

## **Extended Role of Medical Laboratory Scientists in Diagnostic Pathology**

Associate Professor Mike Legge  
Departments of Biochemistry and Pathology  
University of Otago  
PO BOX 56  
DUNEDIN

A report prepared for the Medical Laboratory Workforce Innovation Project as part of the District Health Boards (NZ) Technical Workforce Strategy group. January 2008

Contact details:

Telephone: (03) 479 7845

FAX: (03) 479 7866

Email: [mike.legge@otago.ac.nz](mailto:mike.legge@otago.ac.nz)

## 1.0 Background.

In February 2007 the District Health Boards (NZ) Technical Workforce Strategy Group established a Working Party to investigate extending the role of Medical Laboratory Scientists in diagnostic pathology laboratories to provide for the anticipated shortage of Pathologists. The specific objectives are given below:

- To identify current or planned DHB sector development for Medical Laboratory Scientists which responds to the Pathologist workforce shortage.
- Describe future pathways and barriers to achieving agreed change
- To support career pathway development opportunities for Medical Laboratory Scientists
- To report back to the Technical Workforce Strategy Group and make recommendations on:
  - pathways for workforce development
  - next steps
  - priorities
  - recommendations for targeted audiences (e.g. Ministry of Health, Regulatory Authorities, professional bodies, DHBs, Workforce Group)
- To signal flow on effects of the Medical Laboratory Scientist role expansion on the medical laboratory workforce continuum.

The Working Party held regular teleconference meetings and one face-to-face meeting during 2007 and also surveyed the diagnostic pathology laboratories for the profession's views on an extended role for medical laboratory scientists. Towards the end of 2007 Associate Professor Mike Legge (a Working Party member) was asked to prepare a report on the current situation overseas for the extended role of medical laboratory scientists. This report has been prepared in response to the request for information on the extended role of medical laboratory scientists.

## 2.0 Development of Non-Medical Practitioners

Modern healthcare requires multidiscipline approaches to patient-centred management. This requires flexible approaches to the way health professionals work and may require a reconsideration of professional barriers to further develop skills and talents necessary for patient benefit and an efficient health care service. This needs to be always set against a background of validated competence. With the professional regulation of the non-medical workforce in healthcare similar safeguards for patients and members of the public are now in place in New Zealand through the Health Practitioners Competence Assurance Act (2003). In addition to this the progressive reduction of the scientific content of undergraduate medical programmes has failed to provide an adequate knowledge base for the increasing scientific knowledge and skills required for provision of the scientific basis of modern medicine. Associated with the decrease in scientific training in undergraduate medical programmes is the decreasing recruitment into certain specialised medical professions such as Pathology and Radiology as well as certain areas relating to surgery and, management and treatment in clinics.

In the United Kingdom and the USA there is an increasing need to review and redefine professional roles throughout healthcare. The development of Nurse Practitioners who now carry out many procedures formally undertaken by medical practitioners and the establishment of Physician Assistants in the USA and Canada are redefining the role of the non-medical healthcare professionals. In New Zealand Nurse Practitioners are becoming established and limited prescribing rights are also possible for other non-medically qualified healthcare practitioners. Indeed the now defunct 'New Prescribers Advisory Committee' identified that health practitioners registered with the appropriate statutory registering body may seek limited independent prescribing authority. Increasingly non-medical healthcare professionals are providing expertise, which has been the traditional domain of the medical graduate

## 3.0 Summary of Pathologist Workforce Statistics

Diagnostic Pathology is progressing to a workforce crisis. In the UK, North America, Australia and New Zealand there is an aging pathologist workforce, a shortage in the range of specialities, a lack of trainee pathology registrars and linked to the shortage of qualified pathologists is the reduction in the number of skilled tutors to train pathology trainee registrars. Listed below is the current number of consultant pathologist vacancies in the UK:

<b>Discipline</b>	<b>Number</b>	<b>% workforce</b>
Clinical Biochemistry	22	9
Haematology	54	7
Histopathology	219	14
Medical Microbiology	55	9
Immunology	11	18

In addition the Royal College of Pathologists of Australasia (RPCA) have calculated the projected clinical consultant pathologist shortfall based on early retirement (>55 years) and the figures are shown below:

<b>Discipline</b>	<b>% Projected Vacancies</b>
Clinical Biochemistry	38
Haematology	31
Histopathology	35
Medical Microbiology	30
Immunology	42

In New Zealand the publication of the “Workforce Analysis – Pathologists in New Zealand 2007” by the New Zealand Committee of Pathologists reflects the UK and Australian trend. In summary between 2003 and 2007 there has been:

- a decrease of 11.1 FTE or 7% in pathologist numbers
- a decrease in the FTE/head of population, 1:19048 in 2003 to 1:27877 in 2007
- a decrease in pathology trainees by 2.2 FTE or 4%
- a skewed age distribution
  - 21 FTE (14.2%) were over the age of 60
  - 54 FTE (37%) were in the 50-59 year age group
  - 55 FTE (33%) were in the 40-49 year age group
  - 11 FTE (35%) were in the 30-39 year age group
  - 63 FTE (30%) were likely to retire in 5 – 10 years

The document projects the requirements for pathologists using the Clinical Training Agency (CTA) requirements to 2018 and identifies that there will be a pathologist shortfall of 106.9FTE or if the RPCA figures are used a shortfall of 135.9 FTE. Using the best-case scenario there would need to be an additional 14 FTE pathologists coming in to the system each year for 10 years, which was not seen as possible for a number of reasons:

- the international shortage of pathologists
- low pay and high workload in New Zealand
- low pathology trainee recruitment
- time frame required to train and qualify

The report concludes that a large increase in additional training positions is required to meet the CTA projections and that at least 20 to 30 positions would be required.

#### **4.0 Current Situation Overseas**

**USA:** The Clinical Doctorate has been developed as a professional degree for Clinical Laboratory Sciences. The specialist scientist would work as part of the clinical team as a consultant scientist. The model is based on the existing Clinical Doctorate in place for Pharmacy. In addition to this there already exists specialist Nurse Practitioners and Physicians Assistants both with university qualification routes.

**Canada:** There is extensive development of the Nurse Practitioner scope of practice and the development of health profession roles in Physician Assistants, Clinical Assistant Radiation Therapists and Anaesthetic Assistants. However, to date the only development in Pathology has been for Pathologist's Assistants who are certified to assist pathologists with the preparation and examination of tissues from surgical and autopsy pathology. No other developments appear to have been made in Pathology or Laboratory Medicine

**Australia:** The Royal College of Pathologists of Australasia (RPCA) have debated the introduction of "Medical Scientists" trained in specialist areas of pathology but to date have not reached a decision whether to support the concept. It is currently possible for "Senior Scientists" (based on the definition in the Health Insurance Act, 1973) to become an Associate member of the RPCA and "Clinical Scientist in Pathology" may also be admitted after successfully completing an examination similar to the Part 1 pathology trainee examination and fulfilling a number of criteria. The specific role of these memberships is not clearly defined. The Australian Institute of Medical Science is attempting to have dialogue with the RPCA relating to the development of "Medical Scientists in Pathology". The Nurse Practitioner is well developed but is regulated on a state-by-state basis. There is discussion relating to national health professionals registration system similar to that in New Zealand covered by the Health Practitioners Competence Assurance Act (2003).

## **5.0 United Kingdom National Practitioner Programme.**

The National Health Service (NHS) has been subject to a number of recent reviews centred on the delivery of healthcare, specialist staffing and training. In addition to the NHS reviews the Royal Colleges of Anaesthetics, Medicine, Pathology, Radiology and Surgery conducted their own reviews to investigate the role of non-medical practitioners in extended care areas, which would normally be the domain of a medical practitioner. The outcome has been the establishment of the National Practitioners Programme, which will provide guidance to the NHS on:

- implementation of a flexible career and a skills escalator concept
- enable individuals with transferable, competence based skills to progress in a direction which meets workforce, service and individual need.

Through the initiatives of the Royal Colleges and the coordination of the National Practitioners Programme the leading examples of the practitioner programmes are:

- Surgical care practitioner
- Perioperative specialist practitioner
- Anaesthetic practitioner
- Medical care practitioner
- Emergency care practitioner
- Critical care practitioner
- Endoscopy practitioner
- Assistant practitioners in mental health, maternity services and theatres.

Associated with the above developments has been the very close cooperation and discussions with healthcare professional bodies such as Pharmacy, Physiotherapists, Nursing and Medical Laboratory Scientists (Biomedical Scientists in the UK).

## 6.0 Reviews of Healthcare Provision in the UK

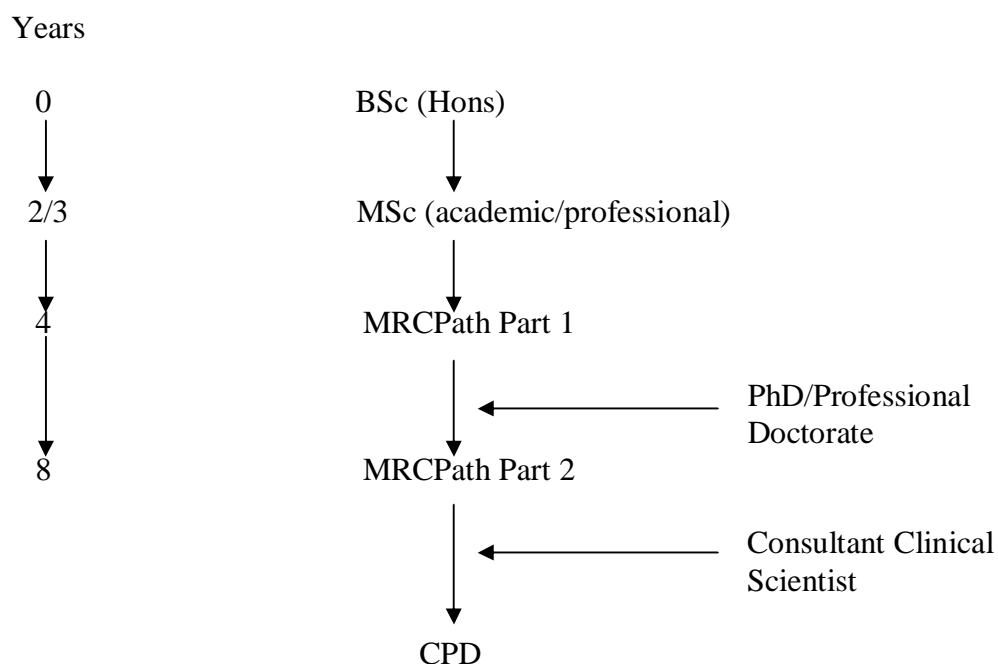
In addition to the report by Lord Carter of Coles on the Modernisation of Pathology Services a number of reports have been prepared by the NHS on Pathology Services and the more global aspects of non-medical healthcare professionals. With regards to the specific area of medical laboratory scientists it was identified that the profession, in general, had a low profile and it was proposed that a career structure for all scientists associated with the provision of healthcare should be adopted with the title of Healthcare Scientists. This proposal also provided for a continuous career progression from an entry level to Healthcare Scientist Consultant Director (equivalent to an NHS clinical consultant). And covered all 49 scientific disciplines employed in NHS healthcare areas.

The RCP in conjunction with the professional scientific bodies employed in diagnostic pathology have developed a generic job description for scientists employed as Consultant Clinical Scientists in Pathology. The Institute of Biomedical Scientists (IBMS) has developed advanced level qualifications with the RCP in histology cut-up, cervical cytology and non-cervical cytology, positive reporting, ophthalmic pathology (including dissection and reporting) with similar initiatives being developed for haematology and microbiology. Clinical biochemistry already has established linkage with the RCP via the Association of Clinical Biochemists. It is intended that by 2008 that clinical scientists will also be able to gain membership of the RCP (MRCPath) by examination (parts 1 and 2) in all disciplines of pathology. The RCP recognises that attainment of consultant status will be medical consultant equivalents and this status is similarly recognized by the Clinical Pathology Accreditation (UK) Ltd in its standards for laboratory accreditation (“*Each discipline shall be professionally directed by a consultant pathologist or a clinical scientist of equivalent status*”). Currently the clinical scientist UK membership of the RCP is approximately 25% of the total membership and this is expected to increase as role extension progresses and the newer disciplines such as genetic diagnosis and clinical embryology progress. Future extended roles for the clinical scientist have been identified by the RCP in two areas:

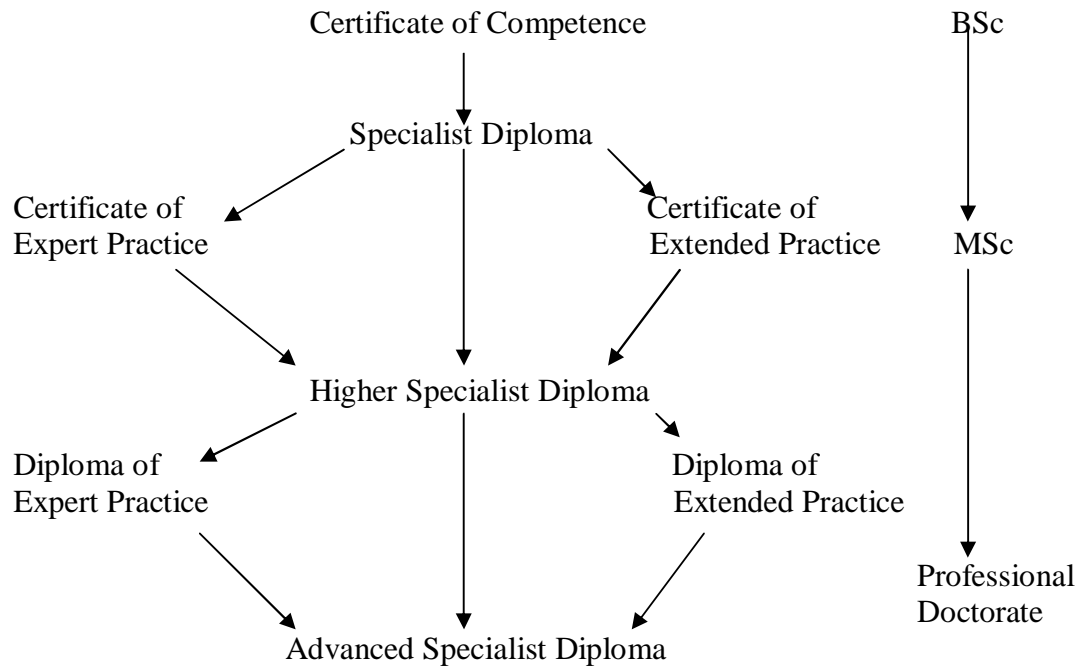
- “High level management and direction of laboratory services consequent upon medical consultants having greater roles in direct patient care. Disciplines will include clinical biochemistry, haematology, histocompatibility and immunogenetics, clinical immunology, microbiology and transfusion science”
- “Introduction of new or extended specialist services that will be managed and directed by principal grade and/or consultant grade clinical scientists. All disciplines of pathology will be affected but the impact is likely to be greatest in cellular science, clinical embryology, genetics, haematology and histocompatibility and immunogenetics”.

## 7.0 Pathways to Training Clinical Scientists in Pathology

Multiple entry routes are proposed and the RCP has considered the entry of a science graduate with an honours degree in the area of the chosen discipline in pathology. At this stage the minimum training would be eight years which would be divided into four years for pre-registration and four years for higher specialist training. Training to the pre-registration would be equivalent to a minimum of a Master's degree level along with vocational training under supervision. The end point of the training would be MRCPATH by examination and it would be anticipated that most clinical scientists would have also gained a PhD by research at this stage. An idealised route is shown below:



Possible alternative routes have also been considered, in particular with the Institute of Biomedical Scientists (IBMS) who already have established a specialist qualification system available for scientists who have gained Fellowship of the IBMS. The route is outlined on page 8.



Fellowship of the IMBS is equated with an MSc in the UK and is gained by examination with the Specialist Diploma. Scientists can progress further via the Expert or Extended Practice routes ultimately gaining an Advanced Specialist Diploma in a specific area of diagnostic pathology. This structure has been recognized by the RCP as a suitable route for entry in to the RCP. Funding for training as consultant clinical scientists is available via the multi-professional education and training budget (MPET).

### 8.0 The New Zealand Situation.

Given the acknowledged shortfall of pathologists in New Zealand (and Australia) the possibility of training clinical scientists along similar lines to the models discussed should be considered. It would seem appropriate that the best resource for this would be medical laboratory scientists who already have knowledge and experience in diagnostic pathology. And many have already undertaken post-graduate training. The adoption of the generic title Healthcare Scientist and an open ended career structure similar to that recently introduced in the UK would provide a strong indication of a career structure for the profession with multiple stopping off points for those not wishing to become consultant clinical scientists. In establishing the open-ended Healthcare Scientist career structure it would also be important to define the appropriate positions on the scale for science graduates who do not have a medical laboratory science degree. In adopting a new professional title it would be appropriate for the Medical Laboratory Science Board (MLSB) to adopt the vocational scope of practice identical to that used by the Medical Council of New Zealand. Consideration would also have to be made whether the MLSB would be the most appropriate statutory authority to oversee the new qualification route and whether there would be a requirement to create a new statutory authority to oversee these qualifications and continuing professional development.

In implementing the courses of advanced and professional study for the consultant clinical scientist important considerations would be:

- A university provider and appropriate funding for training
- Funding for clinical practice training
- Linkage with either the RPCA or the RCP (UK)
- A CPD programme (would be linked through the RCPA or RCP)
- Registration process and appropriate Statutory Authority
- The requirement for “scope of practice”.
- The development of professional MSc and PhD programmes

## **9.0 Conclusion**

Given the widespread international acknowledgement that there is a pending crisis in the training and supply of pathologists it is appropriate to consider alternative training routes to bridge this problem. The increasing use of diagnostic pathology services and the new diagnostic technologies such as genomic medicine, informatics, systems biology etc will place extra demands on an already aging workforce in a profession which is experiencing a significant crisis in recruitment. In the Northern Hemisphere measures are being taken to overcome the pathologist shortage with the training of non-medical graduates in specialist pathology disciplines which has to be a serious consideration in New Zealand and Australia. Both the CTA and the RPCA projections indicate that sufficient numbers are required to justify the implementation of a suitable training programme to meet the future shortfall of this important healthcare workforce.

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