Australian Government

Department of Education, Employment and Workplace Relations

MSL975002A Perform haematological tests

Revision Number: 1

MSL975002A Perform haematological tests

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to determine levels, function, activity and interactions of cellular and plasma components of blood using tests and procedures identified with the discipline of laboratory haematology.

Application of the Unit

Application of the unit	This unit of competency is applicable to laboratory technicians and technical officers working in the biomedical industry sector. While this unit focuses on the laboratory investigation of human physiology and pathology, it reasonably describes aspects of work performed in veterinary settings. The unit of competency assumes that technical personnel would perform tests and procedures under close supervision. The results of their work would also normally be integrated, interpreted and reported on by supervising scientists and medical pathologists. Although a supervisor may not always be present, the technician will follow standard operating procedures (SOPs) that will clearly describe the scope of permitted practice in modifying testing procedures, interpretation of data and for communicating test results to people outside the laboratory. It is understood that the management of any laboratory would establish for itself, in terms of its own responsibility and purposes, the ability of any worker to work in a haematology laboratory, regardless of the education and training record or presumed ability of any worker. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These can be found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		
	MSL974006A	*Perform biological procedures*
	MSL973007A	*Perform microscopic examination*

Prerequisite units		
	MSL973004A	*Perform aseptic techniques*

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Process samples and associated request details	1.1. Sort specimens according to tests requested, urgent status and volume 1.2. Return samples and request forms that do not comply with requirements to their source with reasons for non-acceptance 1.3. Log acceptable samples and request forms, applying required document tracking mechanisms 1.4. Process samples as required by requested tests 1.5. Store samples and sample components appropriately until ready for testing
2. Perform tests	2.1. Select authorised tests that are indicated for the requested investigations 2.2. Conduct individual tests according to documented methodologies, applying required quality control procedures 2.3. Record all results, noting any phenomena that may be relevant to the interpretation of results 2.4. Seek advice of section head or other responsible colleague when result interpretation is outside parameters of authorised approval 2.5. Store unused sample or sample components, for possible future reference, under conditions suitable to maintain viability
3. Maintain a safe environment	3.1. Use established safe work practices and personal protective equipment to ensure personal safety and that of other laboratory personnel 3.2. Clean up spills using appropriate techniques to protect personnel, work area and environment from contamination 3.3. Minimise the generation of wastes 3.4. Ensure the safe disposal of biohazardous materials and other laboratory wastes in accordance with enterprise procedures
4. Maintain laboratory records	4.1. Make entries on report forms or into computer systems, accurately calculating, recording or transcribing required data as required 4.2. Update instrument maintenance logs as required by accreditation checklists 4.3. Maintain security and confidentiality of all clinical information, laboratory data and records

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- counting and measuring cells
- deriving cell data that can assist with classification of cell populations
- staining cells, identifying their morphology and classifying them
- determining of the amount and function of blood components
- measuring clinically useful phenomena, such as erythrocyte sedimentation or detecting markers of immune response
- assessing haemostasis, coagulation, fibrinolysis and thrombosis
- amplify and detect gene products (where appropriate)
- contributing to the general maintenance of equipment and processes to ensure ongoing compliance with enterprise and laboratory accreditation
- recognising problems in systems and documentation
- using the enterprise information system efficiently
- preparing documentation
- organising work to ensure the timely completion of tasks
- using samples, reagents and materials economically and disposing of wastes safely
- working safely

Required knowledge

Required knowledge includes:

- the necessity for a patient or client focus when performing laboratory procedures and tests, including issues of confidentiality and security of clinical and laboratory information and data
- the relationships that exists between the sample and the test result, including:
  - sample collection
  - the preservation and timely testing of samples
  - sample storage requirements and issues of artefact
  - sub-sampling routines, including the nature of unstable particulate suspensions
  - validated tests
  - quality control
  - quality assurance
- the use and maintenance of laboratory equipment and resources that contribute to accurate, precise, timely and economical generation of data for use by clinicians
- relevant aspects of normal and abnormal anatomy, physiology, genetics, biochemistry and immunology

REQUIRED SKILLS AND KNOWLEDGE
• the investigation of blood cell disorders, including anaemia, leucocytoses and leucocytopaenias, leukaemia and thrombocytopenia • heritable and acquired coagulopathies and therapeutic drug related alterations in haemostatic and coagulation mechanisms • haematological responses to infection, immunisation and malignancy • relevant health, safety and environment requirements

Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • count and measure cells • derive cell data that can assist with classification of cell populations • stain cells, identify their morphology and classify them • determine of the amount and function of blood components, such as haemoglobin and other substances quantified by spectrophotometry • measure clinically useful phenomena, such as erythrocyte sedimentation • assess haemostasis, coagulation, fibrinolysis and thrombosis • detect markers of immune response (where appropriate) • amplify and detect gene products (where appropriate) • contribute to the general maintenance of equipment and processes to ensure ongoing compliance with enterprise and laboratory accreditation • recognise problems in systems and documentation • use the enterprise information system efficiently • critically analyse information in enterprise documents • prepare documentation that is accurate, easily understood by the intended audience and in accordance with enterprise requirements • manage tasks and organise work to ensure the timely completion of tasks • use samples, reagents and materials economically and dispose of wastes safely • use equipment safely • maintain equipment, recording and reporting malfunctions appropriately.
Context of and specific resources for	This unit of competency is to be assessed in the

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assessment	workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL925001A Analyse data and report results* • *MSL934002A Apply quality system and continuous improvement processes*. Resources may include: • standard haematology laboratory with relevant equipment, samples and reagents • enterprise procedures. Under duty of care requirements, off-the-job training providers should ensure that blood samples are known to be antibody free for hepatitis B and C, syphilis and human immunodeficiency virus (HIV). However, this does not reduce the need for universal precautions in the use of these samples.

Method of assessment	The following assessment methods are suggested:
	• review of results/data/records generated by the candidate
	• feedback from peers and supervisors that enterprise procedures were followed and that work is performed consistently in line with enterprise requirements
	• oral and/or written tests and paper problems associated with test methods and laboratory processes, such as equipment calibration and maintenance
	• integrated assessment by use of case studies to demonstrate performance of the range of tests and procedures implied in the critical aspects of competency and essential knowledge sections of this standard. Suitable case studies could involve:
	  • performance of the routine full blood count, including the examination of the stained blood film
	  • a coagulation screen, including tests to measure anti-vitamin K and anti-heparin therapeutic agents, and the counting of platelets
	  • studies that can assist in identifying relationships between quantitative data from blood counts and morphological findings from stained blood films.
	In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those

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	aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case study below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Biomedical** A patient's blood sample and request form have been brought to the laboratory. The patient has complained of rectal bleeding for some months. The technical officer has been asked by the supervisor to perform a full blood count on the analyser, set up an erythrocyte sedimentation rate, and to prepare, stain and examine a film of the patient's blood. The technical officer checks the records for information on the patient. Finding none, the technical officer records the required data in the laboratory information management system (LIMS) and then performs the required tests. Satisfied that the results of the standards are within range, the technical officer prints an interim report for the supervisor. The report incorporates the results of the differential white cell count, calculations of the leucocyte numbers and comments on the morphology of the blood cells. The report and film is taken to the pathologist for supplementary comments, verification and signature. Following these checks, the technical officer telephones the ward to advise that the patient's results can be retrieved from the ward's computer terminal.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS 2252 Biological safety cabinets
	  • AS ISO 17025-2005 General requirements for the competence of testing and calibration laboratories
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	  • AS/NZS 2982.1:1997 Laboratory design and construction - General requirements
	  • AS/NZS ISO 14000 Set:2005 Environmental management standards set
	  • AS/NZS ISO 9000 Set:2008 Quality management systems set
	• cleaning, hygiene and personal hygiene requirements
	• enterprise procedures, SOPs and operating manuals
	• incident and accident/injury reports
	• instructions to comply with legislation, standards, guidelines and codes
	• quality system and continued improvement processes
	• safety requirements for equipment, materials or products
	• sampling procedures (labelling, preparation, storage, transport and disposal)
	• schematics, work flows and laboratory layouts
	• statutory and enterprise occupational health

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	and safety (OHS) requirements • stock records and inventory • test procedures (validated and authorised) • training program contents • waste minimisation, containment, processing and disposal procedures
Equipment, **materials and systems**	Equipment, materials and systems may include: • blood mixers • reference material for automated and manual quality control and quality assurance systems • instruments for the semi-automated or automated electronic counting and partial characterisation of blood cells, the measurement of haemoglobin and the computation of red cell indices • staining machines • safe working cabinets • centrifuges, water baths and incubators • volumetric glassware and measuring devices • cell counting chambers • microscopes for bright field and phase contrast examinations • spectrometers • coagulometers • counters for single or multiple cell types • computer information systems, databases, record and filing systems • general laboratory glassware and equipment associated with a serology laboratory
Communication	Communication may involve: • supervisors and managers (laboratory, quality and customer service) • other laboratory or clinical personnel • patients and clients • personnel of accreditation agencies (e.g. national Association of Testing Authorities (NATA))
Occupational health and safety (**OHS**) **and environmental management requirements**	OHS and environmental management requirements: • all operations must comply with enterprise

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	OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

Competency field

Competency field	

Co-requisite units

Co-requisite units		