Royal College of Anaesthetists

A National Strategy for Academic Anaesthesia

Full Report

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Abbreviations

AAGBI – Association of Anaesthetists of Great Britain and Ireland

ABPI – Association of British Pharmaceutical Industries

AoMRC – Academy of Medical Royal Colleges

ASA – American Society of Anesthesiologists

BJA – British Journal of Anaesthesia

BMA – British Medical Association

CCST/CCT – Certificate of Completion of (Specialist) Training

DoH – Department of Health

F1/F2 Years – Foundation Years 1 and 2 respectively

FAER – Foundation for Anesthesia Education and Research (USA)

GMC – General Medical Council

HEFC (HEFCE) – Higher Education Funding Council(s) (HEFC for England)

MD – Doctor of Medicine degree

MMC – Modernising Medical Careers

MRC – Medical Research Council

NHS (NHS R&D) – National Health Service (NHS Research and Development)

NIH – National Institutes for Health (USA)

NTN (NTNA) – National Training Number (NTN Academic)

PAs (APAs, SPAs) – Programmed activities (additional PAs; Supporting professional activities)

PhD – Doctor of Philosophy degree

PMETB – Postgraduate Medical Education and Training Board

RAE – Research Assessment Exercise

RCA – Royal College of Anaesthetists

SIFT – Service Increment Fund for Teaching

SHO; SpR – Senior House Officer; Specialist Registrar

UKCRC – United Kingdom Clinical Research Collaboration

Other abbreviations are defined in the text

EXECUTIVE SUMMARY AND RECOMMENDATIONS

(1) Executive Summary

Introduction

There is a severe crisis in academic anaesthesia in the UK. Throughout our Report, 'anaesthesia' is used as shorthand to include critical care and pain medicine. This crisis reflects the problems of academic medicine as a whole, but (as recognised by the Academy of Medical Sciences)[5,6] may be more severe in anaesthesia than in other clinical academic specialties.

In response to this crisis, the Royal College of Anaesthetists commissioned a review with the aim of developing a national strategy. A Strategist (Dr Jaideep Pandit) was appointed to work with the College's Academic & Research Committee (Chairman Professor Tony Wildsmith) on the project. A literature review was performed and then a series of 1:1 meetings arranged with key individuals both within and outwith the specialty (the Advisory Panel). Questionnaires were also sent to academic departments of anaesthesia and to the College's network of Regional Advisers. From these sources the full report was produced. This executive summary outlines the main findings and conclusions.

The full report, a summary report and the appendices referred to in the full report are all published separately at www.rcoa.ac.uk.

A central tenet of this Strategy Report is that academic anaesthesia is an important and necessary activity: it includes not just research but also teaching, the development of new techniques for patient care, and professional leadership. As such, academic anaesthesia is essential for the future of the specialty as a scientific (and consultant-based) discipline.

External factors contributing to the crisis

Many of the reasons for this crisis relate to pressures exerted upon the specialty from outside, which are beyond its direct control.

Chief among these has probably been the Research Assessment Exercise (RAE), and its effect on university policy. The RAE is the means by which the Higher Education Funding Councils (HEFC) distribute the public funds to universities to provide the infrastructure and running costs to support research (HEFC also provides funds to underpin teaching).[33,34,37,55] To maximise their scores in the RAE universities have adopted various strategies, which generally include placing special emphasis on the ability of departments or research groups to raise independent grant income (e.g. from MRC or Wellcome Trust) and to publish in journals which have a high impact factor.[60,76,77] Universities have then distributed the funds they receive from HEFC to individual departments using formulae which again favour or reward similar elements.[57]

Anaesthetic departments have performed poorly in this exercise since historically they have raised relatively little grant income (perhaps because the sort of research they conduct has traditionally not needed it – see Section 3), and their output is published generally in low-impact factor specialist journals.[13,35,77] In a climate where money is scarce, it is entirely logical (though very damaging) that universities should decide to close down all 'unsuccessful' departments and instead focus scarce resources on those departments more likely to yield higher scores in the RAE.

Factors within the specialty contributing to the crisis

While it may be tempting or easy to blame the entire crisis in academic anaesthesia on external factors (e.g. the RAE, universities, deans of medical schools, or others), many factors underlying and exacerbating the crisis have come from within the specialty itself. It is essential to acknowledge this and ask whether the specialty's own organisation and attitude have enabled it to manage the pressures imposed. Expressed another way: the RAE has adverse consequences only if the specialty does not adapt quickly to the value system imposed by it. The RAE may be flawed,[37,81] but it is also true that the specialty has failed to respond rapidly to its processes.

There are two examples which illustrate this starkly. First, it became clear in the early part of this Strategy Project that the Royal College held no database of the current Heads of academic anaesthetic department. Furthermore, since some of these Heads were not Fellows of the College (e.g. not clinically or anaesthetically qualified) they did not receive any College circulars or regular communications. If the College has no database and does not communicate regularly and formally with all academic Heads, then the College cannot assist promptly and effectively if a department faces closure. Second we found that, when the RAE requested formal feedback from stakeholder groups in 2002–2003,[37] the College was not registered as an 'interested' body. All this needs to be rectified.

Context of the Strategy Report nationally

There is a 'campaign' at national level to redress the harm done to clinical academic medicine by the RAE and various aspects of public policy in recent years. This is co-ordinated by national organisations such as the BMA, the Academy of Medical Sciences, AoMRC and others.[3–7,12,18,20,25,26,74] They all seek to improve the national framework in which research is organised and funded. The Royal Colleges support this campaign. For example, the Royal College of Anaesthetists nominates individuals to sit on RAE panels and is currently providing feedback to influence the 2008 RAE. This Strategy Report and its recommendations will therefore contribute *de facto* to this national effort, but our Project has more specific and more limited aims. Our Report cannot of itself change public policies which regulate all research nationally, and we do not seek to do this. Rather, our approach is to acknowledge these existing frameworks, and make recommendations which maximise the benefits for academic anaesthesia within the constraints of these frameworks.

It is important to emphasise that even if the national frameworks were changed by the national campaigns, it would still be necessary for the specialty to consider how, in any new framework, anaesthesia could maximise its gains and its standing. Indeed, regular

review and adaptation of strategy will *always* be necessary, since the research environment nationally constantly changes. The challenge for the specialty is to keep pace with the changes as they occur and ideally, to help fashion the changes. Campaigning or complaining against the potentially damaging external frameworks may be a *necessary* activity for the academic anaesthetic community. However, it is not of itself *sufficient* to improve the situation.

Outline of our recommendations

This Strategy Report and its recommendations are grounded in reality. The twenty recommendations made here are not an unattainable 'wish-list' but are *practical ways* in which academic anaesthesia can be strengthened *within the current frameworks*.

An Institute for Academic Anaesthesia

In implementing any strategy, it is clear that a structure is needed. With respect to strategies concerning clinical training, the Royal College structures are very robust and have delivered well (i.e. Schools of Anaesthesia, College Tutor and Regional Adviser systems). These structures have recently been strengthened by the College's Education Strategy (Glavin) Report,[69] which recommended the creation of an 'Institute for Education' to guide new developments in competency-based training. However, there seem to be no similar structures identifiable for academic training or academic strategy. We therefore recommend the creation of an 'Institute for Academic Anaesthesia'. This will be based in the Royal College and will be at the heart of the specialty's future academic strategy.

We envisage that the Academic Institute will be at the centre of a network of UK academic anaesthetic departments. Fundamental to this more integrated relationship will be the formal identification of an 'Academic Tutor', and formal recognition by the College of the 'Head' of each academic department. These roles (with names held on a central register/database and updated regularly as they are for College Tutors and Regional Advisers) will provide a newer sense of identity, formalise the relationship between the College and individual departments, and provide robust channels of communication.

When we refer to 'departments' we recognise that re-organisations within universities have meant individual academic anaesthetists find themselves widely dispersed, or their traditional department merged with others. The concept of collaborative 'research groupings' may be replacing the notion of traditional specialty-based departments: while not necessarily a bad thing for the organisation of science, this poses challenges for a craft-based profession. However, our proposals for the manner in which the Academic Institute will interact with all academic units (the traditional, the dispersed and the merged) will help engender a sense of corporate identity which we feel is of paramount importance.

Our suggested relationship between the Academic Institute and the specialist societies in anaesthesia, critical care and pain may evolve into 'research networks' which develop multi-centre studies or audits (a concept which is favoured by NHS R&D). The relationship may also evolve into a network of funding to support research priorities.

The proper focus for anaesthetic research

The type of research which the main funding agencies favour currently are self-evident.[46,60] Hypothesis-driven research in basic sciences, with results which are widely applicable to other fields seem especially valued.[46,60] The results of many investigations in anaesthetic questions are indeed relevant for other areas of science. However, this is not always perceived to be the case by those outside the specialty.

We therefore suggest that it is necessary for anaesthetists themselves to emphasise the wider importance of their work, and stress its relevance for science outside the operating room. We should extend the interpretations of our work to settings outside of our own clinical discipline, and we should seek to convert basic science discoveries and hypotheses into practical applications that benefit patients in our specialist fields (i.e. 'translational' science). A natural 'culture of research' must be restored within anaesthesia.

Academic career training

We need make no specific recommendations for the planning of training for career academics, since the recent publication of the document from Modernising Medical Careers and UKCRC (the Walport Report)[52] has provided us with the agreed models. Our recommendations will enable the specialty fully to exploit the opportunities offered by the Walport Report with respect to academic career training.

However, one important consequence of the Walport Report is to make clearer the distinction between 'conventional clinical trainees' (holding NTN or similar) who are on a *clinical training pathway*, and 'academic career trainees' (holding an NTNA) who are on a *clinical academic career pathway*. The expectation is that trainees will choose between the two pathways much earlier than generally they do at present (i.e. choosing at F2 level or soon after, rather than late in their SpR years). Therefore, many of our recommendations require academics to be perhaps less involved than they are now in delivering conventional clinical training programs, but more involved than they are now in training (and thereby maximising their exposure to) students and trainees early in their career (e.g. F2s).

In future, academic anaesthetists will probably become role models – not just for anaesthetic SpRs as at present – but more so for medical students and F2 trainees. This may require a major philosophical and cultural shift in the thinking of some academic anaesthetic departments and of some individual academic anaesthetists. Traditionally, academic anaesthesia has regarded itself as a 'post-postgraduate' subject, with any trainees who choose to be academics doing so relatively late in their careers, after considerable experience in clinical anaesthesia. However, a shift away from this traditional view may be essential if the specialty is to exploit fully the opportunities offered by the Walport Report.

Supporting research-active NHS consultants

Finally, we recognise that sufficient staffing levels in academic departments are vital and we make some recommendations to maximise these. The full engagement of 'research-active' (and 'teaching-active') NHS consultants, and their formal incorporation into academic departments is important in this regard. This is a dynamic, sympathetic and relevant group of people whose skills can be harnessed to benefit the academic department. We therefore make a number of specific recommendations to support these individuals in their research and teaching aspirations. In doing so, we recognise that they may need to utilise the full range of mechanisms offered by new contractual arrangements to help them attain their aims.

A note on devolved nations

The UK has four different health services (England, Scotland, Wales, Northern Ireland), so ideally four separate Strategy Reports are needed, but this is beyond our scope. England has been chosen as the single reference point for the ideas discussed (purely by way of example). It is hoped that where details of our considerations differ in other health services, the principles can nonetheless be readily adapted or modified as appropriate. For example, where the Report refers to an institution in England, this should be taken to represent the equivalent body in the devolved country.

Concluding remarks

There is no single solution to the crisis in academic anaesthesia. Complex problems often need multiple solutions, so we present a wide range of recommendations for the specialty to consider. If the ensuing debate means that some recommendations are not implemented, this should be for logical and relevant reasons and not simply because those recommendations are unpalatable.

We commend this Report to the specialty, and we advise that all the recommendations are implemented in full measure.

(2) Recommendations

An Institute for Academic Anaesthesia

Recommendation 1

An Institute for Academic Anaesthesia, based in the Royal College, is necessary to oversee the recommendations of this Strategy Report. Specific roles for the Institute are further outlined in Recommendations 19 and 20, below.

The proper focus for anaesthetic research

Recommendation 2

We recommend that the specialty as a whole (through all anaesthetic organisations) supports research priorities in three broad themes:

(a) *generic research in the basic sciences* relevant to anaesthesia; research which is also widely applicable to other disciplines. The key message is that *anaesthetists should be scientists* with an intellectual interest which extends beyond the walls of the operating room, the intensive care unit or the pain clinic;

(b) *translational research* which seeks to convert basic science discoveries into practical applications which benefit patients in anaesthesia, critical care or pain management; or which tests basic science hypotheses in anaesthetic, critical care or pain management settings;

(c) *clinical research* in areas identified by the relevant sub-specialty groups as being especially important, and which is amenable to large, multi-centre or 'network-based' studies, including health services research.

Academic anaesthetic departments: structures, concepts and corporate identity

Recommendation 3

Many universities have moved away from the concept of traditional, specialty-based academic departments. Some anaesthestic departments have disappeared or merged with others. We feel that a distinct academic department is the best vehicle for achieving academic objectives. However, we also conclude that it is more important (regardless of whether a traditional department exists or not) that individual academic anaesthetists behave and function as a cohesive unit – as a 'virtual department' if necessary. To facilitate this corporate identity, we recommend that the Academic Institute formally identifies each academic centre and recognises in each a *Head of Department* and *Academic Tutor*. These individuals will be the primary lines of communication between the Royal College/Academic Institute on the one hand, and the academic unit on the other. They will enable the College to support individual centres and help clarify the relationship between an 'academic department' and the Royal College.

Role of academic departments in conventional clinical training

Recommendation 4

The current requirements for academic training within the clinical CCT are very limited, and do not necessitate the involvement of academics for their delivery. The future pool of academic anaesthetists are likely to be drawn mainly from specialist academic trainees (see Recommendation 8) and not from conventional clinical trainees. Considerations such as these lead us to recommend that it is not generally advantageous for academic departments to regard delivering the academic component of the clinical CCT as a priority activity. This remains, as at present, the primary responsibility of the Schools of Anaesthesia (with local NHS department, College Tutor, Deanery and Regional Adviser support).

Recommendation 5

To help deliver all aspects of training, the NHS department is recommended to use a 'team approach', using a 'training faculty' of NHS consultants. One NHS consultant in this faculty should be identified as the *Lead Consultant for Academic Competencies*.

Recommendation 6

We recommend that the Royal College ensures that the specialty assessments supervised by PMETB which have superseded College visits specifically examine the delivery of academic components of conventional clinical training. These must be viewed as being of equal importance to all other aspects of training for the CCT in anaesthesia. If additional or special resources are necessary locally for the academic components, these should be identified and the Royal College must exercise all influence to ensure that local organisations (e.g. NHS Trusts or Deaneries) provide them.

Recommendation 7

Notwithstanding Recommendation 4, the relationship between an academic anaesthetic *department* and a *School* of Anaesthesia needs clarification, so that the two can work together to take forward postgraduate education. If an academic department takes on the role of delivering the academic/research competencies of the clinical training program, it is very much to its advantage that it works with the School, postgraduate dean and NHS department to cost the service it provides, and include in the resulting budget an element for any necessary research time or additional research expenses.

Academic career training: the Walport Report

Recommendation 8

The Walport Report requires each specialty to develop specific programs for clinical academic career training (as distinct from conventional clinical training). Inherent in this is the need to identify (a) the academic anaesthetic departments in a position to host and deliver this training, and (b) the sources of funding for the critical stages of the academic career pathways. The Academic Institute will co-ordinate the development of specific training programs to be delivered by the UK academic anaesthetic departments, and it will work towards re-aligning the available funding within the specialty to support critical stages of these programs.

Extending the role of academic anaesthesia in medical student training

Recommendation 9

The amount of teaching provided by a department often determines the core teaching staff which a medical school needs to provide. The larger and more indispensable the teaching, the larger should be the provision of core staff. Broadening its teaching range can help an academic anaesthetic department achieve a 'critical mass'. Research can then be built later upon this core staffing. We therefore recommend that academic departments develop portfolios for teaching medical students which are much broader than the current very narrow remits of 'anaesthesia', 'critical care' or 'pain medicine' (e.g. broadened to include the teaching of physiology and pharmacology to undergraduate medical students).

Recommendation 10

We recommend that academic departments ensure that all the medical student teaching which they undertake is properly resourced, and funded in a manner which maximises academic staff numbers. Where NHS consultants deliver medical student teaching, the broad aim should be to incorporate these 'teaching-active' NHS consultants into the academic department. The funds available to support teaching within medical schools (e.g. SIFT) can be used to achieve these objectives, if they are analysed or 'unravelled' at local level.

Intercalated BScs and PhDs

Recommendation 11

We recommend that anaesthetic departments offer medical students opportunities for intercalated BSc and PhD degrees, focussing on basic science or translational research topics (rather than in 'anaesthesia' as a postgraduate clinical subject; see Recommendation 2, above). The aim is that anaesthesia is regarded as a natural clinical specialty of choice for any student who has undertaken an intercalated BSc or PhD degree in a biomedical science subject. The specialty should offer long-term mentorship to such students and encourage them to specialise in anaesthesia. The presence of such individuals will help foster a natural 'culture of research' within the specialty. The simple aim with these talented individuals is to '*catch them early and treat them well.*'

Academic component of the F2 year: a role for anaesthesia

Recommendation 12

We recommend that academic anaesthetic departments prepare suitable modules for the academic component of the F2 year. Projects which offer exposure to basic laboratory science (which builds upon the trainee's medical student experience), or involvement in simple clinical studies, or which can be integrated with a clinical F2 module in critical care or anaesthesia would be especially suitable. The strategic benefit for the specialty is that this will be an opportunity for F2 trainees to come into contact with academic anaesthesia at an early stage, and so consider it as a career option.

Supporting research-active NHS consultants

Recommendation 13

We recommend that the Academic Institute formally identifies research- and teaching-active NHS consultant anaesthetists, who should then be regarded as an integral part of their local academic department. This process of identification would be the first step to supporting such consultants.

Recommendation 14

Research- and teaching-active NHS consultants need, above all, protected time for these activities. This can be achieved most readily through an 'A+B' contract (or similar) from the local university. Where no A+B arrangements exist, the academic department (with Academic Institute support) should marshal arguments which seek to persuade host institutions to provide them.

Recommendation 15

We recommend that research-active NHS consultant anaesthetists are encouraged to seek external grant funding as principal investigators and seek to include in their applications an element for protected research time. The Royal College/Academic Institute and the local academic department must emphasise to grant-giving bodies that even modest funding can buy significant research time, because the 'team approach' adopted by the specialty with regard to supporting professional activity (SPAs) facilitates very efficient use of each consultant's skills.

Recommendation 16

Many NHS Trust guidelines explicitly allow for additional programmed activities (APAs) over and above supporting professional activity (SPAs) to be allocated for research support within NHS job plans. Academic anaesthetic departments (with Academic Institute assistance) should support formally identified research-active consultants (see Recommendation 13) in any negotiations for such research APAs. We recommend that a target (which is reasonable) of 1 'research APA' per 10 NHS consultants in the department.

Recommendation 17

In addition to points made in Recommendations 14–16, there are a number of other ways to provide protected academic time within the New Consultant Contract. These can all keep costs to the employing NHS Trust to a minimum, whilst maximising investment in research. We recommend that research-active consultants work with the local academic department (and with the Academic Institute) to explore these additional avenues.

Strategic roles for academics in the research governance structure

Recommendation 18

The holding of key posts in NHS management, in local R&D committees and ethics committees, and in the Deaneries are important strategic manoeuvres to ensure that academic anaesthesia is properly represented in decision-making at all levels in the wider research governance structure.

Details of the Academic Institute's Roles and Structure

Recommendation 19

We recommend that the Academic Institute initially comprise a Director and Deputy Director with secretarial support. The Institute will report to the Academic & Research Committee of the Royal College.

Recommendation 20

The main remit of the Academic Institute will be to implement the twenty recommendations of this Strategy Report. A major role will be to plan training programs for academic careers in anaesthesia, in line with the expectations of UKCRC. This will need better co-ordination of the activities of UK academic departments, and greater co-operation between the specialist societies. This greater integration will also make possible a funding network and increase the potential for multi-centre studies in anaesthesia, with the Institute having a major facilitating role for such initiatives.

SECTION 1. BACKGROUND

1.1 The crisis in academic medicine has been documented extensively[10,19,53,80] but has affected academic anaesthesia especially severely.

1.2 The Council of the Academy of Medical Sciences convened a working group in 2001 to enquire into the state of academic medicine. Their report, *Clinical Academic Medicine in Jeopardy: Recommendations for Change*[5] (and also three other relevant reports from the Academy)[3,4,6] suggested that each royal college should establish a forum to consider its specialty's particular situation. A naesthesia was mentioned as needing special attention.

1.3 In response, the Council of the Royal College of Anaesthetists (RCA) through its Academic & Research Committee, instituted the Academic Strategy Project and appointed a Strategy Officer to co-ordinate this work and to write a report emanating from the project. Appendix A outlines the relevant terms of reference. Setting and maintaining standards of anaesthetic care in the UK is a core business of the Royal College. Since academic anaesthesia is integral to clinical anaesthetic care, the College is responsible for providing solutions to any problems identified.

1.4 Some other specialties have produced reports of differing styles. The Royal College of Physicians focussed on academic training;[73] ophthalmology[71] and asthma interest[54] groups both focussed on specific research questions; neurology made some practical suggestions,[8,9] but not all can be easily applied to anaesthesia.

1.5 Our Academic Strategy Project follows directly on the completion of the Royal College's Education Strategy Project (the Glavin Report).[69] The Glavin Report addressed the requirement to achieve specific and clear competencies within the new, shorter training for SpRs, focussing on how to train the trainers to facilitate this.

1.6 We invited an Advisory Panel of senior representatives from key organisations involved in the planning, organisation, delivery and funding of academic medicine and research (see page 1, above).

1.7 We also consulted the specialty directly using questionnaires sent to each head of academic anaesthetic department, each Regional Adviser in anaesthesia, and to each specialist society with an interest in anaesthesia, critical care or pain medicine. The results are detailed in Appendices B, C and D, respectively.

1.8 Other individuals (some listed in the Acknowledgements, above) were also consulted, interviewed, or reviewed drafts of this report.

1.9 The publication of our Report is not the end of the project, but rather the start of a process. We hope the momentum will continue and the essential work will continue in part through the development of the Royal College's Academic Institute (see Sections 4 and 13), and in part through greater direct engagement of the academic anaesthetic community by the College itself.

SECTION 2. WHY ACADEMIC ANAESTHESIA IS ESSENTIAL

2.1 Clinical academic medicine in vital for health care. Clinical academics play an essential role in evolving and maintaining best practice through research, clinical trials, teaching and training. The public expects continued improvement in delivery of health care, and this can only be achieved through scientific research.[74]

2.2. The roles of academic anaesthesia include:

a. to teach undergraduate and postgraduate students and doctors;
b. to conduct research;
c. to inspire others in a culture of enquiry;
d. to provide professional leadership (including promoting a high standard of patient care).

2.3 After basic and advanced clinical skills are learned by a trainee – something which current clinical training programs appear to do very well – there is a duty on the part of trainer and trainee to augment the intellectual foundations of these skills. If this is not done, then the specialty as a whole will remain static, and will not be in a position to advance its knowledge and skills base in the years to come. This will put patients at direct risk of harm in the future. As Slater wrote (quoted by Vandam):[83]

> *"Professions do not live by service alone … Without vision and research, the professions die."*

2.4 Advances in molecular genetics have created the new sciences of 'post-genomics' or 'proteomics', and it is necessary for all biomedical science specialties to consider how these developments will affect their own field and how these advances in knowledge can be translated into clinical benefits for patients. If anaesthesia as a specialty has few or no clinical scientists to do this, it is clear that patient care in anaesthesia will inevitably suffer in future years. This was expressed succinctly by Kitz and Biebuyck:[39]

> *"A discipline not continually engaged [in research] … is dead and will not advance, and will probably deteriorate in standards and efficiency … Solutions to clinical problems come from new ideas and we get new ideas only by having a strong research community."*

2.5 The majority of clinical anaesthetists are not active in research. However, it is a requirement of the General Medical Council (GMC) – and of NHS employers – that all consultants must undertake regular audit of all aspects of their practice. There is no longer held to be a clear or fundamental difference between audit and research, because the methodology of audit is underpinned by the same methods as are used in research (e.g. measurement of processes, data analysis, statistics).[84] If research infrastructure is allowed to wither, it is inevitable that the quality of audit will decline, and this will be to the direct detriment of patient care.

2.6 Critical appraisal of published literature is also an essential skill for trainees and consultants alike, and it is clear that this cannot be properly acquired without some active participation in academic medicine.[60]

2.7 Clinical academics are heavily involved in the teaching of undergraduate medical students. The recent expansion in medical student numbers will increase annual intake to ~6,000 by 2006, so workload will increase.[5]

2.8 Clinical academics also play a major role in the medical royal colleges and in postgraduate training. By virtue of their in-depth investigation of particular problems or areas of practice or science, clinical academics are often *de facto*, experts in that particular field. For this reason, they are often called upon to help in the delivery of the continuing professional development (CPD) of other consultants.

2.9 The roles outlined above together enable – and require – clinical academics to provide professional leadership in their field, and to act as role models. The Walport Report recognises this role explicitly in its very first recommendation:[52]

> *"…(the) goal is to make sure that medical students are taught by leading clinical academics…"*

2.10 Currently, much anaesthetic research is conducted *ad hoc* by NHS consultants and other staff not formally related to or part of academic departments. The topics researched often relate to isolated, often practical problems in clinical anaesthesia, and they rarely form part of a sustained 'research project'. Although many important results can emanate from such activity, it is clear that the current framework (i.e. the RAE) does not give such work its proper 'credit'. Furthermore, the academic training pathways proposed (see Section 8 – the Walport Report) do not envisage that such *ad hoc* activity will underpin academic training in the future. Additionally, NHS R&D policy now specifically discourages such small-scale isolated research, and instead is focussed upon supporting more organised, often multi-centre research networks (see Section 12 and Appendices G and H). For these reasons, it is important that 'academic anaesthesia' is organised in a manner which enables it to provide a sound 'research base' for the specialty.

Objectives of this Strategy Report

2.11 The recommendations made in this Report are designed to help deliver the following objectives:

a. to enable the UK to remain amongst the leaders internationally in anaesthetic research;
b. to provide exceptional education in anaesthesia and its related science subjects for undergraduates, graduates and doctors in training. This education will be characterised by close contact of students with leading academic anaesthetists;
c. to enable academic anaesthesia make a significant and vital contribution to the healthcare of the nation;
d. to enable the UK attract, develop and retain clinical academic anaesthetists of the highest international calibre;
e. to recruit the very best students (nationally and internationally) to a career in academic anaesthesia;
f. to harness the potential of research-active NHS consultant anaesthetists so that they are able to contribute more effectively both to clinical service delivery and, equally, to scholarly research in their specialist fields.

SECTION 3. PROBLEMS FACING ACADEMIC ANAESTHESIA

General problems faced by academic medicine

3.1 There has been growing concern over the years that recruiting and retaining academic staff across all specialties in the UK is increasingly difficult. Several reports have comprehensively listed the problems and disincentives underlying this trend.[3–10,12,18,20,25,26,52,71–73,78]

3.2 These problems are particularly severe in academic anaesthesia.[27,28,30,36,41,47,63,76,79] We will not repeat these arguments in full, but previous reports suggest that they include:

a. conflicts of clinical service, teaching and research duties for clinical academics;
b. reduced time for teaching, with increased demands (e.g. due to rising medical student numbers);
c. weak clinical research infrastructure;
d. adverse effects of Research Assessment Exercise on university policies;
e. a perception that basic science research is favoured over clinical research in the distribution of grants;
f. poorly-defined career structure for those who wish to be clinical academics;
g. lack of pay parity between academics and clinicians;
h. slow implementation of the New Academic Contract, which might otherwise address, at least in part, some of the above issues.[18]

Key measures of the state of academic anaesthesia in the UK

3.3 The current situation (and recent trends) in academic anaesthesia might be summarised by some key measures:

a. the number of academic anaesthetic departments in the UK;
b. the total number of anaesthetic professors, readers and senior lecturers;
c. the total number of research trainees in anaesthesia, including the trend in higher degrees (i.e. MD/PhD);
d. the total independent grant funding raised by the specialty as a whole.

3.4 In 1995, Smith reported that there were 26 academic anaesthetic departments in the UK, with a total grant income of £7.6 million per year (8 departments held an MRC grant and 9 a Wellcome Trust grant).[76]

3.5 In 2000–2001, Professor Tony Wildsmith, as Chairman of the Association of Professors of Anaesthesia, conducted a survey of academic anaesthetic departments. This data contributed to the Council of Heads of Medical Schools survey of 2001.[20] The questions were not the same as in our recent survey (Appendix B), but the Table 3.1 below illustrates key measures.

3.6 Ten years on, Appendix B estimates an annual grant income of ~£9 million/year: little different from Smith's 1995 estimate. UK departments have held only ~5 MRC and ~5 Wellcome grants over the last three years, with a total value of ~£5.85 million and ~£3.2 million respectively. Since the MRC disburses ~£435 million/year and the Wellcome Trust ~£516 million/year in grants, we estimate that anaesthesia attracts only 0.3% of total MRC/Wellcome grant funding per year.

3.7 The staffing figures have shown no improvement, and have shown a decline in the

senior lecturer grade. It is somewhat encouraging that the numbers enrolled for a higher degree has shown a small increase, and this may reflect the enthusiasm of those who wish to undertake research.

Table 3.1 Trends in the state of UK academic anaesthesia 2000–2005.
The data excludes veterinary anaesthetic departments. The Wildsmith survey asked specifically only about MRC grants held, and did not survey the total external grant income to the department. We include Wellcome grants in parentheses in the last line (NA is not available).

Key measures	Survey 2000–2001	Survey 2004–2005
Number of academic anaesthetic departments or units	26	24
Number of professors (no. vacant)	27	29 (3)
Number of readers & senior lecturers (no. vacant)	66	54 (2)
Numbers enrolled for a higher degree, i.e. MD or PhD	77	84
Number of departments holding an active MRC (Wellcome) grant over the last 3 years	3 (NA)	5 (5)

3.8 We conclude that academic anaesthesia in the UK is poorly-staffed, has received little by way of external grant support, and that there is a worrying trend towards further decline. Two departments have disappeared (London Guys/St Thomas'; London St Bartholomew's). Of the remaining 24 departments, three appear to consist of just one senior academic staff (Newcastle, Plymouth, Southampton – see Appendix B), and three consist of just two staff (Cambridge, Leeds, Middlesborough, North Stafford).

3.9 The statistic that so few young trainee anaesthetists choose to undertake a higher research degree is of considerable concern. Appendix B indicates that on average, only ~28 register for a higher degree per year, with just ~15 completing an MD or PhD per year (this is out of a total of ~2000 trainees), and this may include MD/PhD students who are not anaesthetists, but are basic scientists or others working in anaesthetic departments. This is the 'substrate for the future' of academic anaesthesia, and so this statistic is not encouraging.

3.10 At most, only ~15% of NHS consultant anaesthetists show any interest in academic activity. The majority of Regional Advisors and heads of academic department agreed that academic interest was probably shown by fewer than 10% of NHS consultants (Appendices B and C). Smith also noted this unfortunate lack of interest and argued

that, in time, this may be used by NHS managers to further diminish both NHS and academic anaesthetic departments in terms of professional standing within Trusts and even pay parity (e.g. locally-determined or performance-related pay and other types of distinction awards).[76]

3.11 However against this grim background, there are some academic anaesthetic departments which are quite successful in terms of staff, grant income and academic trainees (Appendix B). These departments might form a nucleus around which academic strategy can be built.

3.12 The data also highlight the huge disparity between the amount of investment in anaesthetic research and the investment in clinical anaesthesia. The NHS invests in anaesthesia because its services are essential, underpin many other areas of clinical activity, and also because anaesthesia is cost-effective. Further investment in anaesthetic research could increase efficiencies.

Some comparative data: the United States

3.13 A comprehensive comparison with the situation in all other countries is beyond the scope of this Strategy Report. However, and as an illustration we outline some comparative data from United States, acknowledging the self-evident differences in health-care system organisation and size.

3.14 From its recognition in 1941, physician anesthesia grew at a dramatic rate. But in the early 1990s some calculations suggested there would be an 'oversupply' of anaesthesiologists. Since US salaries are not set at a national level as in the UK, this led to fears of decreased individual incomes (because more anesthesiologists would be competing for a limited pool of income). This in turn led to a reduction in those seeking anaesthesiology education and training. There was a high point in 1992 of 1,904 first year anesthesia trainees to a low point in 1996 of 1,073. American medical school graduate interest (as opposed to foreign, non-US medical graduates) also reflected this decreased enthusiasm with 1,609 American graduate first year trainees in 1992 to 496 in 1996.[29]

3.15 The earlier pessimistic forecasts proved somewhat exaggerated and the specialty has seen a rapid increase in interest among medical graduates to 1,466 first year trainees in 2001 with 980 of those from American medical schools.[29]

3.16 Academic programs were hardest hit by the 1990s' reduction in anesthesia trainees. The Society of Academic Anesthesia Chairs estimated in August of 2000 a *deficit* of nearly 500 faculty posts in the 142 US anesthesia programs.[29]

3.17 In the US, 'clinical productivity' of a department is especially important because it determines the department's main income.[44,49] Various factors at national level have conspired in recent years to decreased reimbursement. In departments with declining income, the time available for anesthesia research (i.e. non-clinical, non-income generating activity) has come under pressure. This resulting threat to anesthesia as a scientifically-based discipline represents a situation similar to that in the UK (albeit with different underlying causes).

3.18 However, the funding for US anesthesia research far exceeds that for the UK: in 2001–2002, a total of 242 National Institutes for Health (NIH) grants were awarded to anaesthestic departments, amounting to ~$71 million dollars. Additionally, the Foundation for Anesthesia Education and Research (FAER) disburses ~$1.4 million annually.[29]

3.19 Thus, despite some problems, the US academic situation is far healthier than that in the UK (with greatly adverse consequences for the future of UK as compared with US academia). FAER concludes that: '*Research support for proven experienced investigators in anesthesiology is readily available as evidenced by examination of current NIH budget proposals.*'[29]

3.20 Nonetheless, the American Society of Anesthesiologists (ASA) and FAER continue to campaign at national level for improvements. They are sensitive to the picture outlined in 3.11 – 3.14 above and they feel that it continues to represent a potential danger for the longer term. Compared with NIH grants awarded in radiology ($201 million) or surgery ($299 million) anesthesia still scores low and the ASA and FAER rightly believe that there should be more equity in this regard.[29]

3.21 The disparities between UK and US academic funding also apply to other specialties (as indicated by the data in 3.20). The academic environment is worse in the UK than in most comparator countries for all specialties, much to the detriment of the UK healthcare system in the long term.

3.22 In many centres in the US, a case for investing in an academic department can be made to hospital managers, using the persuasive arguments that academic anesthesia improves patient outcomes, helps recruitment and is an investment for the future. Head and Knight have outlined some strategies important in developing a successful academic anesthesia department in this context. Their advice can be summarised as:[32,40]

a. where funding is limited, focus research on a limited range of topics;
b. emphasise new (especially molecular and translational) approaches to 'traditional anesthetic' questions;
c. include also clinical audit and health service management in 'academic' programs;
d. collaborate with basic science departments (especially physiology and pharmacology), to create 'thematic links';
e. focus limited resources on 'up-and-coming' researchers (the substrate for the future) and invest in the future through them;
f. use FAER grants for 'pump-priming' projects, enabling researchers then to apply for more substantive NIH grants;
g. support medical scientist training programs (i.e. combined MB-PhDs) and encourage those who have undergone them to specialise in anaesthesia;
h. identify and mentor able researchers closely throughout their career;
i. solve problems and barriers within the specialty before tackling problems and barriers outside the specialty.

These suggestions parallel many of our recommendations in this Strategy Report and later sections of this Report expand upon our reasoning in more detail.

SECTION 4. AN INSTITUTE FOR ACADEMIC ANAESTHESIA

4.1 Much of what we discuss below and the nature of our recommendations leads to the conclusion that an 'Institute for Academic Anaesthesia' (termed the 'Academic Institute') is essential to implementing the academic strategy of the specialty.

4.2 The Royal College's recent report on education (Glavin Report) similarly recommended that an 'Institute for Education' could best take forward the education strategy.[69] The 'Academic Institute' will be its academic counterpart.

4.3 The main immediate role for the Academic Institute will be to begin the implementation of the recommendations of this Strategy Report.

4.4 The Academic Institute will also be ideally placed to execute other functions. Broadly, we envisage the Institute to be at the centre of three 'networks'. These networks are themselves inter-related, and are:

a. a network of academic departments in the UK;
b. a network of specialist societies with interests related to anaesthesia, critical care and pain;
c. a network involving external funding agencies, the pharmaceutical industry, universities and medical schools, NHS R&D and others involved in 'purchasing' academic anaesthetic services. The Academic Institute will facilitate 'introductions' from this network to the other two networks.

4.5 The Academic Institute will have (and will develop) other roles, such as:

a. to interact with the College's Institute for Education;
b. to review academic strategy at regular intervals in the future.

4.6 In all its functions, the Academic Institute will make it easier to do research; it will not itself add any further barriers or layers of bureaucracy.

4.7 Sections 5–13 deal with matters concerning the nature of anaesthetic research, academic department structure, academic training, the role of NHS consultants in the academic effort, and the role of NHS R&D. Throughout our discussion, we refer to the Academic Institute's roles in these issues. In Section 14, we discuss the Academic Institute and its structure in more detail.

Recommendation 1

An Institute for Academic Anaesthesia, based in the Royal College, is necessary to oversee the recommendations of this Strategy Report. Specific roles for the Institute are further outlined in Recommendations 19 and 20, below.

SECTION 5. THE PROPER FOCUS FOR ANAESTHETIC RESEARCH

5.1 Research in anaesthesia has evolved over the decades, and a historical perspective highlights two factors.

a. the development of *research* in anaesthesia has often gone hand-in-hand with developments in *organisation* (e.g. formation of specialist societies, specialist journals, distinct departments, and identity of anaesthetists as specialist practitioners).

b. the focus of research has changed slowly over time from one which addressed immediate and vital questions concerning the practical conduct of anaesthesia, to one which now addresses questions increasingly based in basic science. Briefly, the pattern can be summarised:[48]

1900–1950s

Basic patient safety was the main focus. The oxygen mask was developed, Guedel described the basic signs of anaesthesia and Magill introduced tracheal tubes. The 1930s saw developments in tubing to deliver oxygen and anaesthetic vapours (e.g. circle system with CO_2 absorber). Proper training programs for anaesthetists started, and the first Chairs in Anaesthesia were established in Oxford, USA and Europe.

1950s–1970s

The notion emerged that advances in anaesthesia might be relevant for areas outside the operating theatre. Cardiopulmonary resuscitation was developed. The polio epidemic led to artificial ventilators and then to critical care units (with all which that these entail, including blood gas analysis, tracheostomies, etc). The concept of 'multi-disciplinary pain clinics' developed and 'blood banks' facilitated transfusion for major surgery. There were major developments in pharmacology of anaesthetics, neuromuscular blocking drugs and cardioactive drugs. In the UK, the National Health Service appointed consultants in anaesthesia on the same terms and conditions as all other consultant staff, thus ensuring that anaesthesia was on a par with all other clinical specialties in terms of remuneration and kudos. There was establishment and growth of specialist societies in anaesthesia.

1970s–1990s

Technology was introduced relating to drug delivery and patient monitoring (e.g. pulse oximetry, capnography, drug delivery systems). Advances in airway management techniques included the laryngeal mask airway and fibreoptic intubation techniques. Regional anaesthesia (especially in conjunction with general anaesthesia) became a standard technique. Initiatives such as confidential enquiries into post-operative and maternal mortality were formalised at national level. The Royal College was formed, separate from a faculty within a surgical college, and essential criteria were identified for the training of junior staff (in all specialties) and standards began to emerge for assessment and appraisal.

5.2 Two further questions might be raised from the overview above:

a. *Are anaesthetic problems still significant healthcare problems?*
The problems of mortality as a direct result of anaesthesia appear largely solved. 'Operating room anaesthesia' is no longer regarded as a major healthcare issue by many outside the specialty, in the sense that it once was. In a competitive funding environment, research which does not appear to solve an immediate healthcare problem will inevitably receive lower funding priority.[45,58] Therefore, it seems important for the specialty to develop a vision for its research that goes beyond the walls of the operating room;

b. *Is 'anaesthesia' a science distinct from other fields of research?*
The early years of anaesthetic history were directed in large part to ascertaining whether the new art of anaesthesia was, in fact, also a new science. It was not known whether a separate research discipline was needed, as distinct from other disciplines in biomedical science. In part, this uncertainty was understandable. As a new phenomenon, it could not be predicted which elements were important in ensuring safe anaesthesia. Now, however, the picture seems much clearer. The scientific knowledge underlying the practice of anaesthesia is essentially the same as that which underlies all other fields of biomedical science, and there are very few topics which remain of unique interest to anaesthesia. Those unique topics that remain seem insufficient in number (or immediate need) to justify a completely separate focus for research activity.

This analysis would seem to suggest that the specialty could (or should) direct its skills to addressing more generic questions in science, rather than seek to define a separate area of research which is purely of 'anaesthetic' interest. For example, subjects such as postoperative pain, septic shock, the cardiorespiratory effects of anaesthetic drugs, and anaesthetic pharmacology all cross specialist boundaries and all have as their basis the fundamentals of biomedical science.

5.3 The range of activities in which anaesthetists have been involved is very broad. This makes it impossible to define 'anaesthetic research', but one strength of this broad research base is that it gives the specialty plenty of opportunity to 'rebrand' or 'realign' its research focus to areas which give a better yield in terms of external grant support.

5.4 In other words, not only should there be a natural 'culture of research' within the specialty, but this culture should foster the asking of the important research questions.

5.5 It is therefore logical to conclude that the specialty would benefit if its research focus were less directed to questions purely of anaesthetic interest and more to research in the following general areas of science:

a. basic science research in physiology, pharmacology and biochemistry, including their molecular aspects;
b. translational research, examining basic science hypotheses and applications in a clinical setting;
c. clinical trials and research based upon national or multi-regional 'networks';

d. research in education, including the use of simulators;
e. research in optimum modes of clinical delivery, health service management, and health economics.

5.6 In all such endeavours, anaesthetists should seek multi-disciplinary approaches, directly involving the relevant basic science and other departments. Basic scientists may not always know which clinical questions to ask, and this is where academic anaesthetists are essential to the research enterprise.

5.7 Points 5.2–5.6 imply a shift of research focus which may require some re-organisation of anaesthetic departments which enable them to collaborate more effectively (e.g. by ensuring necessary infrastructure is available; by ensuring that job plans allow sufficient laboratory time; by structuring grant applications with the relevant basic science collaboration in mind). This new cultural approach may also involve the direct placement of anaesthetic trainees and research fellows in other departments to acquire particular skills and perform the collaborative research and then bring their new-found expertise back to anaesthesia.

5.8 This shift in approach may also require a degree of 'advertising', so that others outside the specialty understand that 'anaesthetic research' or 'research done by anaesthetists' is not always confined to operating room work, but is also firmly embedded in basic research with wide applications. This advertising drive might include publications in general medical journals, press releases and engagement of key institutions through organisations such as the Academy of Medical Sciences and the Academy of Medical Royal Colleges. Part of this publicity drive will also need to be directed to areas within the specialty itself, especially trainee anaesthetists, who should be encouraged to ask questions more embedded in the basic sciences.

5.9 The newly-adopted editorial policy of the *British Journal of Anaesthesia*, recognising that increased collaboration with basic sciences and a change of emphasis is important, is to be welcomed.[64]

Recommendation 2

We recommend that the specialty as a whole (through all anaesthetic organisations) supports research priorities in three broad themes:

(d) ***generic research in the basic sciences*** **relevant to anaesthesia; research which is also widely applicable to other disciplines. The key message is that anaesthetists should be scientists with an intellectual interest which extends beyond the walls of the operating room, the intensive care unit or the pain clinic;**

(e) ***translational research*** **which seeks to convert basic science discoveries into practical applications which benefit patients in anaesthesia, critical care or pain management; or which tests basic science hypotheses in anaesthetic, critical care or pain management settings;**

(f) ***clinical research*** **in areas identified by the relevant sub-specialty groups as being especially important, and which is amenable to large, multi-centre or 'network-based' studies, including health services research.**

SECTION 6. ACADEMIC ANAESTHETIC DEPARTMENTS: STRUCTURES, CONCEPTS AND CORPORATE IDENTITY

Types of academic anaesthetic departments

6.1 Within the host university (or NHS Trust), academic departments of anaesthesia can exist in various guises. The following patterns may be recognised:

a. a distinct department, identified as such within its host university, with an academic head (professor) whose 'power'/role within the university hierarchy is on par with other heads of department;

b. a group of departments are organised into a larger 'division' (e.g. physical sciences, medical sciences, life sciences, etc), and each has its elected or appointed head. Major decisions are made at divisional level, so in this system any individual department may exercise relatively little power;

c. the department has been absorbed into another department as a sub-unit (for example, 'anaesthesia' is a nominal part of a 'department of surgery');

d. no academic department of anaesthesia at all. The university may not employ any academic anaesthetists. However, a notional academic department may exist within the host NHS Trust, with individuals on predominantly 'academic' contracts – or there may be more complex funding arrangements with NHS-funded anaesthetists with academic duties, but having no formal role in an associated university hierarchy. These individuals may (or may not) have administrative roles in a university through honorary contracts;

e. in some centres there has never been an academic department, but individual anaesthetist(s) may have been awarded a titular or personal (*ad hominem*) appointment. This may (or may not) carry with it associated university duties.

6.2 The problem of different patterns of departmental structure is not confined to anaesthesia alone, and universities often undertake reorganisations of departments for a variety of reasons.

6.3 The lack of a distinct or an identifiable department can, however, lead to:

a. loss of morale;
b. a feeling that the department or specialty is not valued as a separate entity;
c. loss of a corporate identity;
d. weakening of independent influence within a larger structure;
e. increased dependence on others for funding, infrastructure, laboratory space or support;
f. increased bureaucracy (since many matters have to referred up a longer chain of command to the substantive department or division);
g. increased difficulties in organising or supervising academic training for aspiring clinical academics.

However, in 6.10–6.17 below we discuss whether these problems can be surmounted even in the absence of a formal department.

Staffing in academic anaesthetic departments

6.4 Within the departmental models described in 6.1a–e above, academic departments can consist of the following types of staff:

a. a Head of academic department (usually a professor);
b. other professors (some may have personal, titular, *ad hominem* appointments, or funded or endowed chairs);
c. Readers (some may be honorary or titular);
d. Senior Lecturers (some may be honorary or titular);
e. Lecturers (who are usually SpRs undertaking a period of research or reading for a higher degree such as MD or PhD, but the title can also be used to refer to SpRs who are attached for short periods to the academic department);
f. Clinical research fellows (these are usually SpRs undertaking a short period of research, but this title can also be assigned to SpRs undertaking a formal MD/PhD);
g. Research students (these are usually medical or science students reading for higher degrees MSc, MD, PhD);
h. Postdoctoral research staff (these are usually non-clinical, sometimes senior research staff);
i. Technicians;
j. Secretaries;
k. NHS consultants who have dedicated research sessions

6.5 Positions 6.4a–h can be held either by anaesthetists, or by non-clinical scientists.

6.6 Positions 6.4a–f can also be held by NHS consultants as honorary appointments, or by NHS consultants undertaking research or research towards a higher degree.

Spectrum of responsibilities in an academic department

6.7 Generally, the following responsibilities can be identified:

a. teaching medical/dental students;
b. teaching clinical trainees;
c. supervision of research students;
d. undertaking research, including writing grant proposals;
e. university and research administrative duties, including examining;
f. professional leadership roles in the Royal Colleges and specialist societies;
g. clinical service delivery;
h. NHS administration and management

6.8 In this Report, we suggest further roles as described in section 6.18 and section 14 below.

6.9 The above roles should ideally be distributed between the members of the academic department (see 6.4 above), so that there is appropriate 'division of labour'.

Enhancing a sense of departmental identity

6.10 Increasingly, research is no longer being organised along traditional departmental lines. Novel collaborations mean that individuals with widely different backgrounds now work more closely than they do with colleagues from the same nominal specialty. Because such collaborations can lead to lucrative grants, universities can see these 'research groupings' as more durable than the traditional 'department'. Lack of a distinct department is only problematic if it impairs the function of the individuals concerned.

6.11 In other words, the research goals of any individual anaesthetist can be quite easily met even in the absence of a formal department structure (and indeed Section 5 implied that this was an inevitable consequence of cross-specialty collaborations). However, there are two functions which can probably be better met by a department based along traditional specialty lines:

a. a sense of professional identity, which is possibly more important in a craft specialty;
b. focus for training within a particular specialty, especially in relationships with organisations external to the university (such as a royal college).

6.12 Even if no formal department exists, it is essential that anaesthetists with a common academic purpose organise themselves in a manner which creates cohesion – informally as a 'virtual department' if necessary. This should address the concerns in 6.11a and 6.11b. Academic anaesthetists should continue to act as a 'department' (e.g. hold regular meetings, plan strategy, teaching, etc), even if their host university does not formally recognise them as a 'department'. Retaining a sense of corporate identity in this way is particularly important for academic trainees.

6.13 Ultimately, a 'department' is simply an organisational device to support academic activity. It is not an essential requirement for the activity itself. What matters more is how anaesthetists behave and what they do (i.e. they should be cohesive and undertake academic activity even in the absence of a department).

6.14 Some commentators who wish to defend the notion of traditional departments have suggested that the NHS can fund academic departments of anaesthesia more reliably than can universities.[41] However, pressures faced by Trusts mean that the continuity and integration that good science demands in the long-term can never be *guaranteed* by NHS funding.[47] Others have suggested that the pharmaceutical industry could fund academic anaesthesia,[28] but it is also clear that industry will impose its own constraints.[12]

6.15 We reject these arguments in 6.14 as overly simplistic. We conclude that an identifiable department of anaesthesia is desirable. However, it is even more desirable that anaesthetists act cohesively and as if a department existed (regardless of whether it does or not) and thereby help each other achieve their academic objectives. Close relationships between NHS and University staff can be an important aspect of maintaining the appearance of a physically identifiable unit. The specific funding source supporting a department's work is irrelevant. All – HEFC, NHS, industry, charities – are valuable: none is more 'reliable' than the others, all have their own constraints, and none are mutually exclusive.

6.16 The Royal College can contribute to enhancing a sense of identity for all departments (both the virtual and the real), especially by making the lines of communication between the College and individual academic centres more robust. The Academic Institute should:

a. identify all academic departments – both 'real' and 'virtual' – by keeping a central register;
b. for each department so identified, designate for it (i) an Academic Head of Department and (ii) an Academic Tutor;
c. broadly, the Academic Head's role should be as it is at present, as head of department. The Academic Tutor should be the main 'channel of communication' between the Royal College and the academic department. The Academic Tutor will also have an important role in mentoring and supervision of academic career trainees (see Sections 8 and 14);
d. it is clear from Appendix B that some academic departments consist of only one person (usually the Head) and so designating both an Academic Head and an Academic Tutor may be difficult. In these cases, either the Head should also take on the role of Academic Tutor, or use discretion to appoint another person (e.g. a research- or teaching-active NHS consultant) to this role.

6.17 Initially, the list of Academic Tutors (and Academic Heads) held by the Academic Institute will be a 'formal', but 'unofficial' arrangement. However, with the implementation of the Walport Report, it is conceivable that these need to evolve into official roles recognised in the academic training structure by UKCRC and by PMETB.

6.18 In the light of our conclusions in 6.15 and 6.16, we use the term 'department' in the remainder of this Strategy Report to refer to centres where traditional departments exist, and to those where anaesthetists are dispersed (or have been merged into other departments) but where they continue to act cohesively as a 'virtual department'.

Recommendation 3

Many universities have moved away from the concept of traditional, specialty-based academic departments. Some anaesthestic departments have disappeared or merged with others. We feel that a distinct academic department is the best vehicle for achieving academic objectives. However, we also conclude that it is more important (regardless of whether a traditional department exists or not) that individual academic anaesthetists behave and function as a cohesive unit – as a 'virtual department' if necessary. To facilitate this corporate identity, we recommend that the Academic Institute formally identifies each academic centre and recognises in each a *Head of Department* and *Academic Tutor*. These individuals will be the primary lines of communication between the Royal College/Academic Institute on the one hand, and the academic unit on the other. They will enable the College to support individual centres and help clarify the relationship between an 'academic department' and the Royal College.

SECTION 7. THE ROLE OF ACADEMIC DEPARTMENTS IN CONVENTIONAL CLINICAL TRAINING PROGRAMS

7.1 Academic and research training is an essential competency which needs to be gained during a conventional clinical training program leading to the award of a CCST. The general view of the Royal College regarding the place of research in clinical training is stated as:[65]

> "*Research is regarded by the RCA as integral to the development of anaesthesia, intensive care and pain management and is an obligatory part of training. Every trainee should be able to evaluate new developments in their specialty thus preparing themselves for their future career. To achieve this, SpRs require experience in research methods so that they can: (1) learn to pose relevant research questions, formulate hypotheses, design simple research projects, understand the statistical evaluation of such projects, and how to draw valid conclusions; (2) develop and maintain a system of continuous learning in order to keep abreast of major clinical and research developments; and (3) in the context of training, learn to apply audit principles to their own work and to clinical practice.*"

7.2 The specific training requirements are laid out in a series of training documents published by the Royal College of Anaesthetists each of which details the competencies that must be gained at the relevant stage of training.[65–68] These are:

At the level of SHO, the specific training competencies relating to academic study and research state:[66]

> "*Trainees will be required to demonstrate understanding of basic statistical concepts, but will not be expected to have practical experience of statistical methods. Emphasis will be placed on methods by which data may be summarised and presented, and on the selection of statistical measures for different data types. Candidates will be expected to understand the statistical background to measurement error and statistical uncertainty.*
>
> *Specific goals are: Data Collection; Simple aspects of study design; Defining the outcome measures and the uncertainty of measuring them; The basic concept of meta-analysis and evidence based medicine; Descriptive statistics; Types of data and their representation; The normal distribution as an example of parametric distribution; Indices of central tendency and variability; Deductive and inferential statistics; Simple probability theory and the relation to confidence intervals; The null hypothesis; Choice of simple statistical tests for different data types; Type I and type II errors.*"

At SpR 1/2 level, the specific training competencies relating to academic study and research state:[67]

> "*An understanding of the scientific basis of anaesthetic practice is essential. This unit of training effectively underwrites the understanding and education of trainees in all the other aspects of the training that they will receive in SpR years 1&2. Even if separate time is not allocated, the concepts identified here should be fundamental to the education of SpR 1& 2 trainees. Specific areas of knowledge are listed as: (1) The scientific basis of clinical practice; (2) The methodology and processes of clinical and laboratory research including the ethical considerations raised by research, the importance of study design in clinical research and the importance of statistical analyses; (3) The audit cycle; (4) The major national audit processes, including National Confidential Enquiry into Perioperative Deaths (NCEPOD), including Critical Incident Reporting (purpose and value; methods – local/national; anonymity – pros and cons). Specific skills include: to locate published research in a systematic manner; critically interpret and evaluate the value of published clinical research; plan and prepare a presentation and present to a live audience.*"

At SpR 4/5 level, the specific training competencies relating to academic study and research simply state:[68]

> "*All trainees should be required to participate in a research project, a full audit cycle or a published systematic review.*"

7.3 It is essential that, as with each of the clinical competencies, these academic competencies are assessed at each stage of training. The broad method of assessment that should be used has been recently clarified.[31,85]

7.4 The academic competencies are very limited. They are designed to enable clinical trainees to be *research-aware* – not to be *research-active* – and to prepare trainees to conduct relevant audits or (rarely) small-scale research projects when they are consultants. They are also designed to enable these future consultants to deliver the same academic training to their own trainees.

7.5 The Postgraduate Medical Education and Training Board (PMETB) will set standards and will assess training programs (including the academic elements of clinical training programs) against these standards. In setting any standards for academic training components, PMETB will focus upon the goals to be achieved by the academic training. The standards are unlikely to state that academics *per se* will be required to deliver these competencies. Indeed, not every School of Anaesthesia has access to an academic anaesthetic department (see Table C1, Appendix C), so it is more likely that both academics and clinicians will need to play a role.

7.6 As with all other aspects of training for the clinical CCST/CCT, delivering the academic competencies remains the primary responsibility of the Schools of Anaesthesia (with local NHS department, College Tutor, Deanery and Regional Adviser support). The relationships between these responsible bodies are clarified in the Royal College's document *CCST in Anaesthesia I: General Principles. A Manual for Trainees and Trainers*.[65]

7.7 However, some aspects of the research competencies may require special skills or resources (e.g. access to laboratories, equipment, databases). Therefore, the College Tutor may wish to devolve responsibility for this aspect of training to others. The recent document from the Academy of Medical Royal Colleges, *The Role of the College Tutor*, emphasises a 'team approach' and encourages the evolution of a 'training faculty' in each department with each faculty member having a specific role.[2] This is echoed in the Royal College's Education Strategy Report, which recommends that each trainee is assigned to an 'Educational Supervisor', who is part of the active 'faculty'.[69] **We recommend** that this approach is adopted.

7.8 Above (paragraphs 2.1, 2.2 and 6.7) we acknowledged the multiple roles clinical academics need to fulfil – often these roles need to be prioritised. Academic departments may need to take the following factors into account before they decide to assume any primary responsibility for delivering academic competency training for the CCST/CCT:

a. the primary focus of academic departments is properly research output (e.g. the RAE), acquiring research grants and supervising higher research degrees (MD/PhDs). Current academic resources are very limited (see Appendix B) and diverting these resources to delivering academic competencies of the CCST/CCT could detract from the proper primary aims;
b. academic departments are usually (but not exclusively – see Section 6) components of universities, and clinical SpR training is not generally a priority for universities. Academic departments may therefore need to ensure the support of their university before taking on this role;
c. no income is gained by a university academic department in respect of its teaching of clinical SpRs;
d. academic attachments by clinical SpRs for the short periods as envisaged by the competencies rarely leads to important research output;
e. academic departments will instead soon have to focus their resources upon the training of career academic trainees (see Section 8) who, rather than clinical trainees, will form the pool from which future academic anaesthetists will be drawn;
f. the points made in 7.5–7.7 above.

7.9 Taking all these considerations together, we therefore **recommend** that, in order to focus academic strategy more precisely, the delivery of academic competency training within the CCST/CCT should not be a priority duty for academics or academic departments, but should remain the responsibility of Schools of Anaesthesia and their associated structures.

7.10 One qualification to our recommendation in 7.9 above is where academic input to clinical training can be properly costed to provide additional resources for the academic department. For example, the NHS department may be genuinely unable to provide academic training (e.g. due to current skill mix). Then the academic department might take on this role in return for negotiated funding (from Deaneries or NHS Trusts), or for a specified number of academic sessions – all budgeted to cover the teaching required, and also to cover any additional research costs involved (e.g. research time or consumables). In this way, academic and NHS departments can work together to structure an approach which supports the longer-term aims of academic anaesthesia.

7.11 Expressed another way – and constructively – academic departments might raise their own profiles (and increase their income) by working with Schools of Anaesthesia to plan more effective delivery of postgraduate clinical training. Academic departments might also exploit opportunities by, for example, bidding within Deaneries to run research methodology courses (offered also to other specialties). Such initiatives might also help reduce any threats to the departmental integrity (discussed in Section 6).

7.12 A second qualification to the recommendation in 7.9 will arise if, in future, PMETB raises the standard of the requirements to satisfy the academic competencies of clinical training, such that these can only be met by input from fully-qualified academic anaesthetists. We would anticipate that this requirement would then be made explicit by PMETB.

7.13 We emphasise that all the points made above refer specifically to the role of academics in the delivery of academic CCST/CCT competencies. Clinical academics also possess clinical skills and thereby provide – and will continue to provide, regardless of any points made above – *clinical training* (quite apart from any specific *academic training*).

7.14 We have above re-iterated the fact that delivery of the academic components of clinical CCST/CCT training is the primary responsibility of Schools of Anaesthesia. How these Schools might best deliver this training (especially in the absence of specialist academic input) is outside the scope of this Strategy Report. However, the Academy of Medical Royal Colleges' report *The Roles and Responsibilities of College Tutors* has advocated a 'team approach' to all aspects of training.[2] When extended to academic training, this would reasonably involve a 'Lead Consultant for Academic Competencies' to be identified and supported to deliver this component.

7.15 The Royal College has a duty to ensure that all aspects of training are being delivered and that the appropriate resources are in place to do so.[65] This applies also (and perhaps especially) to the delivery of the academic competencies. The College currently uses 'Visits' to ensure appropriate delivery of training.[70] **We recommend** that these visits must also be used to ensure that:

a. a 'Lead Consultant for Academic Competencies' is identified and responsible for the delivery of academic/research competencies (this will usually be an NHS consultant who is part of the 'training faculty');[2]
b. the method of assessment of the academic/research competency is robust;[85]
c. there must be particular attention to ensuring that the appropriate resources exist and the needs of the academic trainers must be addressed (in terms of job planning, or need for protected research time).

Recommendation 4

The current requirements for academic training within the clinical CCT are very limited, and do not necessitate the involvement of academics for their delivery. The future pool of academic anaesthetists are likely to be drawn mainly from specialist academic trainees (see Recommendation 8) and not from conventional clinical trainees. Considerations such as these lead us to recommend that it is not generally advantageous for academic departments to regard delivering the academic component of the clinical CCT as a priority activity. This remains, as at present, the primary responsibility of the Schools of Anaesthesia (with local NHS department, College Tutor, Deanery and Regional Adviser support).

Recommendation 5

To help deliver all aspects of training, the NHS department is recommended to use a 'team approach', using a 'training faculty' of NHS consultants. One NHS consultant in this faculty should be identified as the *Lead Consultant for Academic Competencies*.

Recommendation 6

We recommend that the Royal College ensures that the specialty assessments supervised by PMETB which have superseded College visits specifically examine the delivery of academic components of conventional clinical training. These must be viewed as being of equal importance to all other aspects of training for the CCT in anaesthesia. If additional or special resources are necessary locally for the academic components, these should be identified and the Royal College must exercise all influence to ensure that local organisations (e.g. NHS Trusts or Deaneries) provide them.

Recommendation 7

Notwithstanding Recommendation 4, the relationship between an academic anaesthetic *department* and a *School* of Anaesthesia needs clarification, so that the two can work together to take forward postgraduate education. If an academic department takes on the role of delivering the academic/research competencies of the clinical training program, it is very much to its advantage that it works with the School, Postgraduate Dean and NHS department to cost the service it provides, and include in the resulting budget an element for any necessary research time or additional research expenses.

SECTION 8. TRAINING FOR CLINICAL ACADEMIC CAREERS: THE WALPORT REPORT

Background to the Walport Report

8.1 The content of training for those planning a career in academic anaesthesia should ideally have a different structure from conventional clinical training, and should include a greater focus on academic competencies.

8.2 This is now explicitly recognised by the Academic Careers Sub-Committee of Modernising Medical Careers. With UKCRC, this Committee has produced a document: *Medically- and Dentally-Qualified Academic Staff – Recommendations for Training the Researchers and Educators of the Future* (which we term here 'the Walport Report').[52] The summary of this document and its key recommendations are reproduced in Appendix E.

8.3 The Academy of Medical Sciences reports[3–6] – and the report from the Biosciences Innovation and Growth Team[12] – caused the UK government to set up the Research for Patient Benefits Working Party, specifically to take forward the conclusions of these reports.[25] Additionally, the Chancellor of the Exchequer and the Secretary of State for Health announced an increase in NHS R&D funding (to ~£100 million/year by 2008) and the creation of the UK Clinical Research Collaboration (UKCRC) to promote a partnership approach to strengthen clinical research.[52] The UKCRC commissioned the Walport Report to provide sustainable solutions to the training and career problems of clinical academic staff.

8.4 The members of the Academic Careers Sub-Committee of MMC included representatives of the major funding bodies (MRC and Wellcome Trust), Royal Colleges, PMETB, CHMS, NHS Chief Executives, BMA, MMC, HEFC, Academy of Medical Sciences and the Department of Health. The recommendations of the Walport Report must therefore be seen as definitive.

8.5 The Walport Report also makes recommendations concerning the academic training of medical students and of Foundation Programs.

8.6 All the recommendations have important implications for academic anaesthesia, and a large part of this Strategy Report deals with how anaesthesia should react and adapt to the research and academic training environment which the Walport Report will inevitably create.

Walport Report recommendations for academic training

8.7 The main principle of the Walport Report is that there should be clear and seamless career path for academic training, broadly mirroring clinical (CCST or CCT) training. The path should retain flexibility to allow movement between academic and clinical paths.

8.8 Figure 8.1 below summarises the generic model developed by Walport Report, and also shows by way of comparison the conventional clinical career path.

8.9 There are some key stages of the model which can be seen as 'hurdles' by way of competition for posts and/or funding:

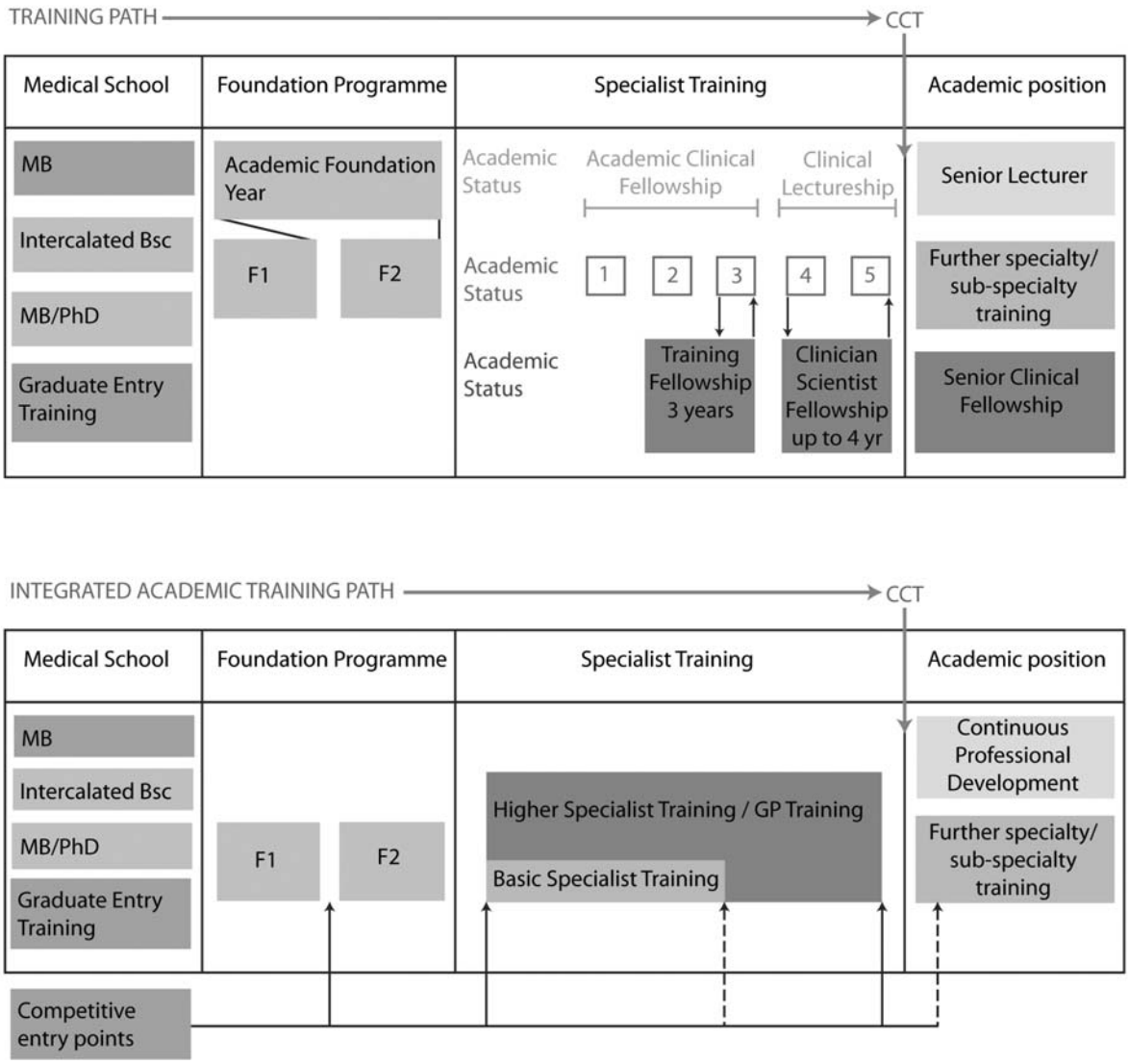
a. appointment by competitive interview for an Academic Clinical Fellowship with an NTNA. It is envisaged that ~250 Academic Clinical Fellowship places will be offered annually with a notional number allocated per specialty. However, ultimate appointment will be made on the quality of the training offered by the programs, regardless of specialty. Years 1, 2 (and possibly 3) of the Academic Clinical Fellowship phase will consist mainly of general (basic) clinical training, but with dedicated academic sessions designed to prepare the candidate for the Training Fellowship part of this phase.

b. the *Training Fellowship* of 3 years (part of the Academic Clinical Fellowship) will lead to a higher degree (MD/PhD). However, candidates will need to compete for funding to support their research plans (e.g. from MRC, Wellcome Trust or other sources). Candidates unsuccessful in obtaining funding at this stage may have to revert to a standard clinical training (NTN) program (i.e. revert to the bottom panel of Figure 8.1).

c. the *Clinical Lectureship* phase consists of finalising clinical training and obtaining post-doctoral experience. Candidates will again need to compete for research funding to support their research (e.g. clinician scientist fellowships from major funding agencies). Candidates who are unsuccessful in their funding applications may have to revert to a standard clinical training (NTN) program. Successful candidates will obtain their academic CCST (or CCT) *and* be eligible for the academic posts indicated in Figure 8.1.

Figure 8.1. The new academic career training pathway.

The top panel shows the new pathway described in the Walport Report for clinical academics. The bottom panel shows the current, conventional clinical training path. The medical school years are identical in both pathways. For the Foundation Programs, the Walport Report suggests three academic options: an integrated academic F2 program (as shown in the diagram); stand-alone 4-month F2 academic rotations; and pilot 2-year integrated academic programs. The academic career pathway consists broadly of two phases: the Academic Clinical Fellowship (encompassing years 1–3 of clinical training and a training fellowship leading to a higher degree); and the Clinical Lectureship (consisting of years 4–5 of clinical training and postdoctoral support such as a clinician scientist fellowship). The total duration of academic training could therefore be as long as 9 years after the F2 year (as compared with ~7 years for clinical training), but could be less than 9 years, since key to the scheme is flexibility. The duration of training may also differ for those individuals who have already obtained a PhD before entering their Academic Clinical Fellowship. Throughout the academic career path, individuals are allocated an NTNA training number.



Implications of the Walport Report for academic anaesthesia

8.10 If the specialty is to capitalise on the opportunities offered by the academic career pathways, it must consider some important consequences (8.10a–d below) of the Walport Report's recommendations:

a. *Consequence 1: The need to develop specific training pathways in academic anaesthesia.*

The main task for the specialty is to develop specific career pathways for future academic anaesthetists. These pathways will have to be developed with national co-ordination, and not by individual departments, since the pathways themselves will be subject to a national competition. As recommendation 11 of the Walport Report confirms: '*these programmes are initiated and selected by means of a national competition…*' The challenge is to make these training programs (i) attractive to both potential candidates and to the UKCRC, so that anaesthesia receives its due share of the ~250 Academic Clinical Training Fellowship programs and (ii) acceptable both in terms of clinical and academic content to PMETB. As the Walport Report states (paragraph 33):

> *"The first step will be national advertisement for appointments to academic programmes of training. This will be accompanied by reference to a listing of potential academic training schemes that were selected through competition."*

b. *Consequence 2: The need to identify anaesthetic departments to host academic training.*

Integral to the process is therefore the need to identify those departments of anaesthesia in a position to train career academics. A corollary of this is that there may be some academic departments of anaesthesia currently not in a position to offer such academic training (e.g. due to low academic staffing levels or little by way of external grant support). Although regional appointment committees established by Deaneries in close partnership with universities and other service partners will have ultimate responsibility for interviewing and appointing applicants to Academic Clinical Fellowship programs, and also for ensuring that ad personam training and regular mentoring are offered by the programs, the input of academic anaesthetists will be essential in all these roles. As the Walport Report states (paragraph 44), there will be:

> *"…selection of the trainees to these programmes by appropriately constituted local appointments committees that include suitable clinical and academic representation. These committees should have a number of external representatives including a UKCRC nominee…"*

Therefore, the Royal College together with academic anaesthetists must develop appropriate structures and formal means of interacting with UKCRC and the other stakeholders who will facilitate the delivery of this training. The day-to-day mentoring of individual Clinical Academic Fellows may be devolved by UKCRC to 'academic sections' of the individual royal colleges, so the Academic Institute we have suggested in this Strategy Report will fulfil this role. Our suggestion for designation of Academic Tutors will also assist with academic supervision at local level.

c. *Consequence 3: The need to provide research funding to support key stages in training.*

Research funding is critical at two key stages: (i) the research fellowship phase leading to a higher degree; (ii) the postdoctoral clinical lectureship phase. Many funding agencies are reluctant to 'ring-fence' grants to support specific specialties. There is therefore no guarantee that anaesthetic Clinical Academic Fellows will all succeed in obtaining research funding in open competition. However, funds to support research are currently available within the specialty (see Appendix D). In the light of the crucial importance of the Walport Report for the future of academic medicine as a whole, it is important to consider how these anaesthetic funds might be better-organised to support research at the key stages outlined above. This is an issue we discuss in more detail later in this Strategy Report.

d. C*onsequence 4: The impact of early career choices.*

The Walport model (Figure 8.1) indicates that trainees will probably be making career choices (e.g. opting for academic training) much earlier than they do at present and the F2 year seems particularly pivotal in this regard. This poses a special challenge for anaesthesia. If 'anaesthesia' *per se* does not feature as a specific component of the F2 year, how can an F2 trainee reasonably opt for a career as an academic anaesthetist? Broadly, there are three solutions to this particular problem (which are not mutually exclusive):

(i) work at local Deanery level to incorporate anaesthesia as a specific module within the F2 year (this has been done in some Deaneries)[42] – at the very least, some elements of clinical anaesthetic training might be offered, perhaps as part of the critical care F2 module;

(ii) offer suitable anaesthetic-related projects for the academic module of the F2 year;

(iii) seek to modify the 'ideal model' described in the Walport Report so that – for anaesthesia – the option to choose a career in academic anaesthesia is delayed, say, until the 2nd year of clinical specialist training (i.e. SHO year 2 or SpR year 1 – soon to be termed 'ST2' or 'ST3' respectively). The Walport Report does indeed allow for this – and the Academic Institute will need to consider in detail the relative merits and problems inherent in structuring such a scheme.

It is a common feature of each of these three solutions that academic anaesthetists will need to increase their exposure to trainees early in their career and that trainees will need to make (and be given the information to make) their career choices much earlier than they do at present.

8.11 The Walport Report emphasises the recommendation (three times in separate paragraphs) that '*substantial efforts are made to develop academic training programmes in those specialties that have been subject to particular decline in their academic activity… [including]…anaesthesia…*' This confirms that the systems being developed by UKCRC and PMETB are receptive to strategy developments from the specialty itself.

Recommendation 8

The Walport Report requires each specialty to develop specific programs for *clinical academic career training* (as distinct from *conventional clinical training*). Inherent in this is the need to identify (a) the academic anaesthetic departments in a position to host and deliver this training, and (b) the sources of funding for the critical stages of the academic career pathways. The Academic Institute will co-ordinate the development of specific training programs to be delivered by the UK academic anaesthetic departments, and it will work towards re-aligning the available funding within the specialty to support critical stages of these programs.

SECTION 9. EXTENDING THE ROLE OF ACADEMIC ANAESTHESIA IN MEDICAL STUDENT TRAINING

9.1 The Walport Report emphasises two areas concerning medical student training (Appendix E):[52]

(1) to ensure that medical students are taught by leading clinical academics;

(2) to promote opportunities to undertake intercalated BSc or PhD degrees (e.g. through MB-PhD schemes).

We discuss each of the implications of this for anaesthesia below.

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(1) '*To ensure that medical students are taught by leading academics*': how academic anaesthesia might benefit

9.2 Academic anaesthetic departments can respond to this recommendation by developing a *portfolio of teaching* which they can provide in a medical school. 'Anaesthesia' as such forms only a very small part of any medical (preclinical, clinical or integrated) curriculum, but the skills in which anaesthetists excel form the core of undergraduate medical education. These skills can include (this list is not exhaustive):

a. preclinical (systems) physiology;
b. preclinical pharmacology;
c. preclinical neuroscience;
d. preclinical biochemistry;
e. resuscitation;
f. critical care;
g. peri-operative care (including assessment of patients prior to surgery, interpretation of laboratory investigations, fluid management);
h. pain management
i. medicine and the law;
j. ethics
k. problem-based learning approaches (especially in medical schools with integrated preclinical and clinical medical courses);
l. medical education.

9.3 Developing a wider teaching portfolio can be linked effectively with our Recommendation 2. If academic anaesthesia becomes more involved in basic science *research*, then it is also natural for anaesthetists to be involved in delivering *medical student teaching* in those areas listed in 9.2.

9.4 Medical schools usually plan their core staffing in order to deliver the required teaching. Those departments which configure themselves to be 'indispensable' – by providing teaching which is absolutely necessary – are therefore in a better position to obtain a higher core level of staffing. Many of the subjects listed in 9.2 above are 'core subjects'. It is then later upon this core level that *research* can be built. For this reason, expanding teaching portfolios can be viewed as part of a strategy which helps anaesthetic departments attain higher levels of staffing.

Recommendation 9

The amount of teaching provided by a department often determines the core teaching staff which a medical school needs to provide. The larger and more indispensable the teaching, the larger should be the provision of core staff. Broadening its teaching range can help an academic anaesthetic department achieve a 'critical mass'. Research can then be built later upon this core staffing. We therefore recommend that academic departments develop portfolios for teaching medical students which are much broader than the current very narrow remits of 'anaesthesia', 'critical care' or 'pain medicine' (e.g. broadened to include the teaching of physiology and pharmacology to undergraduate medical students).

A note: Care and concerns with the use of SIFT

9.5 Superficially, some of the points made above might seem to be at odds with current practice relating to medical student teaching. It is important here to clarify these funding arrangements, and illustrate how care is needed in managing them so that they benefit, rather than harm, academic anaesthetic departments.

9.6 SIFT (the Service Increment Fund for Teaching) is paid by the Department of Health to hospitals (and general practices) to cover the extra costs of medical and dental student teaching. The formula used to calculate the SIFT allocation to each medical school is broadly (and arbitrarily) based upon medical student numbers. For some hospitals, SIFT can represent the largest single income stream.[11,22,23] A medical school of ~150 students, could have an income as high as ~£16 million per year.[11] The SIFT grant is usually pooled with other hospital income and is not 'ring-fenced' to fund specific quanta of teaching. There are large discrepancies between different hospitals in their actual teaching costs.[11] Indeed, it can be difficult to identify 'teaching costs' as distinct from 'clinical care costs' or 'research costs' in situations where, for example, the same patient is being used to teach medical students and is also undergoing an experimental (but therapeutic) procedure. Problems such as this can make it difficult to allocate SIFT to precise quanta of teaching.

9.7 The introduction of the new 2003 NHS Consultant and Academic Contracts present further potential complications for the management of SIFT. Inherent in these contracts is the need to quantify the duties undertaken by an individual.[14–16,58] It is becoming clear that, where teaching is concerned, quantifying medical student teaching in an individual's contract is difficult when the overall mechanism for funding this teaching (i.e. SIFT) cannot be so readily and precisely quantified.[59,62] In other words, it is difficult to quantify the amount of teaching which an *individual* should do, when the *teaching hospital itself* does not know how much it needs to do nor how much is funded. It is inevitable that the requirement for precision at the level of individual contracts will lead to pressure for a re-analysis of the manner in which SIFT funding is managed.[50]

9.8 Regardless of these uncertainties, the current situation is that the responsibility for teaching medical students falls *de facto* upon an academic department. However, academic anaesthetic departments rarely have the necessary staff to fulfil their teaching load (see Appendix B). In these cases, a common arrangement is for NHS consultant staff to 'fill in' or 'help out' with teaching. This NHS-provided teaching is

a. unfunded, or
b. provided under an informal arrangement whereby academics provide some clinical support (this is known as a 'knock-for-knock' or 'mutual uncosted assistance'),[22,23] or
c. the NHS department directly receives some monies – nominally from the SIFT fund – to cover these costs.

9.9 Each of the arrangements in 9.8 a, b or c can lead to problems.

9.10 If NHS-provided teaching is entirely unfunded (9.8a), then this is clearly to the detriment of both academic and NHS departments.

9.11 In a knock-for-knock arrangement (9.8b), it is the academic department which loses out. First, its academics are often required to provide clinical cover beyond their defined contractual duties (which potentially detracts from their main aim as academics). Second, the academic department loses out on potential additional income (or additional staffing) which might otherwise have been provided to it to cover the teaching load, had it been recognised that there were staffing shortfalls. Essentially, a knock-for-knock arrangement is 'covering-up' shortfalls in academic staffing that can be severe (see Appendix B).

9.12 Where the NHS department receives the SIFT monies (9.8c), it is the academic department which loses out. The NHS department usually uses these monies to increase total NHS consultant numbers. A teaching element might theoretically be built into these NHS job plans. Or, as is more usual, NHS consultant numbers simply become sufficiently large that there are always enough people to be called upon to teach if and when needed. While this appears to facilitate the delivery of teaching, it does little to enhance the critical mass of the academic department.

9.13 **We therefore recommend** alternative strategies which are more in tune with the New NHS and Academic Contracts, and which also serve to enhance the standing of the academic department with respect to medical student teaching. These alternatives include:

a. any monies available to fund medical student teaching (e.g. SIFT) should be directed towards bolstering academic staff numbers, using calculations which reflect the burden of teaching. The advantage of this approach is that academic staffing levels are maximised, enabling opportunities for research to be developed from these increased numbers. This approach will be especially valuable if Recommendation 9, above, is implemented;

b. where it is unavoidable that NHS consultants provide medical student teaching, there should be attention to the job plans of these individuals, with the aim of reconfiguring them as part of the 'academic department'. Ideally, this should be in combination with some research sessions so that these consultants can contribute to *all* aspects of academic work (i.e. both teaching and research – see Section 11);

c. it is to the advantage of both NHS and academic departments if monies available for medical student teaching (i.e. SIFT) can be 'unravelled' (locally) in a manner which can identify and reflect the quantum of teaching undertaken. SIFT accountability reports have specifically rejected this 'bottom-up' approach.[23] It is a challenging task, but where it has been undertaken[41] it has been to the advantage of the anaesthetic department in terms of teaching income (and an element of research time) which is made available thereby.

Recommendation 10

We recommend that academic departments ensure that all the medical student teaching which they undertake is properly resourced, and funded in a manner which maximises academic staff numbers. Where NHS consultants deliver medical student teaching, the broad aim should be to incorporate these 'teaching-active' NHS consultants into the academic department. The funds available to support teaching within medical schools (e.g. SIFT) can be used to achieve these objectives, if they are analysed or 'unravelled' at local level.

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(2) '*Intercalated BSc courses… and MB-PhD programs… should be maintained and sustained*': how academic anaesthesia should respond

9.14 Medical students who choose to undertake an intercalated BSc (and especially those who undertake an intercalated PhD between their preclinical and clinical years) are extremely able people. It takes considerable effort and resourcefulness to opt for and plan a research project at such an early stage in a career. It is desirable – if not essential – that as many of these talented students as possible later choose to specialise in anaesthesia.

9.15 Intercalated BSc and proposed MB-PhD programs carry with them funding, which would benefit an academic department.

9.16 Historically though, anaesthetic departments have offered research only in fields considered to be 'postgraduate' (i.e. in anaesthesia, critical care or pain). It is rare and difficult for a medical student to have developed a specific interest in these clinical subjects at an early stage of their career. Most students therefore opt for research in basic science subjects which offer acquisition of more generic skills. However the specialty has not traditionally considered many basic sciences as being connected, at undergraduate level, with clinical anaesthesia. The result has been that clinical anaesthesia has failed to attract the majority of those with intercalated BSc and PhD degrees. Consequently academic anaesthesia has missed out on the skills which they can bring with them.

9.17 If anaesthetic departments are to benefit from the recommendations of the Walport Report, this 'traditional' view must change. This change can be linked effectively with our Recommendations 2 and 9. By changing its emphasis away from being a purely clinical postgraduate subject, and focussing also on more generic, translational and basic science research and teaching, academic anaesthesia will place itself perfectly to attract the brightest and most able students. The ideal aim is for academic anaesthetists to become integral to the teaching of medical students and also to the supervision of intercalated BScs and PhDs students in basic science subjects.

9.18 Furthermore, once recruited into BSc and/or PhD programs under the direction of academic anaesthetic departments, these students should be offered mentorship by academic anaesthetists throughout their career, so that they are not lost to the specialty. This policy will help foster a 'culture of research' within the specialty.

9.19 The policy outlined above regarding identified, talented individuals can be summarised simply as: '*catch them early; treat them well*'.[82]

Recommendation 11

We recommend that anaesthetic departments offer medical students opportunities for intercalated BSc and PhD degrees, focussing on basic science or translational research topics (rather than in 'anaesthesia' as a postgraduate clinical subject; see Recommendation 2, above). The aim is that anaesthesia is regarded as a natural clinical specialty of choice for any student who has undertaken an intercalated BSc or PhD degree in a biomedical science subject. The specialty should offer long-term mentorship to such students and encourage them to specialise in anaesthesia. The presence of such individuals will help foster a natural 'culture of research' within the specialty. The simple aim with these talented individuals is to '*catch them early and treat them well*'.

SECTION 10. THE ACADEMIC COMPONENT OF THE F2 YEAR: A ROLE FOR ANAESTHESIA

10.1 The core curriculum for the Foundation Year 2 (F2) includes skills that can be provided by modules (or 'tasters') in anaesthesia and critical care.[51] One barrier to planning suitable F2 modules in anaesthesia has been that currently, anaesthetic SHOs (after a suitable period of induction) carry a significant burden of clinical service, especially 'out-of-hours'. In most centres, their contribution is essential for overall compliance with the European Working Time Directive (EWTD) on trainees' hours of work. It is at present unclear how *both* the requirement to arrange a short ~3–4 month module in F2 year which proceeds seamlessly to SpR1 year *and* the need to comply with EWTD can be easily met. Nonetheless, some Deaneries have published suitable programs for anaesthesia.[42]

10.2 Additionally, an F2 year *academic* module can be offered, based in any specialty.[51] The Walport Report anticipates that those planning an academic career will choose an F2 academic module.[52] Some specialties, especially in general medicine, have developed academic modules which are explicitly designed to encourage participants towards a career in academic medicine (Appendix F).[43]

10.3 Since the Walport Report requires trainees to decide relatively early to apply for an Academic Clinical Fellowship, it is relatively unlikely that a trainee who has previously never come into contact with a specialty will opt for an academic career in it. Therefore, if our specialty wishes to attract academic career trainees, it is essential that F2 trainees are exposed to academic anaesthesia. An academic F2 module is one means of achieving this.

10.4 Our Recommendations 9, 10 and 11 – that academic anaesthetists become more involved in medical student teaching and research supervision – will also have the effect of 'advertising' the specialty to potential applicants as early as possible ('catch them early, treat them well').

10.5 It is possible for academic anaesthetic departments to offer academic F2 modules using one (or all) of three approaches:

a. by offering an accomplishable research attachment/research project, especially in a basic science area related to anaesthesia, critical care or pain, so that this offers the F2 trainees suitable exposure to generic laboratory and/or clinical research methods;

b. by offering relatively simple clinical projects of the kind already undertaken by many clinical anaesthetists. These can be used as an effective vehicle to expose F2 trainees to research methods, while at the same time offering them some basic practical training in clinical skills. Examples of areas which may be suitable include projects in airway management (e.g. comparisons of one device versus another) or pain management (e.g. assessing post-operative pain scores or extent of sensory loss after certain regional anaesthetic interventions);

c. by planning to 'link' the module in anaesthesia or critical care with the offer of a separate module in critical care-related, or anaesthetic-related research.

10.6 To summarise, there are numerous advantages in academic anaesthetic departments becoming involved in the research modules for F2, notably:

a. it is an opportunity for F2 trainees (especially those interested in an academic career) to be exposed to some aspect of anaesthesia, and therefore for anaesthesia to 'advertise' itself;
b. it potentially enhances the current critical care module. Those F2 trainees who select a critical care module may have done so because of a latent or inherent interest in anaesthesia, critical care or pain – this interest may be strengthened by the added offer of a related academic module;
c. F2 trainees undergoing an academic module may carry with them some (modest) funding.

Recommendation 12

We recommend that academic anaesthetic departments prepare suitable modules for the *academic component* of the F2 year. Projects which offer exposure to basic laboratory science (which builds upon the trainee's medical student experience), or involvement in simple clinical studies, or which can be integrated with a clinical F2 module in critical care or anaesthesia would be especially suitable. The strategic benefit for the specialty is that this will be an opportunity for F2 trainees to come into contact with academic anaesthesia at an early stage, and so consider it as a career option.

Examples of career pathways of future academic anaesthetists

10.7 Based upon the foregoing Sections 8–9 we offer below (by way of illustration) two examples of individuals who would successfully exploit the models and opportunities outlined. These examples also indicate ways in which academic anaesthetic departments can organise or reconfigure their approaches to exploit the new opportunities:

Individual A is interested in pharmacology at medical school. She gains a place for an intercalated BSc to study the pharmacology of isoflurane on the electrophysiology of isolated ventricular myocytes – a project based in the academic department of anaesthesia. The project is very successful and it develops into a funded PhD within the same department, with some collaboration with the department of molecular biology, where cloned potassium channels are available. She re-joins clinical training after her PhD, but continues to have contact with (and be mentored by) her anaesthetist research supervisor. On qualifying in medicine, she enters F1/F2 training (at another hospital) and chooses a critical care module and an academic module based in anaesthesia as part of her F2 year. The latter consists of involvement in a small study comparing the efficacy of a new supraglottic airway with the laryngeal mask airway in 40 adults. She decides to train as a career academic and applies for an Academic Clinical Fellowship in anaesthesia and enters the career academic pathway (Figure 8.1). For her 'training fellowship', she secures funding for a second project involving cloned cardiac potassium channels which extends her previous work. This places her in a competitive position to secure her own grants for her clinical lectureship phase.

Individual B was never really exposed to anaesthesia in medical school (it formed only a small part of the curriculum). However, the bulk of his physiology and pharmacology teaching was provided by anaesthetists and in his clinical training, he encountered anaesthetists in clinical skills sessions and in problem-based learning tutorials. He chooses a critical care module for his F2 year and becomes fascinated by the problem of sepsis. He has not opted for an academic module, but with his interest growing he (speculatively) applies for an Academic Clinical Fellowship in anaesthesia and is successful. In his first two 'clinical fellowship' years he is exposed to research methods (while concomitantly obtaining basic clinical training in anaesthesia), and he puts together a grant application to fund his 'clinical training fellowship' PhD (in the molecular biology of sepsis, conducted in the department of anaesthesia and critical care). He is successful in obtaining this funding (from a joint RCA-AAGBI scheme) and he is now set on a career path to be an academic anaesthetist (Figure 8.1).

10.8 While the two paths outlined in 10.7 seem superficially different, they both conform to the general training pathway proposed (Figure 8.1). The outline examples emphasise the importance of the specialty broadening its scope, of exposing itself early to medical students and to doctors early in their careers, and of continued mentoring of talented individuals.

SECTION 11. SUPPORTING RESEARCH-ACTIVE NHS CONSULTANTS

Identifying research-active NHS consultants

11.1 The limited number of academic posts in anaesthesia and the closure of some academic departments has meant that many suitably-qualified anaesthetists have instead taken up or moved into NHS consultant posts.

11.2 While all consultants need to be 'research-aware', many NHS consultants continue to be 'research-active' or 'teaching-active' and, in various other ways, also contribute to the work of academic anaesthetic departments.

11.3 Research-active NHS consultants are essential for research and for patient benefit. Many lead, participate in or facilitate key research programs, and many (if not all) identify and motivate the clinical researchers of the future.[75] Research-active consultants have been explicitly identified by the Academic Careers Sub-Committee of Modernising Medical Careers as being important and in need of support.[50]

11.4 The first step in being able to support them is to identify them. The Academic Institute should, in conjunction with each academic department, formally identify these consultants.

Recommendation 13

We recommend that the Academic Institute formally identifies research- and teaching-active NHS consultant anaesthetists, who should then be regarded as an integral part of their local academic department. This process of identification would be the first step to supporting such consultants.

Research time for research-active NHS consultants

11.5 What research-active consultants need most is an appropriate amount of *research/academic time* free of clinical or other duties (i.e. 'academic time'). This time will enable them to secure the *funding* to support research (e.g. by writing grant applications), to *supervise* trainees (and medical students) in research, and to *undertake research* themselves (especially where this research is separate from the clinical material in which they are in contact). Concerning the first of these, there are always difficulties in obtaining independent research funding, but what is certain is that, without the time to craft a research proposal, a research grant is very difficult – if not impossible – to obtain.

11.6 The changes introduced by the new 2003 Consultant Academic Contracts are potentially helpful in managing this 'academic time' more efficiently and transparently. The 'programmed activity' of work (the PA) can be regarded as a 'tradable unit of time'

(that is, tradable within the constraints of negotiation and agreement). For example, a ratio of 7.5 direct clinical care PAs and 2.5 supporting activity PAs is described as 'typical', but it is also stated that, where appropriate, any combination of direct clinical care PAs and non-clinical PAs will form a coherent, full-time job plan.[1,14–16,58,59] Therefore, an NHS consultant's job plan could theoretically constitute an equal number of direct clinical care PAs and non-clinical PAs: this situation would then closely resemble an academic contract, or a joint NHS-university 'new blood' senior lectureship (as envisaged in the Walport Report).[52]

11.7 The remainder of this section considers ways in which this added flexibility (the 'tradeability of the PA') can be exploited to assist research-active NHS consultants and so in turn, assist academic anaesthesia.

'A+B' arrangements as a means of securing research time

11.8 In an 'A+B' arrangement, the consultant holds his/her substantive contract with an NHS Trust, but the university or medical school 'buys out' one (or more) session(s) (i.e. PAs) to devote to research or teaching. The university/research activity replaces the clinical activity that would otherwise have occurred in that session.

11.9 This is perhaps the most direct means by which research-active NHS consultants can obtain protected research time. However, there are some limitations to the scheme. There are only a limited number of awards and there is usually fierce competition, so that not every research-active consultant can be offered such a contract, even if they meet the broad criteria to do so. Also, awards are sometimes limited in duration to 5 or 10 years. Finally, not all universities or medical schools offer A+B arrangements.

11.10 A+B contracts are greatly valued by those who hold them and certainly relieve research-active consultants of some of the pressures which the conflicting demands of clinical work and academia can otherwise create. Therefore, wherever possible A+B arrangements should be encouraged.

11.11 The following considerations suggest that funding of A+B awards should be relatively cost-effective for universities and employers:

a. Saville has argued that at least part of the NHS Research & Development (NHS R&D) budget is designed to fund the research time of research-active NHS consultants;[75]

b. if the A+B session is a consultant's 11th or 12th PA, then this is not pensionable in the New Consultant Contract.[14–16] The employer (i.e. the university) is therefore relieved of the relevant employer's contribution. Therefore, the costs of funding an A+B session in the new 2003 Consultant Contract are considerably less than under the Old Consultant Contract, something which makes it more attractive for employers to consider.

11.12 It is clear from Appendix B that, while some academic departments have been able to secure A+B-type funding, other departments have not. One role for the Academic Institute will be to marshal the relevant arguments and agreements from across the country, with the aim of helping to secure such arrangements for all anaesthetic departments.

11.13 Departments with especially high teaching duties might also be able to use similar arguments to obtain resources and funded sessions for teaching.

Recommendation 14

Research- and teaching-active NHS consultants need, above all, protected time for these activities. This can be achieved most readily through an 'A+B' contract (or similar) from the local university. Where no A+B arrangements exist, the academic department (with Academic Institute support) should marshal arguments which seek to persuade host institutions to provide them.

Buy-outs from other sources: the value of a 'team approach' to supporting professional activity

11.14 By making a PA a transparent and 'tradeable' unit of time, it is also possible for research-active consultants to fund research sessions (PAs) from funds they gain from sources other than the university (e.g. industry, research charities, or grants).

11.15 In all such instances the funding arrangements should best be channelled through the academic anaesthetic department, rather than arranged on an individual or *ad hoc* basis. This will enhance transparency and strengthen the links between research-active NHS consultants and the academic department. The academic department would therefore help convert the external funding into a *de facto* 'A+B' arrangement, which will in turn be to the advantage of the individual research-active consultant.

11.16 It is important to emphasise the 'team approach' to managing supporting professional activity in a department. In its document *The Role of the College Tutor*, the Academy of Medical Royal Colleges emphasises a team approach to training and encourages the evolution of a 'training faculty' in each department with each faculty member having a specific role.[2] This notion can (and must) be extended to the management of supporting professional activity (SPA) as a whole.[59] It is self-evidently not possible or desirable that every NHS consultant has the same balance of clinical work, audit, teaching or research in his/her job plan. Job plans should be tailored to individual skills: the department – and the specialty as a whole – benefits from ensuring that there is a 'division of labour' within the team in approaching the tasks that need to be undertaken. The spectrum of consultants will include for example, those who predominantly undertake audit to those who predominantly teach. Similarly, there will be some consultants who will (and should) use the bulk of their SPA time to support research. In this manner, the particular skills of each consultant are better used, and this is to the ultimate benefit of patient care.

11.17 This 'team approach', once established, can be used specifically to enhance external support for research: currently, funding agencies are reluctant to fund just 1 or 2 PAs per week of research activity, rightly believing that this alone is inadequate to support a serious research project. However, the structure of most anaesthetic job plans is such that there are actually ~2 days of non-clinical time available.[58,59] With a team approach, as described in 11.14, much of this could be used for research. An additional 1–2 PAs funded from an external source would then enable a total of ~2.5 or even 3 days to be devoted to research, and this is ample time to support a serious project. Indeed, the academic time made available in this way brings an NHS consultant contract very close to the PA balance in many full-time academic contracts. Therefore, a team approach makes it very cost-effective for external funders to consider buying-out 1 or 2 PAs of consultant time within a grant, because they gain much more than this in terms of actual time devoted to a project.

11.18 We note that this approach is consistent with (and indeed facilitated by) the move to 'full economic costing' by universities and grant-giving bodies (see: http://www.admin.ox.ac.uk/fec/).

Recommendation 15

We recommend that research-active NHS consultant anaesthetists are encouraged to seek external grant funding as principal investigators and seek to include in their applications an element for protected research time. The Royal College/Academic Institute and the local academic department must emphasise to grant-giving bodies that even modest funding can buy significant research time, because the 'team approach' adopted by the specialty with regard to supporting professional activity (SPAs) facilitates very efficient use of each consultant's skills.

Additional programmed activities for research granted directly by NHS Trusts

11.19 Many NHS Trusts properly have provision to recognise research sessions as additional programmed activities (APAs) – over and above the 2.5 SPA allocation – within their own rules on job planning and without recourse to specified external funding. As an example, the relevant paragraph in the Oxford Radcliffe NHS Trust Policy on job planning is:[56]

> *"On the basis of criteria developed by the NHS 'Support for Science Steering Group' consultants should be considered research-active and have time for research identified in their job plan, if they can provide evidence of the research such as: (a) author or co-author of a peer reviewed publication in the last calendar year; (b) named applicant on a grant; (c) named applicant on a research ethics application for which data collection occurred during the last year…the allocation of research programmed activities within the job plan should be agreed by the Directorate Chair in consultation with the relevant academic head of department."*

11.20 Where such rules exist, it is essential that academic anaesthetic departments (with Royal College support) use their influence to ensure that these APAs are granted to the appropriate research-active NHS consultants.

11.21 It is self-evident that there should be some reasonable limit to the number of such research APAs that an NHS Trust might allocate. Approximately 1% of the total consultant PAs allocated by a Trust to research would be aligned with the percentage of NHS funding for R&D,[12,24] and would equate to 1 research APA per 10 consultants (i.e. 1 academic APA per 100 PAs total). Thus an anaesthetic department of ~40 consultants could reasonably claim 4 Trust-funded academic APAs for allocation to suitable research-active individuals. This proportion seems reasonable.

11.22 It may be possible for the NHS Trust to recoup some of the costs of these research APAs via the NHS R&D funds.[75]

Recommendation 16

Many NHS Trust guidelines explicitly allow for additional programmed activities (APAs) over and above supporting professional activity (SPAs) to be allocated for research support within NHS job plans. Academic anaesthetic departments (with Academic Institute assistance) should support formally identified research-active consultants (see Recommendation 13) in any negotiations for such research APAs. We recommend that a target (which is reasonable) of 1 'research APA' per 10 NHS consultants in the department.

Private practice and protected time for research

11.23 The New NHS Consultant Contract requires any consultant undertaking private practice to offer an additional PA to his/her employing Trust. There is no threshold amount of private practice which triggers this requirement: *any* private practice requires the consultant to offer an additional PA.[14–16] Invariably, the employing Trust will assign this extra PA to clinical work.[17] Put simply, an NHS consultant who undertakes any private practice will generally also undertake one extra clinical PA for the Trust (albeit a 'session' which is paid).

11.24 In this regard the New Academic Contract is slightly different. A clinical academic who undertakes any private practice is required to offer an extra PA to *either* employer – NHS Trust or university – but not *both*.[14–16] The decision as to which employer (Trust or university) takes up this offer depends upon the local agreements between the two employers.[15] However, it is clearly to the advantage of the university that it, rather than the Trust, takes up the offer of an extra PA. Because the Trust is likely to direct the academic to undertake an extra clinical activity, this will detract from the university's primary aim, which is to maximise the academic's research activity. This may in part explain why relatively few academics have agreed job plans at >11 PAs (54%) as compared with NHS consultants (80%).[17]

11.25 The research-active NHS consultant 'falls between the two stools' described in 11.23 and 11.24 above. Some research-active consultants also undertake private practice.

They do not have the option of offering an extra PA to a university, and invariably their Trust employer directs the extra PA to clinical duties – which further restricts their research time. Although the extra clinical PA is paid, it is perhaps *research* rather than *money* which motivates these individuals. We propose below one approach which may be attractive to all parties in this situation.

11.26 Where other avenues to obtain protected research time have been unsuccessful (e.g. those outlined in Recommendations 14–16) the research-active consultant might seek agreement from the Trust (with local academic department and Academic Institute support) to waive its requirement that s/he offers an extra PA, as long as the consultant fulfilled the Trust's (and academic department's or Academic Institute's) published criteria as being 'a research-active consultant':

a. the consultant would thus obtain the necessary research time, but clearly would not be paid for an extra PA;

b. the Trust would not gain extra clinical input from that individual, but the funds saved could be used to buy the same clinical service from others. There is indeed provision in the New (2003) Consultant Contract that any additional clinical PAs arising out of private practice may be shared across the NHS department, the additional payments then going to the consultants undertaking the extra clinical work.

Whether these compromises are acceptable to all parties will depend upon the individual consultant, the local academic department and the Trust, and be subject to negotiation. However, the mechanisms would currently seem to exist and be sufficiently transparent for such arrangements to occur.

Recommendation 17

In addition to points made in Recommendations 14–16, there are a number of other ways to provide protected academic time within the New Consultant Contract. These can all keep costs to the employing NHS Trust to a minimum, whilst maximising investment in research. We recommend that research-active consultants work with the local academic department (and with the Academic Institute) to explore these additional avenues.

Summary of measures to support research-active NHS consultants

11.27 In summary, there are the following general means by which a research-active NHS consultant could obtain protected time for research within their job plan as outlined above:

a. A+B contract;

b. external funding (e.g. from industry or grant) buys out PAs to support research;

c. additional programmed activity (APA) for research within NHS Trust's own published guidelines for job planning;

d. a local agreement that the number of 'research PAs' made available by NHS Trusts to a department could quite reasonably approximate to 1% of the total PAs undertaken by that department, with minimal impact upon service delivery. These Trust-funded academic PAs could then be distributed by the department to suitable qualifying individuals;

e. waiver of requirement to offer additional clinical programmed activity for those research-active consultants who undertake private practice.

11.28 It seems important for there to be a formal process (e.g. a register or database kept by the Academic Institute) by which each academic department identifies a 'research-active NHS consultant' so that these individuals can then be properly supported in their academic aims.

11.29 Some research-active NHS consultants may choose to work independently, outside an academic department, and not wish to engage in an integrated research effort. The changes in research governance (Section 12 and Appendices G and H), together with the NHS pressures to meet clinical targets to which these consultants are subject, may make such 'single-handed' efforts impossible to sustain. We suggest that it is in the interests of the research-active NHS consultant to engage with, and obtain support from, their local academic department in the manner we outline above. Equally, it is in the interests of the academic department to exploit the pathways we outline above to incorporate research-active NHS consultants into their department structures.

SECTION 12. STRATEGIC ROLES FOR ACADEMICS IN THE WIDER RESEARCH GOVERNANCE STRUCTURE

12.1 A number of changes have occurred in 'research governance' in the UK.[45] These include developments in function of research ethics committees, changes in clinical trials regulations, the new notion of 'sponsorship' for all clinical research, and new initiatives in NHS R&D.

12.2 Some of these changes are felt by some to place extra burdens upon academic departments. However, there are some key posts in the wider research governance structure which, if held by academic anaesthetists or by NHS consultants with an academic interest, might ensure fairer representation of the interests of academic anaesthesia at all levels. These include:

a. NHS clinical manager: e.g. Clinical Director of the anaesthetic department (or Medical Director or other senior member of the Trust management hierarchy);
b. Director of Research and Development in the Trust;
c. Chairman (or member) of Ethics Committee;
d. Postgraduate Dean and other Deanery posts.

We explain these further below.

NHS Clinical Manager

12.3 Some might argue that academia and NHS management are not roles that combine easily. Nonetheless, the NHS as a whole – and each Trust specifically – has a statutory duty to support research. Unfortunately this duty is often regarded as subsidiary to other duties which (due to the setting of arbitrary 'targets' for NHS Trusts) are superficially perceived to be more 'important'. However, the Follett Report explicitly recommended that there should be greater integration of the aims of NHS and university bodies within a Trust or medical school.[21] Relevant statements in the Follett Report include:

"The key principle of our report is to recognise that NHS bodies and universities have separate responsibilities for medical education and research and for their associated clinical service, but that neither can fulfil these responsibilities without close joint working with the other." (Paragraph 13)[21]

"University and NHS partnerships responsible for medical education and research should establish joint strategic planning bodies, with joint subsidiary bodies responsible for staff management policies and procedures for staff with academic and clinical duties." (Paragraphs 14–17)[21]

"The key principle of joint working to integrate separate responsibilities should be applied to the management of senior NHS and university staff with academic and clinical duties." (Paragraph 24)21

12.4 These recommendations can most readily be achieved by direct involvement of academics in the management process (and vice versa). For example, there is no reason why the head of an academic department should not also be the clinical director. The main restraints for this are usually the extra workloads involved and (for academics) digression from major research programs. However, these roles may be suitable for research-active or research-interested NHS consultants (who should in any case now be considered part of the academic department – see Recommendation 13).

12.5 For these reasons, academic departments of anaesthesia should encourage academics (including their member research-active NHS consultants) to adopt NHS managerial roles with these principles in mind.

Trust Director of Research & Development, and Ethics Committees

12.6 NHS Trusts are setting up (many have already done so) research and development (R&D) committees which will set local priorities for research within the framework of national priorities. These committees will also manage research governance, and they may also hold and disburse funds directly to support research in the Trust. These R&D committees will work closely with ethics committees, which will become increasingly important in the governance process. It will be to advantage of academic anaesthesia to ensure there is anaesthetic representation on local R&D (and ethics) committees. If there is not representation, there is a danger that anaesthetic-related research (sometimes unappreciated by those outside the specialty) will be sidelined and given low priority, as has occurred in the processes related to the RAE.

12.7 Similarly, much of the bureaucracy involved in ethics committees does not seem tailored for, or helpful to, anaesthetic research. Anaesthetic representation on *ethics committees* is therefore essential to assist development of the relevant processes, which in turn will assist the practical conduct of much anaesthetic research.

12.8 The broader 'academic department' (which includes the research-active NHS consultants) should ensure it is properly represented in these roles. The New Contract guidance is that such work should be explicitly recognised in contracts and job plans through the award of additional PAs (APAs), over and above the 2.5 PAs allocated for supporting professional activity.[1,14–16]

Deanery posts

12.9 The Walport Report stresses that the award of an Academic Clinical Fellowship and its subsequent supervision is an *ad personam* appointment. Consequently, there is likely to be some considerable flexibility (and therefore variation) in the way that these fellowships are managed across the UK. Many decisions may rest with Postgraduate Deans. For this reason it is important that anaesthetists (especially academic anaesthetists and research-active NHS consultants) become directly involved in supervision of both clinical and academic training, through appointment to senior Deanery posts.

Summary

12.10 In summary, encouraging academics and research-active and research-interested NHS consultants towards positions in NHS management, R&D, ethics committees and Deaneries is an essential and practical strategic manoeuvre. It is important to stress that once in these positions, the individuals must act primarily on behalf of their respective new 'employers' and not solely on behalf of 'anaesthesia'. However, in these positions they may be able (more readily than others) to limit any natural tendency in the system to discriminate against anaesthesia, and they may be able on occasions to use any discretionary decisions to ensure a more balanced treatment of academic anaesthesia.

Recommendation 18

The holding of key posts in NHS management, in local R&D committees and ethics committees, and in the Deaneries are important strategic manoeuvres to ensure that academic anaesthesia is properly represented in decision-making at all levels in the wider research governance structure.

SECTION 13: CHANGES IN NHS R&D: OPPORTUNITIES FOR SPECIALIST SOCIETIES

13.1 **History:** In the early 1990s, the internal market was introduced to the NHS. To protect the larger teaching hospitals from the potentially adverse impact of this, the Culyer taskforce recommended in 1994 that research and development (R&D) activity be clearly identified and distinct from clinical activity. By so doing, about ~10% of funds to teaching hospitals could be identified as 'funding which supports the additional costs of research embedded within clinical service budgets'. However, these ideas did not translate into 'hard' funds for new project support (there was no new money – this was purely an accounting exercise by Trusts and the Department of Health). Also, because funds were embedded within clinical service budgets, there was no room for the Department of Health to use these funds to implement or direct research strategy.[12,24,25,38,45,78]

13.2 **Recent changes:** The nominal R&D budget is ~£560 million per year (~0.9% of total NHS funding). In practice the vast majority of these funds are embedded in infrastructure and supporting services, and cannot be re-assigned. The 'Culyer reforms' described above have now been adapted into two separate funding streams:

a. *Support for Science.* This is funding (~£400 million per year) which supports the infrastructure costs of research in large teaching hospitals (similar to 'Culyer funding' above).

b. *Priorities and Needs.* This is new money (~£110 million per year) and is intended to support specific research programmes for strategic priorities (usually these are the Trust's own disease- or service-related research).

13.3 **Other recent initiatives:** These have included:

a. *Pharmaceutical Industry Competitiveness Task Force.* This is a partnership between the Department of Health and industry, and which has an interest in clinical trials;

b. *National Cancer Research Institute.* This sets the priorities relating to cancer research. There are three elements:

i. *National Cancer Research Network* for clinical trials in cancer.

ii. *National Translational Cancer Network* which seeks to translate laboratory developments into clinical practice. There are 10 centres across the UK, each with a budget of ~£1m over five years to set up infrastructure and workforce;

iii. *National Tumour Tissue Bank* being set up.

c. *National Service Frameworks* similar to the National Cancer Institute model are being developed for cardiovascular disease, mental illness, stroke, diabetes, dementia and neurodegenerative disorders. Appendix G shows how some groups and regions are organising themselves in preparation for these developments.

d. *Public Sector Research Exploitation Fund* (in collaboration with the Department of Trade and Industry) will support the commercial exploitation of research from the NHS, in part through the creation of 12 'intellectual property hubs' across the UK.

13.4 **New changes proposed in 2005 consultation document:** The consultation paper *Best Research for Best Health: The New National Health Service Research Strategy Consultation* proposes the following initiatives (see www.dh.gov.uk/consultations):

a. creation of a *National Institute for Health*. This is a virtual institute designed to bring together all elements of the NHS and Department of Health Research;

b. creation of an identified faculty of *Senior Investigators* (elite, academic investigators currently funded either by the NHS or by universities), *Research Associates* (NHS employees making a significant contribution to research) and *Junior Investigators* (who will be assigned this status by virtue of acquiring an Academic Clinical Fellowship as described by the Walport Report);

c. *Support for Science* funding will evolve into payments based on a new taxonomy: (i) patient data; (ii) human tissue; (iii) patient intervention. In the long term, the philosophy is that money will follow patient involvement in studies;

d. selecting five hospitals that will evolve into *Academic Medical Centres* (on par with the top centres in the US);

e. a modest amount of funding to support *Leadership Funding*, to support time invested in leading research studies and the development of future research proposals;

f. establishing technology platforms (e.g. in imaging and post-genomics) to provide research equipment essential to specific modern health research;

g. expansion of current research programs such as *Health Technology Assessment, Research Synthesis, Service Delivery Organisation* and *New and Emerging Application of Technologies*;

h. new funding schemes including: responsive funding for: a*pplied and practice-based research* (£15 million per year); *applied research programs; Challenge Fund for Innovation*, for well-managed innovation by translating ideas into practice (£10 million per year); *Research for Innovation, Speculation and Creativity Awards* which will be small grants to support high-risk but high-impact ideas (£5 million per year);

i. expansion of research networks, with allocation of funding for all health economies;

j. a coherent program to reduce and simplify bureaucracy related to the research governance framework, European Clinical Trials Directive, Human Tissue Act and Mental Capacity Act.

Implications for academic anaesthesia

13.5 It is important to consider how these developments impact upon our specialty and specifically, how we might exploit these opportunities to our benefit.

13.6 Some of the changes are probably organisational and do not relate directly to anaesthesia (e.g. the creation of the National Institute for Health and the Academic

Medical Centres – points 13.4a and 13.4c). However, it is interesting that many of the proposals relating to the National Institute for Health resemble those we propose in this Strategy Report regarding the Academic Institute.

13.7 Other changes are again probably of less clear relevance to anaesthesia, for example the support for technology platforms (13.4e). Expensive equipment infrastructure does not seem presently essential to support anaesthestic research or clinical practice (in contrast to, say, oncology) – although the potential of functional magnetic resonance imaging research in anaesthesia is one example of how this may change.

13.8 However, the general emphasis of the NHS R&D consultation document is in line with our Recommendation 2. Namely, there is specific emphasis upon translational research and large multi-centre clinical studies which yield clear results for clinical practice. If the specialty re-aligned its research focus as we propose, then we would expect it – collectively – to gain from the research funding opportunities to be offered (13.4c, 13.4f, 13.4g).

13.9 Furthermore, it will be essential for anaesthetists to feature in the 'faculties' to be created: ie, we would expect there to be anaesthetic representation in the ranks of Senior Investigators, Research Associates and Junior Investigators (13.4b) and as holders of Leadership Fund awards (13.4d). This may occur naturally, *pari passu*, as a result of the specialty acting in response to Recommendation 2.

13.10 Finally, the emphasis of NHS R&D on expanding the concept of networks has relevance for the specialist societies in anaesthesia, critical care and pain management. Many specialist societies have declared in their responses to our questionnaire that it is part of their mission to improve the quality of clinical practice in their chosen field. Many further identified important questions amenable to multi-centre studies (Appendix D). In many ways, societies are well-placed to execute these since their membership is drawn from senior, motivated practitioners from across the country. However, some societies feel that they themselves lack the necessary infrastructure fully to develop such work, or to obtain national funding (although the Intensive Care Society seems both exceptional and exemplary in this regard). This is therefore an opportunity for the Academic Institute to help formulate approaches to NHS R&D funding and network support. A relevant model is also that of the Global Perioperative Research Organisation (GPRO) in the USA (see: http://www.gpro.org). In the UK, closer interaction of the specialty with organisations such as the Health Foundation (see: http://www.health.org.uk) is important, and again the Academic Institute can act as facilitator.

13.11 In conclusion, while many of the details of the NHS R&D consultation paper are still to be finalised, it is clear that specialist societies can have an important role as platforms from which to exploit the new opportunities. This will help the societies grow into more effective organisations (if they truly wish to do so), and it will help the specialty as a whole achieve its academic objectives. The new structures we propose within the specialty – namely the Academic Institute – will facilitate this process.

SECTION 14. DETAILS OF THE ACADEMIC INSTITUTE'S ROLES AND STRUCTURE

14.1 In Section 5, we introduced the concept of an 'Institute for Academic Anaesthesia' and it has been a constant thread in our discussion in subsequent sections. We indicated that, broadly, the Institute will be at the centre of three 'networks': a network of UK academic departments, a network of specialist societies and a network of funding. We discuss these roles in greater detail below, and we also propose an outline structure for the Institute.

The three network functions of the Academic Institute

(1) Network of academic anaesthetic departments

14.2 The academic base of anaesthesia is, unfortunately, very small and shrinking (Appendix B). However it is possible to turn this to advantage because it makes the task of organisation more manageable.

14.3 The Walport Report has set certain requirements concerning academic training pathways, and we have discussed this above (Section 8). The Academic Institute will need to work with UK academic anaesthetic departments to help identify those departments best able to host and offer suitable programs for Academic Clinical Fellowship training. The Walport Report does not envisage a system of different programs in anaesthesia developed independently by individual departments, and therefore, the Academic Institute will need to co-ordinate the development of acceptable training programs in academic anaesthesia across the UK.

14.4 Appendix B yields some information which helps identify those departments which seem well positioned currently to offer academic training, but the Academic Institute will need to conduct a more detailed analysis.

14.5 A corollary of identifying departments able to host/offer academic training programs is that the exercise also identifies – *pari passu* – those departments which need more resources to do so. The Academic Institute may be in a position to assist these departments. One way is for the Institute to be part of Royal College Visits, where it will focus on the state of the academic department (note that this may be either 'real' or 'virtual'), helping identify any specific local barriers to obtaining the necessary resources.

14.6 Our Recommendation 3 emphasised that it was important to designate both a *Head of Academic Department* and an *Academic Tutor*. The latter's role as a primary means of communication with the College on academic matters will become increasingly important in the overall co-ordination of Academic Clinical Fellows. These trainees, distributed across different UK academic anaesthetic departments, will be at different stages of their academic career. They will need academic mentoring and academic supervision at local level. Although College Tutors, Regional Advisers and Deaneries will be involved in this process (as they are for conventional clinical trainees), the special nature of academic career training and the *ad personam* nature of their supervision, may require greater involvement of the Academic Tutor and the Academic Institute.

14.7 The upkeep of the necessary databases (i.e. identifying academic departments, keeping a register of all academic staff, research-active NHS consultants, and academic trainees) will be an important role for the Academic Institute.

14.8 Such databases can be used by the Academic Institute to host an annual meeting for all UK academic anaesthetists. These meetings can further enhance a sense of corporate identity within the academic anaesthestic community and can also be used to focus on specific issues (e.g. academic strategy, on practical problems faced by individuals or by departments, and on funding issues). Such meetings could also involve the funding agencies and evolve into 'research workshops' (see below).

14.9 Many – if not all – academic departments need to produce regular strategy reviews of their own for their host universities. These reviews summarise their past achievements and the funding obtained, and they also indicate their vision for the future. Such reviews can be collated with the Academic Institute's databases to help plan strategy (e.g. identifying those staff at all levels from lecturer to professor who might bring benefits to the specialty as whole by recruitment to certain departments).

14.10 *In summary*: Our logic is that the main impetus for a 'network' of UK academic anaesthetic departments is the requirement of the Walport Report to have a more coherent national strategy for clinical academic training. This inevitably leads to additional levels of integration for the UK academic anaesthetic community. Given the current parlous state of academic anaesthesia, this integration can only be beneficial.

(2) A network of specialist societies in anaesthesia, critical care and pain medicine

14.11 In Section 13, we discussed an important role for specialist societies in developing networks and network-based studies in areas they themselves identify as important. Appendix G outlines how some other specialties are organising such networks. We also highlighted the central role that the Academic Institute could play in facilitating this process.

14.12 The ability to undertake such work requires suitably-trained individuals – both now and for the future.

14.13 Although some specialist societies felt that they had little interest in 'academia' or 'research' (Appendix D), this view may have been shortsighted or based on erroneous views (or stereotypes) of what academia involves.

14.14 Finding the best treatments or modes of clinical practice using clinical studies needs certain skills. These skills can only be acquired through rigorous training. The Walport Report now makes explicit the form and content that this training must take to acquire these skills. It is clear that – unlike in the past – any models of training outside of an Academic Clinical Fellowship will not provide the practitioner with the necessary skills to be research-active. It is in a specialist society's interests therefore to attract those who have undertaken clinical academic training and acquired these skills.

14.15 This logic further leads us to conclude that it is in the prime interests of a specialist society to support directly academic training programs in subjects and projects relating to its area of interest. Only in this way can the specialist society ensure that in the future, it has a sufficient influx of suitably trained individuals to further and promote its interests.

14.16 The most direct way for a society to achieve the aim outlined in 14.15 is to use any available funds primarily to support funding for the research training phase of an Academic Clinical Fellowship – other uses for these funds (such as support for small projects outside of an approved training program, etc.) should be of secondary importance.

14.17 A training fellowship costs ~£50–60,000 per year. So, the suggestion in 14.16 is problematic for those societies currently with insufficient funds to support a whole fellowship by themselves. There are two solutions:

a. to raise more funds (we discuss this possibility below in 14.24);
b. to collaborate with another society such that the two (or three or more) societies together fund a fellowship 'in rotation' (i.e. the topic for the research project rotates between the specialist interests of the collaborating societies). Put another way, one PhD in the sub-specialty every six years is better than none at all.

14.18 The Academic Institute could help societies reach such agreements with each other, and co-ordinate this process to promote transparency in the distribution of funds across sub-specialty interests.

14.19 We acknowledge that the argument we outline in 14.11–14.18 is controversial (albeit logical). While many societies will welcome the suggested approach, others may view it as a threat to their independence or 'freedom' in managing the direction of their own academic initiatives. This concern is perhaps best illustrated by the comments of the Obstetric Anaesthetists' Association (Appendix D).

14.20 We concede that our argument in 14.11–14.18 is one made in response to pressures from outside the specialty (i.e. the Walport Report). But, given that these pressures are real, it would be foolish not to propose a viable solution. The Academic Institute will clearly need to address societies' concerns about co-ordination and direction, and perhaps there are three pertinent points:

a. increased co-ordination of effort or funds brokered by the Academic Institute is not intended to reduce the influence of societies, but rather to ensure that they are more successful in the current environment;
b. supporting an Academic Clinical Fellow of the specialty's choice – and in a project of the specialty's choosing – does not reduce, but rather enhances the society's long-term future;
c. the assumption that 'academics' will not support fellowships in applied clinical projects is wrong. Specialist societies should view academic departments as vehicles for their trainees to acquire skills, these skills then used later for the benefit of the society and its aims. As long as the projects and training fellows are funded, academic departments will host them. This is to the mutual benefit of both the society and the academic department.

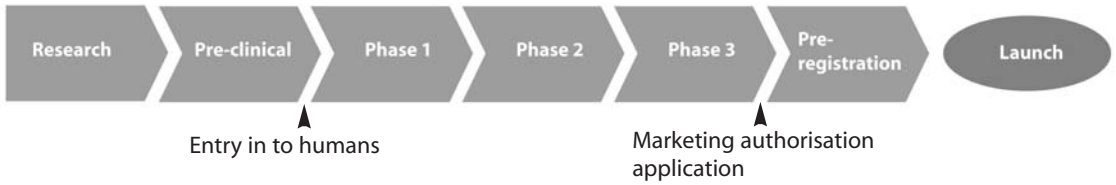
(3) A network of external funding

14.21 *Major grant-giving bodies*. The Wellcome Trust and MRC are key stakeholders in the Walport Report and will be increasingly involved in the planning and delivery of academic and clinical training within the NHS, through their involvement with UKCRC. They have also been engaged in this Strategy Report through our Advisory Panel (see pages 3 and 4). The Academic Institute will continue this process of engagement. The organisation of 'research workshops' will bring together key researchers in anaesthesia (including specialist societies) and representatives from the funding agencies and others. Workshops can lead to new avenues of research and strategy. Of particular interest will be links which may be forged with agencies which traditionally have not been regarded as 'anaesthetic' funders but which the questionnaire responses in Appendix B indicated have supported anaesthetic projects (e.g. British Heart Foundation, British Lung Foundation, National Kidney Research Fund).

14.22 *Pharmaceutical Industry*. Workshops can also be arranged with the pharmaceutical industry. The Association of British Pharmaceutical Industries (ABPI) acts as a facilitator in this regard, and with the Academic Institute also taking on a similar role for anaesthesia, useful introductions could be made between research groups or specialist societies on the one hand, and pharmaceutical companies on the other. Figure 14.1 below indicates a 'drug development timeline' (adapted from the BIGT Report)[12] and it is important for the specialty to consider those points in this timeline at which academic anaesthesia can make a contribution.

14.23 *Fostering multi-disciplinary research*. Implicit in all the approaches discussed above is the understanding that much research is now multi-disciplinary. There is relatively little gain for those who work in isolated, highly specialist departments. Rather, links need to be forged with experts in methodology, statistics, health economics, health services research, amongst many others. This is not say that links do not already exist; however they do need to be formalised. Both academic departments and specialist societies are key to dong this. But, as we have observed above, such collaborations may result in breakdown of traditional organisational departmental structures, but the long-term gain is improved access to high-quality research for all. The Academic Institute can hep foster a culture of collaboration through workshops, and also mitigate against the loss of traditional departments by enhancing a sense of corporate identity.

Figure 14.1. A 'drug development timeline', showing how pharmaceutical companies view the development stages of a drug from research to launch of the final product. The approximate duration of each stage is shown, as is the approximate probability at each stage of the drug reaching launch.



Stage objectives	• Understand disease mechanisms • Identify targets and compounds	• Test candidate drugs in laboratory and animals for toxicity, side-effects and theraputic value	• Test healthy volunteers (20–200 people)	• Test efficacy in targeted disease (in 200–300 people) • Determine appropriate dose	• Confirm efficacy in larger patient populations (300–3,000 people) • Monitor side-effects	• FDA/EMEA reviews 1000,000 page application and decides whether to grant approval
Probability of reaching launch*	0.1%	1%	5%	10%	50%	75%
Duration (Years)	3–5	1–2	1–2	1–2	2–3	1–2

14.24 *Independent fundraising*. Independent fundraising (e.g. private philanthropy) provides freedom from the tyranny of peer review by those outside the specialty.[61] The Academic Institute may not be in a position in its early years to act as an active fundraiser. However the initiatives above, especially the greater engagement of specialist societies and the workshops bringing together industry and charities, may evolve into a fundraising role for the Institute. A fund similar to FAER in the United States[29] should be an achievable goal, and this in time will enable the specialty to plan academic developments which might otherwise be unattainable. One prerequisite before others invest in our specialty is that we are seen to invest in it ourselves. Appendix D indicates that if each specialist society charged a modest £10 'research levy' per member then (assuming that on average an anaesthetist is a member of the RCA, AAGBI and three further societies), this would raise an additional ~£350,000 per year. This alone would be sufficient to fund ~7 Academic Clinical Fellowships (i.e. about half of the average higher degrees currently produced in the specialty each year). This alone would go a very long way to solving the specialty's academic and funding problems.

In Section 4, we also indicated two further roles for the Academic Institute: integration of activity with the Institute for Education, and regular strategy review. We consider these roles further, below.

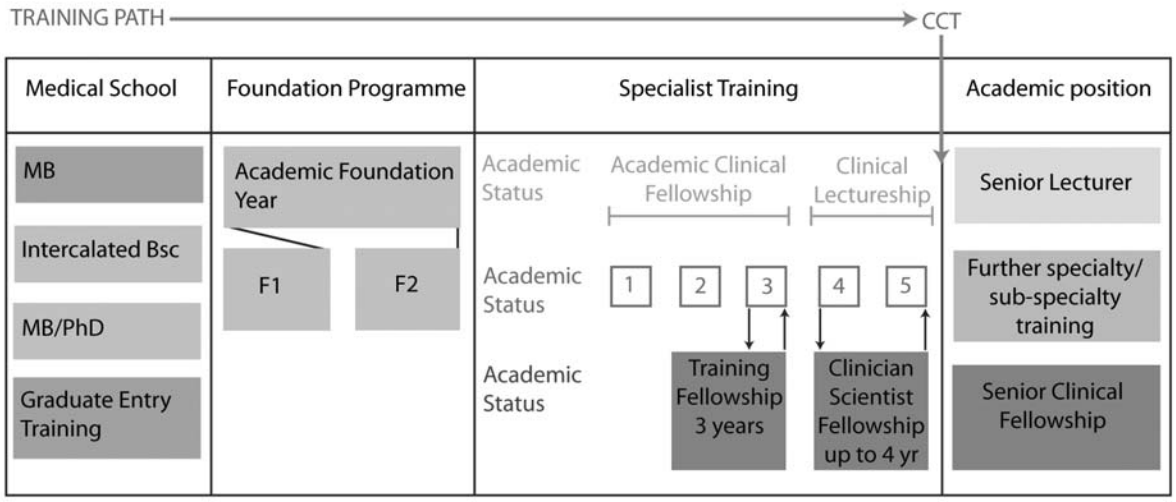
Integration with Royal College's Institute for Education

14.25 Education, academia, research and training are closely connected, and it is therefore inevitable and appropriate that the Academic Institute will interact closely with the Royal College's Education Institute on many levels.

14.26 For example, a career pathway for educationalists, which has been advocated by the Walport Report (Figure 14.2). A number of competitive National Clinical Educationalist Awards may be created similar to the proposed NTNAs.[52] The Walport Report also recognizes a shortage of specialists in clinical trials, and there is therefore provision for training routes to be developed in this field. The Walport Report speculates that this might be in the realm of epidemiology, but there is no reason why anaesthetists (capitalizing on recommendations made in the Glavin Report)[69] should not be so trained and so use the proposed routes for academic training to the advantage of the specialty.

Figure 14.2. Training pathway for educationalists, as recommended by the Walport Report.

The Glavin Report emphasized the teaching of 'non-technical' skills (e.g. expertise, the value system, attitudes) in the notion of 'anaesthetist as educator'. This could be developed further into a general pathway for educationalists, with the Royal College of Anaesthetists offering this possibility as a training route which it is able to supervise. The specialty may be able to build upon the collaborations between the Academic Institute, Education Institute and the specialist societies to plan training pathways for clinical trialists.



Regular Strategy Review

14.27 The research environment is undergoing rapid change. The last few years have seen the New Consultant NHS and Academic Contracts, the introduction of F1/F2 programs, and publication of a number of reports relating to academic medicine.[3–10,12,52] PMETB is now responsible for postgraduate training and the coming year will see the formal inauguration of more national service frameworks, establishment of the new research governance regulations, and perhaps (speculatively) changes to medical student funding.

14.28 It is essential therefore, that the recommendations made in this Strategy Report, and the context in which they have been made, undergo a process of regular review in future years. The creation of an Academic Institute should ensure that this happens. A formal Strategy Review (like the current Project) will be highly desirable in 5 years time (i.e. in ~2011), when progress made can be assessed.

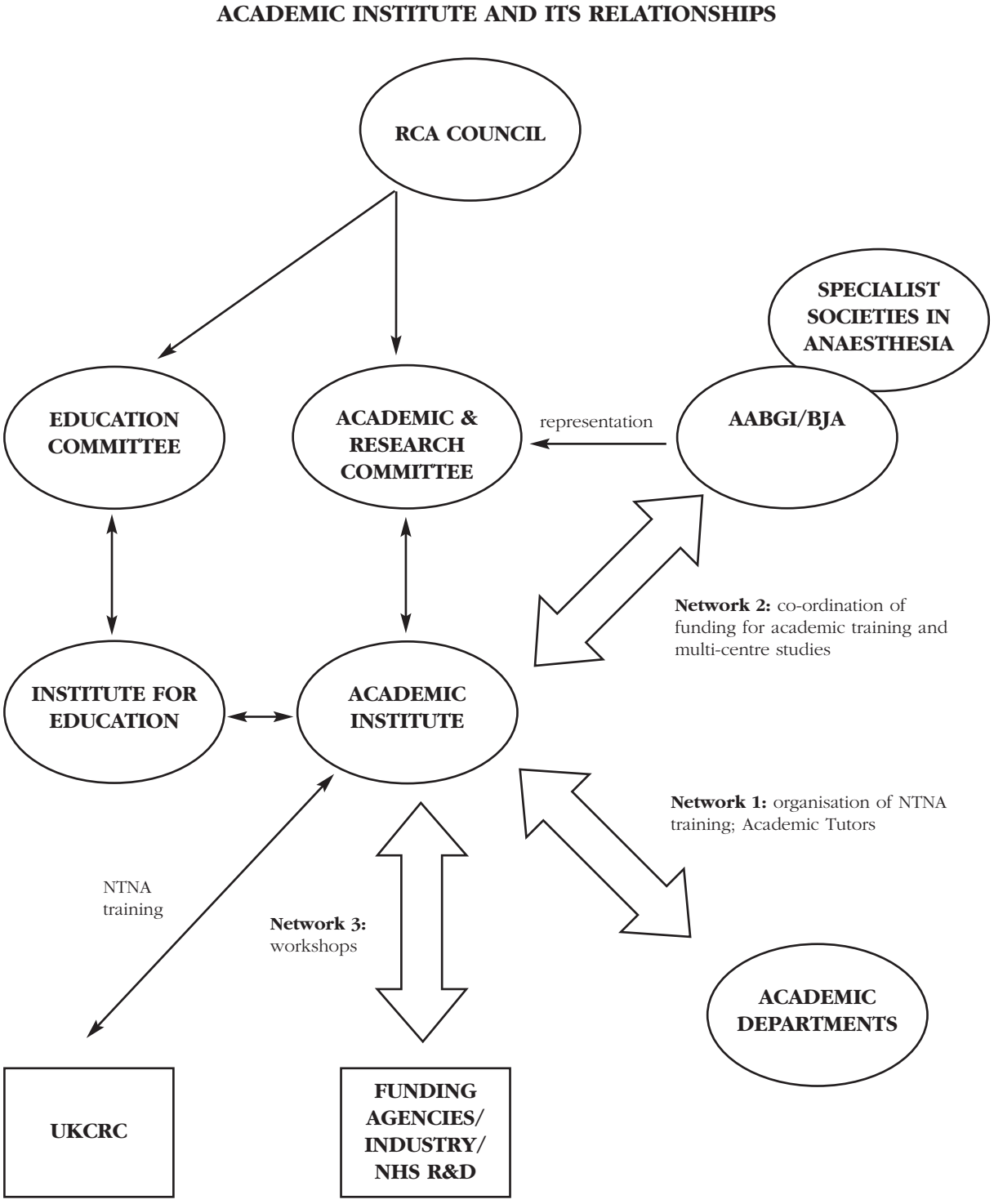


Figure 14.3. Outline of the planned central position of the Academic Institute in relation to other organisations involved in academic anaesthesia in the UK.

The three main 'networks' relate with: the UK academic departments; AAGBI, BJA and specialist societies; and the external bodies such as funding agencies, industry and NHS R&D. Note the important role for Academic Tutors in communications between the Academic Institute and their respective academic departments. Note also that the Academic Institute is the primary section of the Royal College which interacts with UKCRC with reference to organisation of NTNA training.

Structure and staffing of the Academic Institute

Structure

14.29 The Academic Institute will be housed within the Royal College of Anaesthetists.

14.30 Primarily it will be an 'executive arm' of the Royal College, reporting to (and governed by) the Academic and Research Committee. In turn, this Committee (which is chaired by a member of Council) will report (as it does at present) to College Council, so the primacy of Council is retained and there will be no change in this arrangement (Figure 14.3).

14.31 The composition of the Academic and Research Committee could remain unchanged, so that there is formal input as now, from College Council, the Association of Anaesthetists (AAGBI), British Journal of Anaesthesia, Association of Professors in Anaesthesia and the Anaesthetic Research Society. However, given that a greater role for specialist societies in helping plan and fund academic training and in multi-centre studies is desirable, College Council should consider expanding the composition of Academic and Research Committee to include representatives of the larger specialist societies. This should enhance the sense that these societies are direct stakeholders in academic strategy.

Staffing

14.32 The Academic Institute should consist of the following staff:

a. a Director;
b. a Deputy Director;
c. Secretary/Personal Assistant (whose duties are devoted wholly to the Institute).

14.33 The (first) Director will be appointed by the Academic and Research Committee by competitive interview. S/he will hold office for 3 years and devote an average of 1 day (2 PAs) per week to the task. No person may hold the office of Director for more than one term of 3 years.

14.34 The Deputy Director will be appointed by the Academic and Research Committee by competitive interview. S/he will hold office for 3 years and devote an average of 1/2 day (1 PA) per week to the task. After a period of 3 years, the Deputy will automatically succeed to the post of Director to serve the Institute for a further (and final) 3 years.

14.35 The Committee (and College Council) will decide upon the precise 'person specifications', but it is anticipated that the posts will be held by an academic anaesthetist or consultant anaesthetist with an academic interest. If the Director does not already hold the rank or title of 'Professor', the Royal College should consider conferring this title on the postholder.

14.36 Key to the success of the post is that the holder(s) must be prepared to concentrate their efforts on the Royal College Strategy for the duration of their posts, rather than upon their own program of research.

14.37 It is clear from 14.33–14.35 that, after the first appointments are made, there will be elections only to the post of Deputy Director every 3 years. This structure is designed to ensure some degree of continuity in the implementation of strategy, while at the same time enabling a fresh input to the posts on a regular basis.

Funding

14.38 The Royal College will meet the costs of a secretary to the Academic Institute. This post will be wholly devoted to the Institute. The person will need some experience of managing research funding, some knowledge of trainee careers, as well as secretarial support and IT skills.

14.39 The Royal College will also meet the costs of the office space, consumables and any necessary travel or meetings.

14.40 It is envisaged that the Director and Deputy Director will have the time for these posts (made explicit above) incorporated into their job plans in their host NHS Trust or University through the award of additional PAs (APAs) in accordance with the Academy of Medical Sciences guidelines on Royal College duties and duties supporting the wider NHS.[1]

Recommendation 19

We recommend that the Academic Institute initially comprise a Director and Deputy Director with secretarial support. The Institute will report to the Academic & Research Committee of the Royal College.

Recommendation 20

The main remit of the Academic Institute will be to implement the twenty recommendations of this Strategy Report. A major role will be to plan training programs for academic careers in anaesthesia, in line with the expectations of UKCRC. This will need better co-ordination of the activities of UK academic departments, and greater co-operation between the specialist societies. This greater integration will also make possible a funding network and increase the potential for multi-centre studies in anaesthesia, with the Institute having a major facilitating role for such initiatives.

SECTION 15. CONCLUDING REMARKS

If all 20 recommendations of this Strategy Report are implemented, we predict an improvement in the state of UK academic anaesthesia in the UK. More importantly, the structures in place will offer a robust mechanism to enable the specialty to manage any new pressures as a result of future changes in the research regulatory environment.

External funding agencies, the NHS and industry all want academic anaesthesia to succeed and grow stronger. They recognise that this will benefit of UK science and NHS patients. However, they also wish to see that any investment in academic anaesthesia will be money well spent, and that the aims of academic anaesthesia are broadly aligned with their expectations. A co-ordinated national strategy – based upon the recommendations we make in this Report – will help persuade them that this is indeed the case.

We suggest the following six initial 'targets' (by way of measures of success) for our academic strategy. The aim is to achieve all of these within the first five years:

1. that an Academic Institute is formed as outlined, and that it begins the development of its networks;

2. that, with implementation of the Walport Report, the Academic Institute develops suitable academic career training programs so that the specialty secures an acceptable number of Academic Clinical Fellowships in anaesthesia;

3. that, in those departments which deliver this academic career training, there is no further reduction in academic anaesthetic staffing (our preference is that there is an increase in academic anaesthetic staff numbers across the UK);

4. that each academic department offering academic career training produces at least one higher degree (MD or PhD) per year (we desire that ~20 higher degrees in anaesthetic-sponsored programs per year should be attained);

5. that in all Deaneries/Schools of Anaesthesia, an academic module for F2 training based in an anaesthetic department or an anaesthetic-related subject is offered and that there is suitable uptake of this by candidates;

6. that there is an increase in the number of 'research-active NHS consultant anaesthetists' (as duly registered by the Academic Institute). Each academic department should be able to demonstrate that at least at least 10% of NHS consultant anaesthetists in the associated NHS department receive at least one research session awarded as an additional programmed activity.

REFERENCES

1. Academy of Medical Royal Colleges. *Guidance on the New Consultant Contract, and its Implications for Job Plans (Programmed Activities)*. March 2004.

2. Academy of Medical Royal Colleges. *The Roles and Responsibilities of College Tutors: Report of a Working Party*. November 2004.

3. Academy of Medical Sciences. *Non-Clinical Scientists on Short Term Contracts in Medical Research*. February 2002.

4. Academy of Medical Sciences. *Implementing the Clinician Scientist Scheme*. April 2002.

5. Academy of Medical Sciences. *Clinical Academic Medicine in Jeopardy: Recommendations for Change*. June 2002.

6. Academy of Medical Sciences. *Strengthening Clinical Research*. October 2003.

7. AGMETS Working Group Report. *Summary Report on the Joint Consultative Committee/Department of Health Symposium on Careers in Academic Medicine*. October 1999.

8. Association of British Neurologists. *UK Neurology – The Next 10 Years*. 2003.

9. Association of British Neurologists. *Academic Neurology in the United Kingdom. Threats, Opportunities and Recommendations*. 2003.

10. Bell J. Resuscitating clinical research in the United Kingdom. *BMJ* 2003;**327**:1041–1043.

11. Bevan G. The medical service increment for teaching (SIFT): a £400 million anachronism for the English NHS? *BMJ* 1999;**319**:908–911.

12. Bioscience 2015. *Improving national health, increasing national wealth. A report to Government by the Biosciences Innovation and Growth Team*. November 2003 (see: http://www.bioindustry.org/bigTreport).

13. Boldt J, Haisch G, Malek WH. Changes in the impact factor of anesthesia/critical care journals within the past 10 years. *Acta Anaesthesiologica Scandinavica* 2000;**44**:842–849.

14. British Medical Association. *The New NHS Consultant Contract (England)*. August 2003.

15. British Medical Association. *The Clinical Academic Consultant Contract (England)*. July 2004.

16. British Medical Association. Central Consultants and Specialists Committee. *Job Planning. A summary for consultants new to the 2003 contract in England and Northern Ireland*. September 2004

17. British Medical Association. BMA Health Policy and Economic Research Unit. *Survey of UK Consultants on the Introduction of the New Contracts and Associated Matters*. October 2004.

18. British Medical Association. *Medical Academic Staff Annual Report*. February 2005.

19. Clark J, Tugwell P. Who cares about academic medicine? *BMJ* 2004;**329**:751–752.

20. Council of Heads of Medical Schools. *Clinical Academic Staffing Levels in UK Medical and Dental Schools: data update 2004*. Silke A (Ed.) June 2005.

21. Follett B, Paulson-Ellis M. A *Review of Appraisal, Disciplinary and Reporting Arrangements for Senior NHS and University Staff with Academic and Clinical Duties*. Department for Education and Skills. September 2001.

22. Department of Health. *SIFT Into the Future: Future Arrangements for Allocating Funds and Contracting for NHS Service Support and Facilities for Teaching Undergraduate Medical Students*. 1995.

23. Department of Health. *Service Increment Fund for Teaching Accountability Report 1999/2000* (see: http://www.dh.gov.uk/assetRoot/04/03/45/20/04034520.pdf).

24. Department of Health. *NHS Priorities and Needs R&D Funding: A Position Paper*. February 2001.

25. Department of Health. *Research for Patient Benefit Working Party – Final Report*. May 2004

26. Federation of Associations of Clinical Professors. *What is the Future for Clinical Academics?* November 1999.

27. Feldman S. Anaesthesia and the Research Assessment Exercise. *Anaesthesia* 1997;**52**:1015–1016.

28. Feneck RO. Canary needs help; send for Willie Sutton. *Anaesthesia* 2004;**59**:616–617.

29. Foundation for Anesthesia Education and Research. *Anesthesia for the 21st Century: A time for Growth or Obscurity*. February 2005.

30. Harmer M. Academic anaesthesia – alive and kicking? *Anaesthesia* 2002;**57**:1153–1154.

31. Harmer M, Hall JE. Competence in research. *Royal College of Anaesthetists Bulletin* 2004;**27**:1348–1350.

32. Head CA. Building an academic department. *American Society of Anesthesiologists' Newsletter* 2004;**68**:7–8.

33. Higher Education Funding Council & Department of Health. *Developing a Joint University/NHS Planning Culture. Task Group II Report (Ref 99/62)*. November 1999.

34. Higher Education Funding Council. Press Release. 30 March 2001. (See: http://www.hefce.ac.uk/news/hefce/2001/medical.htm).

35. Hunter JM. The latest changes…and no more shorts. *BMJ* 2004;**92**:7.

36. Jackson RGM, Stamford JA, Strunin L. The canary is dead. *Anaesthesia* 2003;**58**,911–912.

37. Joint Funding Body. Review of research assessment. Report by Sir Gareth Roberts to the UK funding bodies; issued for consultation May 2003. (See: http://www.ra-review.ac.uk/reports/roberts.asp [accessed 8 December 2004]).

38. Kerrison K, McNally N, Pollock A. United Kingdom research governance strategy. *BMJ* 2003;**327**:553–556.

39. Kitz RJ, Biebuyck JF. And yet another crisis: research funding in anaesthesiology. *Anesthesiology* 1974;40:211–214.

40. Knight PR. Wake up and smell the coffee, Part IV: Our own worst enemy. *American Society of Anesthesiologists Newsletter* 2004;**68**:11–12.

41. Langton JA. Academic anaesthesia. *Anaesthesia* 2003;**58**:1235–1236.

42. Leicestershire, Northamptonshire & Rutland Postgraduate Deanery. *FY2 Specialty*. August 2005. (See: http://www.lnrdeanery.nhs.uk/cms/document_store/1107263443_2.doc).

43. Leicestershire, Northamptonshire & Rutland Postgraduate Deanery. *Academic Medical Unit, Leicester Royal Infirmary: The Academic Medical Unit Foundation Year 2 Job Description*. August2005. (ee: http://www.lnrdeanery.nhs.uk/cms/document_store/1107186440_2.doc).

44. Lubarsky DA. Incentivize everything, incentivize nothing. *Anesthesia and Analgesia* 2005;1**00**:490–492.

45. McNally N, Kerrison K, Pollock A. Reforming clinical research and development in England. *BMJ* 2003;**327**:550–553.

46. Medical Research Council. Information on Scoring Systems. (See: http://www.mrc.ac.uk/index/funding/funding-specific_schemes/funding-current_grant_schemes/funding-scoring_ system.htm).

47. Menon DK et al. Integrated approaches to academic anaesthesia – the Cambridge experience. *Anaesthesia* 2004;**59**:785–792.

48. Miller RD. The place of research and the role of academic anaesthetists in anaesthetic departments. Best Practice & Research. *Clinical Anaesthesiology* 2002;**16**:353–370.

49. Miller RD. Academic anesthesia faculty salaries: incentives, availability and productivity. *Anesthesia and Analgesia* 2005;**100**:487–489.

50. Modernising Medical Careers. *Academic Careers Sub-Committee Paper 03-04-11 Minutes of 6 October 2004 Meeting*. October 2004. (See: http://www.mmc.nhs.uk/documentstore/minutes/sub-com-03-04-11Minutes.pdf).

51. Modernising Medical Careers, Academy of Medical Royal Colleges, Department of Health. *Curriculum for the Foundation Years in Postgraduate Medical Education and Training*. April 2005.

52. Modernising Medical Careers, UK Clinical Research Collaboration. *Medically- and dentally-qualified academic staff – recommendations for training the researchers and educators of the future*. (The Walport Report). March 2005.

53. Morrison JM, Wood DF. Academic medicine in crisis. *Medical Education* 2004;**38**:796–797.

54. National Asthma Campaign. *Where Next in Basic Asthma Research?* A National Asthma Campaign Consultation on Basic Asthma Research Strategy. 2002.

55. NHS Education for Scotland. *Scottish Foundation Allocation Scheme (SAFS)*. November 2004. (See: http://www.nes.scot.nhs.uk/sfas/Prog_by_Region/West/hospitals/gri/default.asp).

56. Oxford Radcliffe NHS Trust Policy No.53 on Consultant Job Planning in the New Consultant Contract, February 2004. (See: http://orhnet.orh.nhs.uk).

57. Oxford University. The University's Resource Allocation Method (RAM) (updated for 2004-5). *Oxford University Gazette* 2004; **4708(1)**.

58. Pandit JJ. The new consultant contract and anaesthesia: practical implications of the new terminology. A personal view. *Anaesthesia News* 2003;**195**:16–17.

59. Pandit JJ, Fielden JM. The new consultant contract: threats and opportunities of "supporting professional activity". *Anaesthesia News* 2003;**197**:24–26.

60. Pandit JJ, Yentis SM. All that glitters…How to 'value' a scientific publication. *Anaesthesia* 2005;**60**:373–383.

61. Peters K. *Exceptional Matters*. The Harveian Oration. Royal College of Physicians,.October 2004.

62. Rahman A. Teaching students – whose job is it anyway? *BMJ* 2005;**330**:153.

63. Reade M. Resuscitating academic anaesthesia – or trying to breathe life into a dead corpse? *Anaesthesia*. 2002;**57**:1214.

64. Reilly CS. Changes and challenges. *BJA* 2005;**94**:257–258.

65. Royal College of Anaesthetists. *CCST in Anaesthesia I: General Principles. A manual for trainees and trainers*. (2nd Edition), April 2003.

66. Royal College of Anaesthetists. *CCST in Anaesthesia II: Competency Based Senior House Officer Training and Assessment. A manual for trainees and trainers*. (2nd Edition), April 2003.

67. Royal College of Anaesthetists. *CCST in Anaesthesia III: Competency Based Specialist Registrar Years 1 and 2 Training and Assessment. A manual for trainees and trainers*. (2nd Edition), April 2003.

68. Royal College of Anaesthetists. *CCST in Anaesthesia IV: Competency Based Specialist Registrar Years 3, 4 and 5 Training And Assessment. A manual for trainees and trainers*. (1st Edition), April 2003.

69. Royal College of Anaesthetists. *Addressing the Educational Challenges in Anaesthesia*. Report from the Education Strategy Officer (the Glavin Report). October 2003.

70. Royal College of Anaesthetists. *Guidelines for College Visits to Schools and Hospitals*. August 2004.

71. Royal College of Ophthalmologists. *A National Research Strategy for Ophthalmology*. 2002.

72. Royal College of Physicians of London. *Consultant Physicians Working for Patients*. (2nd edition), 2001.

73. Royal College of Physicians of London. *Training in Academic Medicine*. Recommendations from the Academic Medicine Committee. April 2004.

74. Saville J. More in expectation than in hope: a new attitude to training in clinical academic medicine. *BMJ* 2000;**320**:630–633.

75. Saville J. Translational Research Careers at the NHS/University Interface. *Translational Careers*. The Wellcome Trust, December 2004.

76. Smith G. Research in anaesthesia – the key to the future. *BJA* 1995;**75**:383–386.

77. Smith G. Impact factors in anaesthesia journals. *BJA* 1996;**76**:753–754.

78. Strategic Learning and Research Advisory Group. StLaR Plan Project: Phase 1 Consultation Report, Septermber-December 2003. (See: http://www.stlarhr.org.uk/welcome).

79. Stuart-Smith K. CPR for the canary. *Anaesthesia* 2004;**59**:296–297.

80. Stewart PM. Academic medicine: a faltering engine. *BMJ* 2002;**324**:437–438.

81. Tomlinson S. The research assessment exercise and medical research. *BMJ* 2000;**320**:636–639.

82. Vallance P. Training the Medical Academic Leaders. *Translational Careers*. The Wellcome Trust, December 2004.

83. Vandam LD. History of anesthetic practice. In: Miller RD (Ed.) *Anesthesia* (5th edition), pp 1–11. Philadelphia: Churchill Livingstone, 2000.

84. Wade DT. Ethics, audit, and research: all shades of grey. *BMJ* 2005;**330**:468–473.

85. Wildsmith JAW. Training in anaesthesia: ensuring academic competency. *Royal College of Anaesthetists Bulletin* 2005;**33**:1657–1658.

Other reports and websites not directly referred to in the body of the text, but which have relevance to the Strategy Report *(some of these are in press, or were in press when our report was written, or are consultation documents or are general websites which contain further references and resources)*

Academy of Medical Royal Colleges. *Clinical Academic Medicine: The Way Forward*. A report from the Forum on Academic Medicine. November 2004.

Association of Anaesthtetists of Great Britain & Ireland. *Guidance on the 2003 (New) Contract and Job Planning*. August 2005.

Audit Commission. *Anaesthesia under examination*. London: Audit Commission, 1997.

Department of Health. U*nfinished Business: Proposal for the Reform of the Senior House Officer Grade*. 2002.

Medicines and Healthcare Products Regulatory Agency. *Descriptions of Medicines for Human Use (Clinical Trials) Regulations 2004*. (See: http://medicines.mhra.gov.uk/).

Oxford University. *Full Economic Costs 2005*. (See: http://www.admin.ox.ac.uk/fec/).

National Health Service Research & Development. *Best Research for Best Health: The New National Health Research Strategy Consultation 2005*. (See: www.dh.gov.uk/consultations/).

Pandit JJ, Fielden JM. Managing supporting professional activity in an anaesthetic department. *Royal College of Anaesthetists Bulletin* (In Press).

Postgraduate Medical Education and Training Board. (See: http://www.pmetb.org.uk/pmetb).

Quality Assurance Agency for Higher Education. (For reports see: http://www.qaa.ac.uk/).

Richards R. *Clinical Academic Careers*. Report of an independent task force. London: Committee of Vice-Chancellors and Principals, 1997.

UK Clinical Research Collaboration. (For reports see: http://ukcrc.org/).

Appendices to the National Strategy Report

Terms of Reference and Questionnaire Data

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APPENDIX A: TERMS OF REFERENCE FOR THE ACADEMIC STRATEGY PROJECT AND ACADEMIC STRATEGY OFFICER

The following are the original terms of reference for the Academic Strategy Project and the Academic Strategy Officer, as determined by the Council of the Royal College of Anaesthetists.

The proposal is that Council should commission a review of academic anaesthesia that will have three main aims:

- It will seek to sustain the further development of academic anaesthesia.
- It will detail academic anaesthetists contributions (as summarised above).
- It will consider the mechanisms by which departments can be organised and funded, including consideration of inter-departmental links and individual career structure.

A group will be established to review the literature, correspond with relevant organisations and survey the academic departments to identify the contributions which they can (and do) make in all of these areas. The resulting document will be of great importance to the future of the specialty, with implications spreading well beyond its academic aspects, and must be well produced. This will require the services of a young, academically orientated anaesthetist of consultant/senior lecturer status to drive the collection and collation of all the information. There is a parallel with the College's recent appointment of an educational strategist, and obviously the two individuals would need to collaborate closely.

The process will require input from at least 7–8 bodies which, in the broadest sense of the word, 'purchase' the services of academic anaesthetists, or might be persuaded to do so. The research strategist could work in relative isolation, meeting with these potential 'purchasers' to seek their views and reporting to Council through the Academic & Research Committee. However, this is a small committee currently, with members who have conflicting responsibilities, so a separate Working Party is proposed. This would have representatives from academic anaesthesia and from the really key organisations (e.g. the Research Councils/Charities, the Undergraduate Deans, the Postgraduate Deans and the NHS R&D), crucially giving these vital groups 'ownership' as well as involvement.

This would ensure direct involvement of the key groups, and also keep travel and other costs at a reasonable level. Other groups could be visited by the strategist, or invited to attend a single meeting of the Working Party. The plan is prepared on the basis of the project requiring 18 months to complete. It is identified that the individual undertaking the work would devote one day per week to the exercise. Collaboration with other groups might reduce the cost to the College, but could have negative impact unless the organisations are within the specialty (e.g. BJA).

Outwith the specialty there are other organisations active in this field in addition to the Academy of Medical Sciences mentioned already. Most specialties have their own Associations of Professors and there is a Federation of Associations of Clinical Professors, but they all suffer from a key problem – lack of funds. Recently, one other Royal College wrote to this College suggesting that some combined activity might be appropriate, raising the possibility that several Colleges might group together to pursue the same objects. Shared costs would be attractive, but collaboration might result in a generic document with the specific needs of 'Anaesthesia' ignored. Collaboration often leads to delay (it is noteworthy that the other College did not follow up its original letter).

Council of the Royal College of Anaesthetists
January 2003 (Academic Strategy Project commenced April 2004)

APPENDIX B: INFORMATION FROM HEADS OF ACADEMIC DEPARTMENT

The tables below summarise the main results of a questionnaire to Heads of academic anaesthetic departments in the UK.

Table B.1 shows summary results concerning staffing, estimated grant income and higher degrees.

Table B.2 summarises some more qualitative data concerning the move to the New Academic Contract, private practice arrangements, and teaching workloads.

Table B.3 shows some individual comments made by respondents in the questionnaire, listed under the general topic headings.

Table B.1. Summary data on the current state of staffing, funding and research training for UK academic anaesthetic departments

The columns are:

Column 1 – anaesthetic department/location
Column 2 – number of professors, including non-clinical professors (any posts vacant are shown in parentheses)
Column 3 – number of readers (including non-clinical appointments)
Column 4 – number of senior lecturers (with the number of posts vacant in parentheses)
Column 5 – number of lecturers (with the number of posts vacant in parentheses)
Column 6 – number of sessions per week supporting NHS consultants in academic activity (e.g. A+B-type sessions)
Column 7 – number of postdoctoral (usually scientific) staff (with technical staff shown in parentheses).
Column 8 – number of MD or PhD students currently enrolled (some of these might be anaesthetic registrars), and in parentheses any students enrolled for an MSc
Column 9 – number of MDs or PhDs completed in the previous 3 years (with the average/year in parentheses in the last row)
Column 10 – number of secretarial and administrative staff in the academic department
Column 11 – an estimate of the total funding raised by the department in the previous 3 years (with the average/year in parentheses in the last row)

Abbreviations and explanations: London UC = London University College (Institute of Child Health)

The figures shown in the table are only estimates, as provided by each department. The figures for some departments for example include professors (or readers) with personal, rather than endowed chairs. Similarly, in some departments NHS consultants can hold the title of honorary 'senior lecturer' without any specific funding or sessional allocation. Where possible, these honorary arrangements have been excluded from the totals, but this was not always possible from the information provided in responses. Lecturers can be SpRs who enter into a specific university contract (usually supporting work towards a higher degree), or the title can be used for any SpR who undertakes a short (e.g. 2–6 month) stint, with some sessions nominally attached to the academic department. Again, we have attempted to exclude the latter arrangement, but this was not always possible. The grant funding has been rounded to the nearest £1,000. The questionnaire sought estimates of funding obtained for the specific period Jan 2001–Jan 2004, but the replies often included grants which started somewhat before this date, or which extend to beyond these dates. So the funding figures should be viewed as indicative estimates.

The department at London St George's did not reply to our questionnaire.

In addition to the departments shown, there is a 'department' in Bath. This consists of some NHS consultant anaesthetists holding 'honorary senior lectureships' with the Postgraduate School for Health of the University of Bath, but there are no funded appointments or research/academic sessions or support staff.

Department	Professors (number vacant)	Readers	Senior Lecturers (number vacant)	Lecturers (number vacant)	NHS consultant sessions for research	Postdoctoral researchers (technical staff)	MD/PhDs enrolled (MScs)	MD/PhDs completed in last 3 yrs (avg/yr)	Secretarial and administrative staff	Total grant funding last 3 yrs (avg/yr)
Aberdeen	1	-	2	2 (1)	-	1	2	3	0.5	£242,000
Belfast	2	-	1	5	-	-	2	4	1	£375,000
Birmingham	1	1	3	3	-	-	1	2	2	£50,000
Bristol	1	-	2	2	-	1	3	-	0.3	£735,000
Cambridge	1	-	1	1		3	5	4	1	£8,963,000
Cardiff	1	-	5	4	-	-	3	2	2	£220,000
Dundee	1	-	3	1.5	-	-	2	3	1	£182,000
Edinburgh	2	-	1	3	-	2	6	3	1	£607,000
Glasgow	1	1	4	2	-	2	2	1	1	£1,020,000
Leeds	1	-	1	4	-	3 (3)	2 (1)	-	4	£1,259,000
Leicester	1 (1)	1	4 (1)	3	-	-	3 (2)	3	2.5	£260,000
Liverpool	2	-	3	-	-	-	2	-	2	£180,000
London Imperial	2	3	2	5	-	4	8	5	3	£5,028,000
London UC	2	1	4 (1)	1	5	3	19 (5)	5	4	£5,680,000
Manchester	2	-	2	2	-	1	2	-	2	£186,000
Middlesborough	2	-	-	-	0.6	4	- (6)	3	1.5	£320,000
Newcastle	-	-	1	-	-	-	- (1)	-	-	£94,000
North Stafford	-	-	2	-	-	-	-	-	-	£25,000
Nottingham	1	1	1	2 (1)	-	-	3	2	1	£203,000
Oxford	3 (1)	1	-	1	4	7 (2)	2	4	1.6	£1,706,000
Plymouth	1	-	-	-	3	-	5	1	1	£79,000
Sheffield	1	-	2	1	-	1	5	1	1.6	£564,000
Southampton	- (1)	-	1	-	-	-	5 (1)	-	2.5	£100,000
Total	29 (3)	9	45 (2)	42.5 (2)	12.6	32 (5)	84 (15)	46 (15)	36.5	£28,078,000 (£ 9,359,000)

Table B.1

Table B.2. Some qualitative responses related to the new 2003 Academic Contract, workloads, and private practice. The columns are, in order:

Column 1 – name/location of department
Column 2 – the position of the department within the host university/NHS Trust structure. The department might be a discrete, independent entity (I), or may be an identifiable part of a larger department which includes other specialties (L), or it might have been fully absorbed into anothe specialty's department (A). Some universities have a divisional structure (D). Finally, the department might be a fully NHS entity with no formal university role (NHS)
Column 3 – the proportion of consultant-grade academic staff who have taken up the New Academic Contract. If there is no information as yet on this, or if contracts have not yet been finalised this is indicated by NA
Column 4 – whether the New Academic Contract is held to be a positive (+ve), negative (-ve) or neutral (=) development in relation to academic anaesthesia by the respondent
Column 5 – the number of direct clinical care sessions (programmed activities) worked by consultant academic staff in terms of the New Academic Contract (NA indicated contracts not finalised)
Column 6 – the ratio of clinical: academic programmed activities (PAs) in the New Academic Contract (NA means data not available)
Column 7 – whether private practice income (PP fees) is kept by the individual (I); whether academic staff are not allowed to undertake private practice (N); or if the PP income must go into a departmental fund (D)
Column 8 – whether the ability to undertake private practice is generally an incentive (I), detriment (D) or neutral (N) with respect to recruitment to academic posts
Column 9 – the number of trainees who have expressed an interest in planning an academic career over the last 3 years
Column 10 – an estimate of the hours per week per week per academic consultant spent in teaching: medical students/anaesthetic trainees/others (e.g. nurses and trainees of other specialties); followed by the total hours per week per academic [in square parentheses]
Column 11 – an estimate of the proportion of NHS consultants in that Trust who are interested in research or academic issues.

The results in the table indicate quite wide variation in views of current heads of academic department to the desirability of the New Academic Contract and to the desirability of private practice as an aid to academic recruitment. The table also shows variation in the clinical:academic split of PAs in the New Contract, with some centres (e.g. Dundee and London UC) where academics are required to undertake as many as 7 or 8 clinical PAs with only 2 or 3 academic PAs: the reasons for this are unclear. Teaching workloads also seem variable, with some departments having as little as 2 hours/week/academic (e.g. London UC and Plymouth) and others having as many as 13 hours/week/academic.

London St George's did not reply to the questionnaire.

NA = data not available

Department	Position of department in host university/ Trust	Number of consultant academic staff in New Contract	Views on New Contract	Number of direct care 'sessions' worked by academics	Clinical: academic split of PAs in New Contract	PP fees	Incentive or otherwise of PP	No. of trainees planning an academic career)	Hours/wk/academic teaching: (a)medical students (b)anaesthetic trainees (c)others [total]	Estimated % NHS consultant interested in research/ academia
Aberdeen	L	100%	-ve	4	6 : 6	I	D	0	4 / 2 / 2 [8]	<10%
Belfast	L	NA	-ve	NA	NA	I	D	-	8 / 2 / 2 [12]	<10%
Birmingham	I	100%	+ve	5	6 : 5	I	D	1	10 / 2 / 1 [13]	10–25%
Bristol	L	100%	=	6.5	8 : 5	I	D	2	2 / 6 / 5 [13]	10–25%
Cambridge	L	100%	+ve	3.5	5 : 5	I	N	3	3 / 3 / 5 [11]	10–25%
Cardiff	I	100%	+ve	4	6 : 4	I	I	5	8 / 3 / 2 [13]	25–50%
Dundee	D	100%	+ve	6	8 : 2	I	D	1	3 / 1 / 1 [5]	10–25%
Edinburgh	L	100%	-ve	6	6 : 4	N	N	8	2 / 0 / 4 [6]	<10%
Glasgow	L	100%	+ve	7	7 :5	N	D	4	10 / 2 / 1 [13]	10–25%
Leeds	L	100%	+ve	5	5.5 : 4.5	I	N	3	4 / 2 / 0 [6]	<10%
Leicester	A	100%	+ve	3.5	5 : 5	I	N	4	6 / 8/ 3 [17]	<10%
Liverpool	A	60%	+ve	5	5 : 5	N	N	1	NA	NA
London Imperial	I	NA	+ve	NA	NA	I	D	4	1 / 3 / 3 [7]	<10%
London UC	L	100%	=	5.5	7 : 3	I	I	11	0.5/1 /0.75[2]	25–50%
Manchester	A	100%	-ve	5	5 : 5	I	I	0	5 / 3 / 1 [9]	10–25%
Middlesborough	NHS	None	-ve	4	4 : 6	I	I	10	5 / 5 / 8 [18]	10–25%
Newcastle	A	100%	-ve	7	7 : 3	NA	N	2	0 / 0 / 0 [0]	<10%
North Stafford	NHS	None	=	5	5 : 2	I	N	0	4 / 4 / 1 [9]	<10%
Nottingham	I	100%	+ve	5	6.5 : 5	I	N	1	6 / 6 /1 [13]	10–25%
Oxford	D	NA	=	NA	NA	I	N	2	NA	<10%
Plymouth	NHS	100%	+ve	3.25	5 : 5	I	I	0	0 / 2 / 0 [2]	10–25%
Sheffield	L	100%	-ve	3.5	5 : 5	I	N	2	3 / 2 / 0 [5]	<10%
Southampton	L/NHS	NA	-ve	4	4 : 6	I	I	0	2 / 2 / 1 [5]	<10%

Table B.2

Table B.3. Other comments. The purpose of this table is to indicate the flavour of some of the additional comments made by Heads of academic department. Many of these comments made by different individuals are, in fact, mutually exclusive; some ideas have been superseded by developments at national level; other comments are factually inaccurate or betray erroneous understandings of the current situation. Some comments are (independently) clearly consistent with the recommendations we make in Strategy Report; other comments indicate that the respondent might not support our recommendations. They are all reported *verbatim,* to indicate the range of opinion expressed.

On academic competencies in clinical CCST programs

'– Current competencies adequate but not properly enforced by Schools of Anaesthesia.
– There should be a 'two-tier system': one very short academic module for the majority; a longer module for those with particular ability or interest.
– Anaesthetic trainees will not do research unless it is viewed as 'essential' or 'highly desirable' at interview: the College does not recognise this.
– Trainees have looked at their (academic) elders and they do not like what they see – they now opt for a good quality of life.'

On academic training and teaching committment

'– There needs to be more flexibility in academic career training than there is at present.
– There is ambiguity in how the EWTD applies to academic trainees.
– Senior trainees or clinical research fellows could take on some of the teaching burden to their own benefit.
– The RAE has meant that clinical academics devolve teaching to NHS colleagues, so this may result in the standing of academics within anaesthesia is lowered.'

Whether expansion of anaesthetic teaching into other areas (e.g. physiology/pharmacology) and F2 years is a good idea

'– Should be encouraged if resources follow.
– Academic departments could train academic F2s if resourced to do so (e.g. by the NHS).
– Academic departments should not get involved in research components of F2 training.'

Does the academic department hold (or could hold) grants jointly with or supervises PhDs jointly with other departments?:

The general consensus was that departments closely collaborate with departments of: Physiology, Surgery, Medicine, Molecular biology, Engineering, Neuroscience, Entrepreneurship, Pathology, Pharmacology, Biochemistry, Immunology.

'– Yes – and furthermore, academic anaesthetic departments should seek to undertake research in any potentially relevant area of science and not be restricted by artificial concepts of what might (or might not) constitute "anaesthetic research".'

On the Research Assessment Exercise (RAE)

'– The RAE – in the way that it operates – inherently works against anaesthetic departments.
– The RAE does not inherently work against anaesthetic departments: onus is on anaesthesia to obtain grants.
– There is no specific RAE panel for anaesthesia, and poor representation of anaesthesia on grant-giving bodies.
– There is not enough anaesthetic representation at the higher levels of RAE.
– Journals in which anaesthetists publish have low impact factors so score low on RAE returns.
– Competing clinical responsibilities are a problem for RAE assessment.
– Support from industry does not appear to 'count' in RAE returns, to the detriment of anaesthetic departments.
– There is now good support from organisations such as Eurpoean Society of Anesthesiology.
– Anaesthetic referees on grant panels seem more critical of and less supportive of anaesthetic research than non-anaesthetic referees.'

On funding

'– There are fewer charities explicitly supporting anaesthetic research.
– Anaesthetists do not always stress the wider, generic scientific relevance of their research.
– It is more difficult to write a cast-iron clinical research proposal as opposed to a basic science proposal.
– Anaesthetic research does not appear to fall within the remit of many sources of funding.
– NHS funding for academic departments of anaesthesia is likely to be more reliable and sustainable (for the present at least) than through HEFC or the universities. However, there may be loss of influence for the specialty if it is excluded, or excludes itself, from the university structure.
– NHS funding for academia is no more or no less secure or guaranteed than HEFC/university funding.
– NHS R&D funding is directed to cancer, cardiovascular disease and epidemiology – anaesthesia has no chance.'

On Royal College structure

'– Royal College needs to strengthen its academic credentials.
– Some central structure is important within the Royal College to assist or guide the efforts of academic departments.
– A central structure dealing with anaesthetic academia/research is important, but it should be separate from the RCA structure.
– The Royal College could develop a central forum to co-ordinate the trials of major issues in large numbers of patients across many centers.
– Some current heads of academic anaesthetic department who are not fellows or members of the College should nonetheless have full access to the Royal College and its resources, especially in matters relating to academic anaesthesia and academic training.
– Regular academic visits (similar to college visits to Trusts) would be useful to help guide the development of a department.
– No structural change in the Royal College is necessary.
– There should be a regular forum for specialist society representation to enable them to feedback their views to the College, or to facilitate some further integration of their efforts into an overall strategy.
– Specialist societies in anaesthesia might more usefully together raise research funds for the specialty than they do separately in their own area of interest.
– No change is necessary in the College's relations with the specialist societies.
– Research grants currently administered separately by specialist societies could be more integrated (e.g. by single application procedure) especially where the grant covers a similar remit.
– The College should seek greater integration with bodies such as: Academy of Medical Sciences, Academy of Medical Royal Colleges, BMA, GMC, PMETB, major funders.
– The College should not seek any further integration with the BMA or GMC.'

On individual department structure and other areas

'– All NHS and academic departments should be merged, with academics taking the lead (e.g. as clinical directors). Such 'merger' will ensure the co-ordination and integration of clinical and academic goals.
– The new Clinical Excellence Award system is based mainly on contribution to Trust activities and this is detrimental to anaesthesia.'

Conclusion

While some comments seem to based on erroneous assumptions, the individual views of Heads of department indicate that there will be general acceptance of (and ability to implement) the recommendations of this Strategy Report. It remains possible that, in individual departments where views directly contrary to the Recommendations have been expressed, there will be resistance to any recommended change, but it seems that these will be isolated departments only.

APPENDIX C: INFORMATION FROM REGIONAL ADVISERS IN ANAESTHESIA

As part of this Strategy Report, we sent questionnaires to all 24 Regional Advisers in anaesthesia (including the Tri-Sevice 'region'), and all replied. The TriService figures were not included in the totals/mean figures below because of its unusual situation, but some qualitative responses were used from their responses. Table C.1 below shows the key responses.

Table C.1. Key responses of Regional Advisers concerning academic anaesthesia.
The columns are, in order:

Column 1 – region
Column 2 – number of trainees in that region in 2004
Column 3 – whether the region is associated with an academic anaesthetic department
Column 4 – number of trainees expressing an interest in an academic career (over last 3 years)
Column 4 – number of trainees (in last 3 years) who have completed a higher degree
Column 5 – number of trainees who have taken out-of-program experience to do research
Column 6 – number of trainees who wish teaching to be a large part of their consultant job plan
Column 7 – number of trainees (in last 3 years) who have completed MSc in education or similar
Column 8 – an estimate of the proportion of NHS consultants in region interested in academia or research

Region	No. trainees	Acad dept	Academic career	MD/PhD	OOPE research	Wish to teach	MSc Education	% interested NHS consultants
Anglia	87	y	2	4	7	4	2	10–25%
London NC	120	y	12	3	15	2	3	<10%
LondonNW	140	y	2	6	4	4	2	10–25%
Mersey	82	y	3	0	5	5	5	<10%
Northern	125	y	3	0	2	4	4	<10%
N West	189	y	3	1	1	2	1	10–25%
E Midlands	60	y	1	3	12	1	2	<10%
N Thames East	93	n	3	0	5	93	10	<10%
S Thames East	120	n	0	0	1	0	0	<10%
S Thames West	102	y	2	3	9	20	4	<10%
Oxford	87	y	4	0	0	15	5	<10%
N Trent Sheffield	72	y	2	1	1	72	0	10–25%
S Trent Leicester	48	y	2	1	4	3	2	<10%
South West	45	n	1	0	0	5	3	10–25%
Wessex	120	n	0	3	2	15	5	10–25%
W Midlands	211	y	3	0	4	20	12	<10%
Yorkshire	125	y	1	0	1	5	3	<10%
E Scotland	74	y	0	1	4	60	4	50%
N & NE Scotland	21	y	3	1	1	3	2	10–25%
SE Scotland	54	y	0	0	2	2	2	<10%
W Scotland	80	y	9	0	7	8	2	<10%
Wales	110	y	2	3	7	4	9	10–25%
Northern Ireland	70	y	0	6	0	10	6	25–50%
Tri-Service	28	-	2	1	1	8	4	-
Total or average, as appropriate	2052	n4; y19	55	36	90	337	76	~15%
Total/year		-	6	12	30	112	15	-

Responses to other questions

Role of research in training and planning an academic career

The majority of Regional Advisors (14/23) felt that research and academic training should have a larger role in training (or indeed undergo wholesale review). Only a minority (7/23) felt that academic training should have only a small role in training.

There was a near-unanimous view (19/23) that more flexibility is needed to help those trainees who wish to undertake an academic career. However, regarding the precise path to follow to for such aspirants to an academic career, only half the regional advisors (10/23) felt they knew what advice to give. Many Regional Advisors felt the local professor (Head of academic department) would know the precise advice to give (8/23); some felt the Royal College knew the path to follow for an academic career (4/23).

There was some uncertainty as to who should be responsible for the delivery of research training: 13/23 did not know; 4 felt it was the responsibility of the local academic department; 5 felt the Royal College should have a greater role in determining how delivery should be organised. One respondent stated that undergraduate training was the remit of an academic department; while postgraduate training was the Royal College and deaneries. Table C.2 summarises these views.

Table C.2. Summary of qualitative opinions relating to academic anaesthesia. (Tri-Service results are excluded

Question	Responses
Do you think research and academic training should have a larger role in clinical training?	Yes – 14/23 No – 7/23
Is more flexibility needed in academic training?	Yes – 19/23 No – 4/23
Do you know precisely how to advise a trainee aspiring to be an academic anaesthetist?	Yes – 10/23 No – 13/23
If you do not know the precise advice to give, from where do you think advice should be sought?	Local professor – 8/23 Royal College – 4/23 Don't know – 1/23
Are relationships between NHS and academic department good or poor?	Good – 22/23 Poor – 1/23
In the main, who undertakes postgraduate anaesthetic teaching?	NHS dept/tutors – 17/23 Academic dept – 3/23 Both NHS and academic dept – 3/23
What would be the impact of the loss of the academic department on anaesthetic training?	Adverse impact – 17/23 No impact at all – 6/23
Should new consultant posts have a teaching/academic/ research role made explicit within job plans?	Yes – 21/23 No or no answer – 2/23
Additional programmed activities (APAs) should be granted (over and above the 2.5 supporting programmed activities (SPAs) to support research or the delivery of research training	Yes – 21/23 No or no answer – 2/23
Might academic departments benefit by taking the lead in the academic component of the F2 programs?	Yes – 10/23 No or no response – 13/23

Qualitative responses on the future for academic departments

In their general responses, Regional Advisers expressed the view that the work of academic departments should be more directed to the needs of the specialty than to the needs of the university and its structures (i.e. that the academic departments should be less governed by pressures arising out of the RAE). At the same time, Regional Advisers appreciated the realities of the situation and accepted that this might be difficult or impossible. Two common statements were that '*loss of research training will eventually impact upon clinical training*' and '*academia is essential for the specialty*'.

Concluding remarks about the Regional Adviser questionnaire

Academic anaesthesia, as Regional Advisers perceive it, is in a very precarious state. The 'substrate' for the future – trainees in academic anaesthesia – is especially threatened. The fact that 18% of regions do not have access to an academic department is of concern. That a specialty with about 2000 trainees generates only about 12 higher degrees per year does not indicate academic strength. Even the interest in obtaining higher qualifications in education (which is a little higher than for academic degrees) is not dramatic. It is disappointing that so few NHS consultants appear to be active in academia or research.

The responses identify areas of uncertainty. If Regional Advisers do not know how to advise trainees who wish to opt for an academic career, then it indicates clear difficulties faced by these trainees in obtaining guidance. However, the publication of the Walport Report should address this issue.[52]

The responses also give cause for some optimism. The quality of responses and comments indicated that Regional Advisers have a very deep understanding of the problems faced, and of the relevant issues. On the whole, Regional Advisers seem prepared to use whatever power or influence they have to help academic anaesthesia. In particular, they are clear that NHS consultants (where supported through job planning and job descriptions) can have an important role in helping to deliver academic training and academic goals. Relationships between NHS and academic departments remain good.

APPENDIX D: INFORMATION FROM SPECIALIST SOCIETIES IN ANAESTHESIA, CRITICAL CARE AND PAIN

We conducted a questionnaire of specialist societies to ascertain their membership, whether they offer research grants, and their attitude to academic strategy. Table D.1 shows the main indicators.

Table D.1. Key statistics related to membership, estimated income and grants offered by some specialist societies. D1A shows the societies which offer grants; D1B lists societies which do not offer grants. The columns are:

Column 1 – name of society/organisation (OAA Obstetric Anaesthetists Association; APA Association of Paediatric Anaesthetists; Assoc Card Anaesth Association of Cardiothoracic Anaesthetists; BOAS British Ophthalmic Anaesthesia Society; SAAD Society for the Advancement of Anaesthesia in Dentistry). The Royal College of Anaesthetists, the British Journal of Anaesthesia and the Association of Anaesthetists are included as 'specialist societies' for the purpose of illustrating the research support funding available.

Column 2 – whether the society itself feels that academia/research is an important part of its mission. This was assessed by self-reporting by societies ranking their main aims (eg, research, supporting continuing professional development, training, trades union activity, social forum);

Column 3 – membership (with approximate subscription fee: this can vary depending on seniority of members, so the approximate middle value is given, or the value of the 'ordinary' fee). Note that for some societies, nurses or other groups form a significant part of the membership;

Column 4 – research/academic awards disbursed per year. These are estimates, and can vary from year to year, or have varying terms and conditions. The figures include all awards made for research, travel, academic-related projects, prizes, fellowships. * includes award for the British Oxygen Chair of Anarsthesia (~£60,000/yr); ** all awards administered by the RCA; † includes the grant of ~£100,000/yr made to the society's own Director of Research; ‡ visiting Chair in Sedation being instituted).

Column 5 – whether there is a society meeting where abstracts are presented, and the number of meetings/yr; the number who attend [in square brackets] and where the abstracts are published (*BJA* British Journal of Anaesthesia; *IJOA* International Journal of Obstetric Anesthesia; *Paed Anaes* Paediatric Anaesthesia; *J Neuro An* Journal of Neurosurgical Anesthesia; *J OD* Surg Journal of One-Day Surgery; *PADA* Proceedings of Association of Dental Anaesthetists; *Neuromod* Neuromodulation; *BOASN* BOAS Newsletter; *SAADJ* Journal of the Society for the Advancement of Anaesthesia in Dentistry; none = no abstracts published). The RCA hosts a number of meetings, but these are not included in the table (NA).

Column 6 – whether the society is planning, or aims to conduct, multi-centre studies or 'network-based' projects

Column 7 – whether the society feels it could broadly integrate with a combined academic strategy based around the Royal College's initiative. This was assessed by self-reporting by the society, the degree to which the society might wish to become part of an 'umbrella' of organisations working towards joint academic strategy, under the overall guidance of the Royal College.

Table D1A

Society	Academic/ research important part of mission	Membership (sub fee)	Awards/yr	Society meetings	Scope for networks	Integration with specialty's research effort
Royal College of Anaesthetists	yes	13,000 (£335)	£160,000*	NA	yes	yes
British Journal of Anaesthesia	yes	NA	£150,000**	NA	NA	yes
Association of Anaesthetists	yes	9,034 (£195)	£250,000	yes: 2 [1,000] (*Anaesthesia*)	yes	yes
Intensive Care Society	yes	2,300 (£180)	£157,000†	yes: 2 [350] (*BJA*)	yes	yes
OAA	yes	2,000 (£70)	£45,000	yes: 1 [600] (*IJOA*)	yes	no
Anaesthetic Research Society	yes	500 (£30)	£27,000	yes: 3 [70] (*BJA*)	yes	yes
Difficult Airway Society	yes	988 (£10)	£15,000	yes: 1 [400] (*Anaesthesia*)	yes	no
Vascular Anaesthesia Society	yes	300 (£10)	£15,000	yes: 1 [300] (*Anaesthesia*)	yes	yes
APA	yes	700 (£50)	£7,000	yes: 1 [375] (*Paed Anaes*)	yes	yes
Assoc Card Anaesth	yes	438 (£30)	£5,000	yes: 1 [200] (*Anaesthesia*)	yes	yes
Age Anaesthesia Association	yes	175 (£10)	£3,000	yes: 1 [300] (*Anaesthesia*)	yes	no
Neuroanaesthesia Society	no	350 (£20)	£2,500	yes: 1 [200] (*J Neuro An*)	yes	yes
BADS	no	900 (£40)	£2,000	yes: 1 [300] (*J OD Surg*)	yes	no
SAAD	no	2,542 (£20)	£1,600‡	yes: 1 [100] (*SAADJ*)	yes	yes
Association Dental Anaesthetists	yes	350 (£10)	£1,500	yes: 1 [80] (*PADA*)	yes	yes
Association of Burns & Reconstructive Anaesthesia	yes	150 (£10)	£250	yes: 1[45] none	yes	yes
Total			£841,850			

Table D1B

Society	Academic/ research important part of mission	Membership (sub fee)	Awards/yr	Society meetings	Scope for networks	Integration with specialty's research effort
Preoperative Association	Yes	476 (£20)	Nil	yes: 1 [470] none	yes	yes
History of Anaesthesia	No	458 (£15)	Nil	yes: 2 [70] none	no	no
BOAS	No	150 (£25)	Nil	yes: 1 [150] (*BOASN*)	yes	yes
Anaesthetists in Management	No	122 (£30)	Nil	no none	yes	yes
Neuromodulation Society	No	45 (£130)	Nil	Yes: 1 [50] (*Neuromod*)	no	neutral

Types of network-based studies suggested by societies

Specialist societies gave the following responses to the type of multi-centre studies they are, or might wish to be, involved in.

TracMan Study; perioperative audits; Intensive Care National Audit and Research Centre – ICNARC (*Intensive Care Society*)

Multicentre projects; basic data collection; anaesthetic methods in placenta praevia – no formal strategy for identifying such questions is established, although the society has discussed these issues (*Obstetric Anaesthetists Association*)

Examples of multi-centre, network-based studies include the need to develop safer and better medicines for children, apoptosis in the developing brain and anaesthesia; developmental pharmacokinetics and pharmacodynamics. (*Association of Paediatric Anaesthetists*)

Perioperative beta-blockade, perioerative troponins release and its management, perioperative glycaemic control, GA versus LA trial for carotid endarterectomy, joint audits with Vascular Surgical Society are in progress (*Vascular Anaesthesia Society*)

Pneumonectomy Outcome Study; perioperative outcomes amenable to audit (*Association Cardiothoracic Anaesthetists*)

Quality of recovery from anaesthesia; studies on simulated driving after anaesthesia (*British Association of Day Surgery*)

Specific questions include: how do patient factors affect risk?; how can risk be modified by anaesthetic (or other) techniques? (*Preoperative Association*)

Complications of local and general ophtahalmic anaesthesia; audit of national clinical incidents; training standards in ophthalmic anaesthesia. (*British Ophthalmic Anaesthesia Society*)

US-style ASA closed claims database to log critical incidents in airway management; multi-centre trials of airway devices based on generic study design; postmarketing surveillance. (*Difficult Airway Society*)

Checklists for inspection of dental practices for Primary Care Trusts (*SAAD*)

Other comments made concerning academic strategy

The following summarises some general comments made in the questionnaire responses:

We are happy with our approach and optimistic that research will continue. Of particular help would be (a) training posts in intensive care medicine, (b) a less obstructive research regulatory system, (c) creation of more consultant academic posts. (*Intensive Care Society*)

Obstetric anaesthesia is not 'listed' as an area of interest by UK academic anaesthetic departments, and there appear to be more 'fashionable' areas. We therefore feel that our society will continue to thrive despite views of others outside our sub-specialty. However we would like to see more overt support from the College for our interests. Many of the problems of academic anaesthesia are self-inflicted. Unless these issues are addressed it is difficult to support an integrated strategy of the specialty. (*Obstetric Anaesthetists Association*)

It is essential to increase the research capacity of the specialty. Basic science questions should be integrated with clinical questions. There need to be research themes which catch the imagination of the nation or the specialty are necessary; a 'hub' is needed for collaborative research; a 'think tank' may be necessary to suggest research themes which match the priorities of funders and NHS R&D (*Anaesthetic Research Society*)

There is too much emphasis by grant-giving bodies on basic science versus clinical research. Modern training is itself a disincentive to research since after 5 years almost all trainees obtain an NHS consultant post (*Difficult Airway Society*)

It may be important to co-ordinate fewer, rather than more, studies which focus on key areas with genuine outcome benefits. A greater emphasis is needed on collaborative national efforts in the clinical area, along with new links in basic science to drive basic science questions into the clinical domain. This may need secondment of anaesthetists into basic science departments – or vice versa. (*Association of Paediatric Anaesthetists*)

Anaesthetic research seems individualized, with no central strategy and no central funding. We welcome changes such as BJA publication strategy which highlights subspecialty interests. (*Association of Cardiothoracic Anaesthetists*)

The current research agenda in anaesthesia is not directly supportive of vascular research. Even the GALA trial is predominantly organized by surgeons and neurologists. The Royal College of Anaesthetists has not been active enough and needs to be more co-ordinated and place perioperative morbidity at the heart of the research agenda. W e must be more proactive and less reactive. If this were the case, the Vascular Anaesthesia Society would be very supportive. (*Vascular Anaesthesia Society*)

It would be important to have a summary of the research which has been done and that which is being done. A review of the questions which need to be answered will then help guide research strategy. Anaesthesia research must not isolate itself from the rest of research. We must all be disciplined and prepared, if necessary, to deny our individual research interests for the sake of a more structured and disciplined research policy. (*Preoperative Association*)

Future of the research is in jeopardy unless academic anaesthesia is supported centrally. Increased collaboration between various anaesthetic organizations would be desirable. (*Neuroanaesthesia Society*)

If the Royal College raised the profile of the area of interest of the given specialist society, then that specialist society would be keener to be a partner in the collective research effort (*SAAD*)

A large part of the crisis is generated by a political issue that places performance targets above academic development. If a fixed time for research was stipulated in training, this would help. Multi-centre research co-ordinated by the Royal College would help. (*Association of Burns & Reconstructive Anaesthesia*)

Research governance regulations with their need for licences and sponsorship threaten to consume all the society's available funding and threaten research (*Age Anaesthesia Association*)

Societies which were contacted but did not reply

The following societies did not reply to the questionnaire:

- Association of Low Flow Anaesthesia
- British Anaesthetic and Respiratory Manufacturers Association
- Society for Computing and Technology in Anaesthesia
- Society for Intravenous Anaesthesia
- Group of Anaesthetists in Training (GAT)
- British Society of Orthopaedic Anaesthetists
- British Association of Indian Anaesthetists
- European Society of Regional Anaesthesia (ESRA UK branch)
- Scottish Intensive Care Society
- Yorkshire Society of Anaesthetists

Some national societies were not contacted since it is clear that their main interest and remit is not confined to anaesthesia alone (e.g. Resuscitation Society).

APPENDIX E: KEY RECOMMENDATIONS OF THE WALPORT REPORT

This extract is taken from the summary of the Walport Report, but excludes recommendations made for general practice and academic dentistry.[52]

…Warning bells have been ringing for some time over the perilous state of academic medicine in the UK. The deterrents for a clinical academic career have been well documented over the years but can largely be summarised as:
i. lack of both a clear route of entry and a transparent career structure;
ii. lack of flexibility in the balance of clinical and academic training and in geographical mobility; and
iii. shortage of properly structured and supported posts upon completion of training.

This report sets out a series of recommendations to address these deterrents to clinical academic careers. The proposals can be grouped into four sections, each addressing the key stages of a clinician's career, namely: Medical School; Foundation Programme; specialist training and consultant/GP grade. Proposals for each of the career stages are made separately for academic dentists. The recommendations are as follows:

Medical Schools
For the Medical School stage, it is recommended that:

1. medical students must understand the attractions of a career in academic medicine and how to pursue this aim. One way of achieving this goal is to make sure that medical students are taught by leading clinical academics, amongst others;
2. the opportunity to undertake an intercalated BSc or equivalent is maintained, through the provision of scholarships and bursaries;
3. increased opportunities are provided for some students to explore the theory and practice of education in the undergraduate curricula through appropriate programmes, special study modules/student-selected components and intercalated degrees;
4. a limited number of MB-PhD schemes are maintained with appropriate funding and the progress of graduates from these programmes is tracked;
5. programmes for the attainment of a higher qualification are developed in the field of education, structured if necessary on a regional or national basis.

Foundation Programmes
For the Foundation Programme stage, which will consist of two years (F1 and F2), the following options are recommended:

6. the preferred option is for an integrated academic F2 programme which encompasses academic activities throughout the year, designed for those who show an aptitude and commitment for a research/educational career, with the following as additional opportunities;
7. a four-month academic rotation within the F2 year, designed to offer the F2 trainee the opportunity to explore his / her potential interest in a research/educational career, delivered either as "stand-alone" or in the context of an academic F2 year;
8. a pilot two-year integrated academic Foundation Programme targeted in part at MB-PhD students.

Specialist Training

In order to ensure that there is an explicit academic training pathway during the specialist training period, and that these are flexible programmes that allow both clinical and academic competencies to be attained, it is recommended that:

9. dedicated academic training programmes are developed in strong host environments, in partnership between Universities and local NHS Trust and Deaneries – this is the core proposal of this report;
10. these programmes consist of two phases: the academic clinical fellowship phase leading to a competitive externally-funded training fellowship and a higher degree; and the clinical lectureship phase, leading to a CCT and providing opportunities for postdoctoral experience;
11. these programmes are initiated and selected by means of a national competition and candidates appointed by appropriately constituted local appointment committees;
12. substantial efforts are made to develop academic training programmes in those specialties that have been subject to particular decline in their academic activity. Whilst the majority of these programmes will focus on research training, some will have educational training as their main focus;
13. a separate national competition for clinical lectureships is held for an interim period until the first cohorts of trainees have completed the academic clinical fellowship phase of the dedicated programmes. This second competition will enable posts to become available for individuals who are currently completing a higher degree;
14. appointees to these programmes are given an NTN(A) at entry;
15. trainees are able to exit the academic training programme and return to standard clinical training at any point, subject to satisfactory outcomes from joint academic and clinical appraisal. It is important that the proposed dedicated academic training programmes do not exclude other means of entering and pursuing a career in clinical academia. It is proposed that:
16. there should be a variety of entry points into the designated academic training programmes so that they are open to trainees who chose to enter an academic pathway later on in their clinical training;
17. awards by research funders of research training fellowships should not be restricted to those with NTN(A)s;
18. direct entry to the Specialist Register through the 'academic route' under the auspices of the Specialist Training Authority (and its successor body PMETB) is maintained and enhanced.

Consultant/senior academic GP grades

In order to accommodate a new generation of trained clinical academics coming out of the proposed dedicated academic training programmes to establish their careers, the following are recommended:

24. creation of a cohort of 'new blood' senior lectureship posts that are funded in partnership between and jointly owned by NHS Trusts, Universities, the UK departments of health and other research funders;
25. clinical academics should have pay parity with their NHS counterparts;
26. development of a clear pathway back into full time clinical practice from academia, subject to evidence of continuing good clinical performance;
27. establishment of programmes of continuous professional development that allow further clinical training of consultant academic staff, as appropriate, for career requirements;
28. further efforts are made for the revision of academic career progression/promotion criteria within Universities for clinical educationalists.

APPENDIX F: AN EXAMPLE ACADEMIC MODULE STRUCTURE FOR THE F2 YEAR

This appendix shows an example of how the specialty of general medicine is dealing with academic modules for F2 programmes.[43] The general description provides a template which academic anaesthetic departments can use to offer similar academic modules.

From: ACADEMIC MEDICAL UNIT, LEICESTER ROYAL INFIRMARY
The Academic Medical Unit Foundation Year 2 Job Description

This FY2 programme for Academic Medicine will have three main objectives:

- To provide a firm grounding in clinical medicine with competency based and clinical skills training – in preparation for higher specialist training.
- To provide exposure to clinical science and evidence-based clinical practice to provide a foundation for a career in academic medicine
- To provide education and preparation for successful completion of Part 1 of the MRCP examination

The post will be based with the Academic Medical Unit (AMU), which will provide clinical training in General Internal Medicine and Cardiovascular Medicine. It is anticipated that the FY2 trainees would be considering a career in hospital medicine as a clinical academic engaged in clinical research and clinical practice. This new post would provide exposure to clinical training in acute medicine, coronary care, ward and clinic based medicine. In addition this post would provide a "taster" in academic medicine via interaction with a broad spectrum of ongoing research within the Academic Medical Unit. For those contemplating future application for clinical research training fellowships, this post would provide an ideal opportunity to consider and plan this option.

Clinical Training Programme:
These 12-month posts would provide the post-holder with clinical training in Acute Medicine via the Medical Admissions Unit by participation in the regular SHO acute medicine on-call rota with the staff of the Academic Medical Unit. The MAU admits ~50 unselected emergency admissions per day providing trainees with extensive emergency medicine experience. Ward-based work will be divided into 3 blocks: 6 months in a General Medical Ward working with the AMU clinical team. 3 months working on the Coronary Care Unit and 3 months on the Medical Admissions Unit and/or in Medical areas of A&E. There would also be the opportunity to participate in weekly GIM or Specialist clinics.

The educational and training aspects of these posts are key to their success and the entire clinical training programme will be under the supervision of the AMU staff in general, with a specific mentor who will be responsible for appraisals. The post-holder would be expected to attend regular generic GIM training sessions within the UHL Trust and clinical skills and procedure training. They would be expected to have completed an Advanced Life Support course by the of the FY2 year. They would also receive dedicated educational support designed to prepare them for the successful completion of the Part 1 MRCP examination during the tenure of this post. Our aim is to generate highly competent and confident clinicians.

Academic Activities:
The post-holder would gain invaluable experience from becoming actively engaged in the many ongoing clinical research and educational opportunities offered within the AMU including weekly clinical research meetings during which data from ongoing clinical studies are critically reviewed,

weekly CME, weekly journal review meetings and regular clinical audit meetings. There would also be the opportunity to spend dedicated time within the Clinical Research unit to gain understanding of the complexity of clinical research, data handling, interpretation, ethics and regulatory issues, data analysis and writing skills.

Weekly Timetable:

This timetable provides a 'flavour' of the time allocation to various activities – more specific timetables for each post are given in the Appendix.

Monday	Tuesday	Wednesday	Thursday	Friday
Ward-based Clinical work	Consultant Ward Round	OPD Clinic (GIM or Specialist)	Research Activities	Ward-based Clinical work
Medical Student Teaching	Clinical Research Group Meeting	Clinical Audit Projects and weekly meeting	Research Activities	Ward-based Clinical work

- Ward-based work on AMU base ward (6/12), CCU (3/12), MAU/A&E (3/12)
- On-call rota equivalent to 'SHO grade' – proposed contract Band 2A
- Post-take consultant-led ward rounds when on call for acute receiving
- Weekly lunchtime educational meetings include:
  - Journal Club
  - Hypertension clinic review/audit
  - Physician 'Grand Round'

APPENDIX G: EXAMPLE OF EARLY STAGES OF ORGANISING A CARDIOVASCULAR 'NETWORK'

This appendix shows an example (from cardiovascular medicine) of how other specialties are embracing he changes in research governance at regional and national level. It is important for anaesthesia to take note of these activities and consider how it can similarly organise itself.

The 1st North West Cardiovascular Disease Research & Development Network Conference was held on May 6 2003 at the Chancellors Conference Centre. The conference was organised in conjunction with Health R&D North West (the R&D support unit for the NHS in the North West). The Network was launched in June 2002 and currently has 140 members from a wide variety of disciplinary backgrounds. The members are from a range of NHS care settings and Higher Educational Institutions across the North West. The Network aims to be a focus for supporting and developing high quality R&D and utilises a virtual communications system, via a web page. The Steering Group ratified the two-year Strategy in October 2002; a Standing Group and a full-time Co-ordinator facilitate the implementation process.

The Conference was the inaugural meeting of the Network. The morning session of the Conference was an opportunity to review the progress of the implementation of the Strategy. Presentations by the Head of R&D in the Directorate of Health and Social Care North and by the National Lead within the Department of Health provided some policy context of cardiovascular research nationally. There was also an excellent selection of verbal and poster presentations from North West researchers. Representatives from the Cardiothoracic Centre Service User Research Group and the North West R&D User Advisory Group participated in the conference.

The afternoon was dedicated to group work in order to develop research ideas/proposals. The sessions were designed to be a springboard for new collaborative research groups with the ultimate goal of seeking external funding. Research funding organisations were also invited and NHS R&D presented a display on training and funding opportunities in relation to cardiovascular research.

This report provides a brief summary of the five workshops including the potential research groups and agreed next steps. There is also a summary of the evaluations from the conference, including some comments made by participants. For the presentation slides and full notes from the workshop sessions please see the Network web page (www.doh.gsi.gov.uk/nw).

Conference Objectives

- To facilitate the development of collaborative multi-disciplinary research groups as part of Priorities and Needs programmes; linked to local and national research priorities.
- To link early career researchers with experienced North West researchers.
- To disseminate high quality and policy-relevant North West cardiovascular research.
- To review the progress of the cardiovascular R&D Strategy implementation.
- To promote the integration of R&D with service planning & policy development.
- To promote meaningful consumer involvement and integration in North West cardiovascular research and development.
- To disseminate training and funding opportunities

Multidisciplinary Workshop Session

Workshop format:

a) To identify research priorities / needs / opportunities.
b) To consider potential research groupings.
c) To agree the next steps.

Main areas of research priority identified:

1. Cardiac Rehabilitation & Exercise
2. Heart Failure
3. Primary Prevention
4. Public Health Information
5. Stroke

Main approaches to be used:

1. Potential research groupings should be problem-based, rather than profession-based.
2. Network should be publicised locally with the "local population" and local industry, which would have an influence on local charitable funding priorities and also widen opportunities for user involvement
3. If unable to obtain funds locally to fund pilot work, send letter to Cardiac Funders Forum to support setting up a response-mode funding scheme.
4. The Network could co-ordinate responses to consultations to give greater impact e.g. proactive collective response to NICE guidelines
5. Essential to continue to strengthen links with the Cardiac Networks so that research priorities can be identified and research findings fed back to the Network
6. Develop and strengthen links with other research networks
7. Group members to develop bids for external funding
8. Establish a Cardiovascular Research Register
9. Recruitment to on-going research projects and groups to be supported by advertising within the Network.

Adapted from: http://e2.doh.gov.uk/nwro/cvdisrdnet.nsf/0/5e15f2c12f85267880256d41004aa8e7/$FILE/Conference%20Report.doc (Accessed 9 March 2005)

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