

# Assessment of Competency in the Medical Laboratory

## Competency Based Standards

Competency Based Standards for Medical Laboratory Workforce (**Appendix 1**) reflect the work performed by staff of different levels of qualification, skill, experience, responsibility and accountability.

The first six units are, by definition, more general competencies whereas the last four represent the more advanced competencies expected of staff performing supervisory or management roles.

It is intended that these standards be suitable for assessment of competency in a specific discipline or across several disciplines.

## Scope of Practice

Although the competencies in the document in **Appendix 1** are initially described for Medical Scientist (Pathology), they are not specific for this group. Some competencies, such as clerical or technical work or interpretation, may be common to several different groups of staff, but can be practised at different levels or in different contexts. As a result, these same competencies may be applicable all groups of staff in the Medical Laboratory Workforce, commensurate with their position or role.

The Scope of Practice document (**Appendix 2**) seeks to break down the various units and elements described in the Competency Based Standards into laboratory related tasks. These tasks or competencies are colour coded for the minimum level or qualification of staff involved in performing them.

Details are shown in the table below.

Colour	Minimum level of staff required to perform task
Yellow	Laboratory Assistant
Green	Medical Technician (Pathology)
Blue	Medical Scientist (Pathology)
Pink	Clinical Scientist

## Role Definition for Medical Scientists and Medical Technicians (Pathology)

Document in **Appendix 3** defines roles of Medical Scientists (Pathology) and Medical Technicians (Pathology) in various countries and also in Western Australia.

It has become evident that role re-definition is required so scientific staff are removed from routine, and often more technical, testing. As such, their scientific skills could then be utilised in more complex testing, method or equipment validation or higher level roles involving supervision.

## Definition of Technician

NPAAC defines a technician as a person with one of the following qualifications:

- (i) associate degree or diploma as per Australian Qualifications Framework with subjects relevant to pathology or laboratory operations awarded by a recognised Australian TAFE or RTO

- (ii) qualification with subjects relevant to the field of pathology awarded by an overseas tertiary institution after not less than two years full-time study or an equivalent period of part-time study and where the qualification is recognised as equivalent to a diploma by the Australian Institute of Medical Scientists according to their authority approved by the Australian Education International-National Office of Overseas Skills Recognition

with appropriate training and certified competencies to perform the functions required and who is authorised to perform this function by the Laboratory Director.

## Definition of Scientist

If the scientific and, consequently, laboratory technical roles are being redefined, it is timely to review the definition of a Medical Scientist (Pathology).

Review of requirements by societies and associations show diversity in requirements for a scientist. These various requirements are detailed below:

**Australian Institute of Medical Scientists (AIMS)** defines a scientist as:

one who has completed an AIMS accredited degree or an acceptable science degree (which includes full units of human anatomy, human physiology, chemistry, biochemistry, immunology, general microbiology, general pathology, human molecular biology and at least two of the subjects clinical chemistry, haematology, medical microbiology, transfusion science and histopathology/diagnostic cytology).

AIMS accredited degrees are:

- |  |                                      |
|--|--------------------------------------|
| • Bachelor of Applied Science (Medical Science)        | QUT                                  |
| • Bachelor of Medical Laboratory Science               | JCU                                  |
| • Bachelor of Laboratory Medicine                      | University of SA                     |
| • Bachelor of Biomedical Science                       | University of Tasmania               |
| • Bachelor of Applied Science (Laboratory Medicine)    | RMIT                                 |
| • Bachelor of Science (Laboratory Medicine)            | Curtin University                    |
| • Bachelor of Science in Biomedical Science<br>Sydney  | University of Technology,<br>Sydney  |
| • Bachelor of Medical Science (Pathology)              | Charles Sturt University             |
| • Bachelor of Medical Laboratory Science               | Otago University                     |
| • Bachelor of Medical Laboratory Science               | Massey University                    |
| • Bachelor of Medical Laboratory Science<br>Technology | Auckland University of<br>Technology |

To be a graduate member of AIMS, the individual needs to hold one of the above qualifications and a minimum of two years post graduate professional medical laboratory experience in an approved diagnostic medical laboratory.

According to the **Australian Society of Cytology (ASC)**, NPAAC requirements for Gynaecological (cervical) Cytology 2006 state (footnote 2):

"Appropriate training for scientists is defined as having a relevant degree in science or applied science together with a minimum of two years full-time training/experience in NATA/RCPA accredited laboratory for gynaecological cytology. A senior cytotechnologist is

a person having the equivalent of five full-time years experience in cytology and holding a qualification which designates competence in cytology."

**Human Genetics Society of Australasia (HGSA)** requires ordinary Members shall be such persons who:

- (i) Hold a relevant degree or professional qualification from an Australasian university or other institution, or an equivalent degree or qualification from a non-Australasian country; and
- (ii) (a) Whose primary vocation involves or has involved, significant clinical, laboratory, administrative, or other professional responsibility in the clinical care, diagnosis, or management of individuals or families with genetic or developmental conditions; or  
  
(b) Whose primary vocation is, or has been, research, education or administration related to Human Genetics

Associate members of **Australasian Association of Clinical Biochemists (AACB)** must possess a degree from an approved University or an equivalent tertiary qualification.

**Australian Society of Microbiology (ASM)** professional class of membership (Member of the Australian Society for Microbiology) requires:

- (i) Completion of requirements of an academic qualification in microbiology at degree level or alternative qualifications acceptable to National Council; AND
- (ii) Completion of two years of post graduate full-time employment, or its equivalent, as a practising microbiologist

### **Definition of Clinical Scientist**

A 'clinical scientist' (by NPAAC definition) is a scientist who has had not less than 10 years of full-time, relevant laboratory experience and who possesses one of the following qualifications:

- (i) Doctorate of Philosophy in a subject relevant to the field of pathology
- (ii) Fellowship of the Australasian Association of Clinical Biochemists
- (iii) Fellowship of the Australian Institute of Medical Scientists
- (iv) Fellowship of the Australian Society for Microbiology (medical/clinical microbiology)
- (v) Fellowship of the Human Genetics Society of Australasia

It is envisaged that a 'clinical scientist' will play a senior role in the functioning of a pathology laboratory and will be involved in tasks such as creation of assays and research and development in both analytical and clinical sense.

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**Competency-based Standards**

**For**

**Medical Laboratory Workforce**

*Draft Second Edition 2009*

## Foreword

This document was prepared by a Workforce Steering Subcommittee of the Pathology Associations Committee in 2008. This document is a review of the 1993 Competency Based Standards prepared in consultation with of the following pathology industry associations:

- Australian Society of Microbiology (ASM)
- Australian Institute of Medical Scientists (AIMS)
- Australasian Association of Clinical Biochemists (AACB)
- Human Genetics Society of Australasia (HGSA)
- Australian and New Zealand Society of Blood Transfusion (ANZSBT)
- Australian Society of Cytology (ASC)

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## References

Competency-based Standards for Medical Scientists, Commonwealth of Australia, 1993

# Competency Standards for Medical Scientists

## Introduction

This document specifies Competency Standards for the Australian Medical Laboratory workforce.

These standards were developed initially to reflect the contribution normally expected from a scientist i.e. a person with a degree in a relevant area of science or applied science from an Australian (or equivalent) university, together with two years relevant professional experience in an accredited laboratory. This descriptor represents the entry level of a scientist to this profession and reflects a combination of qualifications, skills and the assumption of personal responsibilities and accountability.

The competencies described are not exclusive to the scientific workforce. Some (e.g. technical procedures, interpretation, clerical work) may be common to several groups, but practised in different contexts. Thus, these same competencies may be applied to all staff in the Medical Laboratory Workforce based on the appropriateness to their role.

This document concentrates on the general competencies. Task-specific competencies which refer to individual disciplines (e.g. haematology, microbiology) are described in Range Statements and Cues.

## What is Competency?

Competency has been defined as "the ability to perform the activities within an occupation or function to the standard expected in employment" (National Competency Standards Policy and Guidelines, National Training Board 1991).

Thus, the term "competency" embodies attributes such as knowledge, skills, abilities, attributes and attitudes required in professional practice.

Competency may be core, general or task-specific. Examples of core competencies are literacy, numeracy, reliability, communication skills and ability to work in teams. These are assumed to be present and are not further described in these standards.

## Understanding the Standards

The standards do not describe the knowledge required to demonstrate adequate evidence of personal competence. Rather, it is assumed that in the testing of competence a range of appropriate cues would be utilised to confirm the required standard.

The actual standards comprise:

Units	An aspect of work activity which describes a broad area of professional performance, can be undertaken by one individual, has real meaning as a "marketable component" of work based activity, can be grouped with other units to form a credible qualification.
Elements	Each unit is further divided into elements which describe what is done in the workplace to ensure that the units can be fulfilled.
Performance Criteria	Specify the type of performance in the workplace that would constitute adequate evidence of personal competence. They seek to specify competent performance in "output" terms. Performance criteria describe the overall evidence from which competent performance in an element would be inferred.
Range Statements	Describe more precisely the circumstances and context in which the performance criteria would be applied. They are provided for informative purposes only and do not form part of the mandatory aspects of this standards document.
Cues	Are practical examples of activities to illustrate the performance criteria. These cues are provided to assist an assessor to determine whether a competency has been achieved. They are provided for informative purposes only and do not form part of the mandatory aspects of this standards document.

## UNIT 1

### Collection, preparation and analysis of clinical material

#### Element

#### 1.1 Ensure the appropriateness of sample collection procedures

*If responsible for collection of specimen, staff member ensures that:*

1.1.1 Correct request form is received as set out in established protocol.

1.1.2 Identification of patient and demographic information is established.

**Criteria for assessment and performance:**

*Request form is checked for patient name, date of birth, gender, unit record number, ward, location, photographic identification, third party identification (e.g. relation, nurse, etc).*

1.1.3 Appropriate action is taken when request appears inconsistent with patient information data.

**Criteria for assessment and performance:**

*The requestor is contacted to clarify apparent inconsistency and senior staff consulted as required. Incidents are documented.*

1.1.4 Patient preparation and specimen collection is consistent with test(s) requested.

1.1.5 Patient is informed of procedure, advised of possible associated risks, and agreement to proceed is obtained.

**Criteria for assessment and performance:**

*If patient refuses to have sample collected, refer to requestor, refer to senior laboratory staff. Patient anxieties are considered, discussed and referred to senior staff.*

1.1.6 Collection is performed, consistent with established protocols and safe working practices.

**Criteria for assessment and performance:**

*Patient's condition is monitored before, during and following specimen collection and action taken consistent with the observations.*

1.1.7 Specimen is collected into an appropriate container, then immediately and correctly labelled according to established protocols and regulations including minimum labelling requirements.

**Criteria for assessment and performance:**

*Labelling could include nature of specimen (e.g. urine, CSF), name, date of birth, ward, unit record numbers, date/time, collector identified on specimen and request form.*

1.1.8 Specimen is transported in a safe and timely manner under appropriate conditions according to established protocols and regulations.

**Criteria for assessment and performance:**

*Ensure use of biosafety bag, appropriate packaging and conditions for transport (temperature, lid secured).*

#### 1.2 Ensure the appropriateness of specimen reception procedures

*If responsible for receipt of specimens in the laboratory, staff member ensures that:*

1.2.1 Documentation is checked to ensure it matches specimen and complies with current regulations.

1.2.2 Collection errors are identified and corrective action taken.

1.2.3 Specimen suitability for further processing is established.

**Criteria for assessment and performance:**

*Subject information data is checked against request; specimen is collected in a suitable container, in appropriate timeframe and under correct conditions.*

- 1.2.4 Decision is made whether to process sub-optimal specimen, taking into account all relevant circumstances and available resources.

**Criteria for assessment and performance:**

*Sub-optimal specimens are flagged: consideration given to urgency of situation, difficulty of obtaining new specimen e.g., patient access, nature of sample. Incidents are documented.*

### 1.3 Evaluate specimen suitability prior to analysis

*Staff member ensures that:*

- 1.3.1 Correct and satisfactory labelling and matching of subject details is established.

**Criteria for assessment and performance:**

*Request form and specimen are cross-checked for name, unique laboratory number, unit record number, date of birth, etc.*

- 1.3.2 Confirmation is made that the nature of the specimen is consistent with requested analysis.
- 1.3.3 Specimen is received in correct container (i.e. containing correct anticoagulant or fixative if appropriate) and in accordance with collection and delivery protocols.
- 1.3.4 Quality of specimen meets defined acceptability criteria.

**Criteria for assessment and performance:**

*Specimen is checked for haemolysis, clots, lipaemia, volume, age of specimen, normal flora, epithelial cells, etc.*

- 1.3.5 Appropriate action, as per defined criteria, is taken upon receipt of an unsuitable specimen.

**Criteria for assessment and performance:**

*Specimen rejection criteria, process for requesting new specimen, notifying requestor, processing specimen and consultation with senior staff, incident and outcome documented etc.*

- 1.3.6 Satisfactory specimens are appropriately registered into the laboratory information system.
- 1.3.7 Specimens are prepared for analysis.

**Criteria for assessment and performance:**

*Specimen is stored correctly prior to analysis; specimen is issued with a unique laboratory number, etc; patient and sample details are correctly entered into LIS.*

### 1.4 Determine the priority of laboratory requests (triage) to effectively manage service requirements

*Staff member ensures that:*

- 1.4.1 Priority of analysis is modified based on clinical necessity, as indicated by medical officer(s) and laboratory guidelines, then by staff and equipment availability.
- 1.4.2 Workload is organised to ensure optimal patient care and most efficient use of resources.
- 1.4.3 Workload is continually monitored and reorganised as required to accommodate changes in priority.

## 1.5 Process specimen utilising appropriate techniques

*Staff member ensures that:*

- 1.5.1 Appropriate test procedure is selected for the analysis required, the nature of available specimen(s) and the urgency of the request.
- 1.5.2 Appropriate standards and controls are selected and prepared and testing is organised in accordance with the analytical procedures/protocol to be undertaken, the urgency, and the clinical condition being investigated.
- 1.5.3 Appropriate reagents are selected and prepared to ensure maintenance of quality and suitability for use.
- 1.5.4 Processes are performed in accordance with prescribed methods, quality procedures and accepted safe working practices.
- 1.5.5 Appropriate means are used to ensure outstanding specimens are followed up.

<b>Criteria for assessment and performance:</b>
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<i>Actions take into account factors including time, personnel, reagents, equipment, procedures, quality control and urgency of request.</i>
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## 1.6 Read and validate results

### ***Equipment based testing***

*Staff member ensures that:*

- 1.6.1 Laboratory instrumentation is operated within established procedures (including quality control, troubleshooting instrument problems and performing preventative and corrective maintenance).
- 1.6.2 Validity of test results is confirmed in terms of protocols (including standards, quality control data and performance of analytical systems) and problems are identified and remedied or notified to the appropriate staff member.
- 1.6.3 Results are calculated from data outputs according to documented procedures.
- 1.6.4 Test data, calculations, results and acceptance/rejection of analytical procedure outcome are documented.

<b>Criteria for assessment and performance:</b>
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<i>Problem solving for laboratory instrumentation and analytical methods, quality control, acceptance/rejection criteria.</i>
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- 1.6.5 Available clinical information is reviewed.
- 1.6.6 Storage/disposal of reagents, standards, controls and specimens is in accordance with regulations and guidelines where applicable.

### ***Observation based testing***

*Staff member ensures that:*

- 1.6.6 Available clinical information is reviewed.
- 1.6.7 Critical observations are made and recorded.
- 1.6.8 Observations and evaluations are summarised, using the appropriate knowledge base, and summary is recorded according to regulatory protocols.

## UNIT 2

### Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information

#### Element

#### 2.1 Assess validity of data/results against possible range of outcomes

*Staff member ensures that:*

- 2.1.1 Initial observation and limited interpretation for significance of the raw data/results is undertaken.
- 2.1.2 Implausible results, results inconsistent with clinical information or expected outcomes based on other test results or those outside defined criteria are investigated further using defined troubleshooting strategies.

#### **Criteria for assessment and performance:**

*Acceptance/rejection criteria are adhered to; controls and other specimens, knowledge of limitations of procedure, interfering substances and possible collection/specimen or analytical artefact are assessed. Other test results from internal or external sources are reviewed.*

#### 2.2 Perform validation of results

*Staff member ensures that:*

- 2.2.1 Possible causes for implausible or inconsistent results or outcomes are determined.

#### **Criteria for assessment and performance:**

*Consideration of factors in relation to test including: patient status (e.g. immunocompromised patient), timing of collection, specimen, patient medication type and regimen, protocols.*

#### 2.3 Make decisions about reporting results, repeating procedures, consulting senior staff and carrying out further tests within established guidelines

*Staff member ensures that:*

- 2.3.1 Appropriate decisions about repeating procedures, carrying out further tests within established guidelines, rejection or reporting of results are made. Senior staff are appropriately consulted.

#### **Criteria for assessment and performance:**

*Repeating the procedure (with or without change in variables of test), referring problem to senior staff, requesting further sample and discussing with requestor.*

- 2.3.2 Rejected results are dealt with appropriately.

#### **Criteria for assessment and performance:**

*Reporting the result routinely, referring the result to senior staff, communicating result urgently, conducting additional or substitute tests, checking previous results, obtaining further samples, obtaining further clinical information.*

## UNIT 3

### Interpretation, reporting and issuing of laboratory results

#### Element

#### 3.1 Verify report(s) with sample identification

*Staff member ensures that:*

3.1.1 Sample identification is traceable from patient identification to reporting.

**Criteria for assessment and performance:**

*Identification code of result matches with sample number; identification code of sample number matches with patient identification.*

#### 3.2 Use the administrative systems in place to communicate the results

*Staff member ensures that:*

3.2.1 Results are communicated according to laboratory protocols.

**Criteria for assessment and performance:**

*Significant/urgent results are communicated verbally; paper or electronic reports are also generated.*

3.2.2 Confidentiality of results is assured at all times.

3.2.3 Telephone results are only given to authorised and identified persons using verification and documentation procedures.

**Criteria for assessment and performance:**

*Confirmation of identity of caller is established for telephone enquiries.*

3.2.4 Communication of results is recorded by appropriate means.

3.2.5 Overdue results are identified and investigated.

**Criteria for assessment and performance:**

*Results communicated appropriately (correctly, logically, coherently, succinctly) according to laboratory protocols.*

3.2.6 Advice or comment pertaining to the test procedure or outcome is reported in a clear and unambiguous manner.

3.2.7 Relevant reference intervals and, if appropriate, clinical decision limits are included in reports as per established protocols.

**Criteria for assessment and performance:**

*Consideration may be given to age and sex of patient, dose of medication, disease condition.*

#### 3.3 Ensure that results with important diagnostic or treatment implications are communicated as per established protocols

*Staff member ensures that:*

3.3.1 Significant results, as defined by the laboratory, are identified.

3.3.2 Results are interpreted in the light of clinical information provided and knowledge of the test(s) and limitations.

**Criteria for assessment and performance:**

*Consideration may be given to whether condition is life threatening, urgency, therapeutic ranges, clinical notes, test procedure, artefactual causes of spurious values.*

3.3.3 Urgent or significant results are communicated to appropriate personnel so they understand the significance, purpose of the communication and action required. This action is documented.

**Criteria for assessment and performance:**

*Relevant person e.g. doctor, nurse, subject is notified. Action is documented.*

### **3.4 Ensure appropriate storage and disposal of data and reports**

*Staff member ensures that:*

3.4.1 All results are recorded and retained according to current regulations and guidelines.

3.4.2 Reports are disposed of according to regulations and guidelines.

## UNIT 4

### Maintenance of documentation, equipment, resources and stock

#### Element

#### 4.1 Coordinate supplies of stocks and reagents

*Staff member ensures that:*

- 4.1.1 Conditions of receipt and storage of laboratory supplies are according to manufacturers' specifications and current safety and quarantine regulations.

#### **Criteria for assessment and performance:**

*Ensure on receipt that reagents have been kept at correct temperature and are not expired. Reagents are stored under correct conditions depending on requirements (temperature, security, safety).*

- 4.1.2 Stock supplies are maintained.

- 4.1.3 Expired or dangerous materials are disposed of according to regulations.

- 4.1.4 Inadequate stocks (e.g. expired reagents, contaminated reagents) are notified to the responsible staff member/unit and are appropriately quarantined to prevent inadvertent use.

#### 4.2 Participate in maintenance of the laboratory and equipment

*Staff member ensures that:*

- 4.2.1 Preventive maintenance protocols are enacted and actions recorded.

#### **Criteria for assessment and performance:**

*Maintenance records are up to date. Work area is tidy/clean/organised. Solvents are returned to fire-proof cabinets. Waste is placed in correct containers.*

- 4.2.2 Equipment maintenance by supplier is checked against laboratory requirements.

- 4.2.3 Equipment is calibrated against specified standards on a regular basis.

- 4.2.4 The status of the laboratory environment is monitored and any deficiencies detected are rectified and/or reported.

- 4.2.5 Safety protocols for equipment are maintained e.g. electrical checks, safety guards in place, etc.

- 4.2.6 Risk assessments are performed for any deviation to recommended instrument safety protocols.

#### 4.3 Participate in preparation and revision of manuals and protocols

*Staff member ensures that:*

- 4.3.1 Methods are regularly monitored for necessary update/modification.

- 4.3.2 Existing documentation is assembled and checked for appropriate references.

- 4.3.3 Relevant guidelines for content of manuals and regulatory requirements are followed.

- 4.3.4 Consultation with peers and senior staff is undertaken to discuss applicability, relevance and need for changes to any existing documentation.

- 4.3.5 Proposed changes to any existing documentation are discussed with, and approved by, senior staff.

- 4.3.6 Changes to documentation are effectively communicated to all relevant staff.

#### **4.4 Ensure appropriate resources are available to the laboratory**

*Staff member ensures that:*

- 4.4.1 Adequate and up-to-date information is utilised at time and point of need to assist in interpretation of test results and provision of advice, commensurate with experience.

**Criteria for assessment and performance:**

*Resources for additional information relating to tests and conditions can include reference materials e.g. texts, journals, internet, access to appropriate clinical information and/or personnel to assist in interpretation of test results and provision of advice.*

- 4.4.2 Requirements for staffing resources are communicated to appropriate authorities.

- 4.4.3 Requirements for equipment are communicated to appropriate authorities.

## UNIT 5

### Maintenance and promotion of safe working practices

#### Element

#### 5.1 Prepare and store reagents and solutions

*Staff member ensures that:*

- 5.1.1 Reagents and solutions are prepared using established protocols.
- 5.1.2 Reagents are labelled according to legislative guidelines.
- 5.1.3 An up-to-date inventory of hazardous reagents, Material Safety Data Sheets and supplies is maintained.
- 5.1.4 Reagents are stored in the correct facilities and under the correct conditions.
- 5.1.5 Reagents are handled as required by regulatory guidelines.
- 5.1.6 Expired reagents and solutions are disposed of according to safety precautions.
- 5.1.7 Reagent inventory is periodically reviewed and hazardous reagents no longer in use are disposed of in a timely manner.

**Criteria for assessment and performance:**

*Reagent preparation procedures are followed with reference to Material Safety Data Sheets, safety requirements for handling, storage and disposal.*

#### 5.2 Identify and respond to unsafe work practices and breaches of regulations

*Staff member ensures that:*

- 5.2.1 All safe work practices (as laid down by legislative guidelines) are understood and promoted.
- 5.2.2 Methods/protocols do not incorporate unsafe work practice.
- 5.2.3 Upon identification or suspicion, unsafe or improper practices are notified to senior staff with suggestions for improvement where appropriate.

**Criteria for assessment and performance:**

*Safety guidelines, risk assessments and/or audits, notification of issues to appropriate senior personnel.*

#### 5.3 Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes

*Staff member ensures that:*

- 5.3.1 The condition of biological, toxic and radioactive material is monitored on receipt and when in storage by the laboratory to ensure compliance with current legislation and guidelines.
- 5.3.2 The despatch from the laboratory of biological, toxic and radioactive material is performed in accordance with current regulation/guidelines.
- 5.3.3 The disposal of biological, toxic and radioactive material is performed as per current legislation and guidelines.
- 5.3.4 Protocols for incidents such as spills of biological, material, chemicals and radioactivity are followed in accordance with current regulations and guidelines.

- 5.3.5 Monitoring of the workplace and staff in areas using radioactivity is performed in accordance with current regulations and guidelines.
- 5.3.6 Staff handling radioactive substances are appropriately trained.
- 5.3.7 Laboratory workplace safety requirements are met when handling biological, toxic or radioactive substances.

**Criteria for assessment and performance:**

*Use of biohazard cabinets, requirements for TB cultures, safety procedures, appropriate storage and disposal of biological, toxic and radioactive waste*

#### **5.4 Respond appropriately to emergency situations**

*Staff member ensures that:*

- 5.4.1 Appropriate safety equipment and personal protective equipment (PPE) is used according to documented protocols.
- 5.4.2 Possible interactions of the various chemicals, reagents and biological material and potential hazards are known.
- 5.4.3 Knowledge and skill in using safety equipment to respond appropriately to emergencies is developed, maintained and documented.
- 5.4.4 Appropriate actions are taken as described in safety manuals.
- 5.4.5 Any emergency or safety related incidents are recorded and appropriately notified.

**Criteria for assessment and performance:**

*Compliance with Workplace Health and Safety documentation, Material Safety Data Sheets, instrumentation manuals, safety audits*

**Range Statements:**

*Safety manuals including: fire, chemical spills, electrical faults, basic first aid, radiation spill, biological hazards, thermal injury/damage.*

## UNIT 6

### Professional accountability and participation in continuing professional development

#### Element

#### 6.1 Establish and communicate personal goals in professional development

*Staff member ensures that:*

- 6.1.1 Realistic personal professional development goals are identified.
- 6.1.2 Goals are discussed and modified in consultation with relevant personnel.

#### Criteria for assessment and performance:

*Career goals are documented and a mentor is identified.*

- 6.1.3 A program for professional development is established.

#### 6.2 Maintain and update scientific/technical knowledge and skills

*Staff member ensures that:*

- 6.2.1 There is participation in formal CPD program (such as APACE) if available.
- 6.2.1 Relevant scientific meetings are attended.
- 6.2.2 Relevant scientific literature is monitored.
- 6.2.3 Opportunities to enhance learning from investigation of unusual clinical cases and/or results are pursued.
- 6.2.4 Information from instrument/reagent manufacturers and suppliers is critically assessed.

#### Criteria for assessment and performance:

*Documented attendance at internal and external meetings, workshops, presentations and regular review of scientific literature (e.g. in APACE diary and by APACE certification).*

#### 6.3 Develop skills relevant to the enhancement of professional growth

*Staff member ensures that:*

- 6.3.1 An understanding of all aspects of laboratory operation and the place of laboratories in health care systems is demonstrated.
- 6.3.2 Initiative is shown in suggesting or volunteering for additional tasks.

#### Criteria for assessment and performance:

*Engagement in quality improvement activities, method development, reagent evaluations.*

- 6.3.3 Additional skills are developed through activities in professional organisations and/or by attending courses.

#### 6.4 Recognise own abilities and level of professional competence

*Staff member ensures that:*

- 6.4.1 Work is only undertaken within the limits of one's abilities, qualifications and training.

- 6.4.2 Consultation with senior staff is undertaken when a situation requires expertise beyond one's own abilities and qualifications.
- 6.4.3 Appropriate advice and guidance is given to other staff, commensurate with experience.
- 6.4.4 An appropriate example is set for other staff in the workplace.

## **6.5 Comply with profession's code of ethics**

*Staff member ensures that:*

- 6.5.1 Decisions are made in a transparent, ethical, accountable and professional manner and conduct is demonstrated in a non-discriminatory manner.
- 6.5.2 Professional judgement, skill and care are exercised to optimal standard and in such a way as to bring credit to the profession.
- 6.5.3 Practices detrimental to patients and others are avoided.
- 6.5.4 Confidential information gained in a professional capacity is not disclosed to unauthorised persons.
- 6.5.5 Professional competence is maintained throughout career.
- 6.5.6 Appropriate safety regulations are always followed.
- 6.5.7 A responsible approach to the community and the environment with respect to the handling and disposal of hazardous materials is maintained.

**Criteria for assessment and performance:**

*Compliance with Equal Employment Opportunity policy, Anti-Discrimination policy, Anti-sexual harassment policy, Confidentiality agreement, Workplace Health and Safety documentation, ISO14000 or appropriate environmental policies, APACE or other appropriate certification of continuing professional development.*

## UNIT 7

### Responsibility for Medical Science practice including test selection, development and use of laboratory investigations

#### Element

#### 7.1 Accept responsibility for own actions/omissions

*Staff member ensures that:*

- 7.1.1 Tasks are delegated to medical scientists and technical officers commensurate with their abilities and scope of practice.
- 7.1.2 Tasks are checked to ensure they are completed.

#### 7.2 Make independent, professional judgements

*Staff member ensures that:*

- 7.2.1 Problems are solved using sound judgement based upon knowledge and practical experience.
- 7.2.2 Implications associated with various outcomes of decision making are recognised and understood.

#### **Criteria for assessment and performance:**

*Appreciation of the risk and possible repercussions, outcomes and consequences of decisions taken; assessment of decision making by senior personnel.*

#### 7.3 Demonstrate knowledge of contemporary ethical issues impinging on Medical Science

*Staff member ensures that:*

- 7.3.1 Data and events are critically analysed from an ethical perspective.
- 7.3.2 Rights of individuals/groups are recognised and protected.
- 7.3.3 Ethical problems and/or dilemmas in the workplace are identified and resolved appropriately or referred to a higher authority.
- 7.3.4 Unprofessional conduct is identified and dealt with or notified accordingly.
- 7.3.5 Serious misconduct is reported to appropriate authorities.

#### 7.4 Demonstrate knowledge of new tests and their potential in the laboratory

*Staff member ensures that:*

- 7.4.1 Ongoing review of current literature for information on new or improved tests or procedures is performed.
- 7.4.2 Recommendations regarding suitability of test(s) as replacement is made based on review of methodology, literature and/or other laboratories' procedures.
- 7.4.3 New tests are developed and implemented into laboratory environment.

#### **Criteria for assessment and performance:**

*May include correlation and validation of test method(s), establishment of reference intervals, instrument interfacing, test and result codes in laboratory information system, notification of appropriate staff and communication of new test requirements.*

## UNIT 8

### Liaison with health workers and others to continuously improve the service

#### Element

#### 8.1 Participate in quality improvement activities

*Staff member ensures that:*

- 8.1.1 Interactions of pathology with other components of the health service are identified and developed.
- 8.1.2 Quality issues are documented and brought to the attention of senior staff.
- 8.1.3 Suggestions for the better performance of the laboratory are made and different options are evaluated.

#### 8.2 Continually review laboratory processes and testing to streamline, minimise waste and increase efficiency.

*Staff member ensures that:*

- 8.2.1 Cost effective improvements to laboratory procedures or protocols are suggested.
- 8.2.2 Changes in response to technology improvements that improve processes, minimise waste, etc are implemented.

#### Criteria for assessment and performance:

*Understanding performance improvement processes such as principles of lean engineering, Six Sigma*

#### 8.3 Establish and maintain relationships with suppliers

*Staff member ensures that:*

- 8.3.1 In-house and external suppliers of goods and services to the laboratory are identified and an up to date list of contacts of suppliers of goods and services is maintained.
- 8.3.2 Good/appropriate communication channels with suppliers are developed and maintained.
- 8.3.3 Confidential information is not disclosed inappropriately to suppliers.
- 8.3.4 Critical aspects of supplier performance are agreed between the laboratory and the supplier and performance is reviewed in line with these.

#### 8.4 Establish and maintain relationships with service users

*Staff member ensures that:*

- 8.4.1 Effective communication channels with service users are developed and maintained.
- 8.4.2 Confidentiality is maintained during service delivery.
- 8.4.3 Key performance indicators (identified by discussion with the users of the laboratory service) are agreed and monitored by the laboratory to ensure that the laboratory service meets the needs of its clients.
- 8.4.4 There is participation in relevant activities that foster a broad perspective on service delivery.

## UNIT 9

### Participation in education and training of health workers and others

#### Element

#### **9.1 Research, prepare and deliver appropriate presentations to peers in-house or externally**

*Staff member ensures that:*

9.1.1 Educational topics are researched, prepared and presented to health workers and others.

#### **9.2 Participate in interdepartmental and other meetings**

*Staff member ensures that:*

9.2.1 Regular participation in inter or intra departmental meetings and/or intra laboratory meetings is performed.

#### **9.3 Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery**

*Staff member ensures that:*

9.3.1 Knowledge of pathology testing including collection, testing, result interpretation and clinical significance is demonstrated.

9.3.2 There is participation in relevant activities and education to foster a broad perspective on pathology.

9.3.3 Adequate and current information is available to staff for interpretation of test results and provision of advice.

#### **9.4 Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures**

*Staff member ensures that:*

9.4.1 Training complies with the requirements of ISO15189 or equivalent standard.

9.4.2 Feedback systems are established to assess effectiveness of presentation/training.

## UNIT 10

### Contribution to advancement of knowledge and improvement of laboratory practice

#### Element

#### 10.1 Contribute to planning and design of research and development projects

*Staff member ensures that:*

- 10.1.1 Initiative in identifying problems and questions which require investigation is demonstrated.
- 10.1.2 The need for research or development activities is communicated to colleagues.
- 10.1.3 There is contribution to the experimental design and research protocol.
- 10.1.4 Participation in funding proposal is undertaken if appropriate.
- 10.1.5 Relevant information is accessed online, from libraries and other sources.
- 10.1.6 Principles of ethical research are understood and practiced.
- 10.1.7 Relevant protocols are referred to institutional ethics or biosafety committees.

#### 10.2 Follow research/development protocol

*Staff member ensures that:*

- 10.2.1 Resources are assembled to commence project.
- 10.2.2 Relevant ethics approvals are sought and complied with.
- 10.2.3 Laboratory procedures are followed.
- 10.2.4 Outcomes of experimental procedures are continually monitored.
- 10.2.5 All experimental steps and observations, including updating of protocols, are fully documented.

#### 10.3 Evaluate results and the need for further experimental work

*Staff member ensures that:*

- 10.3.1 Data is collected and prepared for analysis.
- 10.3.2 Contributions are made to the interpretation of results and conclusions.
- 10.3.3 Requirements are determined for further experimental work in consultation with collaborators.

#### 10.4 Prepare and deliver report

*Staff member ensures that:*

- 10.4.1 Contributions are made regarding the format and presentation of outcomes.
- 10.4.2 Preparation of verbal and/or written reports or article (including for publication) is undertaken.
- 10.4.3 Report is presented for peer review.

## Appendix 2:

### Scope of Practice

Laboratory Assistant and above

Technician and above

Scientist and above

Clinical Scientist

### Technical Skills

\* Collection, preparation and analysis of clinical material

<p>1.1 Ensure the appropriateness of sample collection procedures</p>	<p>Understands correct identification and labelling requirements for patient specimens</p>	<p>Aware of collection instructions for test procedure/s and correct specimen/s required for testing</p>	<p>Understands transport requirements for test and notifies appropriate staff if this is exceeded and/or results are compromised</p>	
<p>1.2 Ensure the appropriateness of specimen reception procedures</p>	<p>Determines acceptability of samples within guidelines</p>	<p>Aware of requirements to match specimen and documentation upon receipt in laboratory</p>	<p>Notifies appropriate staff if patient identification error is observed or specimen is sub-optimal</p>	

1.3 Evaluate specimen suitability prior to analysis	Determines acceptability of samples within guidelines									
1.4 Determine the priority of laboratory requests (triage) to effectively manage service requirements	Prioritises assignment of test requests according to established guidelines	Coordinates general workflow and reorganises to suit changes in priority	Ensures quality and timeliness of patient test results by investigating problems involving specimen collection, result reporting and turnaround time							
1.5 Process specimen utilising appropriate techniques	Prepares specimens for analysis	Performs standard laboratory techniques under direct supervision	Operates laboratory instruments	Performs quality control procedures within established parameters	Troubleshoots instrument problems within established parameters	Performs preventative and corrective maintenance and repairs on laboratory equipment	Performs some non-automated and automated laboratory techniques	Performs some non-automated and specialised laboratory procedures	Recognises appropriate and inappropriate selection of all lab tests	Determines when "backup" methods must be initiated

1.6 Read and validate results	Enters data into computer system within training guidelines	Performs preliminary evaluation of quality control and refers data to scientific staff	Where necessary, records observations and details according to regulatory requirements	Evaluates quality control measures and institutes corrective action within established parameters	Uses statistical methods to research and assess laboratory testing	Evaluates and calculates quality control statistics to assess accuracy, reproducibility and validity of current laboratory methods	
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**Knowledge Base**

\* Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information

2.1 Assess validity of data / results against possible range of outcomes	Recognises and refers implausible results	Recognises abnormal results	Understands the basic physiology of laboratory results	Identifies technical, instrumental, and/or physiologic causes of unexpected test results	Develops solutions to problems based on knowledge, patient diagnosis and instrument performance	Demonstrates high level of clinical and scientific expertise	
2.2 Perform validation of results	Evaluates and interprets test results	Reports abnormal results	Has knowledge of the theory of laboratory procedures				

2.3 Make decisions about reporting results, repeating procedures, consulting senior staff and carrying out further tests within established guidelines	Recognises and refers results when necessary and follows documented procedure in dealing with rejected results	Recognises and refers questions and/or problems to appropriate personnel	Refers requests for special and unusual tests	Differentiates technical, instrumental and/or physiologic causes for unexpected test results	Recognises appropriate and inappropriate selection of basic laboratory testing	Correlates abnormal laboratory data with pathologic states to determine validity and/or whether follow-up tests should be done	Integrates and relates lab data generated by various lab sections in making judgements regarding possible discrepancies	
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**Analytical / Decision Making**

\* Interpretation, reporting and issue of laboratory results

3.1 Verify report(s) with sample identification	Ensures patient identification is traceable at all steps of testing process	Deals with inconsistency in sample identification appropriately	Reports test results					
3.2 Use the administrative systems in place to communicate the results	Observes principles of data security / patient confidentiality	Follows procedures to ensure communication of results occurs in timely manner and this process is documented	Identifies and follows up overdue results					

3.3 Ensure that results with important diagnostic or treatment implications are communicated as per established protocols	Recognises significant results and alerts appropriate staff	Performs analytical and decision-making functions with direct supervision	Ensures reference intervals and/or reported comments on results are communicated where necessary and this is documented according to procedures	Ensures accurate advice is communicated where necessary and this is documented according to procedures.	Works with Pathologists to establish critical-level values and develop acceptable criteria	Interacts with other health care workers to solve problems and interpret patient lab results within the framework of medical technology	Informs physicians concerning details and limitations of lab procedures	Creates an evidence base for use by clinicians for the benefit of patients	
3.4 Ensure appropriate storage and disposal of data and reports	Ensures results are recorded according to regulatory requirements	Ensures results and/or reports are stored according to regulatory requirements	Ensures reports are disposed according to regulatory requirements and ensuring privacy and confidentiality is maintained	Analyses laboratory computer applications to manage data					
<p><b>Resource Maintenance</b></p> <p>* Maintenance of documentation, equipment, resources and stock</p>									
4.1 Coordinate supplies of stocks and reagents	Maintains inventory and supplies	Ensures stock received is transported and subsequently stored according to manufacturers specifications	Disposes expired or dangerous goods according to regulations	Ensures quarantine of expired or contaminated stock to prevent inadvertent use					

4.2 Participate in maintenance of the laboratory and equipment	Ensures proper functioning of laboratory equipment	Operates and calibrates all laboratory instruments to ensure accuracy	Performs preventative and corrective maintenance and repairs on basic laboratory equipment	Ensures safety protocols for equipment are maintained and risk assessments are performed if deviation to normal safety protocols				
4.3 Participate in preparation and revision of manuals and protocols	Consults with relevant personnel regarding need for change to documentation	Maintains records / documentation and monitors for any updates	Follows relevant guidelines for method / manual content	Appropriately communicates changes to all relevant staff	Writes procedures according to prescribed format	Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately	Approves new methods as fit for use	
4.4 Ensure appropriate resources are available to the laboratory	Suggests cost effective laboratory procedures or protocol	Communicates requirements for laboratory resources to appropriate personnel	Involved in appropriate utilisation of human and technical resources, including position descriptions					

## Safety

\* Maintenance and promotion of safe working practices

5.1 Prepare and store reagents and solutions	Prepares, labels, handles and stores reagents according to requirements	Maintains inventory of hazardous reagents including MSDS and reviews periodically to ensure discard of substances no longer used					
5.2 Identify and respond to unsafe work practices and breaches of regulations	Complies with and promotes safety guidelines	Ensures procedures do not contain unsafe practice and notifies appropriate personnel with concerns or improvement suggestions					
5.3 Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes	Ensures receipt, despatch from laboratory and disposal of biological, toxic or radioactive substances is according to guidelines	Ensures protocols for handling of dealing with spills of biological, toxic or radioactive substances are followed	Adheres to appropriate safety regulations and is responsible to community and environment when handling and/or disposing of hazardous substances	Holds appropriate licence for handling radioactive substances	Enforces safety regulations	Develops safety and waste management procedures	

5.4 Respond appropriately to emergency situations	Familiar with safety documentation and use of safety equipment	Documents safety related incidents according to protocol	Aware of hazards caused by interaction of some substances	
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**Professional Development**

\* Professional accountability and participation in continuing professional development

6.1 Establish and communicate personal goals in professional development	Displays interest and participates in departmental education commensurate with level of training	Responsible for own professional development	Identifies and discusses goals for professional development	Assists with professional development of staff	
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6.2 Maintain and update scientific / technical knowledge and skills	Updates knowledge by attending relevant meetings, reviewing scientific and technical literature and case studies	
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6.3 Develop skills relevant to the enhancement of professional growth	Volunteers for additional duties and shows initiative in suggesting improvements	Demonstrates understanding of laboratory operations and place of laboratories in health care	Develops additional skills by participating in relevant activities or attending approved courses	Develops and utilises research skills	Researches and develops the field of analysis both analytically and clinically	
6.4 Recognise own abilities and level of professional competence	Identifies unprofessional conduct and reports serious breaches to appropriate authorities	Intervenes, where applicable, to ensure rights and/or safety of person/s in the workplace	Undertakes work and gives guidance and advice within bounds of one's abilities, qualifications and training	Consults with senior staff when necessary	Sets an example to others in the workplace	
6.5 Comply with profession's code of ethics	Maintains ethical standards and displays professional conduct in a non-discriminatory manner	Maintains confidentiality and professional competence	Exercises professional judgement, skill and care in decisions made regarding patients and others			

## Accountability

\* Responsibility for Medical Science practice including test selection, development and use of laboratory investigations

7.1 Accept responsibility for own actions / omissions	Able to make appropriate decisions commensurate with level of experience and/or job description	Delegates tasks (or enlists help of others) and ensures appropriate completion of these, commensurate with role and ability					
7.2 Make independent, professional judgements	Applies step-by-step thinking, problem solving and critical thinking patterns and is aware of implications associated with outcomes	Performs analytical and decision making functions without supervision	Supervises laboratory personnel as assigned	Contributes to resolution of conflicting decisions / interpretations within the laboratory	Demonstrates responsibility and accountability for management and planning of services and/or departments	Responsible for strategic direction of laboratory	
7.3 Demonstrate knowledge of contemporary ethical issues impinging on Medical Science	Considers ethics within laboratory environment relating to data, events or relationships	Refers ethical problems in the workplace to a higher authority	Respects the rights of individuals or groups in the workplace				

7.4 Demonstrate knowledge of new tests and their potential in the laboratory	Performs new procedures as directed	Evaluates and validates new methodologies	Possesses scientific knowledge to evaluate clinical lab technology	Reviews current literature relating to new or improved procedures and makes recommendations for adoption where appropriate	Develops and implements new tests	Identifies tests / parameters which help diagnose, screen and monitor treatment	Demonstrates innovation and highly developed and specialised skills	
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**Communication**

\* Liaison with health workers and others to continuously improve the service

8.1 Participate in quality improvement activities	Documents issues and refers these to senior staff	Performs quality assurance relevant to laboratory role	Monitors quality assurance	Identifies and suggests standards of practice	Continuously improve quality to meet goals	Audits clinical use, general guidelines and promulgates best practice	
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8.2 Continually review laboratory processes and testing to streamline, minimise waste and increase efficiency	Suggests cost effective laboratory procedures or protocol	Implements changes in response to technology and laboratory procedures	
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8.3 Establish and maintain relationships with suppliers	Appropriate communication is established with internal and external suppliers	Service level is established for suppliers and failure of this is documented and referred to senior staff	
8.4 Establish and maintain relationships with service users	Communicates and maintains confidentiality in relation to service delivery	Is aware of key performance indicators to ensure laboratory meets clients needs	
<p><b>Education / Training</b></p> <p>* Participation in education and training of health workers and others</p>			
9.1 Research, prepare and deliver appropriate presentations to peers in-house or externally	Prepares and delivers training and/or presentations relevant to position as required		

<p>9.2 Participate in interdepartmental and other meetings</p>	<p>Prepares and presents continuing education lectures and conferences for department personnel</p>				
<p>9.3 Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery</p>	<p>Responds to technical questions consistent with level of training, knowledge and/or qualifications</p>	<p>Provides instruction on collection and/or testing of specimens commensurate with experience and qualifications</p>	<p>Provides advice on interpretation and significance of results, giving consideration to clinical information and limitations of test</p>		
<p>9.4 Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures</p>	<p>Trains staff commensurate with experience and qualifications</p>	<p>Teaches theory and procedures using educational methodology and establishes feedback to monitor effectiveness of training</p>	<p>Instructs personnel in work group on new methods / instruments</p>	<p>Trains laboratory personnel in new technology and laboratory procedures</p>	<p>Instructs patients, new technicians, medical students, residents and peers regarding laboratory testing as required</p>

## Research and Development

\* Contribution to advancement of knowledge and improvement of laboratory practice

<p>10.1 Contribute to planning and design of research and development projects</p>	<p>Identifies issues and communicates research idea to appropriate personnel</p>	<p>Assists with design of the project</p>	<p>Accesses information related to the project</p>	<p>Understands ethics and protocols associated with research</p>	<p>May initiate or lead formal research projects</p>	
<p>10.2 Follow research / development protocol</p>	<p>Assesses and assembles resources for project</p>	<p>Follows procedures and monitors and documents outcomes</p>				
<p>10.3 Evaluate results and the need for further experimental work</p>	<p>Assists in evaluation and selection of new equipment</p>	<p>Evaluates and validates new methodologies</p>	<p>Collects, analyses data and contributes to interpretation of results</p>	<p>Assists in determining requirements for further research in consultation with appropriate personnel</p>		

10.4 Prepare and deliver report	Prepares and reviews reports (written, verbal, journal) and submits for peer review	
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**Appendix 3:**

**Role Definition for Scientists and Technicians in  
Pathology**

*A discussion paper prepared by the Role Definition Subcommittee of the  
Pathology Associations Council Workforce Committee*

*May 2009*

## Background

The Australian pathology industry comprises public and private organisations delivering diagnostic pathology services to the Australian population. The workforce is diverse and incorporates medically qualified Pathologists, Senior Scientists with postgraduate and/or vocational qualifications (Fellowships of professional societies), Graduate Scientists, Technical Officers and Laboratory Assistants as well as ancillary support staff in information technology, clerical, phlebotomy and transport roles.

There is a widely recognised workforce crisis looming in the industry with a recent report to the Federal Government highlighting the extent of the problem and some mitigating strategies<sup>1</sup>. To a large extent the critical shortages have been identified in the specialist pathologists and scientific components. The Pathology Associations Committee has convened a Workforce Committee looking at many aspects of the scientific workforce including Competency Based Standards (CBS), Training and Career Structure for scientists, Registration of scientists and Role Definition.

International literature demonstrates how role delineation and job redesign are strategies widely used to address workforce shortages. Role definition is a very difficult question, not least because pathology is not a single discipline and demands and requirements vary between the subspecialties. It is vital however, that we address the problem because we cannot hope to plan future needs in terms of workforce without defining the roles first. Nomenclature of the various staff types varies from laboratory to laboratory and one proposal we will make is to standardise names across all sectors of the industry.

The question is also a sensitive issue for several reasons. The career prospects of those currently employed must be considered if we propose changes likely to impact them. There is also a clear requirement for scientific staff to have technical competencies so the definitions must make clear the *extra responsibilities* which define a scientists' role. The industry will need ever more flexibility in the coming years so role definition should not be seen as inhibiting flexible work practices. It must, however, recognise the limitations imposed by qualifications and training.

The industrial relations considerations and role of Trade Unions in drafting industrial awards is not being challenged by this discussion document. The awards define minimum qualifications for the various groupings but don't define clearly what each job title can or cannot do.

## Role Definition in other countries

### USA

The two groups of staff roughly comparable to our scientist and technician grades in the USA are referred to by interchangeable titles by professional organizations, educational programs, and other clinical laboratory professionals. Both groups are subject to regulation in 12 States (with scope of practice included in the licensure) with a further 12 preparing legislation for medical laboratory personnel.

The US Bureau of Labor Statistics information on medical laboratory careers<sup>2</sup> states that the Medical Technologist/Clinical Scientists group can evaluate test results, develop and modify procedures, and establish and monitor programs, to ensure the accuracy of tests. The Medical Laboratory Technicians/Clinical Laboratory Technicians role is described as “*to perform less complex tests and laboratory procedures than technologists do. Technicians may prepare specimens and operate automated analyzers, for example, or they may perform manual tests in accordance with detailed instructions.*”

### UK

Pathology staffing in the UK is governed by the *Healthcare Scientists Career Framework*<sup>3</sup>. The framework covers 9 stages from *Assistant Healthcare Scientist* to *Consultant Director Healthcare Scientist*. Registration of Biomedical Scientists (BMS) has been in place in the UK for many years. The regulation of the profession has set minimum standards and provided a clear delineation between BMS grades and non registered Medical Laboratory Assistants working under their supervision.

More recently UK government initiatives to look at workforce issues have included the piloting of a new Associate Practitioner Biomedical Scientist to sit between the MLA and BMS grades. According to the Healthcare Scientists Career Framework: “*An associate healthcare scientist performs a wider range of clinical, scientific or technical procedures (that may have been previously performed by a regulated practitioner) but usually under the direction of an appropriately regulated practitioner*”. The project has produced a list of associate practitioner knowledge and competencies for several pathology disciplines and identifies the additional responsibilities of the new role over those of MLAs. A toolkit for employers considering appointing to this new group has been developed.

### New Zealand

In New Zealand both Medical Laboratory Scientists (MLS) and Medical Laboratory Technicians (MLT) are registered by the Medical Laboratory Science Board. Scopes of practice and minimum qualifications for registration for each group are defined by the Board. The Board also publishes a code of competencies and standards for the practice of medical laboratory science<sup>4</sup>. The code covers 5 broad areas of competency and details standards under each area. For a limited number of the standards the code differentiates the requirements for MLS and MLT. For example, under code 1.8 *Demonstrate problem solving skills*, MLS and MLT should initiate resolution of problems but only MLS staff are expected to evaluate outcomes and modify procedures where appropriate.

## Role Definition in Australia

### Western Australia

There has been a recent attempt to address the roles of various staff groups as part of a review of workforce requirements by the public pathology provider in Western Australia (Pathwest)<sup>5</sup>. A survey of staff in WA undertaken as part of the review, found Medical Scientists are less satisfied with their career outlook than Laboratory and Technical Assistants. This highlights the need for career structure reform to accompany role definition.

The WA report notes that *“Medical Laboratory Science is in a continuous process of technological advance, with new tests being developed, new instrumentation, and new methods of sample and data handling, all aimed at making testing available for more disorders, quicker and more cost effective.”* Automation has been most prominent in the “clinical” rather than “anatomical” disciplines of pathology with biochemistry and haematology laboratories often combined in an automated core laboratory where the majority of the tasks are purely technical in nature. This shift to automation has sometimes been accompanied by a change in staff profiles with a shift to more technical officers. However, this has often been an ad-hoc process with vacant positions advertised as scientific/technical officer with the obvious attraction of lower employment costs if a technical officer is employed rather than a clear definition of what is required of the position. The result is some automated laboratories have a high proportion of technical grades whilst others with similar instrumentation and workloads are staffed predominantly by scientists. The overall shift to technical grades in recent years is shown in the WA report<sup>4</sup>. The total Pathwest scientific/technical workforce (FTE) is made up of 43.4% scientists and 56.6% technicians and assistants (not further delineated). New entrants to the workforce in the past 2 years show only 23% are scientists with 77% in technical and assistant grades.

The report also highlighted the variation in tasks performed by scientists across different laboratories: *“Medical Scientists in regional areas in particular, are much more involved in all components of laboratory work than Medical Scientists in tertiary laboratories. There is also a lack of agreement on the duties performed by other staff (Laboratory Assistants, Technical Assistants, Technical Officers, Laboratory Supervisors and Laboratory Managers) in the laboratory. The same issue occurs when examining the differences between sites and laboratory disciplines.”*

One recommendation from the WA report was to redefine the tasks and roles of Medical Scientists – remove them from routine testing into complex/specific testing, method and equipment development, supervision and validation.

## **Proposed framework for Pathology Scientific and Technical Staff Role Definition**

In order to clarify this process the following nomenclature is proposed: Laboratory Assistant (LA) describes all staff without formal qualifications. Medical Technician (Pathology) is used to describe all staff with VET qualifications and includes staff currently classified Technical Officers, Technician etc. Medical Scientist (Pathology) describes those staff in positions requiring a degree in a suitable discipline, a minimum of 2 years post graduate full time employment in a pathology laboratory and deemed competent as a scientist. The use of (Pathology) is to clearly identify the fields we are concerned with. It is recognised that many technical and scientific positions exist in the healthcare sector and confusion over terms like “Medical Scientist” and “Technical Officer” abound.

It is clear that one common approach to role definition is to identify competencies required to operate at a given level. The existing Competency Based Standards are built around 10 units with each unit being further divided into elements which describe what is done in the workplace to ensure that the units can be fulfilled. Each element is made up of specific tasks which are the actual steps needed and which may be performed by various members of the laboratory workforce. We propose these specific tasks mark the point at which role definition may be applied.

The units, elements and tasks have been delineated in appendix 2 with colour coding of the specific tasks according to the classification of staff expected to perform them. It should be remembered that tasks may be performed by all grades of staff above the level defined. So, for example, for element 2.1, all staff from LA upwards would be expected to recognise abnormal results, only MT and MS (Pathology) would be expected to understand the basic physiology of results and identifying technical, instrumental an/or physiological causes of unexpected results would only be in the scope of Medical Scientists (Pathology).

As the units are organised such that the more demanding competencies are in the later units so it is not surprising several of the elements have been considered to be the exclusive domain of the MS classification.

We believe the proposed definition recognises the technical expertise of Medical Technician (Pathology) and the important future roles of LA. It is important to note the competencies expected of scientists are not limited to supervisory or management tasks. Most international and local practice is that LA and MT are supervised by MS grades but this is not the primary function of a Medical Scientist (Pathology). Despite the widespread introduction of automation and “kit” methodologies there will remain a demand for innovation in the diagnostic laboratory. Scientists have the skills and training to perform this role and this competency based role definition should have the by product of releasing them from less rewarding tasks to facilitate this.

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