

**Further Considerations Relating to the Extended Role of Medical  
Laboratory Scientists in Diagnostic Pathology**

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## 1.0 Career Pathways in Pathology

A career in Pathology has been one of the many options available to the medical graduate, however in recent years there has been a decline in the number of medical graduates entering this discipline. Taking in to consideration the time to qualify in medicine the time-frame to qualify as a Consultant Pathologist is approximately 12 years with the qualification being administered by the Royal College of Pathologists (either UK or Australia). It has been acknowledged by both the Royal Colleges that there is not only an ageing Pathologist workforce with poor recruitment but there are also shortages in the both the traditional Pathology disciplines, and new and emerging disciplines.

Currently the Royal College of Pathologists (UK) has attempted to resolve the issue of Pathologist shortages by creating qualification routes for biomedical and clinical scientists. These professional groups have operated for some considerable time in their own right and have (especially in the case of Clinical Biochemistry and Genetics) already non-medical consultants within the National Health Service and also holding Clinical Chairs in Universities. Some non-medical scientists also hold Chairs in other “clinical” disciplines such as Reproductive Medicine and Endocrinology. Such appointments are based on the qualifications, research skills and personal abilities of the appointed individuals.

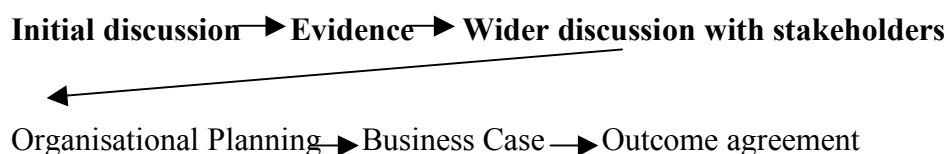
Currently in Australasia the Royal College of Pathologists (RPCA) does not provide an opportunity for a non-medical career route for scientists despite the predications by both the RPCA and the Clinical Training Agency (NZ) that there are or will be shortfalls in the Pathologist workforce in the near future. This has been linked to both the ageing workforce and the failure to attract adequate numbers of medical graduates to train in Pathology. In addition to this there is an increasing need for specialists trained in the new technologies and scientific disciplines, which will increasingly form part of the diagnostic procedures. In summary the overall issue facing Pathology Services is whether it is ‘fit for practice’ in 2008 and beyond and can deliver the required service for New Zealand health care.

The present document explores the feasibility and qualification routes of non-medical Consultant Clinical Scientists to meet the needs of Diagnostic Pathology services.

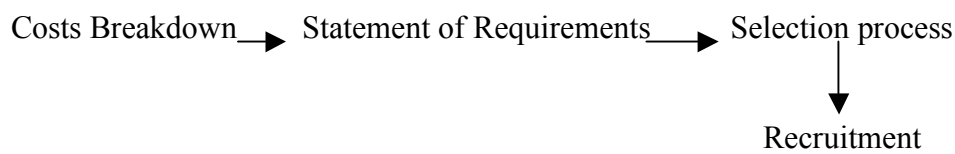
## 2.0 Staging

During 2007 and 2008 there have been considerable discussions under the auspices of the District Health Boards (NZ) Technical Workforce Strategy Group relating to the possible implementation of extended roles of Medical Laboratory Scientists in Diagnostic Pathology. This can be broken down into three staged groups: Planning, Preparation and Implementation.

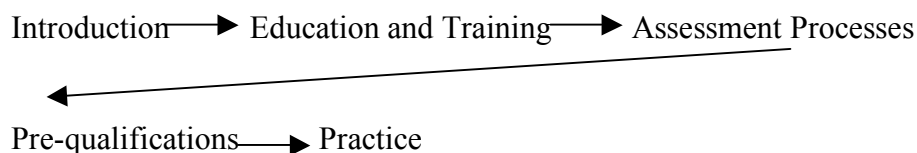
**2.1 Planning:** This is summarized below using a flow diagram with the stages reached in bold.



**2.2 Preparation:** Assuming 3. 1 is achieved the preparation process is outlined below.



**2.3 Implementation:** This is dependent on agreement for the first two staged groups.



The required time frame for this process is still to be decided as are the routes to implementation

## 3.0 Scoping.

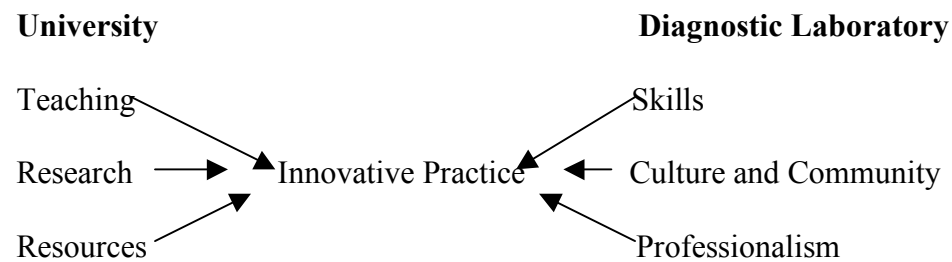
Diagnostic Pathology is a complex, multidisciplinary science. To provide for extended roles for Medical Laboratory Scientists it will be necessary to analyse and review scopes of practice to determine both workforce shortfalls and the discipline areas most suited for a Medical Laboratory Scientist to work in thereby producing a “plan for reform”. Such an exercise should consider the following: what training/competencies are required, how will the role be evaluated, who will be eligible to undertake the role, review of job description and appropriate recognition. The development of Extended Roles will require significantly higher levels of clinical and educational skills and technical responsibilities and will need to consider two groups of scientists: those who are already qualified and have sufficient experience to

advance, and those who are in the process of qualifying who can gain additional suitable qualifications whilst still at University.

## 4.0 Development of New Systems in Diagnostic Pathology.

### 4.1 General Considerations.

To achieve the recognition of Extended Roles there must be a clearly defined qualification system and suitable professional recognition. This will necessitate the cooperation of both the diagnostic laboratories to provide the clinical resource, and the Universities to provide the academic resource as outlined below.



Globally there will need to be a synthesis of a number of skills including specialised (discipline-based) knowledge, interpretive skills, technical knowledge, research and development experience (critical assessment, scientific reading, literature searches, colleague consultation, publications, presentations at conferences), data management, management and communication skills, health and safety. Whilst the Universities can provide some of this, the clinical and interpretive skills are more appropriately developed in a hospital/clinical environment.

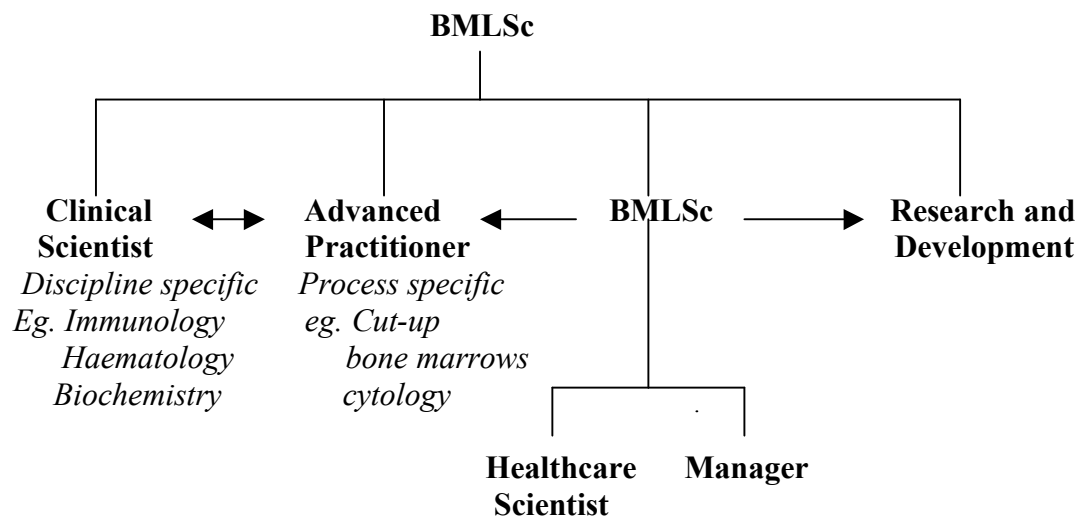
### 4.2 Requirement for a Hybrid System.

An important consideration in implementing the Extended Role model will be the requirement to operate in the foreseeable future a hybrid system i.e. accommodating the existing senior Medical Laboratory Scientists who wish to proceed in undertaking an Extended Role as opposed to producing a graduate prepared for an Extended Role. In the immediate future, roles could be identified in areas such as histology cut-up, bone marrow reporting, cytology, clinical biochemistry, haematology, and microbiology etc. With other disciplines identifying specific areas for appropriate training and recognition. As these scientists are already experienced in the specific discipline they should only require a clinical supervisor/mentor to help them gain the core competencies for the defined scope of practice. This also has the additional advantage of providing a pilot scheme for further development

### 4.3 Towards a Qualified Clinical Scientist

This was initially discussed in the earlier report “Extended Role of Medical Laboratory Scientists in Diagnostic Pathology, January 2008” however further consideration should be given to how the routes to qualifications can develop. The BMLSc qualification as an appropriate academic standard seems to be the most appropriate entry point for suitable candidates to undertake Extended Roles in Diagnostic Pathology. The current four-year degree covers all the core disciplines in Diagnostic Pathology including a final fourth year working in an approved laboratory

in two disciplines. Following graduation the options are to gain employment or to continue post-graduate studies with some students progressing to complete a PhD. Currently it is estimated that approximately 50 per cent of BMLSc graduates enter the Diagnostic Pathology workforce with the remainder completing additional qualifications, or finding alternative employment in other biomedical science areas such as research or biotechnology. Those who complete a Masters or a PhD rarely return to Medical Laboratory Science. A possible career route for Extended Practice is shown below:



The primary route of qualification would be vertical, however opportunity should exist for horizontal movement if further qualifications are required.

#### 4.4 Clinical Scientist

The development of the Clinical Scientist is ultimately a senior scientist who can provide clinical consultation and data interpretation. The aim of developing this role in Pathology is that it should be possible that Clinical Scientist should be capable of practice at the same level as a medical consultant within the speciality discipline. It would be expected that the scientist would hold a PhD or equivalent and be eligible for, or hold Membership of the Royal College of Pathologists and would have had considerable clinical exposure during their training

#### 4.5 Advanced Practitioner

This group of scientists would hold additional qualifications in an advanced area within specific discipline eg histology, haematology etc. They would be capable of operating on their own within the scope of practice. Typically they would have additional qualifications at the Diploma or MSc level and would be eligible to proceed to the role of Clinical Scientist with further study.

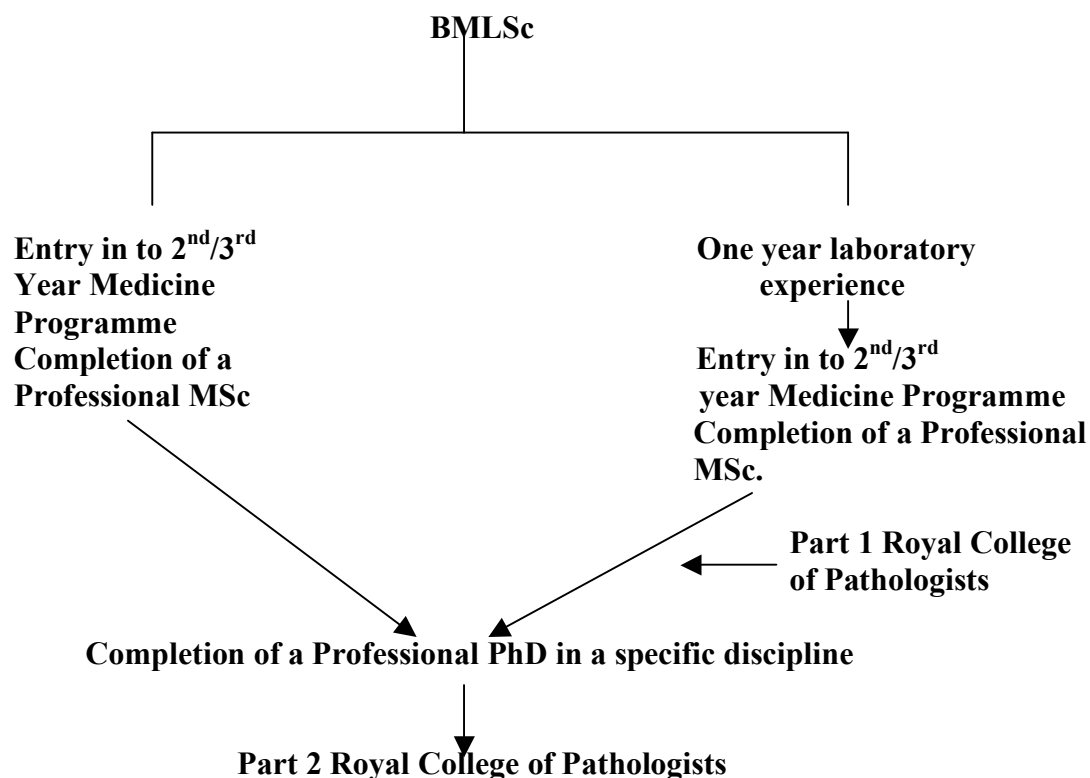
#### 4.6 BMLSc

The BMLSc scientists represent those continuing in the more traditional route in Diagnostic Pathology and would form the core of Health Care Scientists responsible for the operation of the Pathology laboratory. Opportunities to advance to.” Advanced

Practitioner' through to "Clinical Scientist" should exist although the time frame may be longer than the conventional route. Alternative opportunities in Laboratory/Health Care Management as career options would also be possible as would alternative careers in Research and Development.

### 5.0 An Alternative (more radical) Qualification Route

A criticism of the Extended Role model has been that scientists will not gain the vocabulary and general clinical background obtained when qualifying in medicine. With the development of integrated medical curricula and early patient contact in Medical Schools a possible alternative qualification route is outlined below.



The overall time frame for this route would be approximately 10 years and would clearly not provide an immediate solution to any Pathologist shortage but provides an alternative route for scientists to specialise in a clinical discipline. The advantage of the professional PhD would be that it would be undertaken in a clinical setting in a similar manner as the MD is currently taken. Under these conditions the scientist could be employed under similar conditions as a Registrar in Pathology.

### 6.0 Role of Universities.

A decision will have to be made relating to which qualification routes require diploma and degree qualifications and which routes can be accomplished by alternative qualification systems (see section 7.0). Will it be necessary to have to provide clinical material as an integral part of the Clinical Scientist training, if so then can they qualify only at a University with a Medical School? Alternatively can the training be shared across the three Universities currently teaching BMLSc degrees? Bearing in

mind the relatively small number of students who may be eligible and want to pursue the career route of Clinical Scientist the financial viability of providing specialist courses will be an important consideration for University administrators in agreeing to mount such courses.

## **7.0 Role of Professional Bodies**

The New Zealand Institute of Medical Laboratory Science (NZIMLS) and the Australian Institute of Medical Scientists (AIMS) are the professional bodies representing the Medical Laboratory Scientists and Medical Scientists respectively. Is it appropriate for these organizations to oversee a course of study in a similar manner as the Institute of Biomedical Science has undertaken in the UK? This would be especially relevant to certification of the Advanced Practitioner qualifications. A prescribed course of study could be jointly agreed between the two organizations and the RPCA to provide a common Australasian qualification. Ideally this should be at a level acceptable to Universities, which may then be used to gain further qualifications. It is not likely that the NZIMLS or AIMS would have the resources to train Clinical Scientists. It is also important to consider the involvement of Clinical professional organizations such as the Australian Association of Clinical Biochemists, the Human Genetics Society of Australasia and the Australian Society for Microbiology.

## **8.0 Role of the Royal College of Pathologists of Australasia.**

This is a critical factor in the development of Consultant Clinical Scientists. Full approval and participation by the RPCA in a training scheme would be ideal. The RPCA should consider the recognition of non-medical consultants as Members/Fellows of the College and as such allow access to the Part 1 and Part 2 examinations for suitably qualified scientists in the same way as the Royal College of Pathologists in the UK has now done. Suitably qualified non-medical scientists would also participate in the RCPA CPD programme as part of the ongoing education and development within the specific discipline. Direct involvement by the RPCA would ensure that the qualifications are transportable in Australasia.

## **9.0 Funding**

Clearly no scheme will function successfully if adequate funding for the programme is not available. Currently funding for medical education and training is split between Vote Health and Vote Education, which in 2002 totalled \$121 million per annum. Of this \$43 million was met by the Tertiary Education Authority, \$62.9 million by the Clinical Training Agency and \$15 million by the District Health Boards. (A Report to the Ministers of Health and for Tertiary Education from Workforce Taskforce [March 2007] from the Medical training Board). The same report identifies that *‘Some tasks that have traditionally been carried out by medical practitioners could be delegated to other people, specifically trained for this purpose. This would free medical practitioners to concentrate on their unique role in the workforce team and allow better utilization of their skill for clinical teaching and ancillary roles.’* It can be inferred from this report that perhaps the time is right to consider alternative strategies in Pathology as part of the broader brief of delegating tasks to people with additional

specific training. A case for appropriate funding could be made to follow-up this recommendation.

## **10.0 Professional Registration**

The registration system currently in operation in New Zealand for Medical Laboratory Scientists would be appropriate for Advanced Practitioners. However, the Consultant Clinical Scientist may well represent a new professional category operating outside of the scope of the Medical Laboratory Science Board. In the UK the Health Professions Council identifies Clinical Scientists as a separate registrable professional group from Biomedical Scientists (equivalent to Medical Laboratory Scientists). Assuming there is direct involvement by the RPCA in membership examinations then FRCPA for a medical graduate is registrable with the New Zealand Medical Council – where non-medical FRCPA graduates would fit would need to be considered.

## **11.0 Audit and Identification of Errors.**

As health care professionals both the Consultant Clinical Scientist and the Advance Practitioner will be subject to audit. Such a process would include mistakes in clinical advice, diagnosis and management, risk management strategies, audit of provision of diagnostic services and professional performance indicators. The maintenance of a logbook would be essential for professional review.

## **12.0 Pathologists and Clinical Scientists**

Criticism of the proposal to train Consultant Clinical Scientists has been made relating to taking over the role of Pathologists. This is not the case. Evidence from the UK and USA indicates that there are appropriate niches for both the Consultant Clinical Scientist and the medically qualified Pathologist. The UK Royal College of Pathologists provides evidence that Pathologists have more time for direct clinical consultation and greater involvement with their clinical colleagues as well as time for research for those who are research orientated, and a general reduction in workload. It is important to acknowledge that the proposal is not a challenge to professional integrity or skills. The use of specialist Health Practitioners/Health Care Scientists in the National Health Service in the UK has resulted in improved efficiency in patient management and through put.

## **13.0 New and Emerging Areas in Pathology.**

Although the traditional areas of Pathology will still the mainstay of diagnosis and treatment, developments in both new technologies and medical biology will change approaches to identification of disease and disease management. Scientists are qualified in many of the rapidly emerging areas such as molecular genetics and molecular diagnostics, gene array technologies, medical bioinformatics and modelling, stem cell biology, systems biology, biochemical and immunogenetics, pharmacogenetics etc. These and other areas of biology are making significant impacts on modern medicine and may ultimately replace some traditional approaches in diagnostic medicine. Many of the new and emerging areas represent the Pathology



of the future with for example the opportunity to identify and classify a tumour based on its molecular signature and identify the response to treatment based on the individual's personal genetic profile to the drugs used to treat the tumour. These are areas where the medically qualified Pathologist, the Consultant Clinical Scientist and the Clinician can work for improved patient outcome.

#### **14.0 Conclusion.**

The concept of the Consultant Clinical Scientist is now well established in the UK and the USA and has not created significant issues in either the skill base or the interface between medicine and patient care. It is generally accepted that there is a place for re-alignment of career pathways and that Consultant Clinical Scientists have a place in overcoming the workforce crisis facing Diagnostic Pathology. For this to be successful in both New Zealand and Australia it will require acceptance and development of a recognisable career pathway, which involves the Royal College of Pathologists of Australasia. This could evolve in conjunction with the NZIMLS, AIMS, AACB, HGSA and other representative organizations representative for health care scientists. Modern Pathology requires multi-disciplinary approaches and a unified Workforce in which individual skills and knowledge are aligned in such a way those individuals can work according to their individual expertise, knowledge and skills. The establishment and professional recognition of the Consultant Clinical Scientist and the Advanced Practitioner is consistent with a modern approach to Pathology.