



To the Health Committee of the United Kingdom Parliament

**Short Memorandum of Evidence on
Workforce Needs and Planning for the Health Service
Prepared by The Royal College of Pathologists**

1. INTRODUCTION

The Royal College of Pathologists (RCPATH) welcomes the request of the new Inquiry, made on 27th January, 2006, [1] to present evidence on the current status of the Pathology Workforce in the United Kingdom and the projected requirements of that specialty within the terms of the Inquiry. The College thanks the Health Committee for accepting this written submission.

The RCPATH works closely and regularly with the NHS Workforce Review Team and with members of the Department of Health to share data and to formulate policy with respect to Workforce planning. The complexity and extent of 'Pathology' in the United Kingdom precludes a detailed appraisal of the various different specialties contained within the subject. Therefore, this memorandum comprises a generic assessment of the common factors principally constraining planning and development of the pathology Workforce in the National Health Service. For reference purposes, the Appendices contain greater detail with respect to each of the individual specialties within the totality of 'Pathology'.

2. BACKGROUND

'Pathology' represents a combination of clinical and laboratory-based (scientific) disciplines [Appendix I] and activities that underpin a large amount of patient investigation and management within the Health Service of the United Kingdom and is required for up to 70% of diagnosis. The Workforce is extensive and varied in its composition, including medically-trained pathologists (3,468 of which 323 posts are vacant), clinical scientists (3,983) and biomedical scientists (21,256) together with a wide range of ancillary but essential support from a range of laboratory assistants, phlebotomists, anatomical technicians, clerical, secretarial/administrative and other personnel [2]. These latter figures are in general agreement with the 28,242 non-medical scientists identified in the 2004 survey [Appendix II] of non-medical personnel within the NHS [3].

These figures underestimate the total Workforce necessary to deliver the Pathology service required by the UK NHS. However, existing systems of data collection preclude a more accurate assessment of the size, composition and complexity of the Workforce currently delivering the Pathology service. Although many activities are based in laboratories, Pathology is a 'clinical service that supports other clinical disciplines', and not merely a 'support service' and in many areas is also responsible for providing the clinical service. Pathology is an integral part of the multi-disciplinary team and discussions between a Consultant Surgeon and a Consultant Pathologist are of a similar status and nature to those between a surgeon and physician when discussing how best to advise a patient and what treatment options should be considered.

Pathology, defined by the Government as the 'Essential Service' [4], comprises the four major specialties of Histopathology (including Cytopathology), Haematology (including Blood Transfusion), Clinical Chemistry (including Metabolic Medicine) and Medical Microbiology (including Virology and Parasitology) together with a number of smaller specialties including Immunology, Embryology and Medical Genetics. The group of laboratory-based specialties termed 'Pathology' analyses the entire spectrum of bodily materials including fluids (blood, urine, cerebrospinal fluid, ascites etc.) and secretions (respiratory, cervical etc.) as well as intact tissues and their derivatives (proteins, lipids, carbohydrates, hormones, minerals, nucleic acids etc.) using a variety of specific laboratory techniques.

The materials studied originate from individual patients and the data generated through laboratory analyses are assessed objectively against a spectrum of values or appearances judged to represent 'normality' within the caveats of age, gender, disease, medication and other factors. Following interpretation, decisions based upon the pathological data directly affect the clinical management of individual patients. The role of pathology is to identify, develop and provide the scientific infrastructure that enables accurate diagnoses to be made and, thereafter, to monitor patients and assess disease progression, including response to therapy. Thus, pathologists (i.e. all those involved in the practice of pathology) are patients' advocates with respect to their clinical management. Following initial diagnosis, interpretation of pathological processes potentially influence disease progression and hence determine the outcome of each individual patient.

Within the UK NHS, pathology currently provides a highly efficient and effective service, despite the constraints it has continued to endure over a number of years. While there is no doubt that some improvements in structuring and delivery of the pathology service could be made, these changes should be considered only on the basis of informed understanding of present structures and functions. There are few clinical situations in which provision of pathological information is not acquired early and used as an integral part of the clinical diagnostic-management pathway. Increasing sophistication of the technologies and methodologies routinely employed by pathologists is providing the constantly-evolving scientific basis by which ostensibly identical diseases are being sub-divided into biologically distinct entities (e.g. malignancies, cardio-respiratory disease, hypertension, metabolic bone diseases, autoimmune inflammatory disease etc. etc.), often requiring significantly different therapeutic approaches.

Thus, the practice of Pathology (and hence the role of Pathologists) is core to the clinical diagnosis and monitoring of patients. In the very near future, Pathologists will also determine the biologically appropriate therapeutic regimens employed to manage individual patients and to change treatments as the diseases affecting those individual patients become modified.

3. PATHOLOGY WORKFORCE OVERVIEW

The NHS Pathology service in each of the subject specialties previously identified (see Section 2) is provided by an integrated workforce that can be considered in four broad groups of: 1) Medically trained doctors; 2) Clinical Scientists; 3) Biomedical Scientists and 4) Clerical/Secretarial/Administrative. Smaller groups may be considered within these broad categories, according to skills, training, competencies and responsibilities (e.g. Anatomic Pathology Technicians may be included within the group of Biomedical Scientists). Recruitment, development and retention of an appropriately skilled Workforce 'fit for purpose' is crucial to an effective and reliable Pathology service that is the cornerstone of modern healthcare delivery.

Within all pathology specialties, there is overlap with respect to roles, technical competencies and responsibilities between the principle groups [Appendix III]. Pathology Modernisation [5, 6] as a concept initially set-out to explore the similarities and differences between the activities of these groups and to make recommendations with the objective of improving performance in Pathology by adoption of new strategies and working practices. Simultaneously, additional approaches embodied within the *Knowledge and Skills Framework* [7] and *Agenda for Change* [8] prompted and strengthened the drive towards rationalising practices within pathology laboratories. Thus, diverse efforts are being made from different agencies to remodel the structure and delivery of pathology. Often, these pressures are uncoordinated, poorly-informed and frequently conflicting in their purposes.

Within the 'Pathology Workforce' the concept of strict demarcation between individual specialties is becoming outmoded with respect to innovations that include robotic handling of specimens, modern molecular biological technology and automated image analysis (from DNA arrays to histopathological specimens). However, before the objective of a fully integrated 'cross-specialty' approach to Diagnostic Pathology can be attained, the fundamental and common factors of recruitment, retention and competencies require to be addressed and current deficiencies resolved.

4. EFFECTIVENESS OF WORKFORCE PLANNING

4A. Effects of Policy Announcements and Changes

- i. Workforce Planning in the Pathology Specialties is unique within the National Health Service since it involves a large number and diverse range of highly trained personnel, both Medical and Scientific. Provision of appropriate skills to a level of competence within the workforce involves a delay of at least 5 years for those medically-trained to reach MRCPATH and at least 4 years for Clinical Scientists to reach PhD.
- ii. There is increasing reliance on non-medically trained personnel to take responsibility for ordering pathology tests, often using protocols drawn up by pathologists (Demand management) or for pathological investigations performed by a variety of “One-Stop” agencies or “Walk-In” centres to be repeated. There is also a significant trend for personnel not trained or experienced in a broad understanding of medicine to rely upon laboratory investigations for diagnostic and monitoring purposes.
- iii. Emphasis on a ‘patient-led’ NHS [9] and employment of Medical Care Practitioners [10] without a broad medical background is likely to increase demand on all sectors of the Pathology service.

4B. Technological Change

- i. Technological change is occurring in three major sectors of pathology activity:
 - a.** Near Patient, or Point of Care testing is increasingly being deployed to allow regular monitoring without the expense or inconvenience of transporting those patients to a laboratory to perform tests. Increasingly, these modern instruments convey data by telecommunication links [11] to a central laboratory, to clinicians and to the patients’ electronic records. Such investigations may be performed by the patients following training (e.g. blood glucose measurements), by Medical Care Practitioners or by nurses, thus obviating the need for doctors or laboratory personnel to administer each test.
 - b.** Truly novel technologies allow acquisition of patient-specific pathology data not hitherto available. These modern technologies are often robotic and automated up to the point of delivering the validated data. Obvious examples include all molecular genotyping and phenotyping of human cancers. For example, sentinel node assessment of a primary cancer not only permits detection of otherwise occult micrometastases but simultaneously provides unique information on tumour differentiation and biological competence with respect to drug sensitivities, and hence therapeutic options. Similar principles may be applied to haematological malignancies as well as to the microbiological investigation of tissue infections and infestations.
 - c.** Digitisation of a disparate array of image-based information together with web-based telecommunications provides ready access to mathematical analyses (application of algorithms) and the integration of remote data to provide levels of novel information not previously attainable.
- i.** Utilisation of these new technologies is often hampered by shortages of personnel (workforce), expertise, time and funding.
- ii.** The lack of numbers of laboratory personnel, particularly those with appropriate expertise, often means that those available are fully committed to the traditional delivery of service and have no flexibility or opportunity to learn new skills. Time spent developing new methods of working, including acquisition of new skills, is considered as detrimental to efficiency, of delivering a service and attaining targets, and hence is not encouraged or funded within the existing system.
- iii.** To acquire and develop the new technologies to a level of common usage within the NHS service requires increased flexibility within the workforce.

- iv.** Introduction of automated instrumentation will change the profile of the workforce. Fewer middle-grade scientists will be required in preference to more technicians to supervise the instruments together with more medically-trained pathologists or clinical scientists to interpret the data, to advise clinicians and to take-on increasing Clinical roles.
- v.** Technological change has been assumed (erroneously by many) to be the panacea for correcting any perceived inefficiencies within the existing pathology service. “Technological change” can potentially achieve an increase in the availability of pathological investigations through point-of-care testing using a range of novel instruments outside main laboratories. This is not necessarily cheaper or workforce saving but has a place and a value in a number of clinical situations, particularly allowing patients remote from hospitals to be closely monitored with the tests being administered by non-medical and non-scientific staff.
- vi.** Many such instruments are now readily available, especially within the community. Effective deployment of this technology requires the training of a support workforce knowledgeable in technical aspects of administering the tests but without responsibility for their interpretation.
- vii.** The other major technological advance involves the introduction of new technologies where there is no previous expertise within laboratory medicine. Such new technologies include the full range of evolving molecular biological methods with which to detect and classify an expanding range of human diseases (benign as well as malignant).
- viii.** There are a number of newer innovative technologies now seeking application in Pathology. These include exhaled breath analysis to detect and monitor a range of non-respiratory systemic illnesses including hepatic dysfunction and degenerative CNS disease. These will ultimately provide rapid-access and non-invasive technology with which to identify and manage patients with those conditions.

4C. Influence of an Ageing Population

- i. With respect to workforce, the term ‘Ageing Population’ might be applied equally to laboratory personnel as to the patients served by the pathology service.
- ii. The major specialties within pathology contain a medical and a scientific component in which a high proportion of each membership is within 10 years of retirement [Appendix IV] and of which a significant proportion is within 5 years of retirement.
- iii. This group of personnel within pathology contains significant knowledge and expertise to ensure continuity of training but is undergoing attrition before that knowledge can be passed to the trainees entering the various professions [Appendix V]. Loss of training capacity, probably affecting the scientists more than the medically-qualified pathology workforce, is resulting in numbers of laboratories no longer accepting trainees in favour of maintaining target-oriented services in a manner analogous to that already described for technological change (see Section 4B. iv.). Without centrally-directed support, the Pathology Workforce will continue to contract relative to workload and demand because the capacity to train new recruits will continue to diminish.
- iv. Within the community, ageing populations generally require more pathological investigations than younger populations and are more likely to have chronic disease that needs long term monitoring. However, many of the types of investigation required are predictable and hence programmed monitoring of ageing populations could be planned so that appropriate resources are available. For example, occult thyroid dysfunction (both hyper- and hypo-thyroidism) is more common with advancing age but can be readily detected by appropriate laboratory investigations. It is economically justifiable, through planned surveillance of ageing populations, to prevent many diseases while they are yet minimal from becoming clinically overt and requiring additional NHS resources.
- v. Other diseases that benefit from early pathology laboratory detection include diabetes, metabolic bone disease, cardiac failure, hypertension, colorectal (and other) neoplasia, renal failure and many more. However, while such programmes are economically justifiable and

hence desirable, the current pathology Workforce is too small relative to the present or predicted workload to implement such surveillance.

4D. Increasing use of Private Providers

- i. There is a general misconception that, within the United Kingdom, a large private pathology sector is available with capacity ready to accommodate excess work from the public sector. While it may be true that highly selected parts of the country's pathology workload could be performed within private laboratories, this is demonstrably untrue for the totality of pathological investigations.
- ii. The majority of work that would be suitable for transfer falls into the low technology automated category (typically routine biochemical and haematological). These require little staff input.
- iii. These 'high-volume, low-cost' tests underpin much of the expense of more complex investigations ('low-volume, high-cost') that make NHS pathology laboratories viable. Diversion of these automated and remunerative tests ('cherry-picking') would seriously undermine current efficiency of NHS pathology laboratories as well as fragmenting provision of an integrated assessment of individual patients' pathological data.
- iv. A consequence of unrestrained use of private suppliers would be a less efficient and less cost-effective NHS pathology service in which unit workforce costs for specialist complex investigations would be driven-up.

5. PREDICTING FUTURE DEMAND

5A. Financial Constraints

- i. Pathology has often been viewed by Hospitals, Trusts and Health Authorities as an expensive service removed from the actual provision of healthcare. This view was reinforced during the period of competitive tendering between laboratories in which pathology budgets were reduced and services curtailed. This led to significant inter-laboratory rivalry that has persisted and remains a significant obstacle to development of 'pathology networks' in which cooperation rather than competition has been the primary objective.
- ii. Current financial constraints originating in this earlier era continue to inhibit development of pathology services in two principal respects:
 - a. A lack of financial flexibility to invest in additional workforce, in developing new technology or in reconfiguring services in favour of maintaining current working practices to achieve targets (see Section 4B. vi.). Such a rigid approach ensures maintenance of the *status quo* by the majority of laboratories within the NHS while ensuring lack of essential support for the overall pathology service to evolve.
 - b. The majority of laboratory budgets are insufficient to continue supporting the final (fourth) year of clinical scientist training. Provision of funding for this pre-registration year has always been *ad-hoc* in many laboratories. However, different Pathology specialties are affected differently. For example, Haematology and Immunology have been successful in developing Grade A clinical scientist training schemes, although a number of these trainees have left the specialties following completion of training through lack of funding to support career progression. Histopathology currently trains and employs few clinical scientists, but is likely to require more as the nature of the tests performed within those laboratories change. Conversely, Clinical Chemistry is highly dependent on its scientist workforce but the combined impact of factors including continued decline in funding relative to demand, a large pre-retirement workforce and diversion of funding to achieve service targets have reduced the capacity to maintain this science-based workforce.
- i. Responsibility for funding Pathology within the NHS is about to be transferred to StHAs and to PCTs - two layers of administration likely to be disbanded in the near future. Unfortunately, the majority of persons working within these administrative bodies are physically and experientially remote from investigative aspects of patient care such that

their appreciation of the value of Pathology is frequently inadequate. History has repeatedly shown Pathology to be a prime target whenever economies are to be made and budgets cut.

5B. European Working Time Directive

- i. Throughout the Pathology Workforce, but affecting medically-trained pathologists more than the scientist workforce, it is common practice for individual personnel to work more than 40 hours per week in order to complete outstanding work.
- ii. However, many Trusts consider it unnecessary for pathologists to work more than 40 hours per week with the consequence that only 10 PAs are offered to pathology consultants under the terms of the new contract. Pathology trainees in many laboratories do not receive banded payments for additional work. If Consultants accept this reduction we may soon see a significant reduction in the hours they work.
- iii. Current attitudes engendered in Trainees to work only within fixed time schedules, and not to work outside those planned times for which they are remunerated, will increase the necessity for a larger Pathology Workforce, if workload demands are to be successfully addressed.
- iv. The Working Time Directive (WTD) is beginning to have an impact on pathology. Compliance with the WTD without detriment to clinical services through lack of pathology services will not be possible without consultant expansion to enable reductions in working hours.
- v. There is some possibility for cross-cover by developing links between neighbouring hospitals, which will occur in parallel with changes in the acute services strategy. However, the impact is likely to be slight in view of the need to have local advice on site in all acute hospitals. Histopathology, in particular, is a 'hands-on' specialty at Consultant level in most DGHs with little or no dedicated junior doctor cover, thus precluding effective operational availability on more than one site simultaneously. Many of the other specialties provide a clinically based service and important pan-hospital services, such as infection control and blood transfusion services.

5C. Feminisation and Part-Time Working of Pathology Workforce

- i. An increasing proportion of medical students are female. A similar trend is developing in the Pathology Workforce whereby more medically trained pathologists are female [Appendix VI].
- ii. Currently, women seek more time away from work than men in order to look after children and young families, thus increasing the total required headcount to match the full time equivalents (FTEs) of the Workforce necessary to meet pathology workload demands.
- iii. Increasing part-time working (whether by women with family commitments or by men seeking less time at work for whatever reasons) imposes an uncertainty on workforce planning that cannot be fully compensated. In the workforce planning algorithm used by the NHS Workforce Review Team and the RCPATH to estimate the numbers of medically-trained pathologists required in future years, the factor used to relate 'headcount' to FTEs has fallen from 0.8 in previous years to 0.75 in this current year – indicating a necessary increase in the numbers to maintain the same effective Workforce.
- iv. To compensate for a declining Medical Pathology Workforce through additional recruitment and training requires approximately 8 years to generate independent, competent and effective Pathologists following their initial Medical training (see Section 4A, i.).

5D. International Competition for Pathology Laboratory Staff

- i. The UK Pathology Workforce (Medical and Scientific) is currently trained to a very high international standard. Organisation of an integrated Health Service (including Pathology) is more extensive in the UK than anywhere else in the world. These two factors provide a

unique opportunity for UK pathology to become a net exporter of Pathology services and hence to attract revenue into the country.

- ii. The converse of this projected scenario is that, without appropriate reorganisation, the UK NHS could purchase some of its pathology services from other countries.
- iii. The UK could benefit (financially and structurally) from reconfiguring its pathology services and thus fully realize this currently undervalued resource:
- iv. There are significant potential opportunities in working with UK-based manufacturers of pathology equipment and instrumentation to develop 'integrated packages' that might be supplied as functional units to pathology laboratories in less sophisticated countries. Development of equipment that complies with common internationally-standard operating systems would allow the direct interfacing of different pieces of equipment from different suppliers ('plug-and-play') without supporting monopolies. Manufacturers of such equipment would find ready markets in Eastern Europe, the Middle East, the Indian subcontinent and other parts of the world before those countries developed their own systems.
- v. Development of large automated laboratories that are environmentally competitive would make financial sense for non-urgent pathology tests (e.g. clinical trials) or specialist tests that would be expensive to establish on a small scale elsewhere (including a wide range of Histopathology together with all of the other Pathology sub-specialties). Installation of routine digital image scanning together with web-conferencing have already demonstrated this option to be viable.
- vi. The UK pathology workforce is highly competent but requires additional funding to expand and to develop further. This expertise is in international demand and should be nurtured, developed and protected. Rather than allowing this national resource to migrate from the UK, reconfiguration of pathology services in which the trained expertise is fully exploited would provide a strong business-case to purchasers of this expertise from other countries.
- vii. The UK has always had a tradition of attracting both trainees and pathologists from other countries. This has not only supplemented workforce deficiencies but has provided important international links and has helped enhance the standard of medical practice world-wide. An increasing number of doctors are now being seen from Eastern Europe. While the RCPATH does not support or condone recruitment of pathologists from 'Third World' countries or from any places where such expertise is in short supply or its removal would be detrimental to its location of origin, personnel trained in laboratory Medicine may benefit from short periods of additional training in the UK, but with the proviso that they return, with their added expertise, to their country of origin following training.
- viii. Trained pathologists, trainee pathologists and medical scientists may be recruited from countries within the EEA, USA, Canada, Australasia and other countries where pathology is already practiced at a high standard and where there is a surfeit of this expertise. Such recruitment may prove beneficial to UK pathology, to those persons choosing to work within the UK and/or to international cooperation and understanding between foreign nationals.

5E. Early Retirements, Resignations and Other Losses

- i. The RCPATH is unique within the NHS in commissioning a bespoke Electronic Workforce Database (EWD) able to encompass numbers and membership of all groups working within pathology in the delivery of healthcare. Funding for this database has been suspended, temporarily. However, both the DoH and NHS Workforce realize that, without the proposed electronic database, there will be incomplete understanding of current Workforce – in terms of both numbers and competencies.
- ii. Until the EWD is established, the RCPATH will continue to maintain a database, updated annually, of all Consultant pathologists currently in post as well as a listing of those posts that, for any reason, have recently become vacant.

- iii. While the RCPATH data are as accurate as possible, several factors mitigate against this information being a true representation of all posts available at any time [Appendix VII].
- iv. Trusts and PCTs do not protect the funding of Consultant Pathologist posts but rather consider vacancies in Pathology posts to be opportunities to direct funding towards so-called 'front-line' posts directly identified with patient-related activities.
- v. In recent years, Universities and other academic institutions have transferred many pathology staff from their academic (particularly HEFCE-funded) employment to the NHS in order to be more competitive in previous and current RAE exercises.
- vi. Some senior academic Pathologists, at the proposal of transfer to the NHS, have taken early retirement, particularly when Trusts have refused to fund those individuals.
- vii. Inter-personal stresses caused by increasing loss of Consultant Pathologist Workforce has directly contributed to resignations and early retirements, particularly in Histopathology [12].
- viii. Loss of academic Pathologists from medical schools has compounded the already diminished profile of Pathology disciplines as an integral part of the new medical curriculum and as viable career options, thus worsening problems of recruiting 'home-trained' medical staff into Pathology-related professions [13, 14].

6. CONSTRAINTS ON ABILITY TO MEET PROJECTED DEMANDS

6A. Changing the Roles and Improving the Skills of Existing Staff

- i. Pathology services are heterogeneous with respect to the composition of the workforce within the different pathology disciplines. However, all comprise various mixtures of medically-trained staff (Consultants and Trainees) together with clinical scientists, biomedical scientists and clerical/administrative personnel. Some of the disciplines contain specialist staff such as Anatomical Technicians (Histopathology) and Phlebotomists (Haematology and Clinical Chemistry).
- ii. The career pathways for the individual types of staff are becoming aligned through processes such as the *Agenda for Change* and the *Knowledge and Skills Framework*. Rationalisation of clinical scientist careers is currently being undertaken. The long-term objective is to identify the roles of all personnel to fulfil the activities identified within the Pathology services and to align staff with appropriate skills and expertise to those roles.
- iii. Lack of flexibility within the Pathology Workforce caused by insufficient funding to generate an adequately large human resource, poor retention of scientific staff following initial training (see Section 5A, ii.) and concentration of available resources on achieving short-term targets rather than investing in reconfiguration to develop imaginative and modern methods of integrated working are contributing to the retention of a rigid and stylised approach to Pathology within the NHS.
- iv. Recruitment is a matter of profile [15] – whether medical, scientific, technical or clerical. Individuals will not be recruited into any profession that has no profile or appears to have no relevance. Once recruited, individuals will not be retained without personal job-satisfaction, prospects of career progression and levels of remuneration that are competitive with external options.
- v. The concept of 'competency' is defined as the product of skills (including knowledge) already acquired (through school, university and/or medical school) together with aptitude and ambition to progress to professional training in the discipline.
- vi. Currently, there is a strong subjective sense that, on entry, the skills and experience offered by science-trained graduates is currently higher than at any time previously with the consequence that there is a valuable opportunity for pathology in the UK to recruit talented and well-trained young scientists capable of developing the profession.

7. STRATEGIES FOR MEETING PROJECTED DEMANDS

7A. Nature of the Projected Demands

- i. There are two components to this question: First, the size and nature of the projected demands and, second, the size and competencies of the workforce to match the demands.
- ii. As UK healthcare becomes more proactive with minimal diseases (new and residual) being detected earlier, so the number and complexity of tests required will continue to increase at a rate of approximately 13% *per annum* for the foreseeable future, if the trends over the past decade continue unabated.
- iii. Pathologists are also being asked to provide many new types of information with respect to disease phenotype, prognosis and likely response to therapeutic manipulations.
- iv. The fact that increasing amounts and complexity of tests will be requested does not *per se* predicate increasing numbers of pathology staff. As many new tests become automated, and laboratories function as a 24/7 routine, the workforce is likely to become redistributed from predominantly those with 'hands-on' expertise at the laboratory bench to a lesser number with skills to supervise and maintain instruments together with a larger number competent to interpret the data to be transferred to clinicians and to be stored in patients' records. These evolving profiles will be specialty-dependent according to the individual levels of laboratory automation achieved.
- v. The numbers and profiles of clinically-trained pathologists are likely to rise significantly as demand increases to interpret more sophisticated tests related to individual patients. Already, this change is most significant in Haematology and Clinical Chemistry where pathologists are skilled in performing laboratory investigations as well as clinically to manage patients. Similar trends are already occurring in Medical Microbiology, Allergy and Immunology and in Genetics and are about to occur in Histopathology.
- vi. Histopathologists now perform complex investigations to determine the phenotype, prognosis and likely response to treatment of a variety of diseases, not just cancer. The potential clinical significance of these data frequently cannot be encompassed in simple reports but require detailed interpretation and simultaneous communication to clinicians and to patients in order that appropriate management strategies might be formulated and agreed and reviewed as response to treatment becomes apparent. Therefore, it is most appropriate that Histopathologists adopt a role more central to the clinical management of patients than occurs at the present time.
- vii. The consequence of a more central clinical role will be to support the profile and apparent relevance of pathologists as clinicians in the core management of patients. There will be more and better teaching of pathology in the undergraduate medical curriculum. Recruitment of high-calibre 'home' trainees into pathology will increase and funding of Consultant Pathology posts by Trusts and PCTs will be perceived as essential rather than as being of questionable value in the front-line management of patients.

8. RECOMMENDATIONS

- Effective Workforce planning in Pathology urgently requires the commissioning of a dedicated Electronic Workforce Database (EWD) of the type originally conceived and initially funded through the DoH. This Database is now available for use. The proposed Electronic Workforce Record is no substitute for the EWD since it is insufficiently detailed to capture all of the information necessary for effective Pathology Workforce planning. A detailed analysis of the costs of deploying the EWD are appended [Appendix VIII]. An essential requirement to the use of an EWD is that it should be a requirement of employment (individuals and/or Trusts should be mandated) to maintain their entries at least once, annually.

- Pathology Workforce should be monitored and planned on a national basis using the proposed Electronic Workforce Database as a matter of urgency. There needs to be a greater awareness of the dangers in the predicted loss of expertise as senior members of the workforce (all specialties) reach retirement.
- Pathology specialties could recruit nationally to training programmes based around teaching centres and utilising rotations to other Trusts or trainees to gain specific expertise in a manner analogous to that currently used by Histopathology Training Schools. To assist this process, NTN's should be transferred from locations where no training occurs and relocated to the training centres.
- Wherever possible, specialist training could be integrated between medically-trained Pathologists, Clinical Scientists and Biomedical Scientists for specific areas of the curriculum. Joint training across specialties and between the three groups would provide a foundation for role rationalisation and cross-specialty working, particularly in common fields such as molecular genetics but would still maintain the unique nature of each specialty.
- As a generalisation, medically-trained pathologists should make greater use of their clinical skills and become more proactive in the management of patients.
- Since establishment of pathology services involves complex planning over a long term, StHAs, Trusts and PCTs should ring-fence and protect monies currently designated for workforce personnel.

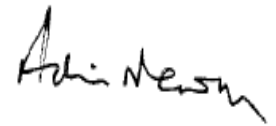
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10. SPECIALTY-SPECIFIC INFORMATION

The foregoing document has provided generic information with respect to overall trends in Pathology Workforce. However, Pathology is a complex and heterogeneous subject in which each of the specialties currently experiences unique and specific problems and constraints. These are addressed in Supplementary Documents I containing Appendices I-VIII. The Proformas developed annually with the NHS Workforce Review Team are contained within Appendices IX-XV in Supplementary Documents II.

Professor Adrian C. Newland MA MB FRCP FRCPath
President
The Royal College of Pathologists
2 Carlton House Terrace
London
SW1Y 5AF

Handwritten signature of Adrian Newland in black ink.

Professor Christopher S. Foster MD PhD DSc FASCP FRCPath
Director of Workforce Planning
The Royal College of Pathologists
2 Carlton House Terrace
London
SW1Y 5AF

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The Royal College of Pathologists
Pathology: the science behind the cure

SUPPLEMENTARY DOCUMENTS

I

APPENDIX I

Professional Bodies represented

Royal College of Pathologists
Association of Clinical Biochemists
Association of Clinical Cytogeneticists
Association of Clinical Electron Microscopists
Association of Clinical Embryologists
Association of Clinical Microbiologists
Association of Clinical Scientists (ACS)
Association of Clinical Scientists in Immunology
British Blood Transfusion
British Society for Haematology
British Society for Histocompatibility and Immunogenetics
British Toxicology Society
Clinical Molecular Genetics Society
Institute of Biomedical Science
Association of Anatomical Pathology Technologists

APPENDIX II

NHS Hospital and Community Health Services: Qualified scientific, therapeutic and technical (ST&T) staff by age bands

England as at September 2004

HEADCOUN
T

Age bands	<25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65+	All staff
Qualified healthcare scientists total	1,469	3,512	3,770	3,855	4,295	4,234	3,743	2,499	780	85	28,242
Consultant Clinical Scientist (Grade C)	10	10	12	21	67	75	112	108	43	3	461
Managers	1	2	19	44	99	145	141	75	17	1	544
Clinical Scientist (Grade A & B)	195	527	523	438	366	311	292	229	72	10	2,963
Advanced Practitioner Biomedical Scientist	5	52	64	50	49	45	45	39	8	-	357
MLSO / Biomedical Scientist	446	1,480	1,598	1,765	2,129	2,295	2,010	1,178	305	25	13,231
MTO / Technician	788	1,390	1,473	1,439	1,481	1,279	1,053	774	292	41	10,010
Cyto-screener	14	27	50	66	81	69	81	92	40	5	1,021
Perfusionist	10	24	31	32	23	15	9	4	3	-	151
Qualified healthcare scientists:											
All qualified clinical biochemistry staff	117	348	383	401	527	621	585	382	108	7	3,479
Consultant Clinical Scientist (Grade C)	-	-	2	2	11	12	35	36	16	-	114
Managers	-	-	-	2	7	5	22	11	4	1	52
Clinical Scientist (Grade A & B)	19	45	51	39	48	55	66	70	24	3	420
Advanced Practitioner Biomedical Scientist	-	-	-	1	1	5	8	2	-	-	17
MLSO / Biomedical Scientist	89	281	320	348	446	535	445	253	61	2	2,780
MTO / Technician	9	22	10	9	14	9	9	10	3	1	96
All qualified cyto / histopathology staff	128	351	413	414	460	478	448	373	112	16	3,193
Consultant Clinical Scientist (Grade C)	-	-	-	-	1	2	3	7	1	1	15
Managers	-	-	3	5	6	18	10	13	1	-	56
Clinical Scientist (Grade A & B)	3	6	11	7	9	10	3	12	1	-	62
Advanced Practitioner Biomedical Scientist	-	1	6	7	6	6	8	3	4	-	41
MLSO / Biomedical Scientist	84	270	293	265	300	323	308	215	56	6	2,120
MTO / Technician	28	47	53	68	60	55	40	35	13	4	403

Cyto-screener

13

27

47

62

78

64

76

88

36

5

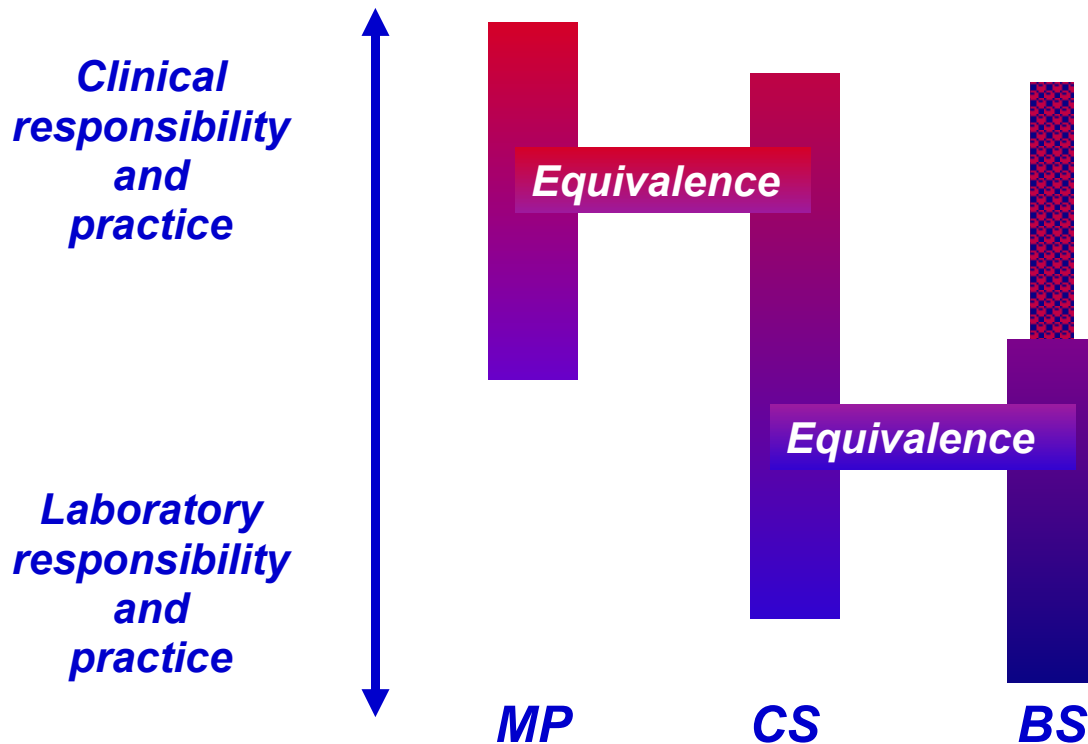
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APPENDIX II - continued

Age bands	<25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65+	HEADCOUNT
All qualified genetics staff	53	131	111	99	68	63	49	27	9	-	610
Consultant Clinical Scientist (Grade C)	-	-	-	-	4	7	5	1	3	-	20
Managers	-	-	-	-	1	1		1		-	3
Clinical Scientist (Grade A & B)	26	77	77	78	47	44	31	18	2	-	400
Advanced Practitioner Biomedical Scientist	-	-	-	1	-	-	-	-	-	-	1
MLSO / Biomedical Scientist		1	2	1	1	8	3		2	-	18
MTO / Technician	27	53	32	19	15	3	10	7	2	-	168
All qualified haematology including transfusion science staff	160	544	587	663	784	782	678	409	93	12	4,712
Consultant Clinical Scientist (Grade C)	-	1	1	1	4	5	9	7	1	-	29
Managers	-	-	5	8	20	43	30	10	-	-	116
Clinical Scientist (Grade A & B)	6	47	47	50	32	35	22	15	2	-	256
Advanced Practitioner Biomedical Scientist	-	1	1	1	2	2	4	2	-	-	13
MLSO / Biomedical Scientist	122	454	505	575	697	666	579	338	76	10	4,022
MTO / Technician	32	41	28	28	29	31	34	37	14	2	276
All qualified microbiology staff	125	439	447	505	600	644	565	325	89	6	3,745
Consultant Clinical Scientist (Grade C)	-	-	-	1	1	2	1	-	-	-	5
Managers	-	-	1	-	6	4	13	5	-	-	29
Clinical Scientist (Grade A & B)	2	11	8	13	9	5	6	12	4	-	70
Advanced Practitioner Biomedical Scientist	5	50	57	39	40	31	22	30	4	-	278
MLSO / Biomedical Scientist	110	361	376	447	533	600	518	273	77	6	3,301
MTO / Technician	8	17	5	5	11	2	5	5	4		62
All qualified other life sciences staff	150	254	215	216	235	231	234	164	56	4	1,759
Consultant Clinical Scientist (Grade C)	3	4	-	4	6	5	6	6	2	-	36
Managers	-	-	1	2	7	11	14	8	2	-	45
Clinical Scientist (Grade A & B)	69	102	48	34	26	25	24	25	4	2	359
Advanced Practitioner Biomedical Scientist	-	-	-	-	-	-	2	2	-	-	4
MLSO / Biomedical Scientist	41	107	100	124	143	150	150	92	30	1	938
MTO / Technician	37	41	66	52	53	40	38	31	18	1	377

APPENDIX III

ALIGNMENT OF CAREER PATHWAYS AND ROLES BETWEEN THE PRINCIPLE GROUPS WITHIN THE UK PATHOLOGY WORKFORCE



MP = Medically-qualified Pathologists

CS = Clinical Scientists

BS = Biomedical Scientists

- i. Training and career structures in the three groups are being aligned with respect to roles and responsibilities, both within the laboratory and clinically.
- ii. Regions of 'equivalence' are being identified where, through appropriate training, experience and completion of appropriate examinations, transfer from one line of career progression to another may be accomplished.

APPENDIX IV

AGE-DISTRIBUTION OF MEDICALLY-TRAINED PATHOLOGY WORKFORCE WITHIN THE UNITED KINGDOM – 2006 DATA

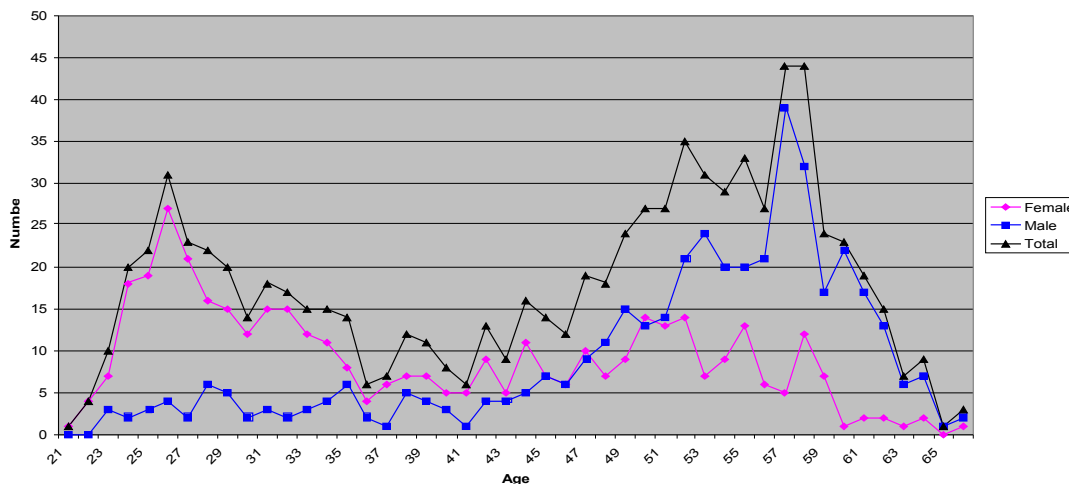
	Total	Aged 50-54	%	Aged 55-59	%	Aged 60-64	%	Aged 65 Plus	%
Chemical Pathology									
England	170	47	28%	38	22%	21	12%	2	1%
Wales	15	5	33%	2	13%	2	13%		
Scotland	29	7	24%	5	17%	3	10%		
N Ireland	9	1	11%	2	22%	1	11%		
Total	223	60	27%	47	21%	27	12%	2	0.9%
Haematology									
England	735	143	19%	113	15%	43	6%	9	1%
Wales	47	8	17%	10	21%	3	6%	1	2%
Scotland	90	11	12%	17	19%	6	7%	1	1%
N Ireland	24	3	12%	5	21%	3	12%		
Total	896*	165	18%	145	16%	55	6%	11	1%
Histopathology									
England	1313	250	19%	150	11%	78	6%	28	2%
Wales	68	20	29%	8	12%	4	6%		
Scotland	154	26	17%	24	15%	15	10%	3	2%
N Ireland	42	9	21%	4	9%	1	2%		
Total	1577*	305	19%	186	12%	98	6%	31	2%
Oral Pathology									
England	20	4	20%	3	15%	6	30%	1	5%
Wales	1			1	100%				
Scotland	1					1	100%		
N Ireland	2								
Total	24	4	17%	4	17%	7	29%	1	4%

APPENDIX IV – continued

	Total	Aged 50-54	%	Aged 55-59	%	Aged 60-64	%	Aged 65 Plus	%
Medical Microbiology									
England	530	112	21%	80	15%	31	6%	4	0.2%
Wales	33	6	18%	4	12%	2	6%		
Scotland	68	15	22%	12	18%	4	6%	1	1%
N Ireland	19	3	16%	2	10%	1	5%		
Total	650*	136	21%	98	15%	38	6%	5	0.8%
Immunology									
England	53	7	13%	8	15%	5	9%	1	2%
Wales	2	1	50%						
Scotland	5			1	20%				
N Ireland	2								
Total	62*	8	13%	9	14%	5	8%	1	2%
Allergy									
England	34	3	9%	4	12%	2	6%	1	3%
Wales									
Scotland									
N Ireland									
Total	34*	3	9%	4	12%	2	6%	1	3%
Clinical Cytogenetics & Molecular Genetics									
England	4	1	25%						
Wales	1								
Scotland	1			1	100%				
N Ireland									
Total	6	1	17%	1	17%				

APPENDIX V

AGE-DISTRIBUTION OF CLINICAL BIOCHEMISTS IN THE UNITED KINGDOM – 2005 DATA



The profile of these data is almost identical for Clinical Scientists in the other major Pathology specialties as well as for much of the Medically-trained Pathology Workforce and thus highlights a serious potential problem for future service delivery and for future training in all specialties.

- i. There is a bimodal age distribution with peaks between 50-60 years (343 persons) and 24-34 years (216 persons) with a minimum between 36 and 41 years (49 persons). The lower age maximum indicates the effect of the introduction of the Grade A training programme, while the minima reflect the previous loss of Grade B posts. The higher age maximum is an indicator of the number of clinical scientists that will need to be replaced over the next ten years as they approach retirement. In the past, succession planning has been absent and these data indicate the magnitude of the problem which we are tackling at present.
- ii. A large proportion of the “younger” members of the profession are female whereas a large proportion of the “older” members who will retire in the next 10 years are male. The increasing percentage of female clinical scientists will have an impact on workforce planning /training and progression because of maternity leave, career breaks, job sharing and part-time working. It is at present difficult to assess the numbers of biochemists who work part time as this data is not easily available from the ACB database.

APPENDIX VI

GENDER-RATIOS OF MEDICALLY-QUALIFIED TRAINEE PATHOLOGISTS IN UK – 2006 DATA

SPECIALTY	FEMALE	MALE	RATIOS F : M
Clinical Biochemistry	50	36	1.4 : 1
Haematology	180	194	0.9 : 1
Histopathology	257	205	1.25 : 1
Medical Microbiology	124	124	1 : 1
Immunology	15	27	0.55 : 1
Allergy	6	3	2 : 1
TOTAL	632	589	1.07 : 1

Progressive feminisation of the Pathology Workforce

The gender distribution contained within these data reflect a significant number of those who entered their Medical training 8 or 9 years ago. Since that time, the F : M ratio of Medical Students has continued to move in favour of female students. Since Pathology is a relatively attractive career to female doctors, a continued migration towards female Pathology trainees, and hence a predominantly female Workforce, is anticipated.

APPENDIX VII

CLINICAL PATHOLOGY POSTS CURRENTLY VACANT IN UK

Specialty	Number	Percentage
Clinical Biochemistry	22	9%
Haematology	54	7%
Histopathology	219	14%
Medical Microbiology	55	9%
Immunology	11	18%
CLINICAL PATHOLOGY POSTS IN UK PROJECTED VACANCIES FOLLOWING RETIREMENT AT AGE 55		
Clinical Biochemistry	85	38%
Haematology	241	31%
Histopathology	486	35%
Medical Microbiology	171	30%
Immunology	26	42%

Unpredictable events such as decision to retire at age 50-54, part-time working, deaths etc. will further impact adversely on these figures.

These figures are projections and do not represent the true shortfall of Consultant Pathologists within the UK since Workforce Data are not currently linked to Workload. Furthermore, Trusts do not necessarily maintain the funding for posts after vacancies occur.

APPENDIX VIII

PATHOLOGY WORKFORCE WEB-DATABASE: ESTIMATED RUNNING COSTS

WEBSITE HOSTING

The Pathology Workforce Web-Database would need to be hosted by a commercial web space provider.

These companies provide dedicated web servers, guarantee 100% uptime and sufficient bandwidth to cope with several hundred simultaneous users.

The web server would be windows based and need to support ASP.Net products (the pathology Workforce software is written in ASP.net)

There are literally hundreds of companies in the website hosting market (e.g. www.netcetera.co.uk or www.verio.com).

Prices for supporting a product like the Pathology Workforce Web-Database vary from £2,000-5,000 per annum.

PROJECT HELPDESK SUPPORT

The project would be presented to the pathology Workforce as a census initiated in 2006 and repeated on an annual basis.

Once the census is launched there will inevitably be questions from users which will fall into several categories:-

- Technical questions about the software and how to use it (despite providing adequate user guides etc.).
- Logical questions about the range of choices presented in fields and drop down menus etc.
- Political questions about what posts or incumbents to be included in the census.

This support could be provided by a help desk at the RCPATH or this service could be “bought in” from an outside agency.

The helpdesk would need to be operational 9-5 Monday to Friday 52 weeks of the year (excluding bank holidays)

The helpdesk would need to be staffed by individuals with sufficient skills to understand the software, the web base behind it and able to respond appropriately to incoming calls from organisations, heads of departments and individuals etc.

On this basis I would suggest these individuals should be an AfC Grade 5 (Salary Range £18,698 to £24,198 p.a.)

In addition there will be

- Employers on-costs
- A contribution towards accommodation costs

SOFTWARE MODIFICATIONS

Modifications to the Web Database Software will fall into a number of categories:-

- Modifications required to fix bugs that become apparent after the software is launched (despite adequate beta testing). These are usually minor.
- Modifications requested by the client based to further develop the software functionality (these can be major)

Software development requires skills commensurate with and individual on AfC Grade 8a (Salary Range to £34,372 to £41,246 p.a.). The costs of software modifications are usually specified and agreed in advance as a number of days work and these costs are recharged at a day rate of £200 per day.

DATA ANALYSIS AND INTERPRETATION

The design of the software allows appropriately authorised users to view basic tabulations of the database on line.

It is assumed, therefore, that the requirement for specialist analysis and interpretation of the data will be minimised.

However, should specialist analysis of the data be required this would involve an individual on AfC Grade 8a (Salary Range to £34,372 to £41,246 p.a.). The costs of such analysis and interpretation are usually specified and agreed in advance as a number of days work and these costs are recharged at a day rate of £200 per day.

ORGANISATIONAL MOTIVATION AND USER COMPLIANCE

The major problem with data collection exercises of this sort is compliance.

Responsibility for motivating department and individuals to participate in the pathology Workforce census and submit data must rest with the Royal College of Pathologists.

ESTIMATED COSTS

Basic Running Costs

- Website Hosting £2,000 - 5,000 p.a.
- Helpdesk Management £18,698 to £24,198 p.a.
(£22,604 - £29,385 including employer's on-costs)
- Accommodation £2,500 p.a.

Ad-hoc Costs

- Software Modifications £200 per day
- Data Analysis £200 per day