SEMEMI2-66v2 - SQA Unit Code H2B8 04
Carrying out fault location activities on assistive technology systems and equipment

Overview

This unit identifies the competences you need to locate faults on assistive technology systems and equipment, in accordance with approved procedures. You will be required to locate faults on equipment such as manual and powered wheelchairs, buggies and scooters, postural support systems, hoists, personal communication aids, walking aids, adjustable beds, pressure relief and distribution equipment, telecare alarm systems, aids for daily living, environmental control systems, associated battery charging systems for assistive technology systems and equipment.

You will be expected to use a variety of fault location methods and procedures, such as gathering information from the person who reported the fault, using recognised fault finding techniques and diagnostic aids, measuring, inspecting and operating the equipment.

Your responsibilities will require you to comply with organisational policy and procedures for the fault location activities undertaken, and to report any problems with these activities, or with the tools and equipment used, that you cannot personally resolve or that are outside your permitted authority, to the relevant people (such as the reporting of any actual or potential safety related problems to the appropriate regulatory body). You will be expected to work to instructions, either alone or in conjunction with others, taking full responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will provide an informed approach to applying fault location procedures to assistive technology systems and equipment. You will have an understanding of the basic fault location methods and techniques used, and their application. You will also know how to interpret information obtained from fault finding aids and equipment, in adequate depth to provide a sound basis for carrying out the activities.

You will understand the safety precautions required when carrying out the fault location activities, especially those for isolating the equipment. You will also understand your responsibilities for safety, and the importance of taking the necessary safeguards to protect yourself and others in the workplace.

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Performance criteria

You must be able to:

P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines

P2 review and use all relevant information on the symptoms and problems associated with the product or asset

P3 investigate and establish the most likely causes of the fault or faults

P4 select, use and apply diagnostic techniques, tools and aids to locate faults

P5 complete the fault diagnosis within the agreed time and inform the appropriate people when this cannot be achieved

P6 determine the implications of the fault or faults for other work and for safety considerations

P7 use the evidence gained to draw valid conclusions about the nature and probable cause of the fault or faults

P8 record details on the extent and location of the fault or faults in an appropriate format

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Knowledge and understanding

You need to know and understand:

K1 the health and safety requirements of the area in which the fault location is to take place, and the responsibility these requirements place on you

K2 the statutory and advisory documentation relating to medical devices (such as Medical Devices Regulations, British and European standards, regulatory agency guidance and safety warnings)

K3 the statutory documentation relating to lifting equipment and electrical safety checks (such as the lifting operations and lifting regulations and portable appliance testing)

K4 the appropriate working practices, and the need to respect the patient and carer in the patient environment, at home or in the community (where appropriate)

K5 the importance of reporting any `adverse incidents' with the equipment to the regulatory authority

K6 the isolation and lock-off procedure or permit-to-work procedure that applies in the work area

K7 the importance of wearing protective clothing and other appropriate safety equipment during fault location activities

K8 hazards associated with carrying out fault location on assistive technology systems and equipment (such as moving parts, handling oils and greases, stored pressure/force, misuse of tools), and how they can be minimised

K9 the procedure to be adopted to establish the background of the fault(s)

K10 how to use the various diagnostic aids to help identify the location of the fault(s)

K11 the various fault location techniques that can be used, and how they are applied (such as six point, half-split, input/output, unit substitution)

K12 how to evaluate sensory information (such as sight, sound, smell, touch)

K13 how to assess evidence and evaluate the possible causes of faults/problems

K14 how to use a range of fault diagnostic equipment to investigate the problem(s)

K15 the importance of carrying out electrical safety tests on medical equipment, and the implications if this is not carried out (where appropriate)

K16 the care, handling and application of mechanical measuring/test equipment (such as measuring instruments, dial test indicators, flow meters, torque measuring devices, pressure/force detectors)

K17 how to check that measuring/test equipment is within calibration, and that it is free from damage and defects

K18 how to obtain and interpret information from job instructions and other documents needed in the fault location process (such as drawings, charts, specifications, manufacturers' manuals, history/servicing reports, graphical symbols)

K19 the basic principles of how the assistive technology system and equipment functions, its operating sequence, the purpose of individual units/components and how they interact

K20 the problems that can occur during the fault location activity, and how they can be minimised

K21 how to evaluate the likely risk to yourself and others, and the effects the fault(s) could have on the overall process or system

K22 the importance of completing the correct documentation following the fault location activity

K23 the extent of your own authority and to whom you should report if you have problems that you cannot resolve

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Additional Information

Scope/range related to performance criteria

You must be able to:

1 Carry out **all** of the following during the fault locating activity:

- 1.1 plan the fault location methods and procedures in conjunction with others
- 1.2 use the correct issue of maintenance documentation (such as drawings, manuals, maintenance records)
- 1.3 adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations
- 1.4 ensure the safe isolation of equipment (such as mechanical, electrical, gas, air or fluids)
- 1.5 ensure that safe access and working arrangements have been provided for in the area where the fault finding is taking place
- 1.6 carry out the fault location activities, using approved procedures
- 1.7 identify the fault(s), and consider appropriate corrective action
- 1.8 in conjunction with others, take actions to resolve the problem(s)
- 1.9 dispose of waste items in a safe and environmentally acceptable manner
- 1.10 leave the work area in a safe and tidy condition

2 Carry out fault location on **two** of the following types of assistive technology system and equipment:

- 2.1 manual wheelchairs, buggies and wheeled commodes
- 2.2 powered wheelchairs and scooters
- 2.3 powered aids for daily living (such as bath lifts, riser and recliner chairs)
- 2.4 pressure redistribution and relief devices (such as alternating pressure cushions, mattresses and overlays)
- 2.5 environmental control systems (such as telephones, intercom systems, remote controlled equipment)
- 2.6 walking aids and other non powered aids for daily living (such as kitchen aids, grab rails and shower seats)
- 2.7 posture support systems (such as modular and custom made)
- 2.8 hoists
- 2.9 adjustable beds
- 2.10 personal communication aids
- 2.11 telecare alarm systems

3 Use **four** of the following diagnostic techniques, tools and aids to assist in locating the fault:

- 3.1 information gathered from the person that reported the fault

3.2 fault finding techniques (such as six point, half-split, input/output, unit substitution)
3.3 diagnostic aids (such as service manuals and records, troubleshooting guides, equipment diagnostics)
3.4 instruments (such as multimeter, mechanical measuring devices, portable appliance tester)
3.5 inspecting (such as checking for breakages, wear/deterioration, overheating, missing parts, loose fittings)
3.6 operating/using equipment (such as manual switching off and on, operating/using equipment, test buttons)

4 Locate faults that have resulted in **two** of the following breakdown categories:
4.1 intermittent problem
4.2 partial failure
4.3 complete breakdowns

5 Complete **one** of the following maintenance records, and pass it to the appropriate person:
5.1 scheduled maintenance report
5.2 corrective maintenance report
5.3 other company-specific report

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