The future of pathology in the UK: modernization or rationalization?

Since its beginning the NHS has profoundly affected the way pathology services are configured, staffed and delivered in the UK, and will continue to do so. But it is only one influence on the shifting patterns of laboratory work that are also continually being re-shaped by the evolutionary forces of advancing medical knowledge and increasingly sophisticated laboratory technology.

THE PAST

To predict the future it is helpful to understand the past. Pathology is a young science — 150 years ago there were no pathologists and no laboratories in hospitals.

Things changed towards the end of the 19th century and by the 1920s district hospital pathology laboratories had appeared where general pathologists provided services in morbid anatomy, histopathology and microbiology. They also offered rudimentary tests in chemistry and haematology. The quality remained very uneven in different parts of the country until two major political events changed the scene — the Local Government Act 1929, whereby the Poor Law hospitals were transferred to local authorities, and the establishment of the Emergency Medical Service (EMS) in anticipation of World War II. The first prompted a thorough review of hospital-based laboratories with some rationalization and investment, and the second produced urgent upgrading of hospitals throughout the country. It generated massive investment in pathology on a regional basis. It also provided pathologists and their technicians with secure salaries for the first time.

After the war, the EMS provided a ready-made foundation and template for the NHS. Then, as state-funded laboratories became bigger and busier, the organizational fragmentation of pathology into separate disciplines began, first in teaching hospitals in the 1940s and 1950s and later in district hospitals. From that time on all NHS consultant pathologists were appointed either as histopathologists, chemical pathologists, microbiologists or haematologists. The College of Pathologists, founded in 1964, sealed this process with its single-speciality membership examinations.

This pattern of professional development was possible because, unique to Britain, the NHS supported single-specialty laboratories in all its acute hospitals. Between 1939 and 1960 the number of consultants in pathology grew from 85 to 725 (Foster, 1981), and they created separate departments for each discipline. This pattern of organic growth was unfettered by the need for commercial viability — a major reason why pathology and pathologists have developed differently in the UK compared with the rest of the world.

THE PRESENT

The legacy of the first 50 years of NHS pathology is therefore that most district hospitals have separate and autonomous departments for the four main disciplines (and sometimes others, such as immunology). The staff of these laboratories belong to three separately regulated professional groups: medically-qualified pathologists, clinical scientists and biomedical scientists. There are also other grades of staff, including cytoscreeners specifically for cervical cytology, and unqualified medical laboratory assistants.

In larger hospitals and academic units additional disciplines have evolved such as molecular genetics, cytogenetics and histocompatibility. Subdisciplines have also appeared such as neuropathology, cytopathology and virology. All have their own postgraduate training programmes and many of the relevant laboratories also operate as independent service units within the NHS.

Although some development continues, the overall growth rate has slowed dramatically in the last few years as financial pressure has increased. Most pathology services are funded by NHS trusts as a direct cost or overhead. This means that the inexorably increasing workload does not bring increased revenue. Rather the reverse occurs because as trusts struggle to balance their books, laboratory budgets tend to shrink year on year. Shrinking budgets have been paralleled by lack of capital investment and many laboratories are now poorly housed and equipped.

Salaries for biomedical scientists (the bulk of the workforce) have failed to remain competitive and there is a poor career structure causing problems in recruitment and retention. Many laboratories are therefore understaffed, under-resourced, poorly capitalized and using outdated working practices compounded by lack of investment in communication technology. Morale in such units is understandably low.

Meanwhile in other countries without the influence of the NHS things have evolved rather differently. District and community medical laboratories have split into two rather than four disciplines, these being anatomical and clinical pathology. Confusingly the latter excludes histopathology and is a combined service in microbiology, haematology, clinical chemistry and immunology. Medical consultants in these disciplines are largely confined to universities and teaching institutions, and community services are overseen either by anatomical pathologists with additional training or by scientists. Anatomical and clinical pathology ser-

vices may be offered from stand-alone laboratories (combined or separate) and not all are based in hospitals.

Technological developments and the capital cost of large laboratory machines are pushing the UK towards the rest of the world rather than vice versa. Look in a modern and well-equipped laboratory for a test tube, bubbling retort or a Bunsen burner and you will be disappointed. Large machines whirring and clicking quietly in air-conditioned rooms with video monitors and keyboards everywhere is a more likely scene. And the machines can easily be configured to perform assays that cross traditional UK disciplinary boundaries.

It is no surprise, then, that combined laboratories for chemistry and haematology are appearing and in some places shift-work is replacing the 9–5 traditional working day, both to meet demand and to use expensive machines more efficiently.

Nowadays the amount of time many consultants spend at the laboratory bench is limited. Haematologists look after patients and most are essentially specialist physicians with laboratory training and responsibilities as well. Chemical pathologists are similarly evolving a dual role as metabolic physicians, and microbiologists are extending their clinical involvement with increasing responsibility for infectious diseases. Scientists are assuming managerial responsibility for service provision and technical responsibility for quality assurance. They also provide clinical advice on laboratory data interpretation and protocols for investigation.

In histopathology (anatomical pathology) things are a little different. The discipline is still microscopy-based, consultants still carry out most of the bench work, and the role of scientists has developed less than in other branches of pathology. But here too the evolutionary wind of change is blowing. There is a national shortage of consultants because of a failure of the NHS workforce planning system in the 1990s. There is therefore a major drive to find ways to relieve work pressures and this includes reviewing the role of laboratory scientists. Technology is also changing practice where (for example) molecular methods for genetic analysis of archived material are expanding rapidly.

THE FUTURE

So what will happen to UK pathology in the future? The NHS is poised on the brink of its biggest upheaval to date. There will more resources for a taxation-funded health service, but it must be modern. This is the vision of the Government's *National Plan* (Department of Health, 2000), but so far the big picture obscures detail.

The clue to the direction of governmental thought as far as pathology is concerned is probably covered in a single line. This states that 'We also propose to develop some partnership arrangements at a regional level for modernising pathology services'. How this will happen is not yet clear but some form of regional organization as opposed to the current district-based system seems to be a likely component.

What is certainly needed is some serious re-examination of the highly compartmentalized management structure that currently exists, a review of how pathology is funded to make it more dependent on workload, a look at how the service is configured, where there is unnecessary duplication of expensive equipment, and consideration of the best deployment of senior professional staff. All this is not an argument for cost-cutting rationalization, nor for carrying out all tests in an aircraft hangar in the East Midlands. But we do need to examine better ways of meeting the demands of the service and this will involve putting some sacred cows at risk.

Larger more expensive machines push us towards 24-hour working to make them economical. They may not be justified in every hospital where transport times to other sites are short. Cervical cytology screening is certainly something that could and should be centralized, not just for economic reasons but more importantly for improved quality control. Histopathologists may be more efficient and achieve greater skills if more work together, sub-specialize and share technical facilities. Whether every hospital needs full-time resident consultant pathologists in every discipline needs to be questioned dispassionately. Many probably do, but perhaps not all.

There is a need for caution, since presently the quality of pathology in the UK is high, despite all the problems described above. And changes that are beneficial in one area may not be in another, because of the different configuration of clinical services and the local geography. But the political pressure for change coupled with the continuing forces of evolution will not allow pathology to stand still.

A young consultant time-travelling from 1950 would scarcely recognize a modern laboratory today. And it is likely that one from today will be equally amazed in 2050. Who knows, by then we will all have personal electronic bio-probes that we link to an on-line health service from home to get an instant print out of our entire internal milieu. It will be pathology, but not as we know it, Jim. HM

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KEY POINTS

- The NHS has had a major effect on the way UK pathology has developed.
- Many laboratories are now under-resourced with low morale.
- Modernization may involve imaginative reconfiguration and reorganization as well as investment.
- Different solutions may apply to problems in different parts of the country.