria.**
- **Clinical Excellence and Distinction Awards should continue to be awarded for five years and should be pensionable. Renewal should be on a competitive basis requiring fresh evidence of outstanding contributions.**
- **When assessing Award applications, serious consideration should be given to the economic and health impact of research in addition to traditional measures of academic excellence.**

Introduction

Medical and health research conducted by doctors is a major driver of the UK's future prosperity. It will improve health outcomes, promote public health, increase the productivity of the NHS and generate considerable wealth. The Government's decision to protect investment in health and medical research in the recent spending review means that the UK can continue to translate extraordinary advances in medical science into benefits for patients and society. We are therefore puzzled as to why the Department of Health should threaten the UK's research enterprise by attacking the Clinical Excellence and Distinction Awards that are one of the few major incentives for doctors to conduct research in the UK and that we believe have made a significant contribution to the success of medical research in the UK. **Removal of the Awards would undermine a major incentive for doctors to engage in medical research and could stop the UK's translational science agenda dead in its tracks.**

Clinical Excellence and Distinction Awards play a vital role in stimulating **doctors across the whole NHS** to engage in research and innovation. To win an Award doctors have to demonstrate outstanding contributions to service leadership, education and research. The NHS has extraordinary potential to lead the world in terms of research that will benefit patients and society as a whole.[1] This potential simply will not be realised if doctors become disengaged from these key strategic objectives. Removing or downgrading these Awards would be profoundly damaging to the future of the NHS.

The UK has a world-leading track record in biomedical research. Many key achievements have been recognised through the Clinical Excellence and Distinction Awards and have generated enormous health and economic benefits. Would we have been so successful without this incentive system? It is very difficult to know how much the Awards have contributed to our past success, but we are convinced that losing this mechanism would profoundly damage the future capacity of the NHS and the UK. We think that it would directly result in the following consequences:

- Doctors across the NHS disengaging from the research and innovation agenda.
- A serious reduction in the number of doctors who devote their careers to being the research leaders of the future.

- Disengagement of current research leaders from translational research and the challenges of the NHS to concentrate on fundamental science.
- A loss of the very best research leaders to our international competitors or to private clinical practice.

Even a temporary suspension of the Awards risks deterring significant numbers of aspiring research-active clinicians from pursuing their career in the UK. We share the concerns expressed by the Medical Schools Council about the Scottish Government's decision in advance of the DDRB review to allow no increase in the value of distinction awards, no new distinction awards and no progression through the award scheme during 2011/12.[2,3]

We recognise that the Clinical Excellence and Distinction Award scheme seeks to ensure that there are proper incentives and rewards for doctors to make outstanding contributions to the NHS in a wide variety of ways. In this response, we concentrate in particular on the impact of the scheme in promoting medical research where we feel we are uniquely placed to make a useful contribution to the debate. Although we focus on medical research for the rest of the paper, we highlight that there are similar, very strong arguments concerning education and training (since this shapes the whole medical workforce of the future) and clinical leadership.

The Academy of Medical Sciences, the British Heart Foundation, Cancer Research UK and the Wellcome Trust welcome this opportunity to respond to the Review Body on Doctor's and Dentist's Remuneration's (DDRB) consultation for its review of compensation levels, incentives and the Clinical Excellence and Distinction Award schemes for NHS consultants. Our response is divided into two sections. The first considers the important role the Clinical Excellence and Distinction Awards play in promoting vital medical and health research. The second considers how the current schemes can be further improved. **We would welcome the opportunity to offer oral evidence to the DDRB.**

1. The importance of rewarding excellence in research

1.1 Medical research is crucial to the UK and the NHS

1.1.1 Health benefits

Research undertaken by doctors can lead rapidly to improved health outcomes and health service delivery. For example, it has been estimated that between 1985 and 2005 over 2.7 million Quality Adjusted Life Years (a measure of both the quality and quantity of life) have been gained from a spectrum of interventions for cardiovascular disease many of which were generated by research conducted in the UK.[4] The Clinical Excellence and Distinction Awards have provided a very effective method of incentivising and rewarding these sorts of research.

Medical research by those with Clinical Excellence and Distinction Awards has had direct impacts on patient care. Award holders have played a pivotal role in transforming UK health services, one of example of which is stroke, which is the nation's third largest cause of death and single largest cause of disability.[5] For example, the discovery that 'episodic hypertension' is just as risky as persistent high blood pressure as a cause of stroke will help reduce the £8.9 billion annual cost of this disease.[6,7]

Another area where Award holders have contributed substantially to the improvement of patient safety, quality of care and the enhancement of healthcare delivery is through the safe and systematic introduction of both advanced robotic and laparoscopic surgery in surgical practice in the UK.[8] Making surgery less invasive has revolutionised surgical care. A person undergoing a minimally invasive procedure usually experiences less pain (reducing the need for pain medication), has a faster recovery time, a shorter hospital stay and a speedier return to work. The cosmetic outcomes are much improved, as is the overall cost-effectiveness of these surgical techniques. Minimally invasive techniques are now used around the world and in all major fields of surgery, leading to improvements in patient safety on a global level.[9]

The health benefits of research undertaken by doctors go wider than service provision. Doctors play an essential role in public health research, which forms a central component of the Government's health strategy.[10] One area where Award holders have significantly improved public health is through the first large-scale international survey of sexual behaviour that provided vital data for scientists, clinicians and policy makers on sexual health and risk taking in sexual behaviours.[11] This brought about improvements in sex education policy and public health planning. A further example is the development of a new and significantly more accurate blood test for peanut allergy, which predicts whether an allergic reaction will develop with more than 95 per cent certainty.[12] Public health is one of the most significant challenges facing the UK for which research is required to generate solutions.[13] It is our view that Clinical Excellence and Distinction Awards are needed to encourage the brightest and best doctors to drive forward this crucial research agenda.

Not only do groundbreaking advances in medical and health research benefit health directly, they also offer 'spillover' benefits to those organisations where the research takes place. The conduct of research within institutions, such as university hospitals in the NHS, can improve healthcare quality by introducing state-of-the-art activities, improving adherence to clinical guidelines, providing a focus for workforce excellence and providing a pool of expertise that can offer the advanced tertiary care required to tackle the most challenging cases.[14,15] We argue that the Clinical Excellence and

Distinction Awards are instrumental in ensuring that patients benefit from research taking place in NHS institutions.

1.1.2 Economic benefits

The research conducted by doctors in the NHS creates wealth for the UK economy. A 2008 report commissioned by the Academy of Medical Sciences, Wellcome Trust and Medical Research Council (MRC) demonstrated that every £1.00 invested in public or charitable research into cardiovascular diseases in the UK between 1975 and 1992 produced a stream of health and economic benefits equivalent to earning £0.39 per year *in perpetuity*.[16] One example of this sort of economically valuable research conducted by Award holders concerns the transformation of treatments for rheumatoid arthritis and other inflammatory conditions. This led to the development of several anti-TNF drugs, one of which, Humira®, had worldwide sales of around $5.6 billion in 2009.[17]

As well as generating wealth directly, research conducted by doctors leverages considerable investment from industry and charities. A recent study showed that every £1 increase in public funding for clinical research stimulates up to £5 investment into research by the pharmaceutical industry.[18] Without motivated doctors to conduct research, this investment from industry and the £1.1 billion annual spend by the UK medical research charities might be refocused on to other topics or invested abroad.[19]

Doctors who conduct research have a vital role in harnessing the opportunities presented by the open model of innovation currently being adopted by much of the pharmaceutical industry. Rising research and development (R&D) costs and falling productivity have prompted many pharmaceutical companies to adopt a new business model that has the potential to deliver unique opportunities to the UK.[20] Large pharmaceutical companies are now investing in flexible partnerships with the NHS, biotechnology firms, universities, hospitals and charities to access specialist expertise and to share skills and resources.[21] The importance of this relationship was highlighted in the Royal College of Physician's report on 'Innovating for health' and the report of recent Academy meeting 'Academia, industry and the NHS: collaboration and innovation'.[22,23] The Academy feels that removal of the Clinical Excellence and Distinction Awards will lead to a reduction in the number of clinical academics that would detrimentally impact on the nascent partnerships recently developed, which have the potential to be of great economic benefit to the UK.

1.1.3 Clinical leadership

Clinical academics play vital leadership roles in the NHS and are at the forefront of pioneering medical and health research. All of the 12 leads of the prestigious NIHR Biomedical Research Units have National Awards, as do over 85% of the 16 leads of the NIHR's Biomedical Research Units and over 90% of the heads of medical schools in England and Wales. The importance of clinical leadership was stressed by the Secretary of State for Health at the 2010 NHS Confederation Conference.[24] We believe that the strong association between Award holding and leadership demonstrates their value as an incentive for the most talented doctors to take on extremely challenging and important leadership roles.

1.1.4 Education and training

To flourish, the NHS requires a well trained clinical workforce schooled in how to use research and innovation for patient benefit. This requires the UK's most talented doctors to be fully engaged with

education, training and teaching. It is our view that the Clinical Excellence and Distinction Awards anchor these internationally renowned doctors in the NHS.

1.1.5 Wider benefits

The recent Government health white paper 'Equity and Excellence: Liberating the NHS' rightly puts research at the heart of our healthcare system.[25] This message is echoed in the recent NHS Constitution and the influential Next Stage Review.[26,27] We consider that removal of the Clinical Excellence and Distinction Awards would undermine the recent progress made by the Office for the Strategic Coordination of Health Research (OSCHR), National Institute for Health Research (NIHR) and MRC in taking forward the translational research agenda. It could also threaten Government efforts to embed research in the NHS and threaten any progress made as a result of forthcoming review of research regulation and governance that was commissioned by Government and is being conducted by the Academy.[28]

1.2 The current Award system is crucial in incentivising research and education

1.2.1 Counterbalancing the financial rewards of private practice

Many clinical academics and other research active doctors in the UK choose primarily to focus their extra-contractual time on unpaid academic endeavour and do not receive substantial income from other sources such as from private clinical practice or for additional programmed clinical activities. We consider that this would *not* be maintained if Clinical Excellence and Distinction Awards were discontinued, and that without a counterbalance the financial incentives of private clinical practice will draw many doctors away from devoting time and energy to research and innovation. Without the possibility of winning an Award we believe the perceived financial penalty will discourage many from embarking on or continuing a clinical academic career.

1.2.2 Making a clinical academic career in the UK attractive

Clinical Excellence and Distinction Awards are particularly important to clinical academics who commonly enter the consultant grade later because they typically undertake at least three years of full-time research training. Fulfilling commitments to service delivery, research and teaching mean that they usually work longer hours for fewer contracted hours (and therefore lower salaries) than other doctors. The fact that their contributions can be recognised by Clinical Excellence and Distinction Awards was cited by senior academics in the evidence we collected from the Academy's Fellows as being critically important to their own decision to stay in the UK. Without these Awards we believe that today's brightest young doctors will not consider clinical academic careers and we will lose the next generation of research stars.

1.2.3 The global marketplace

If the Clinical Excellence and Distinction Awards were abolished or attenuated then there is a very real threat that the UK's best clinical academics will move abroad where rewards are often much more generous. The median salary for chairs of clinical science in the USA in 2009 was $442,000, with those specialising in surgery commanding a median salary of nearly $600,000.[29] While remuneration for senior German clinical academics are not frequently published, our investigations indicate the remuneration packages for W3 chairs are commonly €300,000 and often significantly higher than this. The danger of a brain drain is exacerbated by the considerable investment our international

competitors, such as the USA, China and Germany, are making in science, and because clinical academics from the UK find it particularly easy to move abroad as English has become the common language for those working in many international institutions.[30,31]

1.3 The Awards cost-effectively bolster the NHS

One rationale for removing the Awards would be to reduce NHS spending.[32] This would be a false economy. The National Awards, which often reward excellence in research, cost around £180 million per year while, as we have demonstrated, the research that we believe they incentivise generates far greater returns. Unemployment and sickness absence is estimated to cost more than the entire annual budget of the NHS every year.[33] If Clinical Excellence and Distinction Awards can incentivise research that mitigates less than one fifth of one per cent of this cost, then taxpayers will see a return of many times their original investment. In our view there is a very strong case that the cost of Clinical Excellence and Distinction Awards is dwarfed by the many billions of pounds generated by the research that they incentivise.[34]

Clinical Excellence and Distinction Awards represent only a relatively modest cost to the NHS. Currently only around 12% of consultants hold national Awards, and only 2.5% of consultants receive Awards of greater value than the average estimated income from private practice.[35,36]

1.4 Rewarding and motivating sustained contributions

The Clinical Excellence and Distinction Awards should be seen as part of consultant's salaries rather than as bonuses as they reward sustained contribution to the NHS over long periods of time. Given the long-term nature of the Awards we argue that the Awards should continue to be pensionable as this is an integral part of the incentive they provide.

We believe that Clinical Excellence and Distinction Awards incentivise all doctors not just those who receive them. This makes them particularly cost-effective. Unlike many other types of remuneration the Awards are competitive and meritocratic so offer a strong incentive to excel. In addition to the financial incentives the Awards also provide holders with considerable kudos through peer-recognition. A revised Award system without the financial incentive attached would take many years to obtain the same stature as the current Awards and would not be taken as seriously by clinicians. Moreover, reform of the Awards that de-motivated substantial numbers of better-performing doctors would run counter to the conclusions of the Boorman Review that highlighted the need to better promote the health and wellbeing of the NHS workforce.[37] Practically too it would be difficult to remove Awards from existing holders so it is likely that the scheme would be wound down by closing it to new applications. This would create a two tier system within the NHS that would be divisive. **We recommend that the UK should maintain a system of Clinical Excellence and Distinction Awards for which outstanding contributions to research, medical education and clinical leadership are key criteria.**

2. Strengthening the Clinical Excellence and Distinction Awards

As argued above, we consider that a system to incentivise research by doctors is necessary. It is also essential that such a system is optimal in terms of delivering benefit to society and the taxpayer. The current Award system is, in our view, broadly effective and meritocratic. Nevertheless, changes could, and should, be implemented to refine it further.

2.1 National and Local Awards

The NHS is a complex organisation and we recognise the benefits of increasing local autonomy. One option for an Award system might be to devolve it completely to local NHS trusts. This would be a mistake. The National Clinical Excellence and Distinction Awards are vital to incentivise and reward contributions that impact nationally. Research and leadership will often help the nation as a whole but will often not provide sufficient local benefit for individual trusts to reward them. Devolution of the Awards to local trusts would therefore lead to a focus on local service delivery rather than research and national leadership. The current national system provides a good framework for the best researchers and leaders to be rewarded for their national contributions. Requiring a certain amount of time to be served as a consultant and/or a certain level of Local Award as prerequisites for eligibility for National Awards is illogical. **We recommend the removal of the requirement to achieve a threshold level of Local Award before being eligible for consideration for a National Award.**

If responsibility for Local Awards is devolved more fully to constituent NHS organisations, it is essential that NHS organisations use them to incentivise research and innovation in line with the NHS Constitution. Recruitment of patients into trials should be considered as part of a basket of measures of success for Local Awards. The Awards should also consider contributions to prevention measures, such as smoking cessation or alcohol misuse, and partnerships with key agencies, such as local authorities. This would encourage the translation of research into preventative interventions that lead to benefits for patients and society. While many Trusts do reward research through Local Awards others appear much more reluctant to do so. **We recommend that Local Clinical Excellence Awards give research proper recognition.**

2.2 Enhancing accountability

A system of Clinical Excellence and Distinction Awards should be accountable, transparent, rigorous, competitive and fair. Measures such as publication of all new Awards and reviewed Awards, self nomination, a wider range of nominating bodies and increased involvement of lay members have made the current system progressively more robust. Yet further improvements can be made.

Only a small number of Awards have been removed and pay protection under the new consultant's contract means that the additional remuneration provided by the Awards will remain in place until that time that the consultant's NHS salary reaches that same level. We support rigorous review of Awards, with removal of Awards *and* associated remuneration where holders do not show sustained performance at the level required for the original Award. Without the possibility that Awards and

associated remuneration can be removed there is much less incentive for those who have obtained awards to continue to pursue excellence in research, leadership, teaching and service delivery.

In theory, renewal of an Award already requires evidence of sustained outstanding contributions, but the evidence that we have received is that this is assessed with less rigour than for the initial Award. Consideration should be given to reviewing this, although that will increase the cost and time commitment required to run the system. **We recommend that the Clinical Excellence and Distinction Awards should continue to be awarded for five years. Renewal should be on a competitive basis requiring fresh evidence of outstanding contributions.** This recommendation would either provide economic, health and social benefits by incentivising research more effectively, or save money as fewer Awards would be renewed.

It is also important that Awards reward contributions that result in health and economic benefits as these are central rationales for their continuation. **We recommend that when assessing award applications, serious consideration should be given to the economic and health impact of research in addition to traditional measures of academic excellence.**

3. Conclusion

Research and education conducted by doctors makes a vital contribution to the health and wealth of the nation. We believe that the Clinical Excellence and Distinction Awards provide a strong incentive to conduct this sort of activity. While it is difficult to demonstrate that this relationship is causal, this is not an experiment that the UK should risk conducting. Instead we have provided a portfolio of evidence that we believe, in aggregate, clearly demonstrates that the Awards are one of the foundations of the UK's medical research endeavour. A recent survey found that 95% of respondents thought that medical research should be supported and encouraged, even if a lot of public money would need to be invested.[38] The Clinical Excellence and Distinction Awards should be seen in this light as part of the nation's investment in medical research and training.

If you have any further queries on this consultation response in the first instance please contact Laurie Smith on +44 (0)20 3176 2167 or laurie.smith@acmedsci.ac.uk.

Working group

This report was prepared by an Academy of Medical Sciences working group. Members participated in a personal capacity and not on behalf of their affiliated organisations.

Professor Patrick Maxwell FMedSci (Chair)
Head of the Division of Medicine, University College London

Professor Dame Carol Black DBE FMedSci
National Director for Health and Work, Department of Health

Professor Alastair Buchan FMedSci
Head of the Division of Medical Sciences, University of Oxford

Professor Sir David Carter FRSE FMedSci
Chairman,Board for Academic Medicine, Scotland

Professor Jon Cohen FMedSci
Dean, Brighton and Sussex Medical School

Professor Chris Day FMedSci
Pro-vice Chancellor of the Faculty of Medical Sciences, Newcastle University

Professor Sir Liam Donaldson KB FMedSci
Chair, National Patient Safety Agency

Professor Humphrey Hodgson FMedSci
Sheila Sherlock Chair of Medicine, University College London

Professor Robert Lechler FMedSci
Executive Director of King's Health Partners and Vice-Principal,King's College London

Professor Nicholas Lemoine FMedSci
Director of the Institute for Cancer, Barts and the London School of Medicine and Dentistry, Queen Mary's University of London

Professor David Neal FMedSci
Professor of Surgical Oncology, University of Cambridge

Professor Rosalind Smyth FMedSci
Brough Professor of Paediatric Medicine, University of Liverpool

Professor Simon Wessely FMedSci
Vice-Dean and Professor of Psychological Medicine, Institute of Psychiatry , King's College London

Secretariat

Laurie Smith
Policy Manager, Academy of Medical Sciences

Ellie Estchild
Grants Manager, Academy of Medical Sciences

Nancy Lee
Senior Policy Adviser, The Wellcome Trust

Emma Greenwood
Policy Researcher, Cancer Research UK

Joe Clift
Policy Officer, British Heart Foundation

We would also like to thank the Academy's Officers, Council and Fellows for invaluable advice during the preparation of this response.

Disclaimer
This report is published by the Academy of Medical Sciences and Wellcome Trust. It has been endorsed by the Academy's Officers and Council and the Director of the Wellcome Trust. Contributions by the committee were made purely in an advisory capacity. The members of the committee participated in producing this report in an individual capacity and not as representatives of, or on behalf of, their affiliated hospitals, universities, organisations or associations. Their participation should not be taken as endorsement by these bodies.

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.

Academy of Medical Sciences
41 Portland Place
London W1B 1QH
Tel: +44 (0) 20 3176 2150
E-mail: info@acmedsci.ac.uk
Web: www.acmedsci.ac.uk
Registered Charity No. 1070618
Registered Company No. 35202

The British Heart Foundation

The British Heart Foundation's vision is of a world in which people do not die prematurely of heart disease. We'll achieve this through pioneering research, vital prevention activity and ensuring quality care and support for everyone living with heart disease.

British Heart Foundation
Greater London House
180 Hampstead Road
London NW1 7AW
Tel: 020 7554 0000
E-mail: internet@bhf.org.uk
Web: http://www.bhf.org.uk/default.aspx
British Heart Foundation is a registered Charity No. 225971.
Registered as a Company limited by guarantee in England & Wales No. 699547
Registered as a Charity in Scotland No. SC039426

Cancer Research UK

Cancer Research UK are the world's leading charity dedicated to beating cancer through research. We have saved millions of lives by discovering new ways to prevent, diagnose and treat cancer.

Cancer Research UK
Angel Building
407 St John Street
London EC1V 4AD
Tel: 020 7242 0200

Web: http://www.cancerresearchuk.org/
Registered as a company limited by guarantee in England & Wales No. 4325234
Cancer Research UK is a registered charity in England and Wales (1089464) and in Scotland (SC041666).

The Wellcome Trust

The Wellcome Trust is a global charitable foundation dedicated to achieving extraordinary improvements in human and animal health. We support the brightest minds in biomedical research and the medical humanities. Our breadth of support includes public engagement, education and the application of research to improve health. We are independent of both political and commercial interests.

Wellcome Trust
Gibbs Building
215 Euston Road
London NW1 2BE
Tel: +44 (0)20 7611 8888
Fax: +44 (0)20 7611 8545
Web: www.wellcome.ac.uk

The Wellcome Trust is a charity registered in England and Wales, no. 210183. Its sole trustee is The Wellcome Trust Limited, (whose registered office is at 215 Euston Road, London NW1 2BE, UK).

[1] Academy of Medical Sciences (2010). *Reaping the rewards: a vision for UK medical science.* http://www.acmedsci.ac.uk/p47prid78.html
[2] Letter from the Deputy First Minister and Cabinet Secretary for Health and Wellbeing: http://www.shsc.scot.nhs.uk/upload/file/national_committee_services/sacda/2010_11_16_sacda_letter_from_cabinet_secretary.pdf
[3] Medical Schools Council (2010). *MSC response to the review of the clinical excellence award scheme*. MSC, London.
[4] Health Economics Research Group, Office of Health Economics and RAND Europe (2008). *Medical research: What's it worth?* http://www.acmedsci.ac.uk/p99puid137.html
[5] Darzi A (2008). *High quality care for all: NHS next stage review final report.* http://www.dh.gov.uk/en/publicationsandstatistics/publications/PublicationsPolicyandGuidance/DH_085825
[6] National Institute for Health Research (2010). *Embedding health research.* http://www.nihr.ac.uk/files/pdfs/400891_NIHR_AnnualReport2010_acc3.pdf
[7] Saka O *et al*. (2009). *Cost of stroke in the United Kingdom* Age and Ageing, **38**, 27–32
[8] Further details are available from http://www.royalmarsden.nhs.uk/consultants-teams-wards/staff/consultants-a-f/Pages/professor-darzi.aspx?PRINT
[9] Darzi A and Munz Y (2003). *The Impact of Minimally Invasive Surgical Techniques.* Annual Review of Medicine. **55**, 223-237.
[10] Department of Health (2010). *Equality and excellence: Liberating the NHS.* http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_117353
[11] For example, further details are available from: http://www.wellcome.ac.uk/Funding/Biomedical-science/Funded-projects/Research-profiles/WTDV029750.htm and http://www.ucl.ac.uk/global-health/annejohnsoninterview
[12] National Institute for Health Research (2010). *Embedding health research.* http://www.nihr.ac.uk/files/pdfs/400891_NIHR_AnnualReport2010_acc3.pdf
[13] Academy of Medical Sciences (2010). *Reaping the rewards: a vision for UK medical science*
[14] Antunes MJ (2008). *Guidelines in real life/ Why are they not enforced?* http://rihuc.huc.min-saude.pt/bitstream/10400.4/555/1/Guidelines%20in%20real%20life.pdf
[15] Braunholtz DA, Edwards S JL and Lilford RJ (2001). *Are randomised clinical trials good for us (in the short term)? Evidence for a 'trial effect'.* Journal of Clinical Epidemiology, **54**, 217–224.
[16] Health Economics Research Group, Office of Health Economics and RAND Europe (2008). *Medical research: What's it worth?* http://www.acmedsci.ac.uk/p99puid137.html
[17] EvaluatePharma® (2010). *World Preview 1016*. 3rd edition, 19-20.
[18] Alzheimer's Research Society (2009). *Forward together. Complementarity of public and charitable research with respect to private spending.* http://www.alzheimers-research.org.uk/assets/docs/20090917162138ForwardTogetherSep2009.pdf
[19] Association of Medical Research Charities (2010). *To the public – 'thank you'.* http://amrc.org.uk/tabs_news-2010_thanks-to-donors
[20] Academy of Medical Sciences (2008). *The UK pharmaceutical sector: what does the future hold?* http://www.acmedsci.ac.uk/p50evid90.html
[21] Academy of Medical Sciences (2010). *Biomedical research – a platform for increasing health and wealth in the UK* http://www.acmedsci.ac.uk/p47prid84.html
[22] Royal College of Physicians (2009). *Patients, physicians and the pharmaceutical industry.* http://www.rcplondon.ac.uk/professional-Issues/Pages/Physicians-and-the-Pharmaceutical-Industry.aspx
[23] Academy of Medical Sciences (2010). *Academia, industry and the NHS: collaboration and innovation.* http://www.acmedsci.ac.uk/index.php?pid=101&puid=202
[24] Lansley A (2010). *Shifting power to the front line.* http://www.dh.gov.uk/en/MediaCentre/Speeches/DH_117081
[25] Department of Health (2010). *Equality and excellence: Liberating the NHS.* http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_117353
[26] NHS (2009). *The NHS Constitution.* http://www.nhs.uk/choiceintheNHS/Rightsandpledges/NHSConstitution/Documents/NHS_Constitution_interactive_9Mar09.pdf
[27] Darzi A (2008). *High quality care for all: NHS next stage review final report.* http://www.dh.gov.uk/en/publicationsandstatistics/publications/PublicationsPolicyandGuidance/DH_085825
[28] Further details are available from: http://www.acmedsci.ac.uk/p47prid80.html
[29] Association of American Medical Colleges (2010). *AAMC data book: Medical Schools and Teaching Hospitals by the Numbers*. AAMC, Washington, USA.
[30] Royal Society (2010). *The scientific century: securing our future prosperity.* http://royalsociety.org/the-scientific-century/
[31] British Academy (2010). *Investing in excellence: the needs and contribution of the UK research base.* http://www.britac.ac.uk/policy/Investing-in-excellence.cfm
[32] Manning J, Hill E and Beer G (2010). *Cutting the costs without cancelling the services. How to save £12bn in a year. 2020health NHS savings review.* http://www.2020health.org/export/sites/2020/pdf/Cutting_the_costs_18.6.10.pdf

[33] Black C (2008). *Working for a healthier tomorrow*. http://www.dwp.gov.uk/health-work-and-well-being/
[34] Academy of Medical Sciences (2010). *Biomedical research – a platform for increasing health and wealth in the UK*. http://www.acmedsci.ac.uk/p47prid84.html
[35] House of Commons Library (2010). *Pay in the NHS*. HMSO, London.
[36] Morris S *et al*. (2008). *Analysis of consultants' NHS and private incomes in England 2003/4.* Journal of the Royal Society of Medicine. **101,** 372-390.
[37] Boorman S (2009). *NHS health and wellbeing.* http://www.nhshealthandwellbeing.org/pdfs/NHS%20Staff%20H&WB%20Review%20Final%20Report%20VFinal%2020-11-09.pdf
[38] Wellcome Trust (2010). *Wellcome Trust Monitor 1. Tracking public views on medical research.* http://www.wellcome.ac.uk/stellent/groups/corporatesite/@msh_grants/documents/web_documents/wtx058862.pdf