



Queensland Government
Queensland Health

Simulation facilitator manual

Skills training program for nurses:
Chest tube insertion, removal &
chest drain management



Table of Contents

1. INTRODUCTION.....	3
1.1. PROGRAM OBJECTIVE	3
1.2. OVERVIEW OF THE PROGRAM	3
1.2.1. Pre-requisites for participating in simulation component	3
1.2.2. Overview of the simulation component of the chest tube insertion, removal and chest drain management program for nurses.....	4
2. FACILITATOR	5
2.1. THE ROLE OF THE FACILITATOR	5
2.2. QUALIFICATIONS FOR BEING A FACILITATOR.....	5
3. THE ENVIRONMENT	7
3.1. PREPARING THE ENVIRONMENT	7
4. THE MANNEQUIN.....	8
4.1. FEATURES OF THE MANNEQUIN.....	8
4.2. SET UP OF THE MANNEQUIN.....	9
4.3. SETTING-UP THE PLEURAL SPACE SIMULATOR	11
4.4. CARE OF THE MANNEQUIN	12
4.4.1. Cleaning	12
4.4.2. Maintenance and repair	12
5. ADJUNCTIVE EQUIPMENT.....	13
5.1. EQUIPMENT FOR INSERTION OF A CHEST TUBE.....	13
5.2. EQUIPMENT FOR MANAGING A CHEST DRAIN	14
5.3. EQUIPMENT FOR REMOVAL OF A CHEST TUBE	15
6. THE SIMULATION PROCESS.....	16
6.1. INTRODUCTION	16
6.2. SCENARIO 1: ASSISTING IN INSERTING A CHEST TUBE.....	17
6.2.1. How to conduct scenario 1: assisting in inserting a chest tube	17
6.2.2. Set-up checklist for simulation scenario 1: assisting in chest tube insertion	21
6.2.3. Participant information for scenario 1: assisting in inserting a chest tube	23
6.2.4. Recording sheet for scenario 1: assisting in inserting a chest tube	25
6.2.5. Evaluation sheet for scenario 1: assisting in inserting a chest tube	30
6.3. SCENARIO 2: MANAGING A DISCONNECTED CHEST DRAIN.....	32
6.3.1. How to set-up and conduct scenario 2: managing a disconnected chest drain.....	32
Set-up checklist for simulation scenario 2: managing a disconnected chest drain.....	36
6.3.2. Participant's instructions for scenario 2: managing a chest drain.....	37
6.3.3. Recording sheet for scenario 2: managing a disconnected chest drain	39
6.3.4. Recording sheet for scenario 2 variation: managing a disconnected chest drain	41
6.3.5. Observation sheet for scenario 2: managing a chest drain	43
6.3.6. Evaluation sheet for scenario 2: managing a chest drain	44
6.4. SCENARIO 3: MANAGING A BLOCKED CHEST DRAIN.....	46
6.4.1. How to set-up and conduct scenario 3: managing a blocked chest drain	46
6.4.2. Set-up checklist for simulation scenario 3: managing a blocked chest drain	50
6.4.3. Participant's instructions for scenario 3: managing a chest drain.....	51
6.4.4. Recording sheet for scenario 3: managing a blocked chest drain.....	53
6.4.5. Observation sheet for scenario 3: managing a chest drain	55
6.4.6. Evaluation sheet for scenario 3: managing a chest drain	56
6.5. SCENARIO 4: MANAGING A CHEST DRAIN ATTACHED TO SUCTION	58
6.5.1. How to set-up and conduct scenario 4: managing a chest drain attached to suction... 58	
6.5.2. Set-up checklist for simulation scenario 4: managing a chest drain attached to suction	

6.5.3.	<i>Participant's instructions for scenario 4: managing a chest drain</i>	63
6.5.4.	<i>Recording sheet for scenario 4: managing a chest drain attached to suction</i>	65
6.5.5.	<i>Observation sheet for scenario 4: managing a chest drain</i>	68
6.5.6.	<i>Evaluation sheet for scenario 4: managing a chest drain</i>	69
6.6.	SCENARIO 5: REMOVING A CHEST TUBE.....	71
6.6.1.	<i>How to set-up and conduct scenario 5: removing a chest drain</i>	71
6.6.2.	<i>Set-up checklist for simulation scenario 5: removing a chest tube</i>	74
6.6.3.	<i>Participant's instructions for scenario 5: removing a chest drain</i>	75
6.6.4.	<i>Recording sheet for scenario 5: removing a chest tube</i>	77
6.6.5.	<i>Evaluation sheet for simulation scenario 5: removing a chest tube</i>	80

1. Introduction

This manual is a guide for facilitators to deliver the simulation component of the chest tube insertion, removal and chest drain management program for nurses.

This manual aims to provide you with:

- a broad understanding of this skills training program for nurses and how it works
- a conceptual understanding of where your role fits into the educational program
- specific information about how to carry out your role
- information on where, and from whom, you can find assistance and resources if, after reading this manual, you require further help.

Although this simulation program has not been validated as a competency assessment tool, it can be used (along with the related online program) as part of a competency process that includes other components, e.g. supervised practice.

1.1. Program objective

The insertion, removal and care of chest tubes and chest drains are a significant cause of iatrogenic injury. The chest tube insertion, removal and chest drain management skills-training program for nurses is a safe, affordable, and reproducible patient-free training system. The objective of this program is to improve patient safety in clinical environments by advancing both the knowledge, skills and clinical judgement of nurses inserting, removing and caring for chest tubes and chest drains.

1.2. Overview of the program

The complete chest tube insertion, removal and chest drain management program for nurses consists of two components - an online component and a simulation component. The online module provides the theory and knowledge base for these procedures and the simulation environment allows nurses to demonstrate and practice hands-on skills. The simulation component covers chest tube insertion and removal, and chest drain management. It also challenges a participant's ability to assess risk and manage complications in more complex simulation scenarios.



Caution!

This program provides training in what is considered to be a safe approach to inserting and removing a chest tube and chest drain management. It does not represent a "gold standard" or standard of care. Substantial variations in practice occur in clinical practice, which are likely to be of comparable safety and efficacy.

On-line education and simulation training do not replace the need for supervision/observation of these procedures in patients prior to independent practice.

1.2.1. Pre-requisites for participating in simulation component

This simulation skills' training has been designed to integrate with, and run in collaboration with, the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults'

This course is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

Prior to undertaking simulation skills training, participants should complete the online learning and provide a transcript confirming this to the facilitator. In the simulated skills training, participants will be expected to demonstrate and apply acquired online learning.

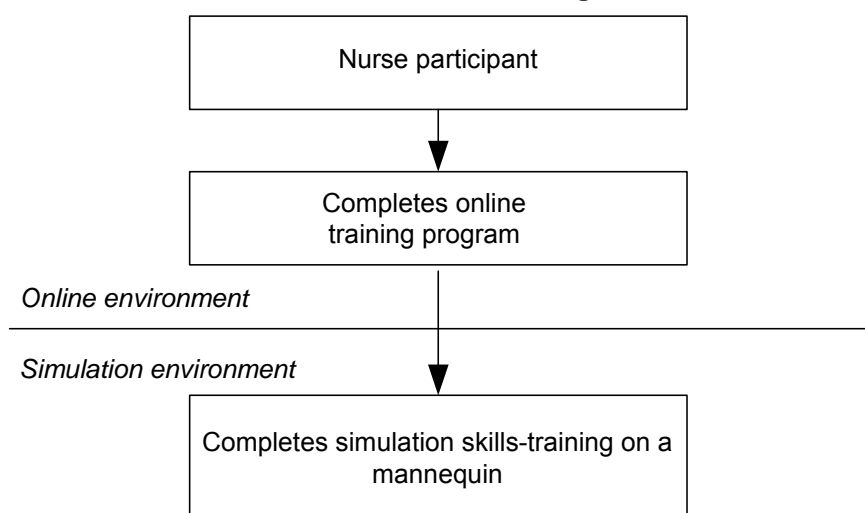


Golden Rule!

Completing the online training program should be a prerequisite to attending simulation training.

See the flowchart below:

Figure 1 - Flowchart for chest drain insertion skills training for nurses



1.2.2. Overview of the simulation component of the chest tube insertion, removal and chest drain management program for nurses

This manual is concerned with the simulation component of the chest drain program. It contains scenarios that allow participants to demonstrate and practice hands-on skills in the following areas:

- Assisting in chest tube insertion
- Trouble-shooting and problem-solving in chest drain management
- Chest tube removal.

The simulation component is carried out on a mannequin (Super-Annie 2) in a simulated procedure room or ward environment. The facilitator is able to regulate the mannequin to reproduce clinical situations with differing degrees of difficulty. The clinical scenarios can be replicated and modified to gauge a participant's understanding and ability to use a problem-solving framework when managing and trouble-shooting a patient's chest tube and chest drain. The clinical scenarios will assess a participant's ability to:

- prepare an adult for chest tube insertion, including the set up of equipment
- demonstrate dressing the site, securing a chest tube and connecting it to a chest drain
- use a systematic approach to identify, assess and resolve difficulties involving chest drain management
- demonstrate a safe removal technique for a chest tube.

2. Facilitator

2.1. The role of the facilitator

Ideally these scenarios should be conducted by 2 people - a facilitator and an observer. While the facilitator is guiding the participant through the scenario, the observer can focus on observing the participant and recording their actions and comments. Feedback can then be provided to the participant, based on the observations of the facilitator and the observer.

The facilitator's role:

- To set-up the simulation scenarios
- To guide the participant through the scenarios
- To observe the participant and assess and record their skills as they progress through the scenarios
- To provide feedback and reflect with the participant on their performance.

The observer's role:

- To observe the participant and assess and record their skills as they progress through the scenarios
- To assist in providing feedback and reflect with the participant on their performance.

In addition, the facilitator is responsible for:

- creating an atmosphere of mutual respect and trust
- keeping on track – if the participant sidetracks the simulation process or gets lost in the simulation, the facilitator sets limits on behaviours, and models and guides the participant back to the agreed processes and goals.

The attitude and skill of the facilitator can make the difference between a good learning experience for participants, and a poor one. So, the importance of effective facilitation cannot be overstated. In fact, facilitation skills can be learnt and continually improved. In return for their effort, facilitators enjoy the benefits of meeting a variety of colleagues, feel the satisfaction of helping people acquire new knowledge and skills.



Golden Rule!

The most successful facilitators are those who are committed, passionate and involved – and present as a person.

2.2. Qualifications for being a facilitator

- **Clinical skills competency**
The Facilitator should have basic competencies in clinical skills relevant to these procedures.

NOTE: This does NOT mean that the facilitator is an "expert" on the procedures, but it does mean they should have experience in inserting and removing a chest tube and managing a chest drain.

- **Subject matter competency**
The Facilitator should have personally completed both the online and simulation components of the chest tube insertion, removal and chest drain management program for nurses.

- **Orientation**
The Facilitator should be familiar with the educational resources and program, and know how to operate within a simulation environment.
- **Experience in clinical tutoring**
The Facilitator should have had previous experience in tutoring in the clinical setting and be familiar with guiding participants through simulated clinical scenarios, and in providing feedback.
- **Time management**
The Facilitator should be able to manage their time and the participant's time to ensure that their role is carried out effectively, and the group meets its goals.

3. The environment

3.1. Preparing the environment

The ideal simulation environment is a room set up as a procedure room or ward environment. The environment is part of the simulation exercise and scenarios may include instructions to modify lighting, bed height and other aspects of the environment.

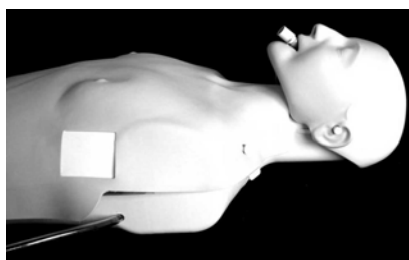
Unless otherwise stated in the scenarios, the room should have:

- an adjustable bed on which to put the mannequin
- adjustable lighting
- portable x-ray viewer (optional)
- a power source
- medical air or oxygen – either piped or bottled supply
- suction (wall or portable)
- taps and sink for hand washing.

4. The mannequin

4.1. Features of the mannequin

The mannequin recommended for simulation training is the Super-Annie 2. The mannequin is manufactured by Richard Morris at Simcentral.



Contact:

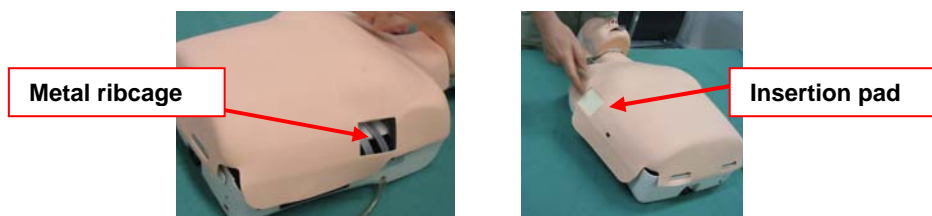
Web: <http://www.simcentral.com.au>

Email: enquiries@simcentral.com.au

Insertion and removal of chest tube (intercostal catheter)

Super Annie 2 has a realistic ribcage and a pad positioned in each lateral chest wall. The pad facilitates insertion of large bore chest tubes by dissection as well as small bore catheters, usually inserted by Seldinger technique. Each pad is compatible with the whole insertion procedure - from prepping the skin and infiltrating with local anaesthetic, to suturing the tube in place and applying the dressing.

The Super-Annie 2 mannequin differs from Laerdal's Little Anne resuscitation CPR mannequin in that it has a metal ribcage and an insertion pad positioned in each lateral chest wall.

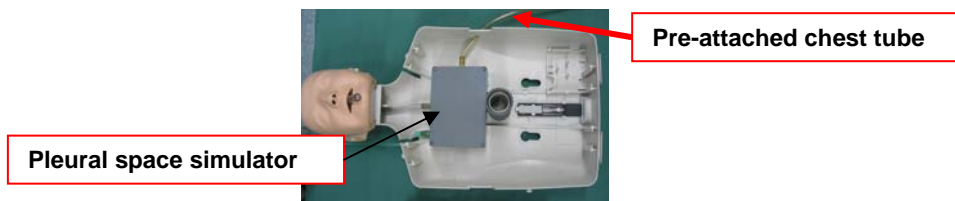


The insertion pad has multiple layers representing skin, subcutaneous fat, fascia, muscle and pleura. It allows the following techniques to be simulated:

- prepping of the skin
- infiltrating insertion site with local anaesthetic
- inserting and removing chest tubes, both large and small bore.

Management of chest drain

The Super-Annie 2 mannequin also has the ability to simulate a functioning underwater seal chest drain (UWSD) system by way of a pleural space simulator ('black box') inside the mannequin's chest cavity.



A 30 French chest tube on the left and a 12 French 'pigtail' catheter on the right are already connected to the pleural space simulator, ready for attachment to an UWSD.

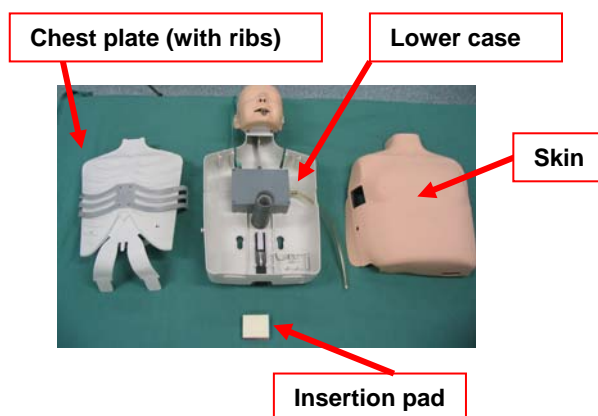
Conditions that can be simulated in the Super-Annie 2 mannequin include:

- Functioning UWSD with swinging of fluid level
- A small air leak
- A large air leak
- A blocked drainage circuit
- Leaks in the drainage circuit
- Correct and incorrect use of suction.
- Effect of PEEP

4.2. Set up of the mannequin

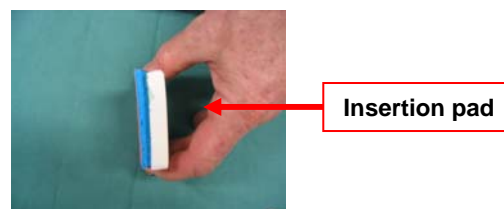
The chest drain mannequin has several different components. These components require assembly prior to conducting scenarios. The chest drain mannequin's components are:

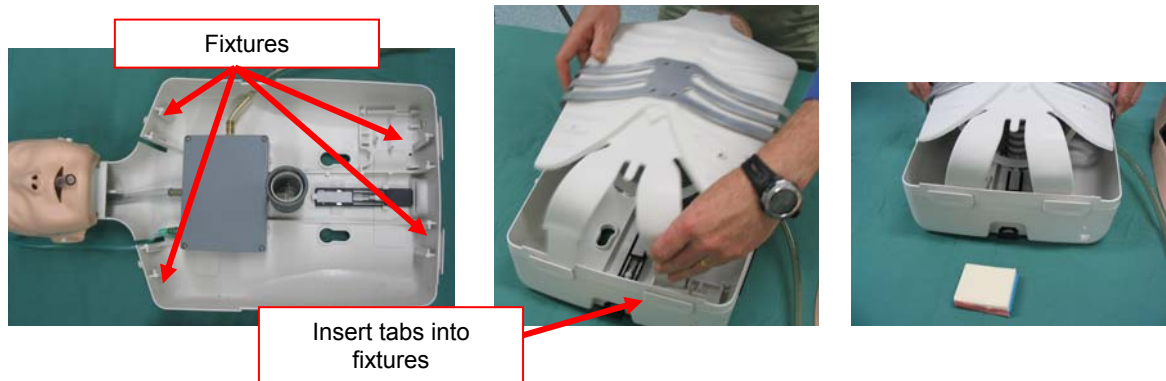
- Lower Case (with head and thorax)
- Chest plate (with aluminium ribs)
- Skin
- Insertion Pads
Insertion Pads have 4 different colored layers. The insertion pads aim to simulate the relevant anatomy in this area of the chest/thorax. Each layer represents the following aspects of the chest anatomy.
 - White - skin and subcutaneous layer
 - Green - fascial layer
 - Blue - muscle layer
 - Cream - pleural layer



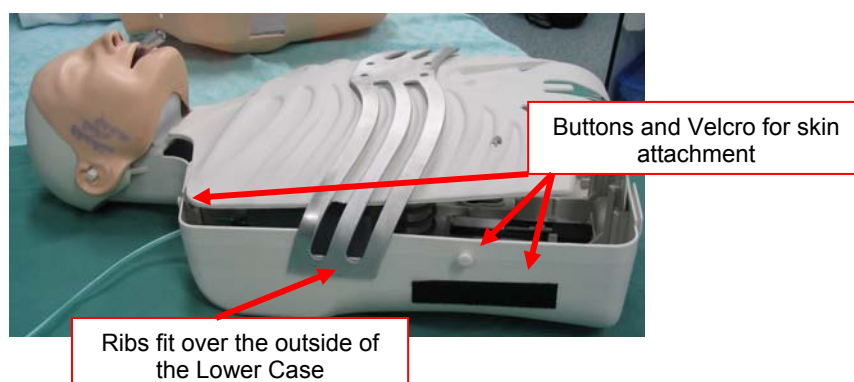
The procedure for set up is to:

- Position the mannequin storage case on the bed or bench.
- Unpack the four components of the chest drain insertion mannequin.
- Position the lower case section on the bed with the head of mannequin at the head of the bed.
- Position the Chest plate over the Lower Case.
- Insert the bottom tabs of the chest plate into fixtures on the inside and at the top and bottom of the Lower Case.

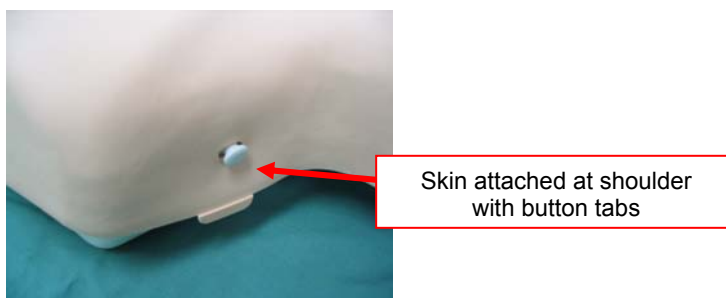




- Ensure the aluminium ribs fit over the outside of the Lower case as you slowly drop the top tabs into the fixtures on the inside and at the top of the Lower Case.



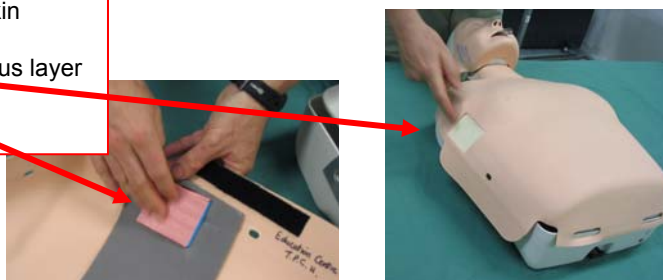
- After the Chest plate has been secured to the Lower Case, position the Skin over the mannequin.
- Attach the Skin section at the shoulders with the button tabs on the thorax.



- Position the Insertion Pads into specified area of the skin component.
- It is imperative that the Insertion Pad is positioned correctly.
- Position with the white side of the Insertion pad facing the outer aspect of the thorax.
- The pink side of the Insertion Pad should face the internal aspect of the thorax.

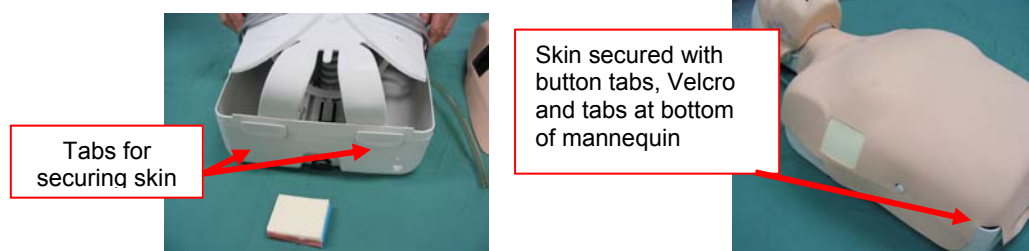
Position insertion pad into skin component with:

- white skin and subcutaneous layer to outside
- pleural layer to inside



- Secure the Skin section on both sides of the thorax, using the Velcro and additional button tabs.

- Secure the Skin at the bottom of the mannequin with the tabs.



Caution!

The chest drain insertion mannequin (Super-Annie 2) appears very similar to a CPR simulation mannequin. The Super-Annie 2 mannequin *is not to be used* for any purpose other than insertion of chest drains. *Do not practice external cardiac compression* techniques on Super-Annie 2, as this will damage internal components. Other procedures that Super-Annie 2 is not to be used for include:

- intubation with an endotracheal tube
- defibrillation/cardioversion
- cannulation.

4.3. Setting-up the pleural space simulator

- The pleura space simulator generates fluctuations in the fluid level of an attached underwater seal bottle.
- The system is connected to a 400kPa oxygen supply.
- Connecting the power supply activates the spontaneous breathing function which can be observed as swing in the underwater seal drain of around two cm. If a larger fluctuation is required this is achieved by occluding the endotracheal tube in the mannequin's mouth.
- A cough is simulated by transiently pressing the button next to the power connector.
- The size of the air leak is adjusted by turning the knob adjacent to the power connector.
- If the effects of positive pressure ventilation on the mannequin are required, the power lead can be disconnected to stop spontaneous breathing and a self-inflating bag or ventilator can be connected to the endotracheal tube.
- Conditions that can be simulated include:
 - Functioning UWSD with swinging fluid level
 - A small air leak
 - A large air leak
 - A blocked drainage circuit
 - Leaks in the drainage circuit
 - Correct and incorrect use of suction
 - Effect of PEEP



Caution!

If you apply clamps to chest drain tubing while the power and air are switched on, it will increase the pressure within the pleural space simulator and may damage the mannequin

For information regarding the pleural space simulator settings for specific conditions, see the sub-section 'How to set up and conduct scenario...' for each specific chest drain management scenario. For example, to find the settings specific to scenario 2: managing a chest drain, see 'How to set-up and conduct scenario 2: managing a disconnected chest drain'.

4.4. Care of the mannequin

4.4.1. Cleaning

Routine disinfection of the entire mannequin is not required, however, periodic cleaning of the head, torso, chest and skin is recommended. These should be washed with a mild, warm, soapy solution, and then rinsed with a clean damp cloth. Proper care will maintain the appearance and general condition of your simulator.

A small amount of water may accumulate within the mannequin during simulation procedures, from the swabbing process and from the anaesthetisation process. If there are to be multiple runs during a session it is important to *dry the interior of the mannequin in between attempts*, as excessive water within the unit may damage electrical components.

4.4.2. Maintenance and repair

If pre-attached catheters require changing, please complete the following steps:

1. Remove the skin from the mannequin
2. Remove the chest plate
3. Replacing **pigtail catheter**
 - a. Using scissors, cut the pigtail catheter as close as possible to the barbed connector on the pleural space simulator (black box)
 - b. Push the new pigtail catheter over the barbed fitting
 - c. Fit a cable tie around the pigtail catheter at the barbed connector
4. Replacing **chest tube**
 - a. Pull the chest tube from the large barbed connector
 - b. Fit the new chest tube over the large barbed connector
5. Refit the chest plate
6. Refit the mannequin skin.

There are no serviceable parts within the pleural space simulator and any repairs should be referred to either your biomedical engineering department or to the manufacturer:

Contact:

Web: <http://www.simcentral.com.au>

Email: enquiries@simcentral.com.au



Caution!

Medical air or oxygen either from a bottled or a piped source is the only gas that should be used with this simulator. Gas is vented away from the electrical circuit and poses little explosion risk in the event of failure within the mannequin. Only the supplied power source should be used or damage to the unit may result.

5. Adjunctive equipment

5.1. Equipment for insertion of a chest tube

In addition to an appropriate environment (see section 3.1), the following adjunctive equipment is required to perform the chest tube insertion skills training. A checklist for standard set-up and equipment, including any scenario-specific requirements, is available in section 6 - 'The simulation process', under the relevant scenario.

Equipment	
Soluble/ impermanent marker to mark insertion site - do not use permanent marker	
Surgical tray	
Trolley	
Operator's preparation	
MO	Nurse
sterile gown	apron
sterile gloves	gloves
mask	mask
protective eyewear	protective eyewear
Patient skin preparation	
Proxy for antiseptic solution (e.g. bottle of water labelled 'alcoholic chlorhexidine' or 'iodine')	
Sterile drapes	
Local anaesthetic	
Syringe – 20 ml	
Needle (25 G for skin and 21 G for deeper layers)	
Proxy for local anaesthetic agent (vial of water labelled 0.5% or 1% lignocaine)	
Chest tube	
Selection of chest tubes sizes 20, 28, 32, small bore catheter kit	
Incision	
Scalpel and blade no 11	
Blunt dissection of tract	
Curved artery forceps	
Insertion and securing of chest tube	
Stout, non-absorbable suture material (e.g. Mersilene 0 or Silk 1) on cutting needle	
Needle holder	
Tape, e.g. leukosilk	
Scissors	
Forceps	
Tube clamps (non-serrated)	
Dressing	
Dressings	
Adhesive tape to secure dressing	
Connection to UWSD	
Sterile tubing	
Adaptors	
Under water drain seal drainage system which is primed according to manufacturer's instructions	

5.2. Equipment for managing a chest drain

In addition to an appropriate environment (see section 3.1), the following adjunctive equipment is required to perform the chest tube management skills training. A checklist for standard set-up and equipment, including any scenario-specific requirements, is available in section 6 - 'The simulation process', under the relevant scenario.

Environment
An adjustable bed
Adjustable lighting
Portable x-ray viewer
A power source
Medical air or oxygen – either piped or bottled supply
Suction - wall or portable
Taps and sink for hand washing
Mannequin and chest tube
Chest drain insertion mannequin with pre-attached chest tube
Pre-attached chest tube should have in place:
Anchoring suture (anchoring chest tube in insertion site)
External dressing
Mesenteric tag of tape (securing chest tube to skin)
Underwater seal drain
Chest tube should be connected to UWSD drain
Anchoring suture, securing of chest tube
Stout, non-absorbable suture material (e.g. Mersilene 0 or Silk 1) on cutting needle
Needle holder
Tape, e.g. leukosilk
Scissors
Dressing
Dressings
Adhesive tape to secure dressing
Connection to UWSD
Adaptor (to attach chest tube to chest drain tubing)
Chest drain tubing (for attaching chest tube to chest drain)
1,2, or 3 chamber underwater seal drain primed according to manufacturers instructions

5.3. Equipment for removal of a chest tube

In addition to an appropriate environment (see section 3.1), the following adjunctive equipment is required to perform the chest tube removal skills training. A checklist for standard set-up and equipment is available in section 8.1.3 - 'Set-up checklist for removing a chest tube'

Mannequin and chest tube
Chest drain insertion mannequin with chest tube inserted and attached to UWSD. <i>Do not use the pre-attached chest tube or pigtail catheter for this procedure.</i> (see section 4.4)
Mannequin and chest tube should have in place:
Wound closure suture for large bore tube
Anchoring suture (anchoring chest tube in insertion site)
External dressing
Mesenteric tag of tape (securing chest tube to skin)
Chest drain tubing (attaching chest tube to chest drain)
Underwater seal drain
Personal protective equipment:
Apron
Gloves
Mask
Protective eyewear
Patient skin preparation:
Proxy for antiseptic solution (bottle of water labelled 'alcoholic chlorhexidine' or 'iodine')
Normal saline
Blue non-adhesive protective sheet
Continuous monitoring of oxygen saturation:
Oximeter
Removal of dressing:
Forceps
Scissors
Removal of chest tube:
Scalpel and blade no 11
Stitch cutter
Steri-strip or suture (if wound closure suture not present)
Dressings
Gauze squares
Adhesive tape to secure dressing
Waste containers for contaminated materials

6. The simulation process

6.1. Introduction

The following sections contain some suggested scenarios, which have been designed to integrate with, and run in collaboration with, the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults'

However, once you have become familiar with the course materials and the mannequin, you may like to design your own simulation training scenarios. The scenarios, included here, were chosen to reflect the range of skills associated with the insertion, removal and management of chest tubes and drains. The chest tube insertion and removal scenarios are primarily concerned with the participant demonstrating a safe technique for these procedures. The chest drain management scenarios are concerned with the participant developing a systematic approach to troubleshooting, using some common management problems.



Golden Rule!

The techniques outlined in these scenarios do not represent a 'gold standard' of care, as substantial variations in technique occur in clinical practice, which are likely to be of comparable safety and efficacy. Always check with your institution's procedures, protocols and guidelines.

Each of the following sections contains a specific simulation scenario and information to assist you in carrying it out. Within each section you will find:

- How to conduct the scenario: information for the facilitator
- Set-up checklist for the scenario
- Participant information for the scenario
- Recording sheet for scenario
- Evaluation sheet for scenario
- Additional material as needed.



Practice Tip!

To assist you, the sections within each specific simulation scenario have colour-coded tabs as follows:

- Information for the facilitator - green
- Information for the participant - pink
- Marking sheets - blue
- Evaluation sheet - white

6.2. Scenario 1: assisting in inserting a chest tube

6.2.1. How to conduct scenario 1: assisting in inserting a chest tube

Objective:

This scenario is designed to review the participant's knowledge and skills in assisting a medical officer to insert a chest tube in an adult. In particular, it will assess a participant's ability to:

- identify the equipment required for insertion of chest tubes in adults
- prepare an adult patient for chest tube insertion
- outline the nurse's role during the insertion procedure
- demonstrate the principles of dressing, securing and connecting the chest tube
- complete the appropriate nursing documentation post chest tube insertion

Pre-requisites:

This clinical scenario is based on the procedure outlined in the online unit, 'Assisting with chest tube insertion in adults', which is contained in the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults' (GL-5074)

It is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

It is recommended that participants have completed this course before commencing this simulation scenario.

Preparing for the scenario:

- Ensure you have an appropriate environment in which to carry out this simulation, e.g. procedure room (see section 3)
- Set up the mannequin according to instructions (see section 4.2). Note: This scenario will not use the pleural space simulator function of the Super-Annie 2.
- The scenario will not cover the actual insertion of the chest tube, except to explore the nurse's role at this stage of the procedure. Once the medical officer is gowned, and the equipment and drapes provided, the scenario will skip to securing, taping and dressing the chest tube post-insertion. For this reason, the mannequin should have a chest tube inserted by the facilitator, prior to the start of the simulation exercise. The chest tube should have a wound closure suture and an anchoring suture in place and be ready to have a wound dressing applied by the participant
- Ensure you have access to the equipment outlined in section 5.1. A checklist for standard set-up and equipment is available in section 6.2.2 - 'Set-up checklist for assisting in chest tube insertion'.

Agenda for scenario:

Activity	Time
Read through 'Participant's information for scenario 1: assisting in inserting a chest tube'	5 minutes
Orientation to the mannequin and its features	5 minutes
Take part in the simulation exercise	30 minutes
Debrief and reflection	15 minutes
Complete evaluation	5 minutes

Orientating the participant:

- Prior to beginning the scenario, give the participant the sheet, 'Participant's instructions for scenario 1: assisting in inserting a chest tube' (see section 6.2.3) and allow them 5 minutes to read it through. Ensure you are familiar with the participant's instructions sheet.
- Ask the participant if they have any questions.
- For the first 5 minutes of the simulation exercise, introduce them to the mannequin and show them its main features. This will assist them to become comfortable with the mannequin and the simulation environment.

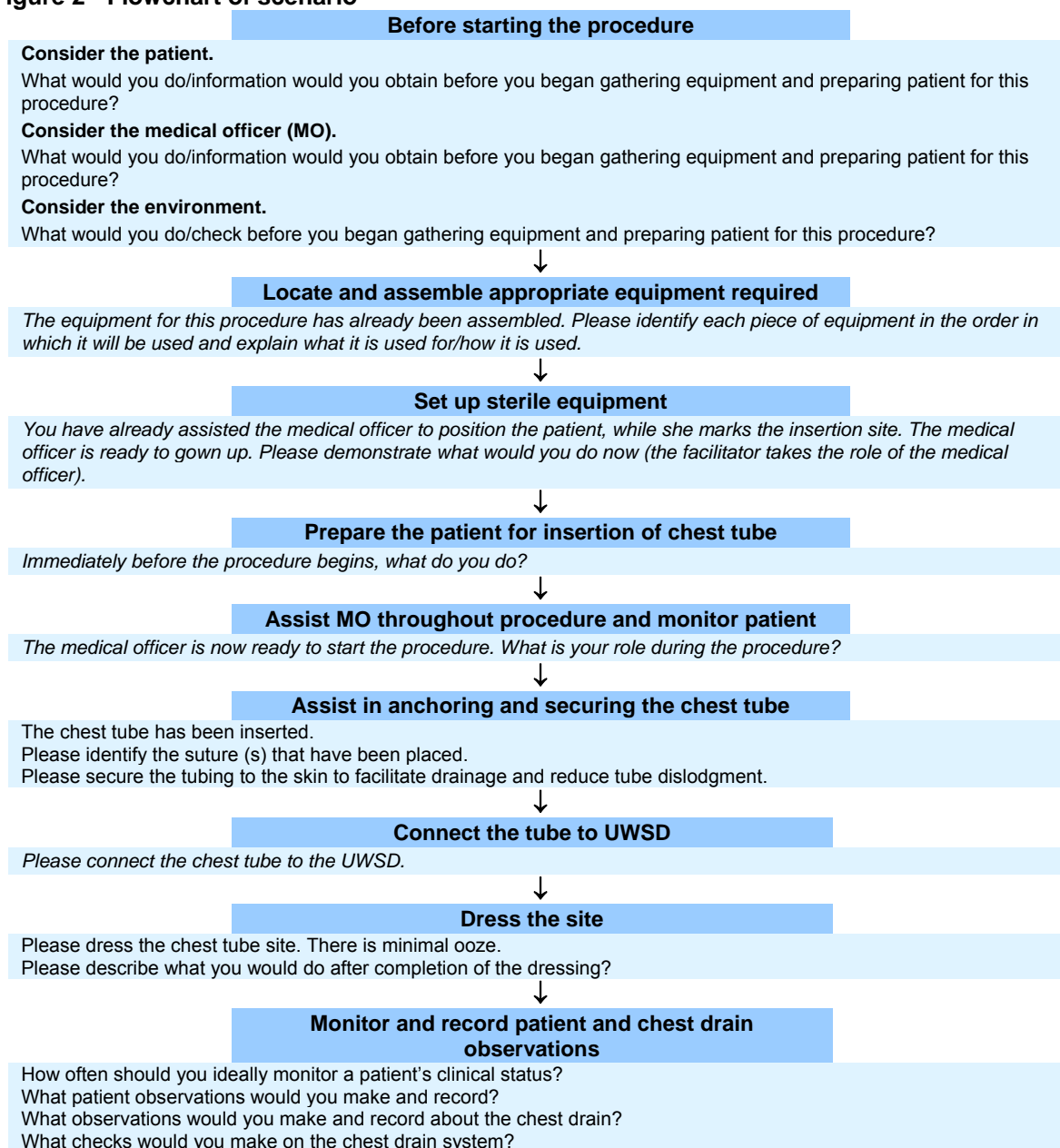
Conducting the scenario:

This scenario will take the participant through a simulated chest tube insertion procedure. The emphasis will be on the participant demonstrating their skill in:

- preparing the patient, equipment, and environment for chest tube insertion
- securing, taping and dressing the chest tube post-insertion
- connecting to the chest drain and monitoring the chest drain post-insertion.

The scenario will not cover the actual insertion of the chest tube, except to explore the nurse's role at this stage of the procedure. Once the medical officer is gowned, and the equipment and drapes provided, the scenario will skip to securing, taping and dressing the chest tube post-insertion (see flowchart below). For this reason, the facilitator should insert a chest tube prior to the start of the simulation exercise.

Figure 2 - Flowchart of scenario



As well as guiding the participant through the scenario, the facilitator will take the role of the medical officer, where necessary. Therefore, having a second person as an observer, who is solely responsible for recording the participant's actions and responses on the recording sheet, is helpful.

Use the sheet 'Recording sheet for scenario 1: assisting in inserting a chest tube' (see section 6.2.4) to guide the participant through the scenario. **Do not let the participant see the recording sheet.**

Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.

Recording sheet and feedback:

This simulation scenario has been designed as a training tool for nurses assisting in chest tube insertion and to provide feedback. The recording sheet is used to aid discussion with the participant, and to provide reflection on their performance. It can also be used as a guide to areas for improvement and future training.

Please note: this simulation scenario has not been validated and should not be used as a competency assessment tool in isolation of other competency measures, e.g. supervised practice.

On the recording sheet, the relevant columns are ticked for each aspect identified / completed by the participant. Any comments that will assist in giving feedback to the participant should also be recorded. The columns on the recording sheet are as follows:

- Step completed correctly without prompting
- Step completed correctly, but required prompting
- Step not completed correctly
- The actions of the participant endangered patient

Evaluation:

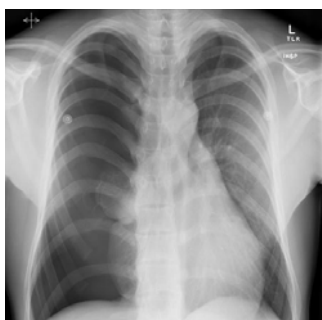
Evaluation is an important, but often forgotten, step. There are three things that are important to evaluate:

- the outcome of the skills training process - did it achieve the goals that were set in the planning phase?
- the simulation process - did this go smoothly? How can it be improved?
- other consequences of the simulation training - was the change successful across a number of dimensions, e.g. cost? What was the impact of the change on the whole unit/facility/hospital/district health service?
- At the end of the simulation exercise, the participant should be given an evaluation sheet to fill out and return to the facilitator. The evaluation sheet can be found in section 0.

Case scenario:

This is the case scenario, as presented to the participant:

You have been asked to assist Dr X in inserting a chest tube in James. James, aged 18 years, is 201 cm tall, weighs 80 kg (BMI=20) and is a keen basketballer. He has developed a spontaneous pneumothorax. A decision has been made to insert a chest tube for drainage of the pneumothorax. He has no other significant medical history. Here is a copy of his chest X-ray, showing almost complete collapse of his right lung.



6.2.2. Set-up checklist for simulation scenario 1: assisting in chest tube insertion

Set-up checklist for simulation scenario 1: assisting in chest tube insertion			
Requirements	Availability		Comments
	Yes	No	
Environment			
An adjustable bed			
Adjustable lighting			
Portable x-ray viewer			
A power source			
Medical air or oxygen – either piped or bottled supply			
Mannequin and chest tube			
Chest drain insertion mannequin with chest tube inserted prior to simulation exercise			
Mannequin and chest tube should have in place:			
Wound closure suture for large bore chest tube			
Anchoring suture (anchoring chest tube in insertion site)			
Equipment			
Soluble/ impermanent marker to mark insertion site - do not use permanent marker on mannequin			
Surgical tray			
Trolley			
Operator's preparation			
MO			
sterile gown			
sterile gloves			
mask			
protective eyewear			
Nurse			
apron			
gloves			
mask			
protective eyewear			
Patient skin preparation			
Proxy for antiseptic solution (e.g. bottle of water labelled 'alcoholic chlorhexidine' or 'iodine')			
Sterile drapes			
Local anaesthetic			
Syringe – 20 ml			
Needle (25 G for skin and 21 G for deeper layers)			
Proxy for local anaesthetic agent (vial of water labelled 0.5% or 1% lignocaine)			

Set-up checklist for simulation scenario 1: assisting in chest tube insertion cont.			
Requirements	Availability		Comments
	Yes	No	
Chest tube			
Selection of chest tubes sizes 20, 28, 32, small bore catheter kit			
Incision			
Scalpel and blade no 11			
Blunt dissection of tract			
Curved artery forceps			
Insertion and securing of chest tube			
Stout, non-absorbable suture material (e.g. Mersilene 0 or Silk 1) on cutting needle			
Needle holder			
Tape, e.g. leukosilk			
Scissors			
Forceps			
Tube clamps (non-serrated)			
Dressing			
Dressings			
Adhesive tape to secure dressing			
Connection to UWSD			
Sterile tubing			
Adaptors			
Under water drain seal drainage system which is primed according to manufacturer's instructions			
Other			

Scenario 1 Facilitator

6.2.3. Participant information for scenario 1: assisting in inserting a chest tube

Objective:

This scenario is designed to review your knowledge and skills in assisting a medical officer to insert a chest tube in an adult. In particular, it will assess your ability to:

- identify the equipment required for insertion of chest tubes in adults
- prepare an adult patient for chest tube insertion
- outline the nurses role during the insertion procedure
- demonstrate the principles of dressing, securing and connecting the chest tube
- complete the appropriate nursing documentation post chest tube insertion.

Pre-requisites:

This clinical scenario is based on the procedure outlined in the online unit, 'Assisting with chest tube insertion in adults', which is contained in the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults'

It is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

It is recommended that you have completed this course before commencing this simulation scenario.

Agenda:

Activity	Time
Read through 'Participant's information for scenario 1: assisting in inserting a chest tube'	5 minutes
Orientation to the mannequin and its features	5 minutes
Take part in the simulation exercise	30 minutes
Debrief and reflection	15 minutes
Complete evaluation	5 minutes

Role of the facilitator:

As well as guiding you through the scenario, the facilitator will take the role of the medical officer, where necessary. Ideally there will be a second person present acting as an observer, who will assist the facilitator by recording your actions and responses.

Recording and feedback:

This simulation scenario has been designed as a training tool for nurses assisting in chest tube insertion and to provide feedback. The recording sheet is used to aid discussion and provide reflection on your performance, and as a guide to areas for improvement and future training.

On the recording sheet, relevant columns are ticked by the facilitator and/or the observer for each aspect identified / completed by you. Any comments that will assist in giving feedback to you will also be recorded. The columns on the recording sheet are as follows:

- Step completed correctly without prompting
- Step completed correctly, but required prompting
- Step not completed correctly
- The actions of the participant endangered patient

Evaluation

At the end of the simulation exercise, you will be given an evaluation sheet to fill out and return to the facilitator. Please take time to complete it and help us to make this a better training program for everyone.

Outline of the scenario:

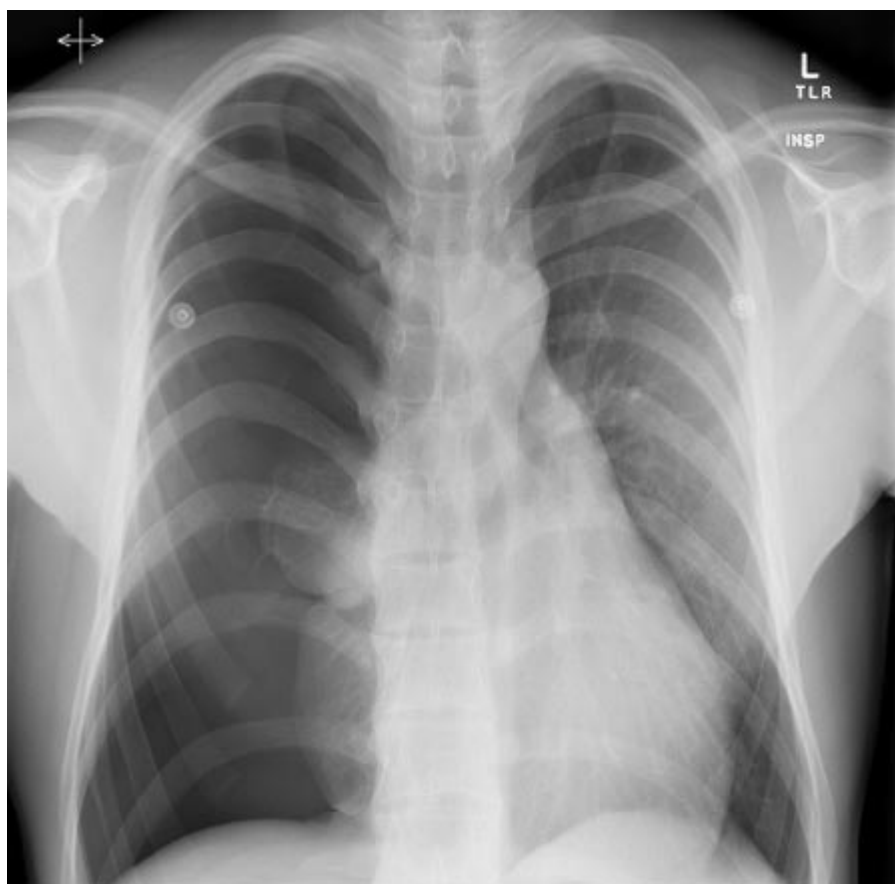
This scenario will take you through a simulated chest tube insertion procedure. The emphasis will be on:

- preparing the patient, equipment, and environment for chest tube insertion
- securing, taping and dressing the chest tube post-insertion
- connecting to the chest drain and monitoring the chest drain post-insertion.

The scenario will not cover the actual insertion of the chest tube, except to explore your role at this stage of the procedure. Once the medical officer is gowned, and the equipment and drapes provided, the scenario will skip to securing, taping and dressing the chest tube post-insertion (see flowchart below). For this reason, the facilitator should insert a chest tube, prior to the start of the simulation exercise.

Case scenario

You have been asked to assist Dr X in inserting a chest tube in James. James, aged 18 years, is 201 cm tall, weighs 80 kg (BMI=20) and is a keen basketballer. He has developed a spontaneous pneumothorax. A decision has been made to insert a chest tube for drainage of the pneumothorax. He has no other significant medical history. Here is a copy of his chest X-ray, showing almost complete collapse of his right lung.



6.2.4. Recording sheet for scenario 1: assisting in inserting a chest tube

Instructions:					
1. Complete the checklist below by ticking in the relevant columns for each aspect identified / completed by the participant. Add any comments that are relevant and will assist in giving feedback					
2. Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.					
Case scenario: You have been asked to assist Dr X in inserting a chest tube in James. James, aged 18 years, stands at 201 cm tall, and is a keen basketballer. He has developed a spontaneous pneumothorax. A decision has been made to insert a chest tube for drainage of the pneumothorax.					
Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Before starting the procedure					
Consider the patient. <i>What would you do/information would you obtain before you began gathering equipment and preparing patient for this procedure?</i>					
Check patient identity					
Explain procedure to patient					
Ensure patient's consent has been obtained					
Carry out a risk assessment					
<i>What would you check for?</i>					
Coagulopathies					
Allergies					
Consider need for I/V access					
Consider the medical officer. <i>What would you do/information would you obtain before you began gathering equipment and preparing patient for this procedure?</i>					
Check x-ray or copy is available					
Check side and site of insertion					
Check patient position required					
Sterile glove size					
Amount and type of local anaesthetic					
Size of chest tube					
Suture material					
Check if premed is required					
Check need for I/V access					
Consider the environment. <i>What would you do/check before you began gathering equipment and preparing patient for this procedure?</i>					
Ensure access to emergency equipment					
Provide privacy					
Check bed positioning					
Check x-ray or copy is available					
Consider this environment. <i>Look around at this environment. Would you be happy to carry out this procedure in this room? What risks can you identify?</i>					
Give one mark for each risk identified, e.g. lack of x-ray viewer, lack of emergency equipment, poor lighting					

Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Step 2: Locates and assembles appropriate equipment required					
<i>The equipment for this procedure has already been assembled. Please identify each piece of equipment in the order in which it will be used and explain what it is used for / how it is used.</i>					
Personal protective equipment:					
sterile gown					
sterile gloves					
mask					
protective eyewear					
e: apron					
gloves					
mask					
protective eyewear					
<i>These items are used for infection control: to protect operators and patient from infection</i>					
Patient skin preparation:					
Antiseptic solution (70% alcoholic chlorhexidine or 10% w/vv povidine iodine)					
Sterile drapes					
<i>These items are used for infection control: to protect patient from infection</i>					
Continuous monitoring of oxygen saturation:					
Oximeter					
<i>This item is used to monitor patient's oxygen saturation</i>					
Local anaesthetic:					
Syringe 20 ml					
Needle, (25 G for skin and 21 G for deeper layers).					
Local anaesthetic agent					
<i>These items are used to anaesthetise the skin, subcutaneous tissue, muscle, periosteum and pleura</i>					
Incision, dissection and insertion of chest tube:					
Scalpel and blade no 11					
<i>The scalpel is used to incise the skin</i>					
Curved artery forceps					
<i>urved artery forceps are used to blunt dissect through ubcutaneous fat, and muscle; puncture the parietal leura; insert the chest tube</i>					
Chest tube					
<i>Chest tube is used to drain air / fluid from pleural cavity</i>					
Tube clamps (non-serrated)					
<i>Used to clamp tube while it is being secured</i>					
Securing of chest tube:					
Stout, non-absorbable suture material					
Needle holder					
Non-stretch tape (e.g. Leucosilk)					
Scissors					
Straight forceps					
<i>Used to insert the wound closure and anchoring sutures and mesenteric tag of tape to secure the tube</i>					

Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Step 2: Locates and assembles appropriate equipment required (cont)					
Connection to UWSD:					
Sterile tubing					
Adaptors					
Under water seal drain (UWSD)					
Adhesive tape					
<i>For connecting to UWSD</i>					
Dress the insertion site:					
Sterile split wound dressing					
Secondary wound dressing					
Adhesive tape					
<i>These items are used to dress the insertion site</i>					
Step 3: Set up sterile equipment					
<i>You have already assisted the medical officer to position the patient, while she marks the insertion site. The medical officer is ready to gown up. Please demonstrate what you would do now. (The facilitator takes the role of the medical officer.)</i>					
Don PPE					
Wash hands prior to opening packs					
Open a sterile gown pack					
Open a sterile gloves pack					
Assist operator with gowning					
Open a sterile procedure pack					
Add additional equipment as required using aseptic technique					
Provide local anaesthetic					
Pour selected antiseptic solution					
Supply sterile drapes					
Step 5: Prepare the patient for insertion of chest tube					
<i>Immediately before the procedure begins, what do you do?</i>					
Perform a final check or 'Time out' :					
sent complete					
patient's name, date of birth, medical record number					
ect side and site					
lling of x-rays					
ilable correct imaging data.					
Perform and record baseline vital signs					
Set up continuous oximetry monitoring for the duration of the procedure.					
Administer pre-medication, if ordered by the MO.					
Position the patient: return patient to the position they were in when site was marked					

Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Step 6: Assist MO throughout procedure and monitor patient					
The medical officer is now ready to start the procedure. What is your role during the procedure?					
Pass equipment as requested					
Observe and reassure the patient					
Encourage the patient to breathe normally					
Assess patient pain and anxiety levels					
Continuously monitor the patient and document:					
oxygen saturation					
respiratory rate, depth, effort and pattern					
blood pressure and pulse.					
Administer oxygen as necessary					
Ensure the patient maintains arm position during the insertion procedure					
If 3 way tap used, ensures it is 'off to patient'					
Step 7: Assist in anchoring and securing the chest tube	<i>(move to mannequin with clamped chest tube, wound closure suture and anchoring suture in place)</i>				
<i>The chest tube has been inserted.</i>					
<i>Please identify the 2 sutures that have been placed.</i>					
Wound closure suture (large bore tube)					
Anchoring suture					
<i>Please secure the tubing to the skin to facilitate drainage and reduce tube dislodgment.</i>					
Applies a mesenteric tag of tape to the chest tube about 15-20 cm distal to the insertion site					
Step 8: Connect the chest tube to UWSD					
<i>Please connect the chest tube to the UWSD.</i>					
Ensures that drainage system is at least 80cm below the site of insertion					
Removes sterile cap from UWSD system					
Connects tubing of UWSD system to secured chest tube					
Removes clamps after connection to the system					
Ensures 3 way tap 'off to bung'					
Tapes the junction of the chest tube and drainage tube					
Uses 2 thin strips of non-stretch tape lengthwise over connection, to allow for the observation of connection					
Asks patient to take a deep breath, hold it, and slowly exhale to assist drainage and lung re-expansion					

Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Step 9: Dress the site					
<i>Please dress the chest tube site. There is minimal ooze.</i>					
Dresses the wound and not the tube; avoiding large amounts of tape and padding					
<i>Please describe what you would do after completion of the dressing?</i>					
Apply suction if prescribed by MO					
Clean and dispose of equipment in the appropriate manner					
Perform social hand wash					
Supply the patient and/or family with post-chest tube insertion education					
Ensure that a chest x-ray has been organised (as per medical order)					
<i>What is the purpose of the x-ray?</i>					
check tube position					
exclude complications					
assess the pleural effusion/pneumothorax resolution					
Ensure the procedure is documented in the patient's chart by MO					
Document the nursing interventions, observations and that the patient education has been provided post procedure					
Step 12: Monitor and record patient and chest drain observations					
<i>How often should you ideally monitor a patient's clinical status?</i>					
Assess hourly for 4 hours and then every 4th hour					
<i>What patient observations would you make and record?</i>					
Basic vital signs					
Oxygen saturation					
Level of consciousness					
Pain and discomfort with deep breaths and cough					
Presence of dyspnoea or cyanosis					
<i>What observations would you make and record about the chest drain?</i>					
Fluid fluctuating (swinging/tidalling) in chest tube					
Presence of air loss evidenced by bubbling in the UWSD					
Amount, colour and consistency of drainage					
Tube position					
Security of connections and system					
<i>What checks would you make on the chest drain system?</i>					
Drainage tube is straight and dependent loops do not form					
The drain system is > 80 cm below the patient's chest					
The water seal chamber/bottle is upright					
It is maintained according to the manufacturer's instructions					
Total					
Further comments:					

6.2.5. Evaluation sheet for scenario 1: assisting in inserting a chest tube

Date of simulation exercise: _____
Location of simulation exercise: _____

Learning Goals

Rank your achievement of each learning goal using the scale below:

- 1 - Unable to meet learning goal
- 3 - Able to meet the goal to a major extent
- 5 - Can confidently meet the goal

To what extent were you able to meet the learning goals?

- identify the equipment required for insertion of chest tubes in adults
- prepare an adult patient for chest tube insertion
- outline the nurses role during the insertion procedure
- demonstrate the principles of dressing, securing and connecting the chest tube in an adult
- complete the appropriate nursing documentation post chest tube insertion

Simulation exercise

To what extent did you find this simulation useful as a learning opportunity? (Tick one.)

- Very useful
- Fairly useful
- Not useful

To what extent was the simulation exercise clear and easy to follow? (Tick one.)

- Clear and easy to follow
- Mostly clear and easy to follow
- Unclear/difficult to follow

Did you complete the online units relevant to this simulation scenario, prior to attending? (Tick one.)

- Yes
- Unsure
- No

Did the online units help you to complete the simulation exercise? (Tick one.)

- Yes
- Somewhat
- No

Comments

Evaluation sheet for simulation scenario 1: assisting in inserting a chest tube *cont.*

Scenario 1 Evaluation

Practice

As a result of completing this simulation will you be making any modifications to your practice? (Tick one.)

- My practice will remain unchanged
- I confirmed my practice
- I plan to review my practice
- I plan to make modifications to my practice

Comments

Facilitator

Did the facilitator promote your learning?

- Yes
- Somewhat
- No

Comments

General Comments

What features did you like/dislike about the simulation exercise?

How could this simulation exercise be improved?

6.3. Scenario 2: Managing a disconnected chest drain

6.3.1. How to set-up and conduct scenario 2: managing a disconnected chest drain

Objective:

This scenario is designed to review the participant's knowledge and skills in managing a chest drain where the chest tube has disconnected from the chest drain tubing under the taped connection resulting in an absence of bubbling and swing in the UWSD. In particular, it will assess a participant's ability to:

- safely manage a chest drain
- apply the principles of underwater seal drains to common management problems
- demonstrate a systematic approach to managing common chest drain problems.

Pre-requisites:

This clinical scenario is based on the procedure outlined in the online unit, 'Managing underwater seal drains – principles, management and troubleshooting', which is contained in the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults'

It is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

It is recommended that participants have completed this course before commencing this simulation scenario.

Preparing for the scenario:

- Ensure you have an appropriate environment in which to carry out this simulation, e.g. procedure room (see section 3).
- Set up the mannequin according to instructions (see section 4.2).
- Prior to the start of the simulation, the mannequin should have in place:
 - a chest tube inserted by the facilitator
 - a wound closure suture (for large bore tube) and an anchoring suture in place
 - a mesenteric tag of tape to secure the chest tube about 15-20 cm distal to the insertion site
 - a wound dressing applied to the insertion site
 - be connected to an UWSD.
- For the management problem in this scenario, you should also:
 - disconnect chest tube from chest drain tubing under the tape
 - no suction is required for this scenario
 - add drainage fluid to the collecting chamber of the UWSD.
- Set-up the pleural space simulator according to instructions (see section 4.3). Before commencing this simulation skills training scenario with a participant, make sure you are familiar with operating the pleural space simulator in the mannequin. It is also recommended that you practice this scenario with an assistant, to ensure it works as seamlessly as possible.
- Specific pleural space simulator settings to achieve the chest drain action for this scenario are:

Simulator Settings	
Power	ON
Air	ON
Dial	OFF

Acton of chest drain	
Swing	Nil
Air Loss	Nil
Drainage	Nil
Suction	NO

- Ensure you have access to the equipment outlined in section 5.2. A checklist for standard set-up and equipment is available in the appendices, in section 0 - 'Set-up checklist for scenario 2: managing a disconnected chest drain'

Agenda for scenario:

Activity	Time
Read through 'Participant's information for scenario 2: managing a chest drain'	5 minutes
Orientation to the mannequin and its features	5 minutes
Take part in the simulation exercise	30 minutes
Debrief and reflection	15 minutes
Complete evaluation	5 minutes

Orientating the participant:

- Prior to beginning the scenario, give the participant the sheet, 'Participant's instructions for scenario 2: managing a chest drain' (see section 6.3.3) and allow them 5 minutes to read through it. Ensure you are familiar with the participant's instructions sheet.
- Ask the participant if they have any questions.
- For the first 5 minutes of the simulation exercise, introduce them to the mannequin and show them its main features. This will assist them to become comfortable with the mannequin and the simulation environment.

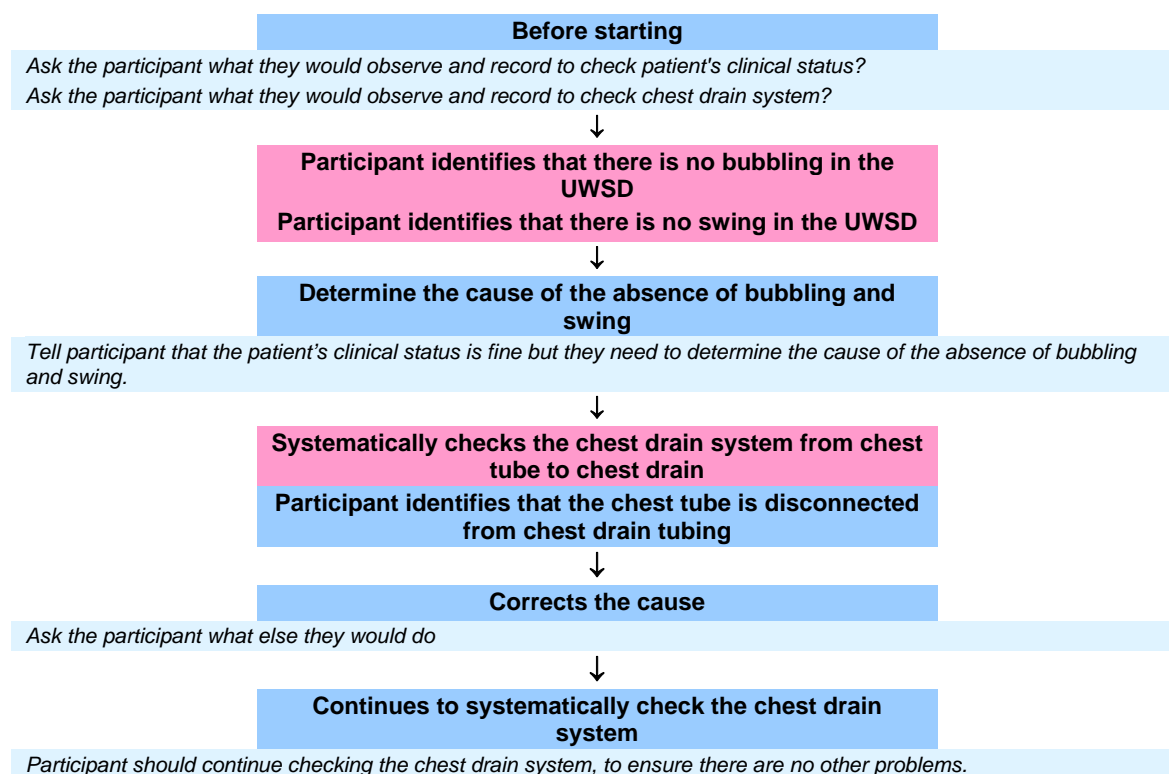
Conducting the scenario:

This scenario will take the participant through a simulated chest drain management problem where the chest tube has become disconnected from the chest drain tubing. The emphasis will be on the participant:

- demonstrating a systematic approach to managing a chest drain problem
- being able to apply the principles of underwater seal drains to common management problems.

Figure 1 - Flowchart for Scenario 2: Managing a disconnected chest drain

Management problem: *The chest tube has disconnected from the chest drain tubing under the taped connection resulting in an absence of bubbling and swing in the UWSD.*



As well as guiding the participant through the scenario, the facilitator will be operating the mannequin. Therefore, having a second person as an observer, who is solely responsible for recording the participant's actions and responses on the recording sheet, is helpful.

Use the sheet 'Recording sheet for scenario 2: managing a disconnected chest drain' (see section 6.3.4) to guide the participant through the scenario. **Do not let the participant see the recording sheet.**

Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.

Recording sheet and feedback

This simulation scenario has been designed as a training tool for nurses managing chest drains and to provide feedback. The recording sheet is used to aid discussion with the participant, and to provide reflection on their performance. It can also be used as a guide to areas for improvement and future training.

Please note: this simulation scenario has not been validated and should not be used as a competency assessment tool in isolation of other competency measures, e.g. supervised practice.

On the recording sheet, the relevant columns are ticked for each aspect identified / completed by the participant. Any comments that will assist in giving feedback to the participant should also be recorded. The columns on the recording sheet are as follows:

- Step completed correctly without prompting
- Step completed correctly, but required prompting
- Step not completed correctly
- The actions of the participant endangered patient

Evaluation

Evaluation is an important, but often forgotten, step. There are three things that are important to evaluate:

- the outcome of the skills training process - did it achieve the goals that were set in the planning phase?
- the simulation process - did this go smoothly? How can it be improved?
- other consequences of the simulation training - was the change successful across a number of dimensions, e.g. cost? What was the impact of the change on the whole unit/facility/hospital/district health service?

At the end of the simulation exercise, the participant should be given an evaluation sheet to fill out and return to the facilitator. The evaluation sheet can be found in section 6.3.6.

Case scenario

This is the case scenario, as presented to the participant:

The patient, Elvie, is a 70-year-old lady with non-small cell lung cancer and recurrent left pleural effusions, who presented very short of breath. On x-ray, she was found to have a pleural effusion and was admitted for chest tube insertion to drain the effusion. Elvie has had a chest tube inserted, which is connected to a 3-chamber UWSD. No suction is being applied to the system. Elvie has been discharged to the ward and you are carrying out the 4th hourly assessment of the patient's clinical status and chest drain.



Scenario variation!

You can use this variation to demonstrate a typical air leak, in a disconnected tube, in a patient on suction. Apply suction to the chest drain, while the chest tube is disconnected. This will result in continual bubbling in the assessment chamber of the UWSD and an inability to assess suction in the UWSD.

If you are using this variation, please remember to:

- adjust the case scenario on the participant sheet to say that Elvie **is** on suction
- use the 'Recording sheet for scenario 2 variation: managing a disconnected chest tube'

Set-up checklist for simulation scenario 2: managing a disconnected chest drain

Set-up checklist for simulation scenario 2: managing a disconnected chest drain			
Requirements	Availability		Comments
	Yes	No	
Environment			
An adjustable bed			
Adjustable lighting			
Portable x-ray viewer			
A power source			
Medical air or oxygen – either piped or bottled supply			
Suction – wall/ portable (<i>Not needed unless using the scenario variation</i>)			
Taps and sink for hand washing			
Mannequin and chest tube			
Chest drain insertion mannequin with pre-attached chest tube			
Pre-attached chest tube should have in place:			
Anchoring suture (anchoring chest tube in insertion site)			
External dressing			
Mesenteric tag of tape (securing chest tube to skin)			
Underwater seal drain			
Chest tube should be connected to UWSD drain and connection taped			
Disconnect chest tube from chest drain tubing under the tape			
Anchoring suture, securing of chest tube			
Stout, non-absorbable suture material (e.g. Mersilene 0 or Silk 1) on cutting needle			
Needle holder			
Tape, e.g. leukosilk			
Scissors			
Dressing			
Dressings			
Adhesive tape to secure dressing			
Connection to UWSD			
Adaptor (to attach chest tube to chest drain tubing)			
Chest drain tubing (attaching chest tube to chest drain)			
1,2, or 3 chamber underwater seal drain primed according to manufacturers instructions			
Other			

6.3.2. Participant's instructions for scenario 2: managing a chest drain

Objective:

This scenario is designed to review your knowledge and skills in managing a chest drain. In particular, it will assess your ability to:

- to safely manage a chest drain
- apply the principles of underwater seal drains to common management problems
- demonstrate a systematic approach to managing common chest drain problems.

Pre-requisites:

This clinical scenario is based on the procedure outlined in the online unit, 'Managing underwater seal drains – principles, management and troubleshooting', which is contained in the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults'

It is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

It is recommended that you complete this course before commencing this simulation scenario.

Agenda for scenario

Activity	Time
Read through 'Participant's information for scenario 2: managing a chest drain'	5 minutes
Orientation to the mannequin and its features	5 minutes
Take part in the simulation exercise	30 minutes
Debrief and reflection	15 minutes
Complete evaluation	5 minutes

Role of the facilitator:

As well as guiding you through the scenario, the facilitator will be operating the mannequin. Ideally there will be a second person present acting as an observer, who will assist the facilitator by recording your actions and responses.

Recording sheet and feedback:

This simulation scenario has been designed as a training tool for nurses managing chest drains and to provide feedback. The recording sheet is used to aid discussion and provide reflection on your performance, and as a guide to areas for improvement and future training.

On the recording sheet, relevant columns are ticked by the facilitator and/or the observer for each aspect identified / completed by you. Any comments that will assist in giving feedback to you will also be recorded. The columns on the recording sheet are as follows:

- Step completed correctly without prompting
- Step completed correctly, but required prompting
- Step not completed correctly
- The actions of the participant endangered patient

Evaluation:

At the end of the simulation exercise, you will be given an evaluation sheet to fill out and return to the facilitator. Please take time to complete it and help us to make this a better training program for everyone.

Outline of the scenario:

This scenario will take you through a simulated chest drain management problem. The emphasis will be on:

- demonstrating a systematic approach to managing a chest drain problem
- being able to apply the principles of underwater seal drains to common management problems.

Case scenario

The patient, Elvie, is a 70-year-old lady with non-small cell lung cancer and recurrent left pleural effusions, who presented very short of breath. On x-ray, she was found to have a pleural effusion and was admitted for chest tube insertion to drain the effusion. Elvie has had a chest tube inserted, which is connected to a 3-chamber UWSD. No suction is being applied to the system. Elvie has been discharged to the ward and you are carrying out the 4th hourly assessment of the patient's clinical status and chest drain.

6.3.3. Recording sheet for scenario 2: managing a disconnected chest drain

Instructions:					
1. Complete the checklist below by ticking in the relevant columns for each aspect identified / completed by the participant. Add any comments that are relevant and will assist in giving feedback					
2. Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.					
Case scenario 2: The patient, Elvie, is a 70-year-old lady with non-small cell lung cancer and recurrent left pleural effusions, who presented very short of breath. On x-ray was found to have a pleural effusion and was admitted for chest tube insertion to drain effusions. Elvie has had a chest tube inserted, which is connected to a 3-chamber UWSD. No suction is being applied to the system. Elvie has been discharged to the ward and you are carrying out the 4th hourly assessment of the patient's clinical status and chest drain.					
Management problem: The chest tube has disconnected from the chest drain tubing under the taped connection resulting in an absence of bubbling and swing in the UWSD.					
Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Step 1: Before starting					
<i>Ask the participant what they would observe and record to check patient's clinical status?</i>					
Basic vital signs					
Oxygen saturation					
Level of consciousness					
Pain and discomfort with deep breaths and cough					
Presence of dyspnoea or cyanosis.					
<i>Ask the participant what they would observe and record to check chest drain system?</i>					
The chest tube position					
The tubing to ensure all connections are secure, tubing is not kinked and there are no coils or loops present in tubing					
The UWSD to ensure it is upright, at least 80 cm below the patient's chest, vents are not clamped or capped and, if not a dry system, that it has sufficient water in water seal chamber					
For the presence of swinging/tidalling in UWSD					
For the presence of air loss evidenced by bubbling in the UWSD					
The amount, colour and consistency of any drainage					
Step 2: Check the chest drain system					
<i>Give the participant the modified observation sheet and ask them to carry out observations. Tell them this obs sheet has been modified. Let them know that you will play the role of Elvie and give them the observations they can't get from looking at the mannequin and UWSD (see below)</i>					
<i>Observations for Elvie: Temp- 36.9C BP- 130/80 PR- 116 Rhythm- regular Resp- 28 Dysp- slightly short of breath (2/10) Sats- 90% Colour- pink Pain- increasing chest pain and discomfort (5/10)</i>					
Identifies that there is no bubbling in the UWSD					
Identifies that there is no swing in the UWSD					
Step 3: Determine the cause of the absence of bubbling and swing					
<i>Tell participant that the patient's clinical status is fine but they need to determine the cause of the absence of bubbling and swing</i>					
Asks patient to take a deep breath and cough					
<i>There is no bubbling or swinging on coughing</i>					
Checks chest tube to see if it is dislodged, kinked, clamped or blocked					
Identifies that the chest tube is disconnected from chest drain tubing.					

(

Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Step 4: Corrects the cause					
Cleans both ends of tubing with an alcohol based solution and reconnects and retapes					
Re-evaluates the patient and the UWSD					
<i>Ask the participant what else they would do</i>					
Notifies the medical officer					
Documents in the patient's record					
Step 5: Continues to check the system					
<i>Participant should continue checking the chest drain system, to ensure there are no other problems</i>					
Checks tubing from chest tube to UWSD to see if blocked, kinked, clamped or has dependant loops					
Checks connection of tubing to UWSD to see if it is disconnected, or blocked					
Checks UWSD to ensure it is upright, at least 80 cm below the patient's chest, vents are not clamped or capped and, if not a dry system, that it has sufficient water in water seal chamber					

Scenario 2 Marking Sheet

Further comments:

6.3.4. Recording sheet for scenario 2 variation: managing a disconnected chest drain

N.B. Only use this recording sheet, if you are using the variation of this scenario and applying suction

Instructions:					
3. Complete the checklist below by ticking in the relevant columns for each aspect identified / completed by the participant. Add any comments that are relevant and will assist in giving feedback					
4. Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.					
Case scenario 2: The patient, Elvie, is a 70-year-old lady with non-small cell lung cancer and recurrent left pleural effusions, who presented very short of breath. On x-ray was found to have a pleural effusion and was admitted for chest tube insertion to drain effusions. Elvie has had a chest tube inserted, which is connected to a 3-chamber UWSD. Suction is being applied to the system. Elvie has been discharged to the ward and you are carrying out the 4th hourly assessment of the patient's clinical status and chest drain.					
Management problem: The chest tube has disconnected from the chest drain tubing under the taped connection resulting in an absence of bubbling and swing in the UWSD.					
Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Step 1: Before starting					
<i>Ask the participant what they would observe and record to check patient's clinical status?</i>					
Basic vital signs					
Oxygen saturation					
Level of consciousness					
Pain and discomfort with deep breaths and cough					
Presence of dyspnoea or cyanosis.					
<i>Ask the participant what they would observe and record to check chest drain system?</i>					
The chest tube position					
The tubing to ensure all connections are secure, tubing is not kinked and there are no coils or loops present in tubing					
The UWSD to ensure it is upright, at least 80 cm below the patient's chest, vents are not clamped or capped and, if not a dry system, that it has sufficient water in water seal chamber					
For the presence of swinging/tidalling in UWSD					
For the presence of air loss evidenced by bubbling in the UWSD					
The amount, colour and consistency of any drainage					
Step 2: Check the chest drain system					
<i>Give the participant the modified observation sheet and ask them to carry out observations. Tell them this obs sheet has been modified. Let them know that you will play the role of Elvie and give them the observations they can't get from looking at the mannequin and UWSD (see below)</i>					
<i>Observations for Elvie: Temp- 36.9C BP- 130/80 PR- 116 Rhythm- regular Resp- 28 Dysp- slightly short of breath (2/10) Sats- 90% Colour- pink Pain- increasing chest pain and discomfort (5/10)</i>					
Identifies that there is continuous bubbling in the UWSD					
Identifies that there is no suction reading in the UWSD					
Identifies that there is no swing in the UWSD					
Step 3: Determine the cause of the absence of bubbling and swing					
<i>Tell participant that the patient's clinical status is fine but they need to determine the cause of the absence of bubbling and swing</i>					
Asks patient to take a deep breath and cough					
<i>There is continuous bubbling but no swinging on coughing</i>					
Disconnects suction					
<i>There is no bubbling and no swinging</i>					
Checks chest tube to see if it is dislodged, kinked, clamped or blocked					
Identifies that the chest tube is disconnected from chest drain tubing.					

Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Step 4: Corrects the cause					
Cleans both ends of tubing with an alcohol based solution and reconnects and retapes					
Re-evaluates the patient and the UWSD					
<i>Ask the participant what else they would do</i>					
Notifies the medical officer					
Documents in the patient's record					
Step 5: Continues to check the system					
<i>Participant should continue checking the chest drain system, to ensure there are no other problems</i>					
Checks tubing from chest tube to UWSD to see if blocked, kinked, clamped or has dependant loops					
Checks connection of tubing to UWSD to see if it is disconnected, or blocked					
Checks UWSD to ensure it is upright, at least 80 cm below the patient's chest, vents are not clamped or capped and, if not a dry system, that it has sufficient water in water seal chamber					
If connected to suction, checks connection of UWSD to suction tubing to see if disconnected, or blocked					
If connected to suction, checks suction tubing to see if blocked, kinked or clamped and that suction at wall is turned on					

Further comments:

6.3.5. Observation sheet for scenario 2: managing a chest drain

Observation sheet for patients with chest drains

ICC OBS 1/24 for 4 hours 2/24 for 24 hours 4/24 till removal	RHYTHM: Regular = R. Irregular = IR	DYSPNOEA: / 10 0 = Nil, 1 = Very slight, 2 = Slight 3 = Moderate, 4 = Somewhat severe 5 = Severe 7 = Very severe 10 = Maximal	COLOUR: Pink = P Pale = A Flushed = F Cyanosed = C	PAIN Score 0-10	SWING Y = Yes N = No	AIR LOSS C = continuous OC = on cough N = none	DRAINAGE Amount in mls	CONNECTIONS S = secure	Name: Elvie <i>ID Label</i> UR: XXXXXXXX DOB: 12/06/37
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Date	Time	Temp	BP	PR	Rhythm	Resp	Dysp	Sats	Colour	Pain	SW	AL	DR	Comments
14/03/07	3 am	37C	120/80	98	R	18	1	93%	P	0	Y	C	25 mls	
14/03/07	7am	37 C	120/80	96	R	20	1	93%	P	1	Y	C	35 mls	
14/03/07	11am													

6.3.6. Evaluation sheet for scenario 2: managing a chest drain

Date of simulation exercise: _____
Location of simulation exercise: _____

Learning Goals

Rank your achievement of each learning goal using the scale below:

- 1 - Unable to meet learning goal
- 3 - Able to meet the goal to a major extent
- 5 - Can confidently meet the goal

To what extent were you able to meet the learning goals?

- be able to safely manage a chest drain
- be able to apply the principles of underwater seal drains to common management problems
- demonstrate a systematic approach to managing common chest drain problems

Simulation exercise

To what extent did you find this simulation useful as a learning opportunity? (Tick one.)

- Very useful
- Fairly useful
- Not useful

To what extent was the simulation exercise clear and easy to follow? (Tick one.)

- Clear and easy to follow
- Mostly clear and easy to follow
- Unclear/difficult to follow

Did you complete the online units relevant to this simulation scenario, prior to attending? (Tick one.)

- Yes
- Unsure
- No

Did the online units help you to complete the simulation exercise? (Tick one.)

- Yes
- Somewhat
- No

Comments

Evaluation sheet for simulation scenario 2: managing a chest drain *cont.*

Practice

As a result of completing this simulation will you be making any modifications to your practice? (Tick one.)

- My practice will remain unchanged
- I confirmed my practice
- I plan to review my practice
- I plan to make modifications to my practice

Comments

Facilitator

Did the facilitator promote your learning?

- Yes
- Somewhat
- No

Comments

General Comments

What features did you like/dislike about the simulation exercise?

How could this simulation exercise be improved?

6.4. Scenario 3: managing a blocked chest drain

6.4.1. How to set-up and conduct scenario 3: managing a blocked chest drain

Objective:

This scenario is designed to review the participant's knowledge and skills in managing a chest drain where the chest tube is blocked by a blood clot, resulting in an absence of bubbling and swing in the UWSD. The UWSD is also positioned on a chair next to bed and is <80cm below patient's chest. In particular, it will assess a participant's ability to:

- safely manage a chest drain
- apply the principles of underwater seal drains to common management problems
- demonstrate a systematic approach to managing common chest drain problems.

Pre-requisites:

This clinical scenario is based on the procedure outlined in the online unit, 'Managing underwater seal drains – principles, management and troubleshooting', which is contained in the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults'

It is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

It is recommended that participants have completed this course before commencing this simulation scenario.

Preparing for the scenario:

- Ensure you have an appropriate environment in which to carry out this simulation, e.g. procedure room (see section 3.0).
- Set up the mannequin according to instructions (see section 4.2).
- Prior to the start of the simulation, the mannequin should have in place:
 - a chest tube inserted by the facilitator
 - a wound closure suture and an anchoring suture in place
 - a mesenteric tag of tape to secure the chest tube about 15-20 cm distal to the insertion site
 - a wound dressing applied to the insertion site
 - be connected to an UWSD.
- For the management problem in this scenario, you should also:
 - block chest drain tubing with faux blood clot - silicone plug
 - place the UWSD on a chair so it is <80cm below the patient's chest
 - no suction is required for this scenario
 - add fluid to drainage chamber of UWSD to simulate blood draining from haemothorax.
- Set-up the pleural space simulator according to instructions (See section 4.3). Before commencing this simulation skills training scenario with a participant, make sure you are familiar with operating the pleural space simulator in the mannequin. It is also recommended that you practice this scenario with an assistant, to ensure it works as seamlessly as possible.
- Specific pleural space simulator settings to achieve the chest drain action for this scenario are:

Simulator Settings	
Power	OFF
Air	ON
Dial	OFF

Acton of chest drain	
Swing	Nil
Air Loss	Nil
Drainage	Nil
Suction	NO

- Ensure you have access to the equipment outlined in section 5.2. A checklist for standard set-up and equipment is available in section 6.4.2 - 'Set-up checklist for scenario 3: managing a blocked chest drain'

Agenda for scenario:

Activity	Time
Read through 'Participant's information for scenario 3: managing a chest drain'	5 minutes
Orientation to the mannequin and its features	5 minutes
Take part in the simulation exercise	30 minutes
Debrief and reflection	15 minutes
Complete evaluation	5 minutes

Orientating the participant:

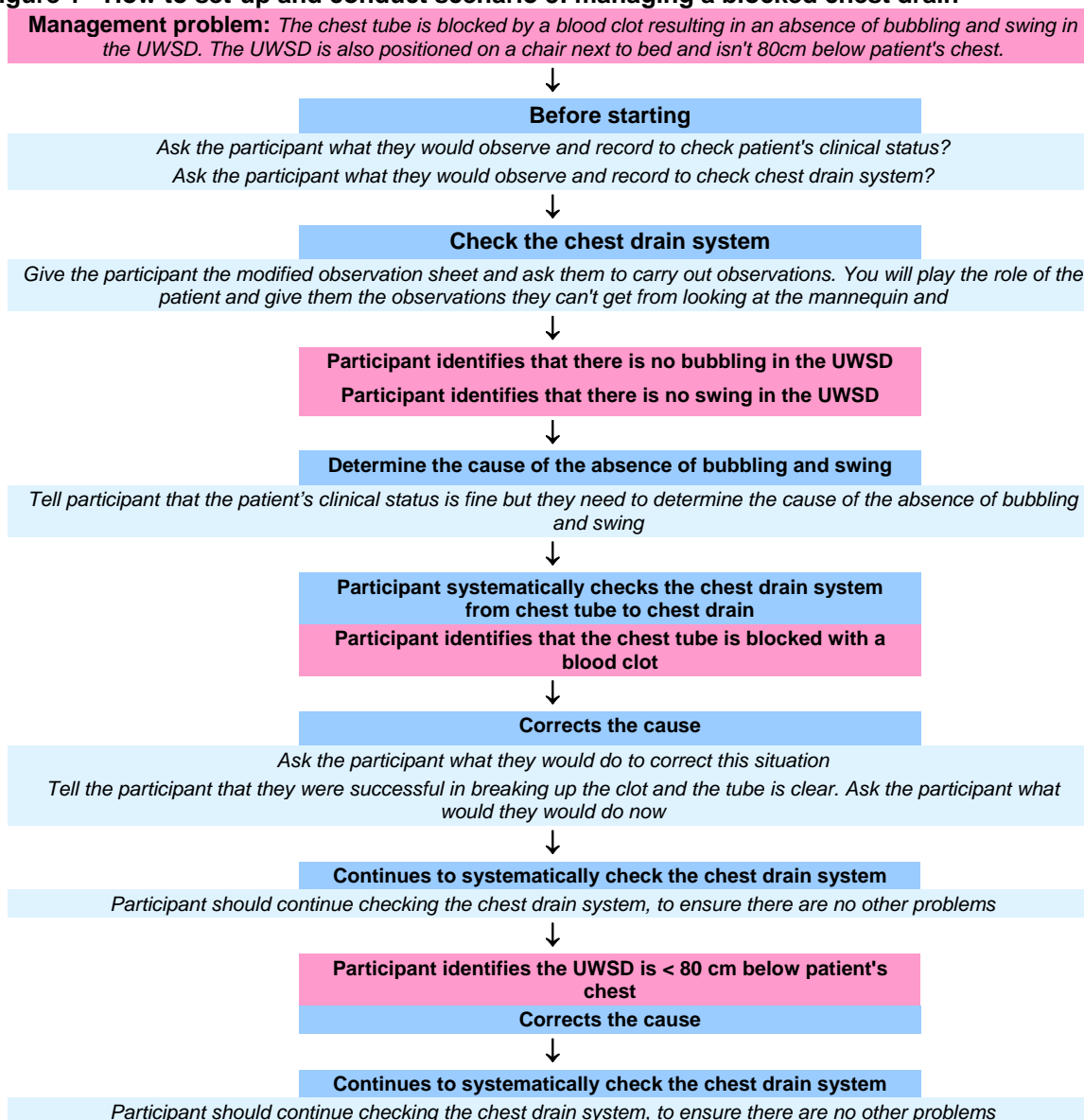
- Prior to beginning the scenario, give the participant the sheet, 'Participant's instructions for scenario 3: managing a chest drain' (see section 6.4.3) and allow them 5 minutes to read through it. Ensure you are familiar with the participant's instructions sheet.
- Ask the participant if they have any questions.
- For the first 5 minutes of the simulation exercise, introduce them to the mannequin and show them its main features. This will assist them to become comfortable with the mannequin and the simulation environment.

Conducting the scenario:

This scenario will take the participant through a simulated chest drain management problem where the chest tube has become blocked with a blood clot (silicone plug) and the chest drain is <80cm below the patient's chest. The emphasis will be on the participant:

- demonstrating a systematic approach to managing a chest drain problem
- being able to apply the principles of underwater seal drains to common management problems.

Figure 1 - How to set-up and conduct scenario 3: managing a blocked chest drain



As well as guiding the participant through the scenario, the facilitator will be operating the mannequin. Therefore, having a second person as an observer, who is solely responsible for recording the participant's actions and responses on the recording sheet, is helpful.

Use the sheet 'Recording sheet for scenario 3: managing a blocked chest drain' (see section 6.4.4) to guide the participant through the scenario. **Do not let the participant see the recording sheet.**

Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.

Recording sheet and feedback:

This simulation scenario has been designed as a training tool for nurses managing chest drains and to provide feedback. The recording sheet is used to aid discussion with the participant, and to provide reflection on their performance. It can also be used as a guide to areas for improvement and future training.

Please note: this simulation scenario has not been validated and should not be used as a competency assessment tool in isolation of other competency measures, e.g. supervised practice.

On the recording sheet, the relevant columns are ticked for each aspect identified / completed by the participant. Any comments that will assist in giving feedback to the participant should also be recorded. The columns on the recording sheet are as follows:

- Step completed correctly without prompting
- Step completed correctly, but required prompting
- Step not completed correctly
- The actions of the participant endangered patient.

Evaluation:

- Evaluation is an important, but often forgotten, step. There are three things that are important to evaluate:
- the outcome of the skills training process - did it achieve the goals that were set in the planning phase?
- the simulation process - did this go smoothly? How can it be improved?
- other consequences of the simulation training - was the change successful across a number of dimensions, e.g. cost? What was the impact of the change on the whole unit/facility/hospital/district health service?

At the end of the simulation exercise, the participant should be given an evaluation sheet to fill out and return to the facilitator. The evaluation sheet can be found in section 6.4.6.

Case scenario:

This is the case scenario, as presented to the participant:

The patient is Tariq, a 45-year old obese man who has come to the ward from ICU. Tariq was admitted from a car accident with chest injury from the steering wheel and a ruptured spleen. He has rib fractures and a chest tube was inserted in surgery to drain a haemothorax. The chest tube is connected to a 3-chamber UWSD. No suction is being applied to the system. Tariq has been discharged to the ward and you are carrying out the 4th hourly assessment of the patient's clinical status and chest drain.

6.4.2. Set-up checklist for simulation scenario 3: managing a blocked chest drain

Set-up checklist for simulation scenario 3: managing a chest drain			
Requirements	Availability		Comments
	Yes	No	
Environment			
An adjustable bed			
Adjustable lighting			
Portable x-ray viewer			
A power source			
Medical air or oxygen – either piped or bottled supply			
Suction - wall or portable	Not needed		
Taps and sink for hand washing			
Mannequin and chest tube			
Chest drain insertion mannequin with pre-attached chest tube			
Pre-attached chest tube should have in place:			
Anchoring suture (anchoring chest tube in insertion site)			
External dressing			
Mesenteric tag of tape (securing chest tube to skin)			
Underwater seal drain			
Chest tube should be connected to UWSD drain and connection taped			
Block chest drain tubing with faux blood clot - silicone plug			
Stand UWSD on chair so <80cm below mannequin			
Anchoring suture, securing of chest tube			
Stout, non-absorbable suture material (e.g. Mersilene 0 or Silk 1) on cutting needle			
Needle holder			
Tape, e.g. leukosilk			
Scissors			
Dressing			
Dressings			
Adhesive tape to secure dressing			
Connection to UWSD			
Adaptor (to attach chest tube to chest drain tubing)			
Chest drain tubing (attaching chest tube to chest drain)			
1,2, or 3 chamber underwater seal drain primed according to manufacturers instructions			
Other			

6.4.3. Participant's instructions for scenario 3: managing a chest drain

Objective:

This scenario is designed to review your knowledge and skills in managing a chest drain. In particular, it will assess your ability to:

- safely manage a chest drain
- apply the principles of underwater seal drains to common management problems
- demonstrate a systematic approach to managing common chest drain problems.

Pre-requisites:

This clinical scenario is based on the procedure outlined in the online unit, 'Managing underwater seal drains – principles, management and troubleshooting', which is contained in the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults'

It is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

It is recommended that you complete this course before commencing this simulation scenario.

Agenda for scenario:

Activity	Time
Read through 'Participant's information for scenario 3: managing a chest drain'	5 minutes
Orientation to the mannequin and its features	5 minutes
Take part in the simulation exercise	30 minutes
Debrief and reflection	15 minutes
Complete evaluation	5 minutes

Role of the facilitator:

As well as guiding you through the scenario, the facilitator will be operating the mannequin. Ideally there will be a second person present acting as an observer, who will assist the facilitator by recording your actions and responses.

Recording sheet and feedback:

This simulation scenario has been designed as a training tool for nurses removing chest tubes and to provide feedback. The recording sheet is used to aid discussion and provide reflection on your performance, and as a guide to areas for improvement and future training.

On the recording sheet, relevant columns are ticked by the facilitator and/or the observer for each aspect identified / completed by you. Any comments that will assist in giving feedback to you will also be recorded. The columns on the recording sheet are as follows:

- Step completed correctly without prompting
- Step completed correctly, but required prompting
- Step not completed correctly
- The actions of the participant endangered patient.

Evaluation:

At the end of the simulation exercise, you will be given an evaluation sheet to fill out and return to the facilitator. Please take time to complete it and help us to make this a better training program for everyone.

Outline of the scenario:

This scenario will take you through a simulated chest drain management problem. The emphasis will be on:

- demonstrating a systematic approach to managing a chest drain problem
- being able to apply the principles of underwater seal drains to common management problems.

Case scenario:

The patient is Tariq, a 45-year old obese man who has come to the ward from ICU. Tariq was admitted from a car accident with chest injury from the steering wheel and a ruptured spleen. He has rib fractures and a chest tube was inserted in surgery to drain a haemothorax. The chest tube is connected to a 3-chamber UWSD. No suction is being applied to the system. Tariq has been discharged to the ward and you are carrying out the 4th hourly assessment of the patient's clinical status and chest drain.

6.4.4. Recording sheet for scenario 3: managing a blocked chest drain

Scenario 3 Marking Sheet

Instructions:					
1. Complete the checklist below by ticking in the relevant columns for each aspect identified / completed by the participant. Add any comments that are relevant and will assist in giving feedback					
2. Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.					
Case scenario 3: The patient is Tariq, a 45-year old obese man who has come to the ward from ICU. Tariq was admitted from a car accident with chest injury from steering wheel and a ruptured spleen. He has rib fractures and a tube was inserted in surgery to drain a haemothorax. The chest tube is connected to a 3-chamber UWSD. No suction is being applied to the system. Tariq has been discharged to the ward and you are carrying out the 4th hourly assessment of the patient's clinical status and chest drain.					
Management problem: The chest tube is blocked by a blood clot resulting in an absence of bubbling and swing in the UWSD. The UWSD is also positioned on a chair next to bed and isn't 80cm below patient's chest.					
Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Step 1: Before starting					
<i>What would you observe and record to check patient's clinical status?</i>					
Basic vital signs					
Oxygen saturation					
Level of consciousness					
Pain and discomfort with deep breaths and cough					
Presence of dyspnoea or cyanosis.					
<i>What would you observe and record to check chest drain system?</i>					
The chest tube position					
The tubing to ensure all connections are secure, tubing is not kinked and there are no coils or loops present in tubing					
The UWSD to ensure it is upright, at least 80 cm below the patient's chest, vents are not clamped or capped and, if not a dry system, that it has sufficient water in water seal chamber					
For the presence of swinging/tidalling in UWSD					
For the presence of air loss evidenced by bubbling in the UWSD					
The amount, colour and consistency of any drainage					
Step 2: Check the chest drain system					
<i>Give the participant the modified observation sheet and ask them to carry out observations. Let them know that this obs sheet has been modified and that you will be Tariq and give them the observations they can't get from looking at the mannequin and UWSD (see below)</i>					
<i>Observations for Tariq: Temp- 37C BP- 105/60 PR- 106 Rhythm- regular Resp- 24 Dysp- feels short of breath (3/10) Sats- 92% Colour- pink Pain- increasing chest pain and discomfit (6/10)</i>					
Identifies that there is no bubbling in the UWSD					
Identifies that there is no swing in the UWSD					

Step 3: Determine the cause of the absence of bubbling and swing					
<i>Tell participant that the patient's clinical status is fine but they need to determine the cause of the absence of bubbling and swing</i>					
Asks patient to take a deep breath and cough					
<i>There is no bubbling or swinging on coughing</i>					
Checks chest tube to see if it is dislodged, kinked, clamped or blocked					
Identifies that the chest tube is blocked with a blood clot					
Step 4: Corrects the cause					
<i>Ask the participant what they would do to correct this situation</i>					
E.g. disconnect UWSD, clamp chest tube and try to break clot up with fingers or stay with patient and contact medical officer					
<i>Tell the participant that they were successful in breaking up the clot and the tube is clear. Ask the participant what would they would do now</i>					
Document the incident in the patient's record					
Re-evaluate the patient and the UWSD					
Continue checking the chest drain system					
<i>Tell participant to continue checking the chest drain system and to verbalise what they are doing and why</i>					
Checks tubing from chest tube to UWSD to see if blocked, kinked, clamped or has dependant loops					
Checks connection of tubing to UWSD to see if it is blocked					
Checks UWSD to ensure it is upright, at least 80 cm below the patient's chest, vents are not clamped or capped and, if not a dry system, that is has sufficient water in water seal chamber					
Identifies the UWSD is not 80 cm below patient's chest					
Step 5: Corrects the cause					
Lowers UWSD					
Re-evaluates the patient and the UWSD					
<i>Participant should continue checking the chest drain system, to identify any other problems</i>					
If connected to suction, checks connection of UWSD to suction tubing to see if disconnected, or blocked					
If connected to suction, checks suction tubing to see if blocked, kinked or clamped and that suction at wall is turned on					
Total					
Further comments:					

6.4.5. Observation sheet for scenario 3: managing a chest drain

Observation sheet for patients with chest drains

ICC OBS 1/24 for 4 hours 2/24 for 24 hours 4/24 till removal	RHYTHM: Regular = R. Irregular = IR	DYSPNOEA: / 10 0 = Nil, 1 = Very slight, 2 = Slight 3 = Moderate, 4 = Somewhat severe 5 = Severe 7 = Very severe 10 = Maximal	COLOUR: Pink = P Pale = A Flushed = F Cyanosed = C	PAIN Score 0-10	SWING Y = Yes N = No	AIR LOSS C = continuous OC = on cough N = none	DRAINAGE Amount in mls	CONNECTIONS S = secure	Name: Tariq <i>ID Label</i> UR: XXXXXXXX DOB: 12/06/62
--	--	--	---	---------------------------	-----------------------------------	--	----------------------------------	----------------------------------	--

Date	Time	Temp	BP	PR	Rhythm	Resp	Dysp	Sats	Colour	Pain	SW	AL	DR	Comments
14/03/07	8 am	37C	115/75	84	R	12	1	97%	P	2	Y	C	50mls	Panadol given
14/03/07	12md	37 C	120/80	78	R	16	1	96%	P	2	Y	C	75mls	Panadol given
14/03/07	2pm													

6.4.6. Evaluation sheet for scenario 3: managing a chest drain

Date of simulation exercise: _____
Location of simulation exercise: _____

Learning Goals

Rank your achievement of each learning goal using the scale below:

- 1 - Unable to meet learning goal
- 3 - Able to meet the goal to a major extent
- 5 - Can confidently meet the goal

To what extent were you able to meet the learning goals?

- be able to safely manage a chest drain
- be able to apply the principles of underwater seal drains to common management problems
- demonstrate a systematic approach to managing common chest drain problems

Simulation exercise

To what extent did you find this simulation useful as a learning opportunity? (Tick one.)

- Very useful
- Fairly useful
- Not useful

To what extent was the simulation exercise clear and easy to follow? (Tick one.)

- Clear and easy to follow
- Mostly clear and easy to follow
- Unclear/difficult to follow

Did you complete the online units relevant to this simulation scenario, prior to attending? (Tick one.)

- Yes
- Unsure
- No

Did the online units help you to complete the simulation exercise? (Tick one.)

- Yes
- Somewhat
- No

Comments

Evaluation sheet for simulation scenario 3: managing a chest drain cont.

Practice

As a result of completing this simulation will you be making any modifications to your practice? (Tick one.)

- My practice will remain unchanged
- I confirmed my practice
- I plan to review my practice
- I plan to make modifications to my practice

Comments

Facilitator

Did the facilitator promote your learning?

- Yes
- Somewhat
- No

Comments

General Comments

What features did you like/dislike about the simulation exercise?

How could this simulation exercise be improved?

6.5. Scenario 4: managing a chest drain attached to suction

6.5.1. How to set-up and conduct scenario 4: managing a chest drain attached to suction

Objective:

This scenario is designed to review the participant’s knowledge and skills in managing a chest drain where the system is connected to suction, but the suction has been turned off, resulting in an absence of bubbling in the UWSD. In particular, it will assess a participant’s ability to:

- safely manage a chest drain
- apply the principles of underwater seal drains to common management problems
- demonstrate a systematic approach to managing common chest drain problems.

Pre-requisites:

This clinical scenario is based on the procedure outlined in the online unit, ‘Managing underwater seal drains – principles, management and troubleshooting’, which is contained in the online course:

‘A nurses’ guide to insertion and removal of chest tubes and management of chest drains in adults’

It is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

It is recommended that participants have completed this course before commencing this simulation scenario.

Preparing for the scenario:

- Ensure you have an appropriate environment in which to carry out this simulation, e.g. procedure room (see section 3).
- Set up the mannequin according to instructions (see section 4.2).
- Prior to the start of the simulation, the mannequin should have in place:
 - a chest tube inserted by the facilitator
 - a wound closure suture and an anchoring suture in place
 - a mesenteric tag of tape to secure the chest tube about 15-20 cm distal to the insertion site
 - a wound dressing applied to the insertion site
 - be connected to a single-chambered UWSD.
- For the management problem in this scenario, you should also:
 - connect the UWSD to suction, either wall or bottle
 - turn suction off.
- Set-up the pleural space simulator according to instructions (See section 4.3). Before commencing this simulation skills training scenario with a participant, make sure you are familiar with operating the pleural space simulator in the mannequin. It is also recommended that you practice this scenario with an assistant, to ensure it works as seamlessly as possible.
- Specific pleural space simulator settings to achieve the chest drain action for this scenario are:

Simulator Settings	
Power	ON
Air	ON
Dial	OFF

Action of chest drain	
Swing	Yes
Air Loss	Nil
Drainage	Nil
Suction	No

- Ensure you have access to the equipment outlined in section 5.2. A checklist for standard set-up and equipment is available in section 6.5.2 - 'Set-up checklist for scenario 4: managing a chest drain attached to suction'

Agenda for scenario:

Activity	Time
Read through 'Participant's information for scenario 4: managing a chest drain'	5 minutes
Orientation to the mannequin and its features	5 minutes
Take part in the simulation exercise	30 minutes
Debrief and reflection	15 minutes
Complete evaluation	5 minutes

Orientating the participant:

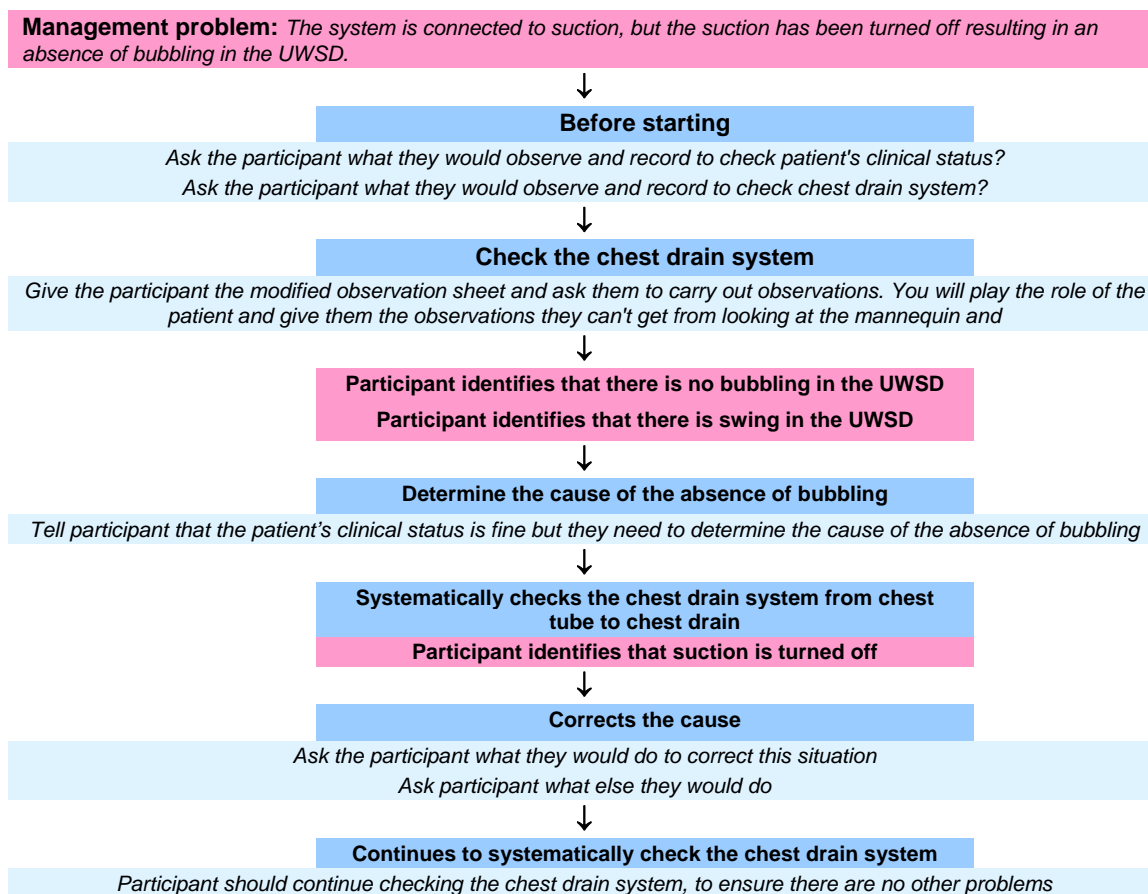
- Prior to beginning the scenario, give the participant the sheet, 'Participant's instructions for scenario 4: managing a chest drain' (see section 6.5.3) and allow them 5 minutes to read through it. Ensure you are familiar with the participant's instructions sheet.
- Ask the participant if they have any questions.
- For the first 5 minutes of the simulation exercise, introduce them to the mannequin and show them its main features. This will assist them to become comfortable with the mannequin and the simulation environment.

Conducting the scenario:

This scenario will take the participant through a simulated chest drain management problem where the system is connected to suction, but the suction has been turned off, resulting in an absence of bubbling. The emphasis will be on the participant:

- demonstrating a systematic approach to managing a chest drain problem
- being able to apply the principles of underwater seal drains to common management problems.

Figure 3 –
Flowchart: How to set-up and conduct scenario 4: managing a chest drain attached to suction



As well as guiding the participant through the scenario, the facilitator will be operating the mannequin. Therefore, having a second person as an observer, who is solely responsible for recording the participant's actions and responses on the recording sheet, is helpful.

Use the sheet 'Recording sheet for scenario 4: managing a chest drain attached to suction' (see section 6.5.4) to guide the participant through the scenario. **Do not let the participant see the recording sheet.**

Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.

Recording sheet and feedback:

This simulation scenario has been designed as a training tool for nurses managing chest drains and to provide feedback. The recording sheet is used to aid discussion with the participant, and to provide reflection on their performance. It can also be used as a guide to areas for improvement and future training.

Please note: this simulation scenario has not been validated and should not be used as a competency assessment tool in isolation of other competency measures, e.g. supervised practice.

On the recording sheet, the relevant columns are ticked for each aspect identified / completed by the participant. Any comments that will assist in giving feedback to the participant should also be recorded. The columns on the recording sheet are as follows:

- Step completed correctly without prompting
- Step completed correctly, but required prompting

- Step not completed correctly
- The actions of the participant endangered patient.

Evaluation:

Evaluation is an important, but often forgotten, step. There are three things that are important to evaluate:

- the outcome of the skills training process - did it achieve the goals that were set in the planning phase?
- the simulation process - did this go smoothly? How can it be improved?
- other consequences of the simulation training - was the change successful across a number of dimensions, e.g. cost? What was the impact of the change on the whole unit/facility/hospital/district health service?

At the end of the simulation exercise, the participant should be given an evaluation sheet to fill out and return to the facilitator. The evaluation sheet can be found in section 6.5.6.

Case scenario

This is the case scenario, as presented to the participant:

James (aged 18 years), a keen basketballer, developed a spontaneous pneumothorax. Ht = 201 cm, Wt = 80 kg BMI=20. He has no other significant medical history. A chest tube was inserted to drain the pneumothorax. It is connected to a single-chamber UWSD with suction applied. James has been discharged to the ward and you are carrying out the 4th hourly assessment of his clinical status and chest drain.

6.5.2. Set-up checklist for simulation scenario 4: managing a chest drain attached to suction

Set-up checklist for simulation scenario 4: managing a chest drain			
Requirements	Availability		Comments
	Yes	No	
Environment			
An adjustable bed			
Adjustable lighting			
Portable x-ray viewer			
A power source			
Medical air or oxygen – either piped or bottled supply			
Suction - wall or portable			
Taps and sink for hand washing			
Mannequin and chest tube			
Chest drain insertion mannequin with pre-attached chest tube			
Pre-attached chest tube should have in place:			
Anchoring suture (anchoring chest tube in insertion site)			
External dressing			
Mesenteric tag of tape (securing chest tube to skin)			
Underwater seal drain			
Chest tube should be connected to UWSD drain and connection taped			
UWSD should be attached to suction, but the suction is turned off			
Anchoring suture, securing of chest tube			
Stout, non-absorbable suture material (e.g. Mersilene 0 or Silk 1) on cutting needle			
Needle holder			
Tape, e.g. leukosilk			
Scissors			
Dressing			
Dressings			
Adhesive tape to secure dressing			
Connection to UWSD			
Adaptor (to attach chest tube to chest drain tubing)			
Chest drain tubing (attaching chest tube to chest drain)			
Single-chamber underwater seal drain primed according to manufacturers instructions			
Other			

Scenario 4 Facilitation

6.5.3. Participant's instructions for scenario 4: managing a chest drain

Objective:

This scenario is designed to review your knowledge and skills in managing a chest drain. In particular, it will assess your ability to:

- safely manage a chest drain
- apply the principles of underwater seal drains to common management problems
- demonstrate a systematic approach to managing common chest drain problems.

Pre-requisites:

This clinical scenario is based on the procedure outlined in the online unit, 'Managing underwater seal drains – principles, management and troubleshooting', which is contained in the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults'

It is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

It is recommended that you complete this course before commencing this simulation scenario.

Agenda for scenario

Activity	Time
Read through 'Participant's information for scenario 4: managing a chest drain'	5 minutes
Orientation to the mannequin and its features	5 minutes
Take part in the simulation exercise	30 minutes
Debrief and reflection	15 minutes
Complete evaluation	5 minutes

Role of the facilitator:

As well as guiding you through the scenario, the facilitator will be operating the mannequin. Ideally there will be a second person present acting as an observer, who will assist the facilitator by recording your actions and responses.

Recording sheet and feedback:

This simulation scenario has been designed as a training tool for nurses removing chest tubes and to provide feedback. The recording sheet is used to aid discussion and provide reflection on your performance, and as a guide to areas for improvement and future training.

On the recording sheet, relevant columns are ticked by the facilitator and/or the observer for each aspect identified / completed by you. Any comments that will assist in giving feedback to you will also be recorded. The columns on the recording sheet are as follows:

- Step completed correctly without prompting
- Step completed correctly, but required prompting
- Step not completed correctly
- The actions of the participant endangered patient.

Evaluation:

At the end of the simulation exercise, you will be given an evaluation sheet to fill out and return to the facilitator. Please take time to complete it and help us to make this a better training program for everyone.

Outline of the scenario:

This scenario will take you through a simulated chest drain management problem. The emphasis will be on:

- demonstrating a systematic approach to managing a chest drain problem
- being able to apply the principles of underwater seal drains to common management problems.

Case scenario

James (aged 18 years), a keen basketballer, developed a spontaneous pneumothorax. Ht = 201 cm, Wt = 80 kg BMI=20. He has no other significant medical history. A chest tube was inserted to drain the pneumothorax. It is connected to a single-chamber UWSD with suction applied. James has been discharged to the ward and you are carrying out the 4th hourly assessment of his clinical status and chest drain.

6.5.4. Recording sheet for scenario 4: managing a chest drain attached to suction

Scenario 4 Marking Sheet

Instructions:					
1. Complete the checklist below by ticking in the relevant columns for each aspect identified / completed by the participant. Add any comments that are relevant and will assist in giving feedback					
2. Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.					
Case scenario 4: James (aged 18 years), a keen basketballer, developed a spontaneous pneumothorax. Ht = 201 cm, Wt = 80 kg BMI=20. He has no other significant medical history. A chest tube was inserted to drain the pneumothorax. It is connected to a single-chamber UWSD with suction applied. James has been discharged to the ward and you are carrying out the 4th hourly assessment of his clinical status and chest drain.					
Management problem: The system is connected to suction, but the suction has been turned off resulting in an absence of bubbling in the UWSD.					
Step	Completes step				
	Correct	Correct with prompts	Incorrect	Endangers patient	Comments
Step 1: Before starting					
<i>What would you observe and record to check patient's clinical status?</i>					
Basic vital signs					
Oxygen saturation					
Level of consciousness					
Pain and discomfort with deep breaths and cough					
Presence of dyspnoea or cyanosis.					
<i>What would you observe and record to check chest drain system?</i>					
The chest tube position					
The tubing to ensure all connections are secure, tubing is not kinked and there are no coils or loops present in tubing					
The UWSD to ensure it is upright, at least 80 cm below the patient's chest, vents are not clamped or capped and, if not a dry system, that it has sufficient water in water seal chamber					
For the presence of swinging/tidalling in UWSD					
For the presence of air loss evidenced by bubbling in the UWSD					
The amount, colour and consistency of any drainage					
Step 2: Check the chest drain system					
<i>Give the participant the modified observation sheet and ask them to carry out observations. Let them know that this obs sheet has been modified and that you will be James and give them the observations they can't get from looking at the mannequin and UWSD (see below)</i>					
<i>Observations for James: <u>Temp</u>- 36.8C <u>BP</u>- 115/70 <u>PR</u>- 94 <u>Rhythm</u>- regular <u>Resp</u>- 22 <u>Dysp</u>- somewhat severe (4/10) <u>Sats</u>- 92% <u>Colour</u>- pink <u>Pain</u>- increasing chest pain and discomfit (4/10)</i>					
Identifies that there is no bubbling in the UWSD					
Identifies that there is swing in the UWSD					

Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Step 3: Determine the cause of the absence of bubbling					
<i>Tell participant that the patient's clinical status is fine but they need to determine the cause of the absence of bubbling</i>					
Checks chest tube					
Checks tubing from chest tube to UWSD					
Checks connection of tubing to UWSD					
Checks UWSD to ensure it is upright, at least 80 cm below the patient's chest, vents are not clamped or capped and, if not a dry system, that it has sufficient water in water seal chamber					
Checks connection of UWSD to suction tubing					
Checks suction tubing					
Identifies that suction is turned off					
<i>Ask participant what effect this could have on the patient</i>					
Identifies that there is nowhere for air in the underwater seal drain chambers to vent. In the presence of a persisting air leak from the lung, this closed system could generate positive pressure, and may precipitate a tension pneumothorax.					
Step 4: Corrects the cause					
Turns suction on or disconnects suction					
Re-evaluates the patient					
<i>Ask the participant what else they would do</i>					
Notify the medical officer					
Documents in the patient's record					
Total					
Further comments:					

6.5.5. Observation sheet for scenario 4: managing a chest drain

Observation sheet for patients with chest drains

<p>ICC OBS</p> <p>1/24 for 4 hours 2/24 for 24 hours 4/24 till removal</p>	<p>RHYTHM: Regular = R. Irregular = IR</p>	<p>DYSPNOEA: / 10 0 = Nil, 1 = Very slight, 2 = Slight 3 = Moderate, 4 = Somewhat severe 5 = Severe 7 = Very severe 10 = Maximal</p>	<p>COLOUR: Pink = P Pale = A Flushed = F Cyanosed = C</p>	<p>PAIN Score 0-10</p>	<p>SWING Y = Yes N = No</p>	<p>AIR LOSS C = continuous OC = on cough N = none</p>	<p>DRAINAGE Amount in mls</p>	<p>CONNECTIONS S = secure</p>	<p>Name: James <i>ID Label</i> UR: XXXXXXXX DOB: 12/06/88</p>
---	---	---	--	-----------------------------------	--	--	--	--	---

Date	Time	Temp	BP	PR	Rhythm	Resp	Dysp	Sats	Colour	Pain	SW	AL	DR	Comments
14/03/07	3 am	37C	110/70	58	R	10	1	99%	P	0	Y	C	Nil	
14/03/07	7am	37 C	110/70	64	R	14	1	99%	P	0	Y	C	Nil	
14/03/07	12md													

6.5.6. Evaluation sheet for scenario 4: managing a chest drain

Date of simulation exercise: _____

Location of simulation exercise: _____

Learning Goals

Rank your achievement of each learning goal using the scale below:

- 1 - Unable to meet learning goal
- 3 - Able to meet the goal to a major extent
- 5 - Can confidently meet the goal

To what extent were you able to meet the learning goals?

- be able to safely manage a chest drain
- be able to apply the principles of underwater seal drains to common management problems
- demonstrate a systematic approach to managing common chest drain problems

Simulation exercise

To what extent did you find this simulation useful as a learning opportunity? (Tick one.)

- Very useful
- Fairly useful
- Not useful

To what extent was the simulation exercise clear and easy to follow? (Tick one.)

- Clear and easy to follow
- Mostly clear and easy to follow
- Unclear/difficult to follow

Did you complete the online units relevant to this simulation scenario, prior to attending? (Tick one.)

- Yes
- Unsure
- No

Did the online units help you to complete the simulation exercise? (Tick one.)

- Yes
- Somewhat
- No

Comments

Evaluation sheet for simulation scenario 4: managing a chest drain *cont.*

Practice

As a result of completing this simulation will you be making any modifications to your practice? (Tick one.)

- My practice will remain unchanged
- I confirmed my practice
- I plan to review my practice
- I plan to make modifications to my practice

Comments

Facilitator

Did the facilitator promote your learning?

- Yes
- Somewhat
- No

Comments

General Comments

What features did you like/dislike about the simulation exercise?

How could this simulation exercise be improved?

6.6. Scenario 5: removing a chest tube

6.6.1. How to set-up and conduct scenario 5: removing a chest drain

Objective:

This scenario is designed to review the participant's knowledge and skills in removing a chest tube. In particular, it will assess a participant's ability to:

- know when it is appropriate to remove a chest tube in an adult
- identify the equipment needed for removal of chest tube in an adult
- prepare an adult patient for chest tube removal
- demonstrate the process of removal of chest tube in an adult
- outline the common complications that can occur during and after chest tube removal in an adult
- complete the appropriate nursing documentation post chest tube removal.

Pre-requisites:

This clinical scenario is based on the procedure outlined in the online unit, 'Removal of chest tubes', which is contained in the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults'

It is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

It is recommended that participants have completed this course before commencing this simulation scenario.

Preparing for the scenario:

- Ensure you have an appropriate environment in which to carry out this simulation, e.g. procedure room (see section 3.0).
- Set up the mannequin according to instructions (see section 4.2). Note: This scenario will not use the pleural space simulator function of the Super-Annie 2.
- Prior to the start of the simulation, the mannequin should have in place:
 - a chest tube inserted by the facilitator
 - a wound closure suture and an anchoring suture in place
 - a mesenteric tag of tape to secure the chest tube about 15-20 cm distal to the insertion site
 - a wound dressing applied to the insertion site
 - be connected to an UWSD.
- Ensure you have access to the equipment outlined in section 5.3. A checklist for standard set-up and equipment is available in section 6.6.2 - 'Set-up checklist for removing a chest tube'

Agenda for scenario:

Activity	Time
Read through 'Participant's information for scenario 5: removing a chest tube'	5 minutes
Orientation to the mannequin and its features	5 minutes
Take part in the simulation exercise	30 minutes
Debrief and reflection	15 minutes
Complete evaluation	5 minutes

Orientating the participant:

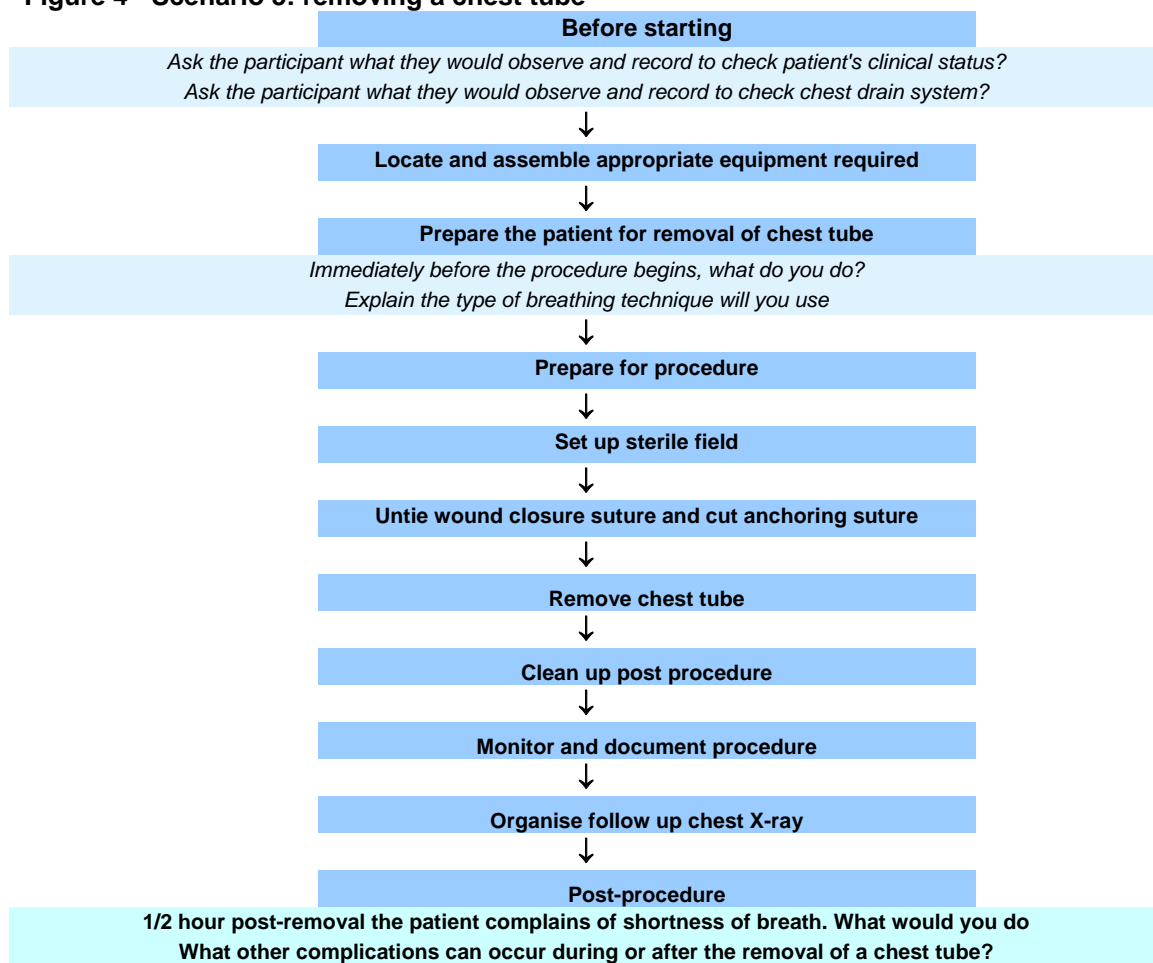
- Prior to beginning the scenario, give the participant the sheet, 'Participant's instructions for scenario 5: removing a chest drain' (see section 6.6.3) and allow them 5 minutes to read it through. Ensure you are familiar with the participant's instructions sheet.
- Ask the participant if they have any questions.
- For the first 5 minutes of the simulation exercise, introduce them to the mannequin and show them its main features. This will assist them to become comfortable with the mannequin and the simulation environment.

Conducting the scenario:

This scenario will take the participant through a simulated chest tube removal procedure. The emphasis will be on the participant demonstrating their skill in:

- preparing the patient and equipment for chest tube removal
- the removal procedure
- appropriate management of the complications that can occur during and after chest tube removal.

Figure 4 - Scenario 5: removing a chest tube



As well as guiding the participant through the scenario, the facilitator will take the role of the assistant, where the participant requests one. Therefore, having a second person as an observer, who is solely responsible for recording the participant's actions and responses on the recording sheet, is helpful.

Use the recording sheet 'Recording sheet for scenario 5: removing a chest tube' (see section 6.6.4) to guide the participant through the scenario. **Do not let the participant see the recording sheet.**

Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.

Recording sheet and feedback:

This simulation scenario has been designed as a training tool for nurses removing chest tubes and to provide feedback. The recording sheet is used to aid discussion with the participant, and to provide reflection on their performance. It can also be used as a guide to areas for improvement and future training.

Please note: this simulation scenario has not been validated and should not be used as a competency assessment tool in isolation of other competency measures, e.g. supervised practice.

On the recording sheet, the relevant columns are ticked for each aspect identified / completed by the participant. Any comments that will assist in giving feedback to the participant should also be recorded. The columns on the recording sheet are as follows:

- Step completed correctly without prompting
- Step completed correctly, but required prompting
- Step not completed correctly
- The actions of the participant endangered patient.

Evaluation:

Evaluation is an important, but often forgotten, step. There are three things that are important to evaluate:

- the outcome of the skills training process - did it achieve the goals that were set in the planning phase?
- the simulation process - did this go smoothly? How can it be improved?
- other consequences of the simulation training - was the change successful across a number of dimensions, e.g. cost? What was the impact of the change on the whole unit/facility/hospital/district health service?
- At the end of the simulation exercise, the participant should be given an evaluation sheet to fill out and return to the facilitator. The evaluation sheet can be found in section 6.6.5.

Case scenario

This is the case scenario, as presented to the participant:

You have been asked to remove a chest tube in James. James (aged 18 years) Ht = 201 cm, Wt = 80 kg, is a keen basketballer. He had a chest tube inserted after developing a spontaneous pneumothorax. He has no other significant medical history. You have been asked by the medical officer to remove the chest tube. It is attached to an UWSD, but it is not connected to suction.

6.6.2. Set-up checklist for simulation scenario 5: removing a chest tube

Scenario 5 Facilitation

Set-up checklist for simulation scenario 5: removing a chest tube			
Requirements	Availability		Comments
	Yes	No	
Environment			
An adjustable bed			
Adjustable lighting			
An adjustable bed on which to put the mannequin			
Taps and sink for hand washing			
Mannequin and chest tube			
Chest drain insertion mannequin with chest tube inserted and attached to UWSD			
Mannequin and chest tube should have in place:			
Wound closure suture (unless using a steri-strip)			
Anchoring suture (anchoring chest tube in insertion site)			
External dressing			
Mesenteric tag of tape (securing chest tube to skin)			
Chest drain tubing (attaching chest tube to chest drain)			
Underwater seal drain			
Personal protective equipment:			
Apron			
Gloves			
Mask			
Protective eyewear			
Patient skin preparation:			
Proxy for antiseptic solution (bottle of water labelled 'alcoholic chlorhexidine' or 'iodine')			
Normal saline			
Blue non-adhesive protective sheet			
Continuous monitoring of oxygen saturation:			
Oximeter			
Removal of dressing:			
Forceps			
Scissors			
Removal of chest tube:			
Scalpel and blade no 11			
Stitch cutter			
Steri-strip or suture (if wound closure suture not present)			
Dressings			
Gauze squares			
Adhesive tape to secure dressing			
Waste containers for contaminated materials			
Other:			

6.6.3. Participant's instructions for scenario 5: removing a chest drain

Objective:

This scenario is designed to review your knowledge and skills removing a chest tube. In particular, it will assess your ability to:

- know when it is appropriate to remove a chest tube in an adult
- identify the equipment needed for removal of chest tube in an adult
- prepare an adult patient for chest tube removal
- demonstrate the process of removal of chest tube in an adult
- outline the common complications that can occur during and after chest tube removal in an adult
- complete the appropriate nursing documentation post chest tube removal.

Pre-requisites:

This clinical scenario is based on the procedure outlined in the online unit, 'Removal of chest tubes', which is contained in the online course:

'A nurses' guide to insertion and removal of chest tubes and management of chest drains in adults'

It is available at:

- Queensland Health staff - http://www.sdc.qld.edu.au/course_chest_drain_nurse.php
- Others –
 - <http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/building-clinician-capacity/>

It is recommended that you complete this course before commencing this simulation scenario.

Agenda:

Activity	Time
Read through 'Participant's information for scenario 5: removing a chest tube'	5 minutes
Orientation to the mannequin and its features	5 minutes
Take part in the simulation exercise	30 minutes
Debrief and reflection	15 minutes
Complete evaluation	5 minutes

Role of the facilitator:

As well as guiding you through the scenario, the facilitator will take the role of the assistant, if you request one. Ideally there will be a second person present acting as an observer, who will assist the facilitator by recording your actions and responses.

Recording sheet and feedback:

This simulation scenario has been designed as a training tool for nurses removing chest tubes and to provide feedback. The recording sheet is used to aid discussion and provide reflection on your performance, and as a guide to areas for improvement and future training.

On the recording sheet, relevant columns are ticked by the facilitator and/or the observer for each aspect identified / completed by you. Any comments that will assist in giving feedback to you will also be recorded. The columns on the recording sheet are as follows:

- Step completed correctly without prompting
- Step completed correctly, but required prompting
- Step not completed correctly
- The actions of the participant endangered patient.

Evaluation:

At the end of the simulation exercise, you will be given an evaluation sheet to fill out and return to the facilitator. Please take time to complete it and help us to make this a better training program for everyone.

Outline of the scenario:

This scenario will take you through a simulated chest tube removal procedure. The emphasis will be on:

- preparing the patient and equipment for chest tube removal
- demonstrating the removal procedure
- discussing the complications that can occur during and after chest tube removal.

Case scenario:

You have been asked to remove a chest tube in James. James (aged 18 years) Ht = 201 cm, Wt = 80 kg, is a keen basketballer. He had a chest tube inserted after developing a spontaneous pneumothorax. He has no other significant medical history. You have been asked by the medical officer to remove the chest tube. It is attached to an UWSD, but it is not connected to suction.

6.6.4. Recording sheet for scenario 5: removing a chest tube

Instructions:					
1. Complete the checklist below by ticking in the relevant columns for each aspect identified / completed by the participant. Add any comments that are relevant and will assist in giving feedback					
2. Use the italicised instructions and questions in the recording sheet, to direct the participant to carry out the actions and give you the information required.					
Case scenario: You have been asked to remove a chest tube in James. James (aged 18 years) Ht = 201 cm, Wt = 80 kg, is a keen basketballer. He had a chest tube inserted after developing a spontaneous pneumothorax. He has no other significant medical history. You have been asked by medical officer to remove the chest tube. It is attached to an UWSD, but it is not connected to suction.					
Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Before starting the procedure					
<i>What would you do/information would you obtain before you began gathering equipment and preparing patient for this procedure?</i>					
Ensure there is a documented medical order for removal of the tube					
Review the indicators for chest tube removal					
<i>What are the indicators for removing a chest tube in a patient with a pneumothorax?</i>					
The air leak has ceased for 24hours and , the lung is fully inflated on x-ray.					
Locates and assembles appropriate equipment required					
Personal protective equipment:					
Apron					
Gloves					
Mask					
Protective eyewear					
Patient skin preparation:					
Antiseptic solution (70% alcoholic chlorhexidine or 10% w/vv povidine iodine)					
Normal saline					
Blue non-adhesive protective sheet					
Continuous monitoring of oxygen saturation:					
Oximeter					
Removal of dressing:					
Forceps					
Scissors					
Removal of chest tube:					
Clamps (for chest tube)					
Stitch cutter					
Steri-strip or suture (if wound closure suture not present)					
Dressings (as per unit policy)					
Gauze squares					
Waste containers for contaminated materials					

Step	Completes step				Comments
	Correct	Correct with prompts	Incorrect	Endangers patient	
Prepare the patient for removal of chest tube					
<i>Immediately before the procedure begins, what do you do?</i>					
Provide privacy					
Position the patient to allow access to the chest tube insertion site					
Provide the patient with an explanation of the procedure and how they are required to assist					
Ascertain whether analgesia may be required and provide it in a timely manner					
Demonstrate and practise breathing technique to be used during removal					
<i>Explain the type of breathing technique will you use?</i>					
1. removing the chest tube with the patient at full inspiration					
2. removing the chest tube with the patient at full expiration					
3. using the Valsalva manoeuvre – the patient takes a deep breath, pinches their own nostrils closed and blows out, as if to unblock their ears, or tries to breathe out against a closed glottis					
Prepare for procedure					
Discontinue suction	Not applicable in scenario				
Discuss with your assistant their role during the procedure					
Perform social hand wash, don personal protective equipment, and put on gloves					
Remove the mesenteric tag of tape and loosen and remove dressing(s), ensuring the chest tube is supported once the dressing is removed					
Set up sterile field					
Perform clinical hand-wash and don sterile gloves					
Set up equipment using a sterile field					
Clean insertion site using aseptic technique and prep the skin around the tube site with antiseptic					
Untie wound closure suture and cut anchoring suture					
Untie the wound closure suture and remove anchoring suture. Ensure chest tube is non adherent to skin edges or anchored by another suture by gently tugging about half a centimetre					
Remove chest tube					
Direct patient to perform breathing technique					
Place gauze dressing over chest tube and support with non-dominant hand					
Remove drain in a quick steady linear motion with dominant hand while supporting drain site with non-dominant hand. The edges of the wound should be gently squeezed together as the tube is removed					
Close insertion site by tying off the wound closure suture provided or by squeezing the sides of the insertion site together immediately after the tube is withdrawn and applying a Steri-Strip to keep the sides of the wound sealed					
Apply and secure dressing					
Step	Completes step				

	Correct	Correct with prompts	Incorrect	Endangers patient	Comments
Clean up post procedure					
Dispose of sharps and waste					
Remove gloves					
Wash hands					
Monitor patient and document the procedure					
Request the patient to cough, to ensure that no air can be heard escaping from the wound					
Advise patient to report any increase in chest pain or tightness, shortness of breath or air loss or oozing from the insertion site					
Assess and document the patients observations					
Document the procedure and outcome in patient's record					
Organise follow up chest X-ray					
Ensure the CXR has been ordered and is reviewed by MO in a timely manner					
Post-procedure					
<i>1/2 hour post-removal the patient complains of shortness of breath. What would you do?</i>					
Assess patient, e.g. vital signs, auscultate chest, check blood gasses					
Give oxygen					
Contact medical officer					
Organise a chest X-ray					
Document in chart					
<i>What other complications can occur during or after the removal of a chest tube?</i>					
Recurrence of the pneumothorax					
Infection in pleural space or at the insertion site					
Bleeding					
Pain					
Necrosis around tube site					
Total of marks					

Further comments:

6.6.5. Evaluation sheet for simulation scenario 5: removing a chest tube

Date of simulation exercise: _____
Location of simulation exercise: _____

Learning Goals

Rank your achievement of each learning goal using the scale below:

- 1 - Unable to meet learning goal
- 3 - Able to meet the goal to a major extent
- 5 - Can confidently meet the goal

To what extent were you able to meet the learning goals?

know when it is appropriate to remove a chest tube in an adult

- identify the equipment needed for removal of chest tube in an adult
- prepare an adult patient for chest tube removal
- demonstrate the process of removal of chest tube in an adult
- outline the common complications that can occur during and after chest tube removal in an adult
- complete the appropriate nursing documentation post chest tube removal

Simulation exercise

To what extent did you find this simulation useful as a learning opportunity? (Tick one.)

- Very useful
- Fairly useful
- Not useful

To what extent was the simulation exercise clear and easy to follow? (Tick one.)

- Clear and easy to follow
- Mostly clear and easy to follow
- Unclear/difficult to follow

Did you complete the online units relevant to this simulation scenario, prior to attending? (Tick one.)

- Yes
- Unsure
- No

Did the online units help you to complete the simulation exercise? (Tick one.)

- Yes
- Somewhat
- No

Comments

Evaluation sheet for simulation scenario 5: removing a chest tube *cont.*

Practice

As a result of completing this simulation will you be making any modifications to your practice? (Tick one.)

- My practice will remain unchanged
- I confirmed my practice
- I plan to review my practice
- I plan to make modifications to my practice

Comments

Facilitator

Did the facilitator promote your learning?

- Yes
- Somewhat
- No

Comments

General Comments

What features did you like/dislike about the simulation exercise?

How could this simulation exercise be improved?
