Unit 110: Planned Preventative Maintenance

Level:	**4**
Unit type:	**Optional (Equipment Management and Clinical Engineering)**
Credit value:	**4**
Guided learning hours:	**36**

Unit summary

In this unit, you will acquire the knowledge of the purpose and process for planned preventative maintenance and be able to plan for, perform and record planned preventative maintenance tasks for a defined range of equipment within own area of practice, together with the practical application of appropriate engineering workshop skills. You will be expected to build your professional practice as you develop your competence in the workplace.

Unit assessment requirements

There are no specific assessment requirements for this unit. Please refer to the assessment strategy in *Annexe B*.

Additional information

All procedures must be undertaken in accordance with Standard Operating Procedures (SOPs) and legislation.

AC1.1 includes:

- transducers involved
- simple block diagram of the equipment.

AC1.6: terminology could include/be related to:

- health and safety related legislation
- metrology terminology
- fundamental energy units
- medical device management system (MDMS) taxonomy covering assets and the organisation
- prevailing medical device management guidance, e.g. Managing Medical Devices (2005) published by Medicines and Healthcare products Regulatory Agency (MHRA).

AC1.7 includes:

- urgency

- time
- impact on services
- availability of other equipment.

AC2.4 includes identification, removal and renewing, refitting.

AC3.1 includes:

- working environment
- equipment in use
- materials and substances
- working practices that do not follow Standard Operating Procedures.

AC4.4 includes:

- multi-parameter monitors or writers, e.g.:
    - ECG monitor
    - ECG recorder
- the effect of poor electrode connections or application
- the effect of interference due to cable placement
- poor transducer placement or interface, e.g.:
    - SpO_2 monitor
    - temperature sensors
    - automatic blood pressure devices
- hazards associated with infusion devices, e.g.:
    - siphonage
    - free flow
    - occlusion
    - mechanical backlash
    - air in line
    - tampering
    - incorrect software set-up
    - incorrect consumables
- poor user maintenance, e.g.:
    - battery (e.g., life, connections, installation)
    - contamination (e.g., suction devices, tympanic sensors)
- patient movement.

Learning outcomes and assessment criteria

To pass this unit, learners need to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet **in own area of work and in accordance with Standard Operating Procedures (SOPs)** to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the engineering principles on which the medical equipment operation is based	1.1	Explain the principles of equipment operation			
		1.2	Explain how to access manufacturer's support information such as operators and technical manuals			
		1.3	Describe the typical consumables and replacement parts used for planned preventative maintenance			
		1.4	Discuss the risks associated with equipment operation during clinical use, maintenance or testing			
		1.5	Explain the process for accessing tools and test equipment for maintenance activities			
		1.6	Know the engineering terminology and equipment management taxonomy of the medical device management system (MDMS) relevant to own area of practice			
		1.7	Explain the factors affecting decisions on maintenance activity			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
		1.8	Explain the actions to take when a piece of equipment cannot be located for planned preventative maintenance (PPM)			
2	Be able to prepare for planned preventative maintenance (PPM)	2.1	Prepare PPM, estimating the time and resources needed			
		2.2	Assess the potential impact of PPM on clinical service delivery			
		2.3	Interpret technical documentation in order to perform PPM successfully			
		2.4	Assess literature and service record to ensure there are no outstanding field service or central alerting system notices for the equipment			
		2.5	Deal with consumables as necessary when performing a PPM, adhering to infection prevention control techniques			
		2.6	Select correct tools and test equipment			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to perform planned preventative maintenance procedures on a defined range of medical equipment in accordance with Standard Operating Procedures (SOPs)	3.1	Identify the hazards and risks associated with maintenance activities			
		3.2	Perform planned preventative maintenance following the appropriate protocol for the equipment under test			
		3.3	Dismantle and reassemble the equipment to module/component level			
		3.4	Explain the equipment component parts indicating their purpose			
		3.5	Adjust the settings to those previously agreed necessary for use in the clinical setting			
		3.6	Perform any appropriate electrical or mechanical safety testing procedures following manufacturer and local SOPs			
		3.7	Perform any appropriate functional tests, following manufacturer and locally agreed SOPs			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to complete the planned preventative maintenance process	4.1	Use written and electronic information processes and systems to record clear and unambiguous information relating to the planned preventative maintenance			
		4.2	Store equipment and consumables correctly to ensure the equipment and consumables remain fit for purpose and ready for use			
		4.3	Perform handover of equipment back into clinical service			
		4.4	Discuss sources of interference on a range of equipment and situations and the methods used to prevent them			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)