



Australian Government

HLTTHE007 Manage advanced technology in surgical theatre environments

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Modification History

| Release | Comments |
|---------|--|
| 1 | This unit of competency was first released in HLT Health Release 11.0. |

Application

This unit describes the skills and knowledge required to operate, maintain, and troubleshoot advanced technologies in surgical theatre environments. It applies to operating theatre technicians (OTTs) who work with a high degree of autonomy and are responsible for ensuring safe and effective use of complex and emerging technologies across a range of surgical specialities.

Work is undertaken in varied environments, including public, private, regional, and remote healthcare settings, where access to advanced technologies and technical support may be limited. OTTs must apply problem-solving and decision-making skills to adapt to the constraints of infrastructure, connectivity, and workforce availability.

While OTTs operate with a high degree of technical autonomy, their responsibilities are performed under clinical direction and in collaboration with surgical and anaesthetic teams. For tasks such as robotic docking and intra-operative adjustments, OTTs follow delegated instructions, ensuring alignment with procedural and safety protocols.

The skills in this unit must be applied in accordance with current Commonwealth and State/Territory legislation, Australian standards and industry codes of practice.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite unit(s)

No pre-requisite units

Competency field(s)

Theatre Equipment

Unit sector(s)

Health

Elements and Performance Criteria

| Elements | Performance Criteria |
|--|--|
| <i>Elements describe the essential outcomes.</i> | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i> |
| 1. Identify and prepare advanced surgical equipment for surgical procedures | 1.1 Review surgical lists, procedural guidelines, and surgeon preferences to determine equipment needs 1.2 Identify technology requirements specific to surgical procedure in consultation with surgical team 1.3 Pair, position and connect modules and other relevant equipment according to surgical preferences 1.4 Conduct pre-use checks and initiate system calibration and self-check functions 1.5 Report unavailable and malfunctioning equipment according to organisational procedures |
| 2. Operate and monitor complex theatre technologies during surgical procedures | 2.1 Activate equipment and verify readiness according to procedural timelines and manufacturer specifications 2.2 Operate technology according to instructions from surgical team and manufacturer specifications 2.3 Monitor performance indicators and adjust system parameters according to instructions from surgical team 2.4 Identify operational deviations and system alarms during use and report to surgical team according to organisational procedures 2.5 Implement corrective actions in response to system feedback according to organisational procedures 2.6 Escalate unresolved technical issues according to organisational procedures 2.7 Communicate system status and intra-operative issues to the surgical team according to organisational procedures |
| 3. Apply safe practices when handling robotic and automated systems | 3.1 Check robotic and automated systems setup and configuration according to manufacturer specifications, procedural requirements and safety procedures 3.2 Perform docking of surgical robot according to instructions from surgical team, procedural requirements and safety procedures 3.3 Operate control interfaces and verify robotic systems responsiveness |

| | |
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| | <p>3.4 Identify safety risks during robotic-assisted procedures according to organisational procedures</p> <p>3.5 Implement measures to manage identified safety risks</p> <p>3.6 Conduct emergency shutdown and manual override according to organisational procedures</p> <p>3.7 Perform post-undocking sequence and verify system reset or shutdown according to procedural requirements</p> |
| 4. Maintain, clean, and troubleshoot equipment post-procedure | <p>4.1 Deactivate and disconnect devices following organisational procedures</p> <p>4.2 Perform routine cleaning and decontamination according to manufacturer and infection control guidelines</p> <p>4.3 Inspect devices for wear, damage, and software irregularities, and record findings according to organisational procedures</p> <p>4.4 Apply basic troubleshooting techniques to resolve minor faults or configuration issues</p> <p>4.5 Document servicing, repairs, and incident reports according to organisational procedures</p> |
| 5. Collaborate with surgical teams and technical vendors to optimise equipment use | <p>5.1 Communicate equipment specifications, limitations, and configuration options to the surgical team before procedure</p> <p>5.2 Provide intra-operative updates on equipment performance and system alerts to surgical team according to time constraints</p> <p>5.3 Report post-operative equipment performance issues and improvement recommendations to surgical team according to organisational procedures</p> <p>5.4 Coordinate with technical vendors to schedule installation, oversee servicing activities, and verify completion of equipment upgrades</p> <p>5.5 Report equipment servicing needs and upgrade requests to authorised personnel according to organisational procedures</p> |

Foundation skills

The foundation skills essential to performance of this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

| Skill | Description |
|---------------------|--|
| Learning skills to: | Apply knowledge of advanced surgical technology, procedural requirements and safety practices to operate, monitor and troubleshoot complex systems in familiar and some unfamiliar context. |
| Reading skills to: | Interpret technical, procedural and system-related information, including equipment instructions and manufacturer guidance, to support safe and effective use of advanced technology. |
| Writing skills to: | Record and report equipment-related information, including servicing, faults and incidents, using appropriate terminology and workplace convention. |
| Numeracy skills to: | Interpret, compare and apply numerical information, including calibration data, system parameters and performance indicators, against manufacturer specifications and safety thresholds to determine required adjustments and escalate deviations. |
| Digital skills to: | Operate and interact with advanced digital and robotic systems, including configuring settings, interpreting system feedback and managing equipment data within workplace system. |

Digital literacy outcomes are included in the Foundation Skills Companion Volume.

Range of conditions

N/A

Assessment Requirements for HLTTHE007 Manage advanced technology in surgical theatre environments

Performance Evidence

The candidate must show evidence of the ability to complete tasks outlined in elements and performance criteria of this unit, manage tasks and manage contingencies in the context of the job role. There must be evidence that the candidate has:

- managed advanced surgical technologies on at least 3 separate occasions, across at least 2 different surgical procedure types, using a combination of the following systems:
 - robotic-assisted surgical system
 - high-definition digital imaging system
 - automated patient positioning system
 - fluid management and suction system
 - electrosurgical unit integrated with digital or robotic platforms
- demonstrated operation, monitoring and adjustment of advanced technology on at least 1 occasion in a simulated or clinical environment, including:
 - system setup, configuration and pre-use checks
 - intra-operative monitoring and parameter adjustment
 - response to system alerts, faults or deviations
 - initiation of corrective action or escalation within role boundaries
- demonstrated application of emergency procedures for advanced systems, including manual override or shutdown on at least 1 occasion in a simulated or clinical environment
- completed documentation of equipment status, faults, and maintenance requirements according to organisational procedures

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge required to effectively complete tasks outlined in elements and performance criteria of this unit, manage tasks and respond to contingencies in the context of the job role. This includes knowledge of:

- types and functions of advanced surgical technologies used in operating theatres, including:
 - robotic-assisted systems
 - high-definition digital imaging platforms
 - automated patient positioning devices

- advanced fluid and suction systems
- integrated electrosurgical units
- technology-specific combination of equipment configuration for different surgical specialities, including:
 - urology
 - gynaecology
 - general surgery
 - orthopaedics
 - cardiothoracic surgery
- procedural preparation and system setup requirements, including:
 - pairing
 - calibration
 - software updates
 - pre-use checks and activation procedures in line with manufacturer specifications
 - system interoperability, modular integration, and compatibility with other surgical tools
 - principles of equipment readiness, real-time monitoring, and performance adjustments during procedures
 - documentation requirements for servicing, inspections, usage logs, and alerts
- safety, risk, and emergency procedures, including:
 - electrical safety principles, thermal risk management, and mechanical hazard mitigation
 - procedures for emergency shutdown, manual override, and safe undocking of robotic systems
 - organisational procedures for responding to equipment failure, alarms, and system malfunctions
 - WHS and infection prevention principles for high-risk surgical technology use
- troubleshooting and post-procedure maintenance, including:
 - troubleshooting methods for common equipment faults, including:
 - software configuration issues
 - software errors
 - hardware connectivity issues
 - post-operative cleaning of devices and maintenance in accordance with infection control guidelines
 - inspection criteria, including:

- signs of wear
- visible damage
- software irregularities that may affect performance and safety
- procedures for reporting faults and issues according to organisational procedures
- servicing and upgrade schedules for advanced surgical equipment
- communication, collaboration, and reporting, including:
 - roles and responsibilities of the surgical team members in operating and supporting advanced technologies
 - communication procedures for intra-operative updates and escalation pathways
 - collaboration processes with technical vendors for equipment installation, troubleshooting, servicing, and upgrade validation
 - reporting obligations for equipment incidents, maintenance outcomes, and vendor interactions
- regulatory, ethical and organisational frameworks, including:
 - WHS legislation, NSQHS standards, and organisational policies relevant to operating theatre equipment use
 - data security, software integrity, and patient privacy requirements for digital technologies
 - legal and ethical responsibilities when operating or supporting advanced surgical equipment during procedures

Assessment Conditions

Skills must be demonstrated in the workplace with simulation used only where workplace assessment is not possible, and must reflect workplace conditions.

The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including access to:
 - surgical environment, including:
 - robotic systems
 - automated surgical equipment
 - advanced digital and electrosurgical theatre technologies, including:
 - access to surgical lists and procedural guidelines reflective of a range of surgical specialities
 - organisational policies and procedures relevant to equipment management, WHS, and infection prevention and control, and maintenance protocols

- communication systems and team interaction protocols used in surgical settings
- documentation systems used for recording equipment use, faults, maintenance, and vendor interactions
- resources and procedures to support simulated or real emergency equipment scenarios

Assessors must satisfy the current Standards for Registered Training Organisations (RTOs)/AQF mandatory competency requirements for assessors.

Mandatory Workplace Requirements

The candidate must perform the tasks outlined in the performance criteria of this unit during a period of at least 80 hours of work related to advanced technology in a clinical workplace environment.

Unit Mapping Information

| Previous Code and Title | Equivalence | Comments |
|-------------------------|---------------|--|
| | Newly created | This unit has been created to address a skill or task required by industry that is not covered by an existing unit of competency |

Links

Companion volumes, including implementation guides, are found on the national training register - <https://training.gov.au/training/details/HLT>.