

# THE FUTURE NEED FOR SPECIALIST OCCUPATIONAL PHYSICIANS IN THE UK

A REPORT BY THE FACULTY OF OCCUPATIONAL MEDICINE

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## SUMMARY

This paper considers the need for specialist occupational physicians in the UK over the next decade and the implications for recruitment and training of new specialists over that period taking into account expected losses of existing specialists through retirement. It is informed by a consultation with the Membership and a questionnaire survey.

Many different professions contribute to the delivery of occupational health care nationally, overlapping to a varying degree in the range and depth of their training and skills. Specialist occupational physicians are among the most highly paid of these professions, and the higher cost of employing such doctors can only be justified for roles which cannot adequately be undertaken by other staff paid at lower levels.

Specialist occupational physicians possess a unique combination of skills. The distinctive knowledge and skills of specialist occupational physicians are particularly useful in a number of situations – notably, the management of complex occupational hazards and of complex health impacts on fitness for work, provision of occupational health care for doctors and other health professionals, management of environmental hazards associated with industrial activities, leadership of occupational health services, development of policy relating to work and health, occupational health research, and training of occupational health staff.

Taking into account the skills offered by specialist occupational physicians and the scope for some tasks to be undertaken by other, less expensive personnel, estimates are made of the full-time equivalents (FTEs) of specialist occupational physician resource that are needed nationally to provide for different industrial sectors. The figures derived assume that services are delivered efficiently, but make no assumptions about whether the specialists are employed in-house or through outsourced services. Estimates are made both of the *appropriate* provision and of *potentially achievable numbers in the short-term*. The latter take into account the current affordability to employers and the likely willingness to pay, while the former are more closely aligned with the Faculty's appraisal of what is really needed. These figures are set against estimates of the numbers of FTEs that specialist occupational physicians currently provide in each industrial sector, which were derived from a survey of FOM Members and Fellows carried out in April 2011 (68% response rate).

When summed across industrial sectors, the figures suggest that ideally some 1,211 full-time equivalents (FTEs) of specialist time would be available in the UK. However, taking into account the likely availability of funding by employing organisations, a more realistic estimate of the commitment needed over the next 5-10 years is 527 FTEs. This represents an increase of 23 FTEs over the estimated current provision.

In total 187 responders in the 2011 FOM workforce survey (152 FTEs) indicated that they planned to reduce their work in occupational medicine substantially over the next five years. To replace the loss of specialist manpower that this implies will require approximately 171 new specialists – i.e. an average of ~34 new specialists per year. To deliver the extra 23 FTEs that realistically are needed over the next 5-10 years will require a further 26 new specialists – i.e. 2-3 per year over 10 years.

This suggests that in total, we should aim to recruit some 37 new specialist trainees per year over the next five years – a figure well above the recent annual intake of approximately 15 new trainees.

## Introduction

In 2010, the Faculty published a strategy for the delivery of occupational health care nationally over the next decade<sup>1</sup>. In the context of that strategy, this paper considers the future need for specialist occupational physicians in the UK. It is important for the Faculty to have a clear and well-justified position on the numbers of occupational physicians needed and the roles that they should undertake, both to support workforce planning and also to optimise the delivery of training.

The paper begins with a short review of the various professions that contribute to the delivery of occupational health care nationally, and identifies the particular skills and competencies that are offered by specialist occupational physicians. It then considers the circumstances in which the special skills and abilities of occupational physicians are most needed. Next, it explores in more detail the roles that cannot be undertaken more efficiently by other (generally less costly) personnel with different skill-sets, and which therefore should be performed by specialist occupational physicians. With this background, estimates are made of the numbers of occupational physicians that will be required to cover different sectors of the working population. Finally, the implications for recruitment and training of occupational physicians are examined.

A distinction is drawn throughout between the provision believed to be potentially achievable over the short-term (in the next 5-10 years), taking into account the likely availability of funding by employers to engage the services of specialist occupational physicians, and the appropriate or required provision according to the Faculty's appraisal of needs (recruitment to this level would represent a longer-term goal). The estimated current number of FTEs is given for comparison.

Current and projected numbers are based upon a judgement by the Faculty, informed by a detailed consultation with its Membership.

## Professions that deliver occupational health care and the particular skills and competencies of specialist occupational physicians

Specialist occupational physicians are only one of many professional groups that contribute to the delivery of occupational health care in the UK. Others include:

- Non-specialist occupational physicians (including GPs who carry out sessional work in occupational health, some of whom hold the DOccMed qualification, and a much smaller number of doctors who hold the AFOM and are trained in occupational medicine to a higher level but are not accredited specialists<sup>2</sup>).
- Occupational health nurses
- Occupational health technicians
- Occupational hygienists

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<sup>1</sup> [http://www.facocmed.ac.uk/library/docs/pp\\_natstrat.pdf](http://www.facocmed.ac.uk/library/docs/pp_natstrat.pdf)

<sup>2</sup> The AFOM qualification is no longer awarded, and therefore this group of doctors will diminish over time.

- Ergonomists
- Safety professionals
- Physiotherapists
- Occupational therapists
- Occupational psychologists
- General practitioners working in primary care
- Physicians specialising in disability assessment and rehabilitation
- Other specialist physicians (e.g. in respiratory medicine and dermatology)
- Addiction specialists
- Counsellors

Each of these professional groups is unique, although they overlap to a varying degree in the range and depth of their training and skills. For some (e.g. physicians specialising in rehabilitation), training is fairly standardised, but for others (e.g. safety professions), it is much more variable. The professions also differ in their remuneration, in part reflecting differences in the levels of their training and skills. Like other doctors, occupational physicians are among the most highly paid. This higher cost can only be justified for roles that cannot adequately be undertaken by other staff paid at lower levels.

In considering the need for specialist occupational physicians, it is therefore important to define the particular skills and competencies that they offer as compared with other occupational health professionals.

### **1. Broad Medical Knowledge**

Occupational physicians have a broad knowledge of diseases and illnesses, including their causes, diagnosis, treatment and prognosis. This knowledge is shared with other doctors, but is wider and more detailed than that of occupational health nurses and other non-medical occupational health professions.

### **2. Specialised Knowledge and Skills Concerning the Inter-relation of Work and Health**

The specialised knowledge of occupational physicians encompasses occupational causes of injury, disease and illness, and also the impact of health problems on capacity to carry out occupational tasks safely and effectively. For some occupational physicians this extends to an advanced understanding of the medical aspects of specific areas of work – e.g. aviation medicine, hyperbaric medicine. Along with this knowledge go skills in the identification, assessment and control of occupational hazards to health, and in the assessment and placement at work of people with short- and long-term health problems.

Occupational health nurses and non-specialist occupational physicians share some of this knowledge and some of the associated skills, but not to the same depth as is required of specialist occupational physicians. Occupational hygienists and ergonomists have special skills in the assessment and control of hazardous exposures (chemical/physical and ergonomic respectively) in the workplace, which in some areas go beyond those of most specialist occupational physicians. However, they do not have the same understanding of the injuries and diseases that can result from such exposures, which is relevant, for example, to health surveillance. Safety professionals also have skills in the control of hazardous exposures in the workplace, and particularly in the application of workplace health and safety regulations. However, their training is generally more limited than

that of specialist occupational physicians, occupational hygienists and ergonomists, and includes little coverage of health and disease. Professions concerned with rehabilitation (physiotherapists, occupational therapists and physicians specialising in rehabilitation) have special skills in the assessment and management of disability, but are generally less familiar than occupational physicians with the special physical and mental demands of different jobs and working environments. Addiction specialists (doctors and others) have varied training depending on their underlying profession. Those working within a specific industry (e.g. airlines, railways) have a close understanding of the particular safety critical requirements of that industry. The training for counsellors is also varied, but those working within an occupational health team will understand the mental health requirements and risks of relevant working environments.

### **3. Familiarity with Workplaces and the Organisation of Employment**

Specialist training in occupational medicine requires experience of a variety of industries, occupational environments and organisational cultures. Specialist occupational physicians have the skills to assess workplaces and jobs for their health hazards and health demands, and are used to interacting with both managers and employees (including trades union representatives). They also have a good understanding of the law relating to occupational health and safety, and (although in not quite the same depth) to employment. This element of their training sets specialist occupational physicians apart from other doctors (including non-specialist occupational physicians), and also from the rehabilitation professions (e.g. physiotherapists and occupational therapists). The breadth and depth of their knowledge and experience of working environments, employing organisations and relevant legislation is generally greater than that of other occupational health professions.

### **4. Skills in Health Promotion**

The workplace offers special opportunities for the encouragement of healthy lifestyles, and this can have benefits for employers in improved staff morale and productivity and reduced sickness absence. Specialist occupational physicians are trained in methods of health promotion. Occupational health nurses also have expertise in this area, but it falls less within the ambit of other occupational health professions.

### **5. Scientific Knowledge and Understanding**

Specialist occupational physicians have a broad knowledge of the sciences underpinning occupational health practice, including epidemiology, toxicology, ergonomics, radiation biology and physiology. Some have advanced expertise in one or more of these fields. Other professions may also have particular expertise in one or other of these sciences, but none has the same breadth of knowledge and understanding as is expected in specialist occupational physicians.

### **6. Independent Decision-making**

Like other doctors, specialist occupational physicians have the ability to evaluate and manage complex, non-routine problems, applying analytical skills and a willingness to take responsibility. Where decisions require wider authority, they are able also to marshal relevant evidence in coherent oral briefings or written papers, and to persuade others to adopt a recommended course of action. In general such skills are not as well developed in other occupational health professions, although there are, of course, individual exceptions.

## **7. Professional ethics**

Clinical practice in occupational health entails special ethical challenges. In particular, a difficult balance must sometimes be drawn between obligations to an individual patient, his/her employer, and the general public. These challenges apply not only to occupational physicians, but also to other occupational health professionals such as occupational health nurses and physiotherapists. However, specialist occupational physicians have the most extensive training in their management.

## **8. Leadership**

As part of their training, specialist occupational physicians are required to develop knowledge, skills and experience in the management of organisations and of staff. In conjunction with a capacity for independent decision-making, this suits them for leadership roles. Good leadership requires some personal attributes that cannot be taught, and not all specialist occupational physicians are good leaders. Moreover, there are natural leaders in all occupational health professions. In general, however, specialist occupational physicians tend to be more comfortable with, and better suited to, leadership roles in occupational health than most other professional groups. This is reflected in the relatively high proportion of specialist occupational physicians who currently hold senior management positions, both in the public and private sectors.

While individually none of the competencies that has been discussed is exclusive to specialist occupational physicians, the combination of skills that they offer is unique.

## **Circumstances requiring the skills of specialist occupational physicians**

The distinctive knowledge and skills of specialist occupational physicians are particularly useful in a number of situations.

### **1. Complex Occupational Hazards**

Some types of work are associated with complex and serious hazards to the health of workers, which cannot be satisfactorily managed simply by following pre-defined algorithms. Examples include work at unusually high or low barometric pressures, in extreme climates, with novel and potentially toxic chemical or physical agents (e.g. in the chemical industry), and involving significant risks of unusual adverse health effects, management of which would not come within the competence of most other doctors (e.g. pneumoconiosis, cyanide poisoning, blood-borne infections).

### **2. Complex Health Impacts on Fitness for Work**

Some types of work require special standards of medical fitness because of risks to the safety of the worker and/or the wider public. Examples include flying, driving trains, and work in healthcare that entails exposure-prone procedures. Individual decisions on medical suitability for such work can be far from straightforward, but must be defensible if challenged, especially in the context of increasingly stringent legislation to prevent unjustified discrimination in employment.

Difficult decisions may also arise in the assessment of current and future fitness for work in order to determine eligibility for ill-health retirement pensions. Even where safety is

not a concern, such decisions can have major financial implications. And again, they are liable to legal challenge, and thus must be defensible and as far as possible, evidence-based. In some contexts (e.g. the local government pension scheme), decisions on ill-health retirement must be carried out within a prescribed statutory framework, and an opinion from a doctor qualified in occupational health is required by law.

Judgements about fitness for work require broad medical knowledge of injury, disease, illness and associated disability, coupled with an understanding of the mental and physical demands of relevant jobs, and of any potential risks to safety if the worker has medical limitations.

### **3. Care of Workers with Special Medical Knowledge**

Good occupational health practice requires that the occupational health professional has the confidence and trust of the various stakeholders with whom he/she interacts, including the worker(s) for whom he/she cares. Establishing confidence and trust can be more difficult where the worker is himself/herself trained in medicine or a related health profession, and it is particularly important that advice and decisions in the occupational health care of such individuals be clearly communicated and have a sound rationale. Often this will require the knowledge and skills of a specialist occupational physician.

### **4. Environmental Health Hazards Associated with Industrial Activities**

Some industrial activities expose the general public to known or suspected environmental health hazards. Examples include chemical pollutants released from smoke stacks or industrial accidents, extreme low frequency magnetic fields from power transmission lines in the electricity industry, and the risk of venous thrombo-embolism in airline passengers. Specialist occupational physicians are trained in the assessment of such hazards, and in the communication of associated risks. They are thus well placed to advise employers on their management, and on the handling of public perceptions about the problems.

### **5. Leadership**

As already described, through the breadth and depth of their knowledge, their skills in analysing complex problems, their training in management, and their willingness to take responsibility, specialist occupational physicians are often well suited to leadership roles. Such work may involve line management for an occupational health and safety team (e.g. in a large company or corporate provider of occupational health services), or the development of policies and guidance that can be followed by others (e.g. in central government).

### **6. Research**

Many scientific disciplines contribute to the research that underpins occupational health policy and practice, but some of this work requires a broad knowledge of work and health, combined with an ability to think imaginatively, the drive to pursue questions with purpose, and the skills to analyse and interpret findings rigorously. Some specialist occupational physicians meet this need in a way that other occupational health professions cannot. In addition, by virtue of their training, specialist occupational physicians are well placed to collaborate actively in research led by others. As part of this, they may be the first to recognise and draw attention to newly emerging risks that require research.



## 7. Training

So long as there is a need for specialist occupational physicians, there will also be a need to train them. While not all of this training needs to be delivered by occupational physicians, much of it cannot be provided by others. Some of the training will be delivered by academic centres, and some through supervision of practical work "in the field". Specialist occupational physicians also contribute importantly to the training of other occupational health professionals.

## Numbers of Specialist Occupational Physicians needed

In light of the discussion above, estimates are now made of the numbers of specialist occupational physicians that will be needed nationally in the years to come. Inevitably there are uncertainties in such estimates – even more so than for other medical specialities where employment is mainly in the NHS and demands are somewhat more predictable. Patterns of industrial activity nationally have changed substantially over the past 20 years with, for example, reduced employment in heavy engineering and mining, and increased employment of women. There have also been major changes in the delivery of occupational health care, with a shift from "in-house" to contracted-out services bringing some changes to the mix of work that specialist occupational physicians undertake. It is likely that further developments will emerge in the next 10 years, although their exact nature and extent cannot be predicted with confidence.

Nevertheless, there is a need to estimate future needs as far as possible. Specialist training for occupational physicians is expensive – both for the employers who support it and for the trainees themselves. If too many specialist occupational physicians are produced, resource will have been wasted and expensively educated doctors will have been diverted from other areas of employment where they could be more effective. On the other hand, if too few specialist occupational physicians are trained, important needs will be unmet.

Numbers are estimated for different industrial sectors in turn. The figures derived assume that services are delivered efficiently, but beyond this, do not make assumptions about where the specialists should be employed. For example, an occupational physician providing services to an NHS trust might be employed directly by the trust, or by a large contracted-out occupational health provider, or as an individually contracted consultant. Ultimately, the need for specialist knowledge and skills should be the same however that need is met.

The text that follows highlights particular reasons for input from specialised occupational physicians in certain industries. *In addition, however, all industries may benefit from the contributions that occupational physicians can make to improved productivity through general health promotion and through effective management of employees with health-related incapacity for work.*

In some cases (e.g. in agriculture), a need is identified for which there is no immediately foreseeable source of funding by employers; in other cases there is provision but the need is greater, exceeding the likely availability of funding in the short-term. In these

situations, separate estimates are given for the numbers of specialist occupational physicians that are actually required as judged by the Faculty, and the numbers for which funding in the job market is potentially achievable over the next 10 years.

By way of background, estimates are provided of the numbers of full-time equivalents (FTEs) that specialist occupational physicians currently provide in each industrial sector. These numbers are derived from a survey of FOM Members and Fellows carried out in April 2011 (Appendix A), and while they are subject to some uncertainty, in particular because the response to the survey was incomplete (68%), they are thought to be reasonably accurate in total, and for the larger individual sectors of activity.

## **Healthcare**

Work in healthcare (principally the NHS, but also private and charitable providers) entails many safety-critical tasks and exposure to various special occupational health hazards (e.g. infections, patient-handling, respiratory and dermal sensitisers). Furthermore, many of those who work in healthcare (either as managers or employees) are themselves trained in medicine or related disciplines, and need communication that is tailored to their special circumstances.

It is thus important to have adequate specialist input to occupational health services for healthcare workers – to plan and direct policy, to ensure that other occupational health staff understand it adequately, and to advise on the clinical and occupational management of difficult individual cases.

Currently some 112 FTEs of specialist occupational physician time are devoted to the healthcare sector, principally in NHS hospital trusts. The provision of services for staff in primary care (both medical and dental) is much more limited, although some occupational health departments in NHS hospitals also serve local general practices.

Based on referral load in well-organised NHS occupational health services, and taking into account the shortage of experienced senior occupational health nurses, who might take on some of the work currently undertaken by medical consultants, we believe that on average there should currently be at least one FTE specialist occupational physician for every 13,000 healthcare staff<sup>3</sup>. Allowing for the fact that some consultants will also be needed to carry out work for Government centrally, and to contribute to training of new specialists, this equates to some 120 FTE specialist occupational physicians in the UK as a whole. In the longer term, it might be possible to reduce this to 80 if adequate numbers of well-trained senior occupational health nurses were available and services were optimally configured. However, this is unlikely to come about in the next ten years.

## **Public Health**

In its strategy for delivery of occupational health care nationally, the Faculty has proposed the trial appointment of occupational physicians to local public health teams, where they would take the lead in protection of health at work and in the promotion of

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<sup>3</sup> NB This figure relates only to time for care of healthcare staff. Many NHS occupational physicians also provide services for other employers. Also the optimal ratio of consultant FTEs to staff numbers will vary according to the availability of suitably skilled occupational health nurses and other local circumstances.

health for people of working age. Among other things, they would provide guidance for local GPs (who would continue as the main immediate source of advice on work and health for the majority of the working population who have no access to an occupational health service through their employer), and a referral service for more difficult cases. If such a role proved cost-effective, there could be a need for up to 80 FTEs of specialist occupational physician time nationally in such posts. However, because of resource limitations, the maximum number of FTEs over the next ten years is likely to be fewer – perhaps up to five.

### **Health and Safety Executive**

The Health and Safety Executive (HSE) needs specialist occupational physicians: a) to help develop its policy on protection from disease and illness caused or made worse by work; and b) to provide advice to inspectors in the field on the assessment, management and prevention of such hazards in specific cases, and possibly on the implications of health problems for the safety of certain occupational activities.

Currently, the Health and Safety Executive employs approximately 5 FTE specialist occupational physicians, but having reviewed the current provision, its Chief Medical Adviser considers that a larger number (11 FTE) is needed to optimise the service, and steps are being taken to increase the complement accordingly.

### **Other Government Departments**

Outside the NHS, local public health and HSE, there is a need for specialist occupational physicians in several other areas of national government, their role being to lead in the development and implementation of policy on the interface between work and health and the management of long-term health-related incapacity for work. The departments concerned include the Department of Health (DH), Department for Work and Pensions (DWP), Department for Transport (DfT), Foreign Office, and the devolved governments of Wales, Scotland and Northern Ireland.

Currently, these departments collectively employ about 14 FTEs of specialist occupational physician time. In the short-term this complement should at least be maintained.

### **National and Local Government and Education**

Local Government and Education employs some workers who must meet special standards of medical fitness (e.g. firemen, police drivers), and others who are exposed to health hazards in the course of their work (e.g. asthma from work with laboratory animals in universities).

Currently, some 73 FTEs of specialist occupational physician time are provided to national and local government and higher education institutions. The Higher Education Occupational Physicians (HEOPs) group has recommended that more specialist occupational physician time is needed in higher education than at present, and the Association of Local Authority Medical Advisers (ALAMA) takes a similar view with regard to government employees, work for police forces and fire services being the most demanding of time. Even with an overall ratio of one FTE specialist occupational physician for every 20,000 employees (which would require support from more specialist occupational health nurses than are available at present), some 255 FTEs of specialist

time would be needed to cover all of the approximately 5,100,000 people who work in local government and education. Given the current economic situation, however, it seems unlikely that more than 100 FTEs will be funded by employers over the next 5-10 years.

### **The Armed Forces**

Military operations and training entail work in a diversity of adverse environments, with exposure to multiple hazardous chemical, physical and biological agents as well as psychological stressors, and a premium on maximising operational efficiency and minimising unnecessary medical incapacity. Specialist occupational physicians are therefore essential to formulate policy and procedures on health protection and fitness for work, to lead the teams of occupational health professionals that help to deliver these policies and procedures, and to manage more difficult individual cases. In addition, many specialist occupational physicians in the military progress to take on wider managerial roles.

Currently the Armed Forces employ some 65 FTEs of specialist occupational physician time. Future needs will depend on the extent and nature of the role that the Government requires of the military, and may be somewhat less than at present. In addition, an opening up of senior managerial posts to doctors from a wider range of medical specialties will further reduce the numbers needed. Nevertheless, it would be prudent to assume that at least 40 specialist occupational physician FTEs will be required in 10 years from now.

### **Commercial Aviation**

Commercial aviation demands high standards of safety with careful assessment of medical fitness of key personnel such as pilots and air traffic controllers. It also entails exposure to a range of health hazards that can affect both staff and passengers. Specialist occupational physicians have a crucial role in ensuring that staff are fit for their work, that appropriate standards of medical fitness are applied to passengers, that all are satisfactorily protected from the health hazards associated with flying, and that suitable treatment is available in the event of medical emergencies in-flight or that occur in staff while they are working overseas.

Currently, some 14 FTEs of specialist occupational physicians work for the Civil Aviation Authority (CAA), National Air Traffic Service (NATS) and UK-based airlines. It seems likely that similar numbers will be needed for the foreseeable future.

### **Rail and Marine Transport**

Like civil aviation, the rail industry and commercial sea transport involve safety-critical activities requiring appropriate standards of medical fitness. They are also associated with a range of occupational health hazards including, for example, asbestos, welding fume and organic solvents.

At present, approximately 20 FTEs of specialist occupational physician time are provided to train operators (including the London underground), and the merchant shipping industry. Their expertise is needed for safe operation of these sectors, and the requirement is expected to continue at this level for the foreseeable future.

## **Oil and Gas Extraction**

Oil and gas extraction entails hazardous work, often in remote and challenging environments. Special expertise is needed to manage the medical problems associated with, for example, diving, work on rigs, and work in extreme climates, to ensure that employees are fit for their work, that working methods are sufficiently safe, and to manage diseases and injuries should they occur where normal healthcare facilities are inaccessible. Specialist occupational physicians are uniquely qualified for this type of work.

Currently, some 26 FTEs of specialist occupational physician time are provided to the oil and gas extraction industries, but the workforce in the industry nationally is contracting. Moreover, occupational health services are becoming increasingly international, and some UK occupational physicians with senior appointments may be replaced by doctors from other countries when they retire or move on. Thus, the requirement for specialist occupational physicians nationally is likely to be somewhat lower – perhaps 20 FTEs.

## **Mining and Quarrying**

Over the past four decades, underground coal-mining in the UK has declined substantially, and is now only a minor source of employment. Employment in other mining and quarrying is also fairly limited. However, work in these industries entails exposure to a wide range of hazards, including dust-related diseases and hand-arm vibration syndrome as well as traumatic injuries. Specialised medical oversight is therefore essential.

At present approximately 2 specialist occupational physician FTEs are provided to the mining and quarrying industries, and now that the major contraction of the coal industry is complete, the need for input at this level is likely to remain.

## **The Chemical Industry**

Specialised occupational medicine input to the chemical industry is often needed where the chemicals handled could be hazardous to health. As well as acute poisoning, which may require specialised emergency treatment, there may be longer term risks to health (e.g. respiratory or dermal sensitisation, carcinogenicity), which must be carefully assessed and managed.

Currently, approximately 8 specialist occupational physician FTEs are provided to the chemical industry. The commitment has been declining with a contraction in the number of employees, and reorganisation of occupational health services in, for example, the pharmaceutical industry. However, ideally, there would be at least one FTE for every 10,000 workers, equating to 17 FTEs nationally.

## **Other Manufacturing and Engineering**

Employees in other manufacturing industries, including engineering, are exposed to various occupational hazards, some of which are widespread (e.g. noise, hand-transmitted vibration and organic solvents), while others are particular to specialised areas of activity (e.g. isocyanates, hardwood dust). And as technology evolves, new hazards continually emerge (e.g. nanomaterials). Specialist occupational physicians are

needed to plan and oversee the health protection of workers exposed to such health hazards.

Currently, some 44 FTEs of specialist occupational physician time are provided to this sector. Given the nature and extent of occupational health hazards encountered by many workers in these industries, an overall ratio of at least one FTE specialist occupational physician per 25,000 employees seems reasonable. This equates to a requirement for 108 FTEs of specialist occupational physician time. However, it may be unrealistic to expect many smaller employers to engage occupational health services in the immediate future, so a more achievable provision in the next 5-10 years is perhaps 55 FTEs.

### **Utilities (Gas, Electricity, Water, Telecommunications)**

There is a particular need for specialist occupational physicians in the utility industries where special occupational hazards occur. These include, for example, the risks from ionising radiation in nuclear power generation, and from hand-transmitted vibration in workers who use pneumatic tools when laying and repairing pipes and cables.

At present, an estimated 16 FTEs of specialist occupational physician time is given over to the utility industries. However, this is likely to decline somewhat over the next ten years, with more tasks being transferred to other occupational health professionals.

### **Construction**

The construction industry is one of the most hazardous in the UK. As well as having high rates of acute traumatic injury, workers can be exposed to asbestos, various skin and respiratory irritants and sensitisers, organic solvents, hand-transmitted vibration and risks from manual handling. Occupational health provision is currently sub-optimal (approximately 7 FTE of specialist occupational physician time), and there would be value in increasing this commitment (say to 1 FTE for every 18,000 employees – equivalent to approximately 72 FTEs nationally) to oversee policy on protection from disease and standards of medical fitness for jobs entailing special risks (e.g. scaffolders working at heights). However, it seems unlikely that construction companies will provide funds to increase the complement significantly in the near future.

### **Agriculture**

Like the construction industry, work in agriculture is relatively hazardous with high rates of traumatic injury and also of occupational diseases such as hip osteoarthritis and extrinsic allergic alveolitis. Again, occupational health provision is very sub-optimal, and in total, less than 1 FTE of specialist occupational physician time is currently worked in this sector. There seems little prospect that this will change in the immediate future, although a more appropriate provision would be at least 1 FTE of specialist occupational physician care for every 18,000 agricultural workers, equating to a national requirement for 14 FTEs.

### **Academia**

Currently, approximately 7 specialist occupational physicians hold substantive academic appointments in the UK, but others devote part of their time to teaching and/or research, and in total an estimated 24 FTEs are given over to academic activities. A recent review by the Faculty's Academic Forum indicates that the complement of

occupational physicians employed by academic institutions needs at least to be maintained if training and research are to be delivered satisfactorily, and ideally would be somewhat expanded. However, an expansion seems unlikely to be funded in the current economic climate.

### **Other**

In other industries (e.g. banking and commerce, wholesale and retail distribution), the main occupational hazards are common musculoskeletal disorders (back, neck and arm pain) and stress-related mental health problems. Here the requirement for specialised occupational physician input is less, although such doctors may still be needed to lead occupational health teams, to guide on general health promotion and the management of health-related incapacity for work, and to advise on the management of difficult individual cases.

At present, an estimated 77 FTEs of specialist occupational physician time is worked in other industries. Ideally, there would be at least 1 FTE specialist for every 40,000 workers, which would equate to 387 FTEs nationally. However, many employers will opt not to engage specialists in the current economic climate, and the necessary increase may not be achievable in the short-term.

### **Total need and implications for recruitment and training**

The estimated need for specialist occupational physicians by industrial sector is summarised in Table 1. The figures suggest that ideally some 1,211 FTEs of specialist time would be available in the UK. However, taking into account the likely availability of funding by employers, an estimate of the commitment needed which is potentially achievable over the next 5-10 years is 527 FTEs. This represents an increase of 23 FTEs over the estimated current provision.

In addition, 187 responders in the 2011 FOM workforce survey indicated that they planned to reduce their work in occupational medicine substantially over the next five years. Collectively, these 187 doctors accounted for 152 FTEs. While some may change their plans, and others may continue to work as occupational physicians, albeit with a substantially reduced commitment, time will also be lost from retirements and reductions in workload among those who did not respond to the survey. Therefore, it seems reasonable to assume an overall loss of 152 FTEs of specialist time over the next five years from retirements and reductions in the individual workload of existing specialists.

If the average time worked by specialists in employment who responded to the 2011 workforce survey is applied to the estimated 152 FTEs that will be required to replace losses over the next 5 years, based on the numbers in Table 4 of Appendix A, this corresponds to a need for  $152 \times 437 / 388.9 = 171$  new specialists – i.e.  $171 / 5 = \sim 34$  new specialists per year. To deliver the extra 23 FTEs that realistically are needed over the next 5-10 years will require a further  $23 \times 437 / 388.9 = 26$  new specialists – i.e. 2-3 per year over 10 years.

This suggests that in total, we should aim to recruit some 37 new specialist trainees per year over the next five years – a figure well above the recent annual intake of approximately 15 new trainees.

**Table 1: Estimated current provision and future requirement for specialist occupational physicians in the UK**

<b>Sector</b>	<b>Approximate number of workers (000s)</b>	<b>Approximate current provision (FTEs)</b>	<b>Workers per FTE, currently</b>	<b>Appropriate long-term provision (FTEs)</b>	<b>Workers per FTE, 'appropriate' long-term provision</b>	<b>Potentially achievable provision in short-term (FTE)</b>
Oil and gas extraction	30	26	1,154	20	1,500	20
Rail and marine transport	70	20	3,500	20	3,500	20
Armed forces	200	65 <sup>b</sup>	3,077	40	5,000	40
Commercial aviation	80	14	5,714	14	5,714	14
Chemical industry	170	8 <sup>c</sup>	21,250	17	10,000	8
Healthcare	1,500	112	13,393	120	12,500	120
Mining and quarrying	30	2	15,000	2	15,000	2
Utilities	180	16	11,250	10	18,000	10
Agriculture and fishing	250	0	>250,000	14	18000	0
Construction	1,300	7	185,714	72	18000	7
Civil Service, local government, police, fire, social work, education	5,100	73	69,863	255	20,000	100
Other manufacturing, engineering	2,700	44	61,364	108	25,000	55
Other	15,490	77	201,169	387	40,000	77
Public health	-	0	-	80	-	5
HSE	-	5 <sup>a</sup>	-	11	-	11
Other government departments	-	14	-	14	-	14
Academia	-	24 <sup>d</sup>	-	27	-	24
<i>Total</i>	<i>26,500</i>	<i>504</i>	<i>52,579</i>	<i>1211</i>	<i>21,882</i>	<i>527</i>



<sup>a</sup>The FOM survey gave an estimate of 3 FTEs, but HSE's Chief Medical Adviser reports that five FTEs are currently provided.

<sup>b</sup>There are thought to be approximately 45 specialist occupational physicians in the military at present, but the figure of 65 FTEs allows for the fact that some work for more than 37.5 hours per week, and it may also include the time of some civilian specialists who provide services to the military.

<sup>c</sup>Sources within the chemical industry suggest that up to 20 specialist occupational physicians currently work in the industry, and this figure may be a slight underestimate.

<sup>d</sup>This figure includes specialists who give part of their time to teaching or research, as well as those in substantive academic posts, of whom there are approximately seven.

## APPENDIX A

### FOM WORKFORCE PLANNING SURVEY April 2011

An online questionnaire was distributed to all FOM Members and Fellows based in the UK, excluding 14 (seven aged 65 or older) for whom no email address was available. The questionnaire asked the number of hours per week that recipients currently provided services to each of 16 sectors (Table 1), and also whether they planned to reduce their work as an occupational physician substantially during the next five years. In addition, responders were asked to provide their FOM number. This allowed a reminder to be sent selectively to non-responders, and also, through linkage with the Faculty database, enabled ascertainment of sex and five-year age group.

**Table 1 Sectors covered in questionnaire**

<b>Sector</b>	<b>Full description (as in questionnaire)</b>
<b>Armed Forces</b>	Armed Forces
<b>HSE</b>	HSE
<b>Other Government</b>	Other Government departments ( <i>excludes OH care for Government staff</i> )
<b>Academia</b>	Academia ( <i>excludes OH care for academic staff</i> )
<b>Healthcare</b>	NHS or other healthcare providers ( <i>providing OH care for staff</i> )
<b>Civil service, local government, education etc</b>	Civil service, local government, police, fire, social work, education ( <i>providing OH care for staff</i> )
<b>Commercial aviation</b>	Commercial aviation ( <i>including air traffic control</i> )
<b>Rail or marine transport</b>	Rail or marine transport
<b>Oil or gas extraction</b>	Oil or gas extraction
<b>Mining or quarrying</b>	Mining or quarrying
<b>Chemical manufacture</b>	Chemical manufacture
<b>Construction</b>	Construction
<b>Other manufacturing and engineering</b>	Other manufacturing (including engineering)
<b>Utilities</b>	Utilities (gas, water, electricity, but not gas extraction)
<b>Agriculture and fishing</b>	Agriculture or fishing
<b>Other</b>	Other

Usable questionnaires were completed by 455 (67.6%) of the 673 specialists approached. Table 2 shows the numbers of responders and response rate by sex and age. The analysis excludes 38 responders who did not provide an accurate FOM number, and for whom sex and age were therefore unknown.

**Table 2 Response by sex and age**

	<b>Number mailed</b>	<b>Number responded*</b>	<b>Response rate (%)</b>
<b>Sex</b>			
<b>Male</b>	509	306	60
<b>Female</b>	164	111	68
<b>Age (years)</b>			
<b>&lt;40</b>	42	20	48
<b>40-44</b>	61	41	67
<b>45-49</b>	120	83	69
<b>50-54</b>	137	94	69
<b>55-59</b>	131	90	69
<b>60-64</b>	76	40	53
<b>65-69</b>	66	38	58
<b>70-74</b>	25	8	32
<b>≥75</b>	15	3	20
<b>Total</b>	673	417	62

\*Excludes 38 responders with unknown sex and age

Response rates were lower at older ages, and this is likely to have contributed to the lower response rate in men than in women.

Among the 455 responders, 18 were not currently working. Table 3 shows the distribution of total hours worked per week by the 437 who reported employment.

<b>Total hours worked per week</b>	<b>Number of responders</b>
<b>0.1-10</b>	32
<b>&gt;10-20</b>	45
<b>&gt;20-30</b>	80
<b>&gt;30-40</b>	185
<b>&gt;40-50</b>	72
<b>&gt;50-60</b>	19
<b>&gt;60</b>	4

Most responders worked at least 30 hours per week.

Table 4 shows the numbers of responders working in each sector, and the total FTEs that they provided. It also gives two estimates of total FTEs of specialist occupational physician time nationally. The first (National FTEs<sub>max</sub>) assumes that the hours worked in each sector by non-responders were, on average, the same as for responders. The second (National FTEs<sub>best</sub>) assumes that non-responders over the age of 60 were not working, but that those below age 60 worked the same time, on average, in each sector as responders.

**Table 4 Commitment of responders by sector, and estimated national commitment of specialist occupational physicians by sector**

<b>Sector</b>	<b>Number of responders</b>	<b>FTEs worked by responders</b>	<b>National FTEs<sub>max</sub></b>	<b>National FTEs<sub>best</sub></b>
<b>Armed Forces</b>	53	50.2	74.3	65.1
<b>HSE</b>	21	2.6	3.8	3.4
<b>Other Government</b>	46	10.6	15.7	13.7
<b>Academia</b>	81	18.4	27.2	23.9
<b>Healthcare</b>	170	86.3	127.6	111.9
<b>Civil service, local government, education etc</b>	187	56.4	83.4	73.1
<b>Commercial aviation</b>	22	10.5	15.5	13.6
<b>Rail or marine transport</b>	60	15.8	23.4	20.5
<b>Oil or gas extraction</b>	40	20.4	30.2	26.5
<b>Mining or quarrying</b>	13	1.2	1.8	1.6
<b>Chemical manufacture</b>	28	5.8	8.6	7.5
<b>Construction</b>	45	5.1	7.5	6.6
<b>Other manufacturing and engineering</b>	125	34.0	50.3	44.1
<b>Utilities</b>	57	12.1	17.9	15.7
<b>Agriculture and fishing</b>	8	0.3	0.4	0.4
<b>Other</b>	182	59.3	87.7	76.9
<b>All sectors</b>	437	388.9	575.2	504.3

Many individual specialists provided services to multiple sectors, the sectors in which the largest numbers of responders worked being civil service, local government, education

etc (187), other (182), healthcare (170) and other manufacturing and engineering (125). The total time commitment of responders was 388.9 FTEs, 22% of which was provided to the healthcare sector (86.3 FTEs). The other sectors accounting for relatively high commitments of specialist occupational physician time were other (59.3 FTEs), civil service, local government, education etc (56.4 FTEs) and the Armed Forces (50.2 FTEs). Based on these figures, a best estimate of national FTEs of specialist occupational physician time was 504.3, with an upper estimate of 575.2 FTEs.

In total, 187 (42.8%) of the responders who were in employment indicated that they planned to reduce their work as an occupational physician substantially during the next five years. Most, but by no means all of these specialists were aged 55-69 years (Table 5).

**Table 5 Responders intending to reduce their work as an occupational physician substantially over the next five years**

Age (in years)	Responders intending to reduce their work	
	Number*	%
<b>30-39</b>	2	10
<b>40-44</b>	3	7
<b>45-49</b>	12	14
<b>50-54</b>	31	33
<b>55-59</b>	57	63
<b>60-64</b>	30	75
<b>65-79</b>	26	68
<b>≥70</b>	5	45
<b>All ages</b>	166	40

\*Figures by age exclude 23 specialists who planned to reduce their work substantially, but who did not give their correct FOM number, and therefore were of unknown age.

Collectively, these 187 individuals accounted for 152 FTEs.

## Discussion

The failure to contact a small number of specialists with no known email address is unlikely to have biased this survey importantly. Given their age profile and the absence of an email address, it seems unlikely that these doctors would account for many FTEs of activity, and in all calculations they were assumed to be inactive

Of greater concern is the incomplete response (67.6%) among those specialists who were contacted. The lower response at older ages, and especially above age 70 years, suggests that some Members and Fellows may have chosen not to respond because they were no longer working. For this reason, the estimates of national FTEs that were obtained with the assumption that non-responders over the age of 60 were no longer working, are probably the more reliable. Nevertheless, they are subject to some uncertainty, and particularly the figures for individual sectors, for which response rates

may have varied. The FTEs by sector for responders should, however, provide a reliable lower bound for the national commitment of specialist time.

This survey gives substantially better information on the specialist occupational medicine workforce in the UK than has been available previously, and will be invaluable in future planning. The Faculty is grateful to all Members and fellows who took time to participate.