Training in infectious diseases

A REPORT OF A JOINT WORKING PARTY OF THE ROYAL COLLEGE OF PHYSICIANS AND THE ROYAL COLLEGE OF PATHOLOGISTS

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In recent years it has been realised that infections cause serious problems, some of which are increasing. They include epidemic infections such as salmonella and legionella, serious infections which complicate treatment for conditions such as cancer and kidney disease and new infections such as AIDS. To improve the way these diseases and allied problems are handled requires a number of actions, in particular an increase in the number and improvements in training of the medical staff involved.

This Report, produced by a Working Party of the Royal College of Physicians and the Royal College of Pathologists, emphasises the importance of complementary training in clinical and laboratory medicine for those wishing to adopt a career in infectious diseases.

The diagnosis and management of infection involves teamwork and may require the expertise of those trained in different infection-related specialties. We have therefore not attempted to provide detailed training programmes, but concentrated on providing a framework which can be adapted to those with different specialist interests, for example who wish paediatricians to adopt a career in infectious diseases and medical microbiologists who wish to specialise in clinical virology.

We realise that the implementation of the recommendations in the Report will require increased resources, including new posts. However, we feel that it is important to start by providing suitable training for the increasing number of able young doctors who appreciate that the specialty of infectious disease is important and exciting. This in turn will enhance the practice of the specialty both in hospital and the community. We therefore hope that our proposals and other associated measures will be implemented with some urgency.

1. Introduction

1.1 There is increasing interest in, and anxiety about, infectious diseases among the public, the medical profession and the Government. There are risks and problems associated with the importation of exotic infections, frequent hospital and community outbreaks (such as Legionella pneumonia, salmonellosis), acquired immune deficiency syndrome (AIDS), infections in severely immunocompromised or other debilitated patients, and the escalating cost of antibiotic therapy. Such problems can only be addressed and
The diagnosis and management of infectious disease, in the individual patient and in the community requires close collaboration between those trained to high standards in clinical medicine and in medical microbiology. There is therefore a need to establish complementary training programmes which will produce individuals skilled in both medical microbiology and infectious diseases, who are able to understand and support each other and to work well in an infectious disease team.

After the Working Party had started to consider training in infectious diseases, the Report on Public Health in England (the Acheson Report) [1] was published. This Report recommended the creation of Consultants in Communicable Disease Control (CCDCs) who would be responsible for overall co-ordination of infection control by practising in both hospitals and in the community. To be proficient, the consultants must be appropriately trained and have access to expertise in the recognition and management of infectious diseases and in microbiology, with perhaps some exposure to microbiology at the bench level. Together with environmental health departments, CCDCs would provide additional resources for combating infectious diseases.

The specialty of infectious diseases is becoming more popular, and in a few centres there are excellent academic departments which include clinicians, scientists and graduates conducting research for higher degrees. Such departments, which attract high calibre trainees, have made major contributions to various aspects of the understanding of microbial disease. Infectious disease physicians in these departments have wide expertise in infections, including those of the severely immunocompromised. There are also paediatricians with a special interest in infectious diseases of infancy and childhood.

In the UK, microbiologists have a high degree of skill in the laboratory diagnosis of microbial infections, the study of pathogenicity and antibiotic sensitivity, and possess expertise in the epidemiology of infection and its control. Because they are medically trained and are on the spot, they are able to apply this in detail to the management of the individual patient. They also play a key role in the control of infection in hospital and in the management of outbreaks. The essential role played by medical microbiologists in diagnostic and clinical services, including their key role in infection control and the management of outbreaks, has recently been described in the Association of Medical Microbiologists' report 'Medical microbiology and control of infections' [2].

Although many microbiologists may have had some training and experience in some aspects of clinical virology, there are relatively few specialist clinical virologists.

Other specialists who contribute expertise to the management of certain infections include chest physicians, immunologists, consultants in genito-urinary medicine or tropical diseases. All require the support of laboratory services, particularly microbiology.

2. Organisation of infection departments

Increased regional and national facilities for infectious diseases are required to complement existing regional and national facilities for microbiology.

Regional infectious disease units

Regional infectious disease units have a major role in providing advice, undertaking research and in consultations on infection problems. At present the number of fully-trained infectious disease physicians is small. Thus, there are currently 44 consultants in infectious diseases in the UK (28 in England and Wales) and 8 in tropical medicine. The number in England and Wales should be increased to about 60 during the next five years to enable consultants in regional specialist units to provide a consultative service at district level when required and, where appropriate, a sessional commitment. This is comparable to the number recommended in a Report to the Royal College of Physicians [3]. However, there are only 6 senior registrars in training. In order to achieve the required target for consultants, the number of trainees would also need to be doubled in the next five years. Consideration must also be given for training in and provision of expertise in paediatric infectious diseases. Regional infectious disease units will also require first class medical microbiology for which additional resources will be required.

Even if the number of trained physicians with expertise in paediatric or adult infectious diseases is increased, it must be appreciated that the majority of infections in district general hospitals will for some time continue to be managed by physicians or surgeons who have not been trained in infectious diseases. They will be advised by medical microbiologists, particularly on the use of antimicrobial drugs and the general management of infections.

Academic departments of infectious disease

There are relatively few university hospitals in the UK with academic departments of infectious disease. This is unfortunate since although many able young doctors are expressing an interest in infectious disease, there are only a few centres of academic excellence to set standards of research and clinical practice and to provide training. Young graduates are dissuaded from proceeding further because there is no attractive career structure.

Although the general pressures on the resources of academic departments and NHS hospitals may make it difficult to remedy this unsatisfactory state of affairs, it should be possible to overcome these problems by offering realistic, positive, clear-cut targets to trainees and administrators.
2.6 We consider that in every medical school the integrated investigation, care and teaching of infections, both paediatric and adult should be found. It is encouraging that two schools in England have recently appointed professors of infectious diseases. Much of the proposed expansion could be made by further developing the existing regional centres of infectious diseases, particularly for training, referral and consultation.

District infectious disease teams: structure and function

2.7 We believe that in every health district there should be an active hospital infection team, as well as arrangements for infection control in the community for which the CCDC has executive responsibility. Both must be closely linked with diagnostic services provided by microbiology departments in district general hospitals. The team should be able to perform two inter-related functions:

i. Advise on management and antimicrobial therapy of infected patients and infectious diseases;

ii. Investigate the control and outbreaks of infection in the hospital and the community.

Such arrangements should satisfy the requirements of the Report on Public Health in England [1] as well as the Report on Hospital Infection Control [4].

2.8 Although the composition of the team will vary from district to district, it will be essential to incorporate at least one medical microbiologist. Clinical skills may vary according to local circumstances: they might be provided by an infectious disease physician or another clinician with an interest and experience in diagnosis and management of infection.

2.9 A member of the team must have epidemiological experience or training in order to perform function 2.7 (ii) above. Such a person will work closely with CCDC (he/she may even be the CCDC). The local arrangements will thus be flexible and depend on the close working collaboration between microbiologists, clinicians and public health doctors with epidemiological training. Although the Public Health Laboratory Service (PHLS) has been particularly involved in the investigation and control of infection in the community, we believe that all medical microbiologists should be trained to do this in the community as well as in the hospital. Only in this way can the best service be provided and sufficient local resources be found.

2.10 The members of the team would meet regularly to consider a range of topics, such as the diagnosis and management of individual patients, outbreaks of infection in the hospital or community, antibiotic policy etc. Between them, members of the team would be available for consultation on a variety of problems.

2.11 Very occasionally, even such a combined approach will not be adequate. Under such circumstances, advice and expertise will be sought from regional units, central laboratories of the PHLS, or university laboratories.

3. Training and examinations

3.1 There is now an opportunity within the examination structures of both the Royal College of Physicians and the Royal College of Pathologists to arrange training to provide future specialists with the range of skills needed. Full training in both microbiology and clinical infectious diseases is possible at present, but is inevitably very long and demanding. However, individuals training in clinical infectious diseases should have some experience of laboratory microbiology, and vice versa. We therefore recommend that infectious disease physicians should spend up to a year in a diagnostic or research microbiology laboratory, while microbiologists should have up to a year of clinical and epidemiological training.

3.2 In addition, because of their importance in relation to both specialties, trainees should be encouraged to gain experience in epidemiology and molecular biology. Molecular biology provides the technology and insights for many new diagnostic and therapeutic advances and is leading to a greater understanding of the pathogenesis of disease. These views are in line with those of the Royal College of Physicians Joint Committee on Higher Specialist Training.

3.3 Up to now, the Royal College of Physicians and the Royal College of Pathologists have had different training programmes and examination structures:

- Physicians obtain the MRCP UK after completing general professional training and then undergo further training of a more specialised nature before gaining accreditation and applying for consultant posts.

- With the revised regulations of the Royal College of Pathologists, medical microbiologists will be able to take the major component of their examination as early as three years after commencing training in pathology. This will then be followed by a further period of higher specialist training which could take one of several forms, the MRCPath being awarded after a final assessment when a total of at least five years training has been completed.

- As a result of the new regulations for training and examinations provided by the Royal College of Pathologists, it may be possible to make broadly similar arrangements for microbiologists to include work in clinical infectious disease in their training and for physicians to include relevant laboratory work.

3.4 There are about 400 medical microbiologists in the UK. Although the Royal College of Pathologists considers there should be a minimum of two microbiologists in each district general hospital, a College survey conducted in 1988 [5] showed that 108 medical microbiologists are single-handed, ie do not have additional medically qualified staff. There are 20 districts which do not have a consultant medical microbiologist in post, but are covered by microbiologists from adjacent districts. Of these 128 districts, 41 serve populations of over 250,000.

3.5 Currently, there are only 28 infectious diseases
consultants in England and Wales and 14 in Scotland, although there are some additional consultants with an interest in infectious diseases. Only six regions have infectious disease units recognised for higher specialist training.

3.6 In a previous report in 1976, the Royal College of Physicians recommended that each district general hospital should have sited within it a hospital infection unit of 20 beds. Some hospitals already have such units which their medical and nursing staff recognise as fulfilling a particularly useful function. This was recommended again more recently, although it was suggested that units should consist of 6–10 beds [6]. Regional units will of course require a larger bed compliment.

3.7 Although each College has its own responsibility for training of specialists in the infection field, some overlap in their training programmes is desirable; for example, mutual understanding is important if specimens are to be selected and tested optimally and the results are to be correctly interpreted.

3.8 Within each training programme there is also considerable opportunity for further specialisation, for example to train in tropical diseases, virology or epidemiology. Therefore it is natural that there is considerable overlap in training of doctors specialising in infection, and a wide variety of training options is available.

4. Guidelines for training

Physicians

4.1 Physicians who seek full responsibility for the management of patients with infectious diseases should commence their higher specialist training at the completion of general professional training, ie after the MRCP has been gained.

4.2 All trainees must have experience in certain ‘core’ disciplines; arrangements for the remainder of their training programme should be variable and flexible.

4.3 Core disciplines

i Sound experience in general (internal) medicine is essential.

ii Trainees must gain experience in infectious diseases by working for at least one year in academic units in teaching hospitals or regionally approved units. Trainees should hold the appointment of registrar or senior registrar according to the stage in their training programme at which this training is carried out.

iii The importation of tropical infections is now almost commonplace, particularly in some inner city areas. Such courses as the DTM&H in London and Liverpool or the MSc in Clinical Tropical Medicine would provide valuable training. Alternatively, expertise may be gained abroad in certain centres where trainees should spend at least a few months. Suitable units abroad may welcome this initiative, particularly if reciprocal arrangements can be established for some of their trainees to gain experience in the UK.

iv Trainees must gain experience at the bench in a microbiology (including virology) laboratory for at least six months to learn and understand the meaning, potential and limitations of laboratory investigations on their patients (or see option d). This, preferably, should take place after they have some bedside experience of infectious diseases.

Options for further training

4.4 In addition to the ‘core’ training programme, physician trainees could select one or more of the following options:

a Further training in general medicine or paediatrics, preferably associated with experience in oncology or organ transplantation.

b MSc course in medical microbiology or medical parasitology (eg at the London School of Hygiene and Tropical Medicine or the London Hospital Medical College) or the Diploma of Bacteriology course (University of Manchester) requiring one or two years.

c MSc, or short course in epidemiology.

d A research project in a laboratory discipline related to infectious diseases, eg microbiology, virology, immunology, molecular biology, genetics or epidemiology, which could lead to a higher degree (MD or PhD after two or three years). Studies of the host response to infection provide a particularly valuable basis for clinical practice.

e Training in medical microbiology, virology or immunology leading to the MRCPath.

Medical microbiologists

4.5 Medical microbiologists have responsibility for providing and updating diagnostic services, advising on the management of infected patients and on the epidemiology and control of infection in the hospital and district. The field of knowledge and the duties are now so varied that individuals may have more expertise in one of these fields than in the others.

Core disciplines

4.6 Trainees must acquire experience in certain core disciplines which will be necessary if a higher medical qualification is to be obtained. These include:

i Pre-registration house officer posts.

ii Training and experience in diagnostic microbiology, including virology.

iii Training in the epidemiology of communicable diseases is necessary for all medical microbiologists.

iv Acquisition of the MRCPath is the usual qualification which most medical microbiologists involved in providing clinical services will wish to obtain.
4.7 Options for further training

a Six to 12 months further training in an approved post in infectious diseases, STD, paediatrics, oncology, transplantation, respiratory medicine or general medicine. The MRCP UK may be a useful additional qualification for those medical microbiologists who intend to have a significant clinical role.

b Training courses in special areas may also be appropriate. Courses might include taught courses leading to an MSc in medical or clinical microbiology, courses of instruction in epidemiology or training in molecular biology.

c Research leading to a higher degree, particularly MD, may be an appropriate aim for medical microbiologists, particularly if they wish to pursue an academic or research orientated career.

Further specialisation

4.8 There is a wide variety of career opportunities which extend from a predominantly clinical to a predominantly scientific role. General experience in medical microbiology, infectious diseases, epidemiology, virology, mycology or parasitology form a satisfactory base for further specialisation within the subject.

4.9 Doctors who are uncertain as to whether they would become medical microbiologists or infectious disease physicians should gain experience in general medicine and infectious diseases.

Manpower planning

4.10 It is important that planning arrangements are made from the beginning to ensure that there is an appropriate number of trainees and posts to provide a properly integrated infectious disease service throughout Britain. There are, for instance, frozen or unfilled posts in academic departments of medical microbiology, and the number of consultant posts in medical microbiology are insufficient to meet requirements for many district general hospitals (see 3.4).

5. Funding of training programmes

5.1 Although the initiative of the Wellcome Trust in providing funds for training in infectious diseases, and their interest in funding academic departments is to be applauded, the guidelines for training (see Section 4) are only likely to be successfully implemented if the Department of Health provides central direction and possibly separate funding for this purpose.

5.2 Some of the funding earmarked for new consultant posts in the acute sector ('Hospital/Medical Staffing - Achieving a Balance in the United Kingdom' UK Health Departments, JCC Chairman of RHAs 1986) should be made available for consultants in infectious diseases.

5.3 The concepts of the Acheson Report [1] would be supported by establishing an active infection team in every district, as we have recommended. It would be important however to link their activities closely with those of the proposed CCDC and also with control of hospital infection committees as envisaged in the Report on Hospital Infection Control [4].

5.4 Even if the recommendations of this report are implemented with minimum delay, there will be a shortage of infectious disease physicians for some time. The DOH should therefore be advised to provide central direction to regional health authorities to give priority to infections and to appoint appropriately trained physicians, to fund infectious disease training for medical microbiologists, and to fund various in-service training arrangements, even though the past these decisions have been left to district health authorities.

5.5 In relation to training medical microbiologists, the working party is concerned that several posts within university departments of pathology have been lost while the workload of medical microbiologists increases each year. It should be remembered that hospital infection, both epidemic and endemic, is costly and that rational antibiotic therapy and effective control of infection saves money. Thus, even if better training is costly in terms of time and money, there will be financial advantages in making these changes.

5.6 In addition to removing the above problems, it will also be important to make clear to young doctors the variety of interesting and worthwhile training programmes and subsequent career opportunities in the field of infection. Wherever possible these training schemes should be planned ahead and tailored to individuals.

6. Summary and recommendations

The diagnosis and management of infectious diseases in the individual patient or the community require a high degree of excellence in both laboratory and clinical medicine.

The present state of the specialties of infectious diseases and microbiology in the UK requires strengthening. Recent outbreaks of infectious diseases have been the cause of considerable anxiety to the general public, parliament and the medical profession.

Recommendations

The Joint Working Party of the Royal College of Physicians and the Royal College of Pathologists make the following recommendations.

Organisation and staffing

1. Infectious disease teams should be established in each health district. These teams should include persons experienced in laboratory diagnosis, clinical aspects of infection, epidemiology and the control of infection in the hospital and community. Each team should contain at least one medical microbiologist.
2. The number of regional units recognised for higher specialist training should be increased, and should be complemented by first-class laboratories, particularly medical microbiology laboratories.

3. The number of infectious disease physicians should be increased to over 60 during the next five years.

4. Teaching and research programmes within academic units in clinical infectious disease, microbiology and epidemiology of infection should be created and expanded.

Training

Physicians

5. Physicians responsible for the management of patients with infectious disease will be expected to gain experience in:
   i. Infectious diseases in a regionally approved centre;
   ii. Tropical infections;
   iii. Medical microbiology.

Several options may be considered for additional training:
   a. Additional clinical medicine;
   b. Further training in medical microbiology;
   c. Training in basic epidemiology;
   d. Research leading to a higher medical degree.

Microbiologists

6. During their higher specialist training, medical microbiologists should enhance their knowledge of specialist microbiology. They should also consider one or more of the following options:
   i. A clinical post in infectious diseases, general medicine, paediatrics, STD or tropical infections;
   ii. Further training in epidemiology;
   iii. Laboratory training in molecular biology, or research leading to a higher degree.

Action by the Colleges and the DOH

7. In response to the concern of the public and medical profession about infectious diseases, and the anxiety expressed by both Royal Colleges, the above recommendations should be adopted and implemented.

8. Implementation of these recommendations will require central guidance and funding from the DOH. The Department should indicate that every district general hospital should establish active teams for the diagnosis and management of infections. Such teams should involve medical microbiologists and clinicians, including physicians expert in infections, and consultants in communicable disease control.

References

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Copies of this report are available from the Royal College of Physicians price £5 (Overseas £7 or US$15.00).

THE COMMON COLD UNIT

Dr David Tyrrell is preparing to write a book on the history and work of the Common Cold Unit, Salisbury. He would be very pleased to hear from anyone with information or documents about any aspect of its story from 1940 to 1990. Some individuals may have had contact with the Americans working there during the war, or in the administration or research later. Any details about the type of work or the people involved, or how things were arranged or organised would be particularly welcome.

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