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Summary

The needs of patients are changing: the UK population is ageing, the burden of chronic disease is increasing and diseases are becoming more complex and affecting multiple systems. Medical practice must respond rapidly to evolve the National Health Service (NHS) to meet these changing needs. There are significant opportunities to achieve this, such as a deeper understanding of molecular pathology, rapid technological developments, changes in the way in which health services are delivered and the greater involvement of informed patients in decisions about their own care. All of these rely on embedding health research and innovation throughout the NHS, to shorten the time taken to get research into practice.

The Government has recognised the benefits that research brings to the health service, and has recently put in place statutory duties to promote research across the reformed health service. It has also made strong commitments to improving the links between academia and the NHS. The Academy welcomes these announcements, which we regard as crucial to addressing future patient needs. If the government's ambitions are to be realised, then academic values and a spirit of enquiry and innovation must pervade the whole medical workforce. This requires a modified model of training that can:

- Equip all trainees with the professional judgement to interpret, apply, embed and evaluate innovation and research across the NHS.
- Develop and maintain a strong group of clinical academic leaders, who are able to: inspire and educate the next generation; lead basic, translational and clinical research to bridge the gap between bench and bedside and use medical advances to meet population need; encourage commercial sector investment in research in the NHS; and provide a key interface with industry and policy-makers.

Above all, the Academy believes that to sustain and strengthen research in the NHS, and to meet the Government's and Devolved Administrations' commitments to embed a culture of research, it is vital that the recommendations of the Shape of Training review do not create disincentives to academic careers in the constituent countries of the UK.

We therefore welcome the opportunity to inform this review of the shape of training and would urge the Expert Advisory Group to give careful consideration to the specific points outlined below.

Balance of the medical workforce

- A solid generalist foundation would improve doctors' breadth of clinical competence and enable them to retrain and move between specialties more easily as healthcare needs change, which would create a more adaptable workforce.
- Robust training in research awareness, critical appraisal, and the evaluation of evidence should be a fundamental component of all foundation training programmes. This would ensure that the whole NHS is underpinned by a wider research awareness and involvement and its application to clinical care.
- Academic endeavour and time spent in research must be valued if the NHS is to deliver benefits from the UK's investment in medical research. The UK must continue to nurture a strong clinical academic workforce that provides expert leadership for innovation.
- Any change in the balance between generalists and specialists must not deprive any part of the workforce of important academic capacity and leadership.

Flexibility of training

- Workforce planning must balance the pressures of service delivery against the need to provide a clear training pathway and protected research time for clinical academics.
- All training pathways must integrate research and clinical activity in a way which is adapted to the needs of individual trainees. For many disciplines, academic training is likely to continue well beyond the end of clinical training.
- To ensure that the academic workforce incorporates the most promising academics and future leaders, opportunities for research must be created and maintained throughout the whole training pathway, and beyond.
- Appropriate exit routes should be well defined for those who decide not to go further along the academic pathway. This should not be perceived as 'failure'; the research experience gained by these doctors will be a valuable asset in promoting research awareness and application within the NHS.
- The review should ensure that flexibility in the application of training guidelines is consistent across the UK, to improve the quality and delivery of care across all the constituent countries.

Patient needs

- In the current system, it is not clear what clinical trainees at different levels are professionally competent to perform.
- Trainees should be certified as competent in a particular role, when their current professional capabilities are assessed as sufficient for that role.

The breadth and scope of training

- The current system of time-based competency certified through the Certificate of Completion of Training (CCT) generates a rigid system in which trainees within disciplines move at the same pace. It does not accurately reflect the skill or proficiency of the individual trainee.
- Academic trainees must become competent in both academic research and clinical practice. They need sufficient time to achieve this.
- Acquisition of CCT should be based on demonstrable competence and all trainees should be actively involved in planning their progression to CCT.
- If the Review considers the option of earlier acquisition of the CCT, it should seek the views of funders on the impact on their research funding. Future funding structures must match research training opportunities.
- Unless there are clear pathways of career progression in clinical academia, which do not appear disadvantageous in terms of pay, conditions or security, there is a danger that academic careers will become unattractive.
- There must be sufficient opportunities for advancement to senior clinical academic posts. This must include planning for an appropriate volume of postdoctoral opportunities.

Tension between service and training

- Clinical training needs to be balanced with service delivery. All trainees should be placed in service roles appropriate to their level of training and given suitable opportunities to gain competencies.
- Academic trainees broadly require the same training balance as non-academic colleagues, including a mix of community/hospital and District General Hospital/Specialist hospital experience, although flexibility may be required to maintain their contact with research.

Introduction

The Academy promotes advances in medical science and campaigns to ensure these are translated into healthcare benefits for society. One of the Academy's key strategic goals is to develop the next generation of leading biomedical researchers by working to ensure the development, protection and promotion of careers for academics and encouraging good practice in training and development. We consider the content of postgraduate medical education and training to be of key importance. Our response focuses on the academic aspects of training; however it also takes into account wider issues where they have a close relationship with research.

Our elected Fellows are the UK's leading medical scientists from hospitals and general practice, academia, industry and the public service, some of whom have contributed to this response. Their views have been supplemented by perspectives from academic trainees. **We would be delighted to provide further detail through oral evidence.**

Theme 1: Balance of the medical workforce

1. Over the next 30 years, how do you think the way patients are cared for will change?

The next thirty years will see significant changes to the nature of patient care, including:

- *The move to outpatient or community care:* The UK has an ageing population and an increasing burden of chronic disease. General practice will need to provide a wider scope and range of services in the community or at home to meet these changes.
- *Changes to the delivery of healthcare:* Ongoing evolution in the delivery of medical care, for example via telecare and telehealth services, will present continuing challenges to ensure that care is delivered in the most effective and efficient way possible.
- *The shift to precision medicine:* We are gaining an ever deeper understanding of the molecular basis of health and disease. This knowledge offers significant opportunities to evolve clinical practice and better individualise patient management. However, this will also place new demands on medical professionals, particularly leaders and innovators, who will need to keep abreast of the evolving scientific understanding of medicine to drive improvements in care.
- *Rapid technology change:* Ongoing technological developments, such as changes in surgical interventions, will make ongoing training essential to maintain the skills of the medical workforce and ensure the dissemination of best practice.
- *Greater patient choice and access to information:* The Government has made commitments to providing patients with more information and greater choice. This, combined with greater access to information via the internet, is enabling patients and carers to acquire greater expertise and knowledge about their condition. 'Expert' patients are able to take more control over their health by understanding and managing their conditions and have changing expectations of their interactions with health professionals.

2. What will this mean for the kinds of doctors that will be needed in primary care? In secondary care? In other kinds of care?

The changes outlined in question 1 will provide a huge opportunity to improve patient care, but will require different skills and ways of working. General practitioners (GPs) will need the ability to consult specialists, who can provide advice and expertise, to enable efficient diagnosis and treatment. In parallel, as the number of hospital sub-specialties grows in line with scientific and technological advances, there will be an increased need for hospital generalists, or 'generalist-specialists'. They will oversee the care of acutely unwell patients and those with relatively undifferentiated symptoms, and determine the most appropriate sub-specialist care for the patient. All trainees will need to develop sufficiently broad clinical expertise to understand each

other's roles and to communicate effectively with one another to ensure that patients receive the most appropriate treatment.

As the evidence base expands, it will also be essential that all doctors have a strong grounding in research methods so that they have the skills to access, apply and evaluate new knowledge and can contribute fully to the development of health services. This will only happen if academic values and a spirit of enquiry and innovation pervade the entire medical workforce. Doctors must also take opportunities to link with other relevant disciplines, such as informatics and engineering.

3. What do you think will be the specific role of general practitioners (GPs) in all of this?

The changes outlined above in questions 1 and 2 mean that general practice will need to adapt. The service provided by GPs has already grown considerably, with many practices including new care options for patients. In line with the findings of research commissioned by the King's Fund, we consider that general practice has a vital role to play in coordinating the care of people with more complex needs, including acting as a patient's advocate and navigator across primary, secondary and social care.¹ This will mean that practices need to triage patients to ensure that available staff and services are used most efficiently and effectively. GPs may need specialist support during the consultation process, during care planning, and in ongoing care, to help patients manage their own illness. In England from April 2013, the dual role of general practice as both commissioner and provider of care will bring new challenges. GPs will need to work with specialists in a variety of different ways, which may include commissioning sessional services from specialists, working in an integrated team, or differentiating activities across a pathway of care. In the Devolved Administrations (DA) the Health Boards will need to oversee this collaboration and the integration of health and social care.

4. If the balance between general practitioners, generalists and specialists will be different in the future, how should doctors' training (including GP training) change to meet these needs?

Meeting these future challenges will be helped by developing a workforce with a solid generalist foundation. A broad training would improve doctors' breadth of clinical competence and allow doctors to retrain and move between specialties as healthcare needs change. However, for the reasons outlined above, this should not detract from the need for specialists. Rather, we welcome an approach that provides effective triage through a generalist service and delivers quicker access to an appropriate specialist or team. A cadre of well-trained generalists will be essential to underpinning this triage approach. It will ensure that more doctors have the ability to recognise a full range of disease presentations that occur outside of their chosen speciality, and to make appropriate referrals. We note the definition of 'generalist' is open to a number of interpretations: it will be important that there is clarity in the review on the definition of generalist being used in the discussion and report. At the point of specialisation, there must also be greater capacity for specialty curricula to be changed to ensure that the training of future generations of doctors continues to meet changing patient needs. The Royal Colleges could devise a system that recognises and accredits relevant prior learning in different specialties, where doctors choose to move between specialties. This will create a more adaptable workforce.

To improve patient care, all doctors will need a broad range of skills, including a sound scientific grounding in areas such as clinical study design, genetics, molecular biology and clinical informatics. The ability to understand and apply relevant research, including epidemiological data and clinical trials, should be an essential requirement for all doctors. This will allow them to interpret data for investigation and treatment, to explain the advice to patients, and to evaluate

¹ King's fund (2011). 'Improving the quality of care in general practice: Report of an independent inquiry commissioned by The King's Fund.' <http://www.kingsfund.org.uk/publications/improving-quality-care-general-practice>.

the effectiveness of healthcare delivery. **The Academy recommends that robust training in research awareness, critical appraisal, and the evaluation of evidence should be a fundamental component of all foundation training programmes. This will embed a greater awareness of research across the medical workforce.** Research-awareness should be fostered by including more formal academic components in the curricula, which must be adequately assessed during appraisal.

5. How can the need for clinical academics and researchers best be accommodated within such changes?

Academic endeavour and time spent in research must be valued if the NHS is to deliver benefits from the UK's investment in medical research. The UK must continue to nurture a strong clinical academic workforce that provides expert leadership. Currently, most clinical academic research is undertaken within specialist pathways. Hospital trainees following research careers will be more likely to develop highly specialised clinical skills, and therefore to enter specialist roles. In addition, given that their research commitments will demand that they spend less time carrying out clinical duties, it may be more appropriate for them to spend their clinical time delivering specialist care, rather than offering generalist care. However, as clinical care moves more towards a community setting or intermediary facilities, it is important that clinical academics work in those settings too. Doctors providing more generalist care will need to acquire research skills applicable to a generalist and population-based approach. **It is vital that a shift towards generalist care does not inadvertently deprive the specialties of important academic capacity and leadership, but also that generalist pathways are attractive to academics.** We must ensure that academic opportunities are available and attractive within both specialist and generalist training routes.

Trainees are more likely to pursue research careers if they work in an environment where they are exposed to research. Data collected by the Wellcome Trust about its Research Training Fellowship scheme suggest that early research experience better prepares individuals for future applications for research fellowships and ultimately an academic career.² It is vital that trainees experience research early in their careers (ideally from medical school onwards) both to inform future choices and, more broadly, to generate a research aware workforce.

Theme 2: Flexibility

***6. How would a more flexible approach to postgraduate training look in relation to:
a. Doctors in training as employees?***

The Academy's response is outlined under questions 6b and 6d.

b. The service and workforce planning?

Long-term workforce planning

There are likely to be many short-term pressures on the training pathway, such as the need to increase efficiency and find savings, the introduction of health reforms, and the move to having service providers in England and the DAs play a greater role in education and training. However these pressures must not detract from the long-term importance of high-quality postgraduate training. This requires UK-wide coordination and regulation, for example in determining training numbers, but flexibility in the application of training guidelines at the local level, as detailed in question 6d.

As we highlight in our forthcoming report on '*Strengthening academic psychiatry*', we must maintain strong clinical academic specialties, including psychiatry, when considering moves to reshape the medical workforce to meet the changing needs of patients and health services.³ To

² Wellcome Trust (2012). Data sent in personal communication courtesy of Dr John Williams.

³ Academy of Medical Sciences (in press). '*Strengthening academic psychiatry*'.

achieve this, workforce planning must take account of the uneven distribution of centres of excellence and academic training opportunities across the UK. **Workforce planning must balance the pressures of service delivery against the need to provide a clear training pathway and protected research time for clinical academics.**

Training needs and service delivery

All training pathways must integrate research and clinical activity in a way which is adapted to the needs of individual trainees. Academic trainees need to be able to take time out of the clinical pathway for research training and re-enter at an appropriate point. At a local level, trainee rotations must allow for flexibility, to account for trainees who take time out of the clinical training pathway, including time to pursue research activities. Currently, Fixed Term Specialty Training Appointments (FTSTAs), and ad hoc vacancies, such as Locum Appointments for Training (LATs), provide this flexibility. However, we understand that in some specialties consideration is being given to the phasing out of LAT posts. Were this to happen it would make it harder for trainees to obtain permission to carry out full time research, as it will be more difficult to cover their absence.

In Scotland, Wales and Northern Ireland, some academic specialist training posts are incorporated into 'run-through' academic programmes. This allows a longer-term view of workforce planning, which can take account of individuals' advance plans to move in or out of the pathway. However, while this helps in planning service delivery, it means that individuals are often selected early in their training for the limited number of academic posts. Currently the use of multiple academic training models in Scotland and Wales can accommodate those coming to research late in their training. However, the blanket adoption of any run-through model could prevent such late entry. A balance needs to be struck between planning service delivery and ensuring that the most promising academics have successful career pathways.

c. The outcome of training – the kinds and functions of doctors?

The Academy's response is outlined under questions 6b and 6d.

d. The current postgraduate medical education and training structure itself (including clinical academic structures)?

Opportunities for developing a clear and coherent approach to academic training

For the reasons outlined above, a well-defined yet flexible career path is essential to nurture future clinical academics. We have seen significant improvements in the structure of postgraduate academic training, such as those provided by the National Institute for Health Research (NIHR) Integrated Academic Training Programme (IATP). This has enabled some trainees to take time out of clinical training for academic training periods. The programme allows them to re-enter the clinical pathway after periods in research and to balance their clinical and academic duties. However, we consider that referring to periods of research training as 'out of programme' is not helpful. This does not acknowledge the vital benefits that research training and health research bring to the NHS. We would encourage the review team to consider a more appropriate term, such as 'research training'.

Further, data from the Wellcome Trust's Research Training Fellowship scheme indicate that there is significant interest in academic research among individuals outwith the structured research training programmes in the NHS.⁴ **To ensure that the academic workforce incorporates the most promising academics and future leaders, we should maintain a system in which research opportunities exist throughout the training pathway, and beyond.** There should be clear pathways for later entry to the academic career path. The NHS Research Scotland Career Researcher Fellowship scheme is a good example of efforts to broaden opportunities. It enables NHS clinicians in Scotland, even those with relatively limited research experience, to develop a

⁴ Wellcome Trust (2012). Data sent in personal communication courtesy of Dr John Williams.

research career later in life, by funding protected time for research activities. The ability to access research training in later career stages is particularly pertinent for disciplines such as general practice, where clinical training is normally completed some years before academic training. **There should also be well-defined exit routes for those who decide not to progress further along the academic pathway, which may attract greater numbers of trainees into broader based research experiences.** This should not be perceived as 'failure'; the research experience gained by these doctors will be a valuable asset in promoting research awareness within the NHS.

Ensuring that flexibility in the application of training guidelines is consistent across the UK

The review should ensure that research training can deliver improvements in the quality and delivery of care in healthcare settings across all the constituent countries of the UK, and that barriers creating inflexibility in the application of training guidelines are addressed. To deliver this flexibility, there must be cooperation between research funders and the structures managing education and training locally, such as the emerging local education and training boards (LETBs) in England, which will subsume the postgraduate deaneries. There are many examples of best practice. Unfortunately, there is inconsistency at the local level as to whether flexibility in the application of training guidelines is permitted, primarily because the current deaneries and Health Boards work in a highly regulated environment. We consider that the current changes to education and training structures in England offer a valuable opportunity to develop a coherent approach to academic training, provided that there is effective communication with the DAs.

We welcomed the inclusion of a duty on Health Education England (HEE) 'to have regard to the need to promote research' in the recent draft Care and Support Bill, although we recommended that this could be strengthened.⁵ We would urge HEE to encourage flexibility in the application of training guidelines, to allow trainees to pursue research. The LETBs need to ensure consistency in good practice across England. In particular, trainees who are awarded academic grants and fellowships should have the right to take these up, and be supported as they balance their clinical and academic duties, to maximise outcomes from their research. They must not be disadvantaged when returning to clinical training or precluded from applying for future clinical posts whilst in research. We recognise that achieving this will be challenging and requires motivation and commitment from NHS employers.

To support research effectively as an NHS constitutional priority, the LETB structures must include strong academic representation. We would support the creation of a research champion in each LETB to support academic trainees. We understand that some medical school deans will be included in the governing boards of LETBs and we believe that this should be a generally accepted principle. It will also be important to have a mechanism of UK-wide appeal for academic trainees and for directors of the IATP, where there are local issues regarding flexibility of training or the priority given to academic training.

Geographical considerations

Geographical flexibility is important. Clinical training often requires moves between different locations. However, for academic training, it is often beneficial for trainees to be attached to an academic unit throughout training. It can be difficult to transfer research to a new location, for example where it involves regular contact with patients, or access to highly specialised expertise or equipment. Conversely, for some trainees, academic mobility is highly desirable, but it can be very difficult to generate support for this through the current deaneries. Flexibility could help in such circumstances.

⁵ Academy of Medical Sciences (2012). *Response to the consultation on the draft Care and Support Bill*. <http://www.acmedsci.ac.uk/p100puid256.html>.

Theme 3: Patient needs

7. How should the way doctors train and work change in order to meet their patients' needs over the next 30 years?

The Academy's response is outlined under questions 2-4.

8. Are there ways that we can clarify for patients the different roles and responsibilities of doctors at different points in their training and career and does this matter?

In the current system, it is not clear what clinical trainees at different levels are professionally competent to perform. The existing simple distinction between 'in training' and 'training completed' can cause confusion to patients. It does not reflect the competence of trainees to provide a given service or procedure. In a health service that is being reformed based on the principles of greater transparency and patient involvement, patients and their families, as well as the doctors themselves, must have clarity on professional capabilities and competencies.

9. How should the rise of multi professional teams to provide care affect the way doctors are trained?

The Academy's response is outlined under questions 2-4.

Theme 4: The breadth and scope of training

10. Are the doctors coming out of training now able to step into consultant level jobs as we currently understand them?

The Academy's response is outlined under questions 2-4.

11. Is the current length and end point of training right?

The current system of time-based competency certified through the Certificate of Completion of Training (CCT) generates a rigid system in which trainees within disciplines move at the same pace. It does not accurately reflect the skill or proficiency of the individual trainee. Academic trainees must become competent in both academic research and clinical practice. They need sufficient time to achieve this. Different academic trainees will balance their academic and clinical training differently. We are therefore very concerned that in some cases, trainees are constrained by a requirement to achieve competencies by a particular time. In the craft specialties this is exacerbated by requirements around the number of procedures performed.

The challenges are compounded by limitations of the European Working Time Directive, and often by other circumstances, such as family commitments. The comparatively small number of female clinical academics is of great concern to the Academy of Medical Sciences. There must be sufficient flexibility to enable all trainees to balance their clinical and research workloads with commitments outside medicine.

All trainees, irrespective of their training portfolio, should be equitably assessed and only passed as 'competent' when merited. However, **the acquisition of CCT should be on the basis of demonstrable competence, rather than 'time served'**. This would enable better management of clinical and academic training, and would address the issue that length of training and inflexibility are disincentives to research careers. **Trainees should be supported to be actively involved in planning their acquisition of clinical competencies and their progression to CCT.** This planning should address whether further development is needed in particular areas. If an individual holds a research training grant that continues beyond the point of CCT, they must be permitted to fulfil this commitment as part of their research training.

Trainees should be certified as competent in a particular role, when their current professional capabilities are assessed as sufficient for that role. Clinicians may choose to acquire and maintain different levels of expertise. Competency certification processes need to accommodate this and support those clinicians who want to develop a more specialist practice. Academics could pursue specialist practice in focussed clinical areas of particular relevance to their research, without necessarily demonstrating competence across the entire range of a specialty.

We welcome the General Medical Council's (GMC's) activities to explore options for dual CCT, which are likely to be attractive to academic trainees in some disciplines and specialties. For example, areas of public health research such as epidemiology and clinical trials are highly relevant to research in other specialties, but are often restricted to this one specialism and not accessible to others. Other examples of dual specialty training that would better support academic trainees include Nuclear Medicine & Radiology, Allergy & Respiratory Medicine, Intensive Care & Acute Medicine and Public Health & Infectious Diseases. We recognise the challenges of developing dual CCT and welcome the GMC's ongoing work to broker a solution.

12. If training is made more general, how should the meaning of the CCT change and what are the implications for doctors' subsequent CPD?

Earlier acquisition of CCT

It is our impression that one model under consideration by the review is an initial period of generalist training, followed by earlier acquisition of CCT. As noted earlier, we welcome a system in which moving between specialties could be easier. However, the implications of a shorter training period and consequently of earlier entry to the consultant/post-CCT grade must be fully considered. There would be particular implications for academic trainees.

At present, much research training is carried out while doctors are still clinical trainees. For most, this aligns clinical and academic competencies, allowing individuals to progress to posts after their CCT where they can establish their own research group as well as holding an Honorary Consultant contract. Where research funders contribute towards salary costs for research training, they do so mostly at the clinical trainee grade. In addition, where clinicians leave to study for a PhD, their salary usually remains more or less in line with that of a specialist trainee. If doctors obtain CCT at an earlier stage, careful consideration will need to be given to the linkage between obtaining CCT and becoming a consultant and to the associated remuneration arrangements. If a shorter clinical training period were to result in more research training being conducted post-CCT, research funders may not be able to maintain the current volume of awards offered if they had to reimburse higher salary costs. This could decrease the number of PhD opportunities available to clinicians.

Alternatively, research funders may restrict salary reimbursement for PhD training to current pre-CCT levels. Consultants may then be reluctant to enter PhD training or post-doctoral training when they are able to command a post-CCT salary in their clinical practice.

The recent review of compensation levels, incentives and the Clinical Excellence and Distinction Award schemes for NHS consultants recognised that the quality of research and innovation in the NHS could deteriorate if clinical academics were not properly rewarded.⁶ **We would encourage the review team to consider the implications of earlier CCT acquisition carefully and to consult with research funders to establish under what conditions they could continue to provide important funding for research training.**

For the reasons outlined in question 6, it is challenging to maintain the momentum of research alongside clinical training. Pursuing a clinical academic training career pathway already takes substantially longer than clinical training alone. Earlier acquisition of the CCT would further

⁶ Review Body on Doctors' and Dentists' Remuneration (2012). 'Review of compensation levels, incentives and the Clinical Excellence and Distinction Award schemes for NHS consultants'. http://www.ome.uk.com/ddrb_reports.aspx.

differentiate the two pathways, and would make retention of trainees in research pathways challenging. **Unless there are clear pathways to success in clinical academia, which do not appear disadvantageous in terms of pay, conditions and security, there is a danger that academic careers will become unattractive.**

Continuing Professional Development

As highlighted in question 8, the existing simple distinction between 'in training' and 'training completed' inadequately reflects the competence of trainees to provide a given service or procedure, or the drive of the universities and the GMC to establish a culture of 'lifelong learning' in medical graduates. Continued learning and development post-CCT is essential, especially as much of this learning will relate to scientific developments and emerging research findings. The possibility for this to lead to the attainment of an 'enhanced specialism' merits consideration.

It is important to recognise that for some individuals, and for most trainees in particular disciplines (such as academic general practice), research training will take place after they have achieved CCT. Currently academic GPs find training structures too rigid, especially as they often feel the need to acquire additional clinical experience on completion of three years' vocational training. The flexibility that we have called for in all disciplines is therefore particularly important for academic GPs. We note proposals by the Royal College of General Practitioners to increase clinical vocational training for GPs from the current three years to four years, which were supported by Medical Education England in September 2012. We welcome this proposal, which would increase the opportunities for GPs in training to experience the benefits of research.

13. How do we make sure doctors in training get the right breadth and quality of learning experiences and time to reflect on these experiences?

The Academy's response is outlined under questions 4, 6b, 6d 11.

14. What needs to be done to improve the transitions as doctors move between the different stages of their training and then into independent practice?

The postdoctoral academic training 'pinch-point'

To ensure a strong clinical academic workforce, there must be sufficient opportunities for advancement to senior clinical academic posts. However, there is currently a 'pinch-point' in academic training, at the stage of postdoctoral research. By this point, trainees will have already spent at least three years away from clinical duties undertaking a PhD and there is pressure to return to clinical training. Consequently, postdoctoral work must be undertaken alongside clinical work. Given the competitive nature of research, it is no longer possible for trainees to progress from a PhD/MD directly into a permanent university post such as a lectureship without significant postdoctoral training. However, it is very challenging to maintain the momentum of a research career, while also maintaining a clinical workload. The outcome is frequently that trainees emerge with a CCT without adequate postdoctoral experience to be competitive for prestigious externally funded Intermediate Fellowships/Clinician Scientist Fellowships, which enable the transition from postdoctoral to independent researcher.

Trainees who wish to pursue an academic pathway need to obtain sufficient postdoctoral research experience. To achieve this, there should be clearly defined structures that allow trainees to integrate their specialty training with high quality postdoctoral research training. As we highlight in '*Strengthening academic psychiatry*', government, Higher Education Institutes, the NHS and research funding organisations must collaborate to ensure that clinical academic training numbers are balanced by opportunities for advancement to senior clinical academic posts.⁷ The Shape of Training review should consider whether the volume of postdoctoral opportunities currently available is adequate.

⁷ Academy of Medical Sciences (in press). '*Strengthening academic psychiatry*'.

Theme 5: Tension between service and training

15. Have we currently got the right balance between trainees delivering service and having opportunities to learn through experience?

Clinical training needs to be balanced with service delivery. All trainees should be placed in service roles appropriate to their level of training and given suitable opportunities to gain competencies. For academic trainees, achieving this balance is challenging, because they must deliver the necessary clinical service, and complete both their clinical training and their research work. In principle, academic trainees require the same balance of training opportunity as non-academic colleagues, including the appropriate mix of community/hospital and District General Hospital/Specialist hospital experience. However, as outlined in question 6d, this must take into account individual trainee needs for geographical flexibility.

16. Are there other ways trainees can work and train within the service? Should the service be dependent on delivery by trainees at all?

The Academy's response is outlined under question 15. In addition there has been a tendency for acquisition of responsibility to be pushed later into the doctor's career. Appropriate earlier assumption of professional responsibility under clear supervisory arrangements would accelerate the development of all trainee doctors and increase their fulfilment in their trainee role.

General questions about the shape of training

17. What is good in the current system and should not be lost in any changes?

The quality of clinical academic training in the UK is generally high and its schemes continue to produce clinician scientists who are internationally competitive. In particular:

- We have seen significant improvements in the structure of postgraduate academic training as a result of important efforts by the NIHR and of other research funders.
- The NIHR Biomedical Research Centres and Biomedical Research Units have made significant progress towards establishing research at the heart of the NHS.
- The DAs have developed imaginative and successful models of run-through training, through their funding of existing and new PhD programmes.
- The collaboration between the Higher Education Funding Council for England and local NHS trusts created 200 clinical senior lectureship awards for clinical academics in medicine and dentistry. We would strongly support the continuation of such a scheme.
- We should also ensure that trainees continue to benefit from academic mentors and research supervisors. The Academy is proud of its mentoring programme, supported by the NIHR, which provides one-to-one mentoring by Academy Fellows for Clinical Lecturers and Clinician Scientist Fellows.

Any changes to training should enhance these strengths and create a new education and training architecture that further encourages and rewards academic excellence and develops a research-aware workforce.

18. Are there other changes needed to the organisation of medical education and training to make sure it remains fit for purpose in 30 years time that we have not touched on so far in this written call for evidence?

There are particular issues in some specialties that need to be addressed and we would highlight public health in particular. Under the new arrangements for public health, practitioners will move into a range of new working environments, including Local Authorities (LAs), Public Health England (PHE) and universities, whilst some will remain in the NHS. We recognise the potential benefits of aligning public health with LA structure; however, LAs are much less familiar with clinical research. This will create challenges across the board and especially for clinical academic careers as roles

become less embedded in a research-active environment. PHE will have a major role to play in supporting the development and maintenance of academic public health.

In progressing the review, and in the future evaluation of postgraduate medical education and training, we would emphasise the importance of a robust evidence base. This should include consultation with medical trainees and consideration of comparisons at the international level and with other professions, particularly in terms of how flexibility and assessments of competence are handled. We would also stress the importance of exploiting rapid developments in technology to embrace new ways of learning. However, none of these changes should detract from the importance of face-to-face learning in both clinical and academic settings.

We are grateful to the Academy Fellows and other experts who have contributed to this response. For further information, please contact Catherine Luckin (catherine.luckin@acmedsci.ac.uk; 020 3176 2166).

Academy of Medical Sciences

The independent Academy of Medical Sciences promotes advances in medical science and campaigns to ensure these are translated into benefits for patients. The Academy's Fellows are the United Kingdom's leading medical scientists from hospitals, academia, industry and the public service.

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