This book belongs to
FOREWORD

Nurses form the pillar of every healthcare system and at Tan Tock Seng Hospital, we are proud of our strong and rich nursing tradition, which is one of compassion and care to all who pass through our doors.

Instead of resting on our laurels, we must look towards building a legacy of excellence and it is with this goal in mind that the TTSH Survival Guide for New Nurses was conceived. It is envisioned that this guide, with its comprehensive list of key clinical and documentation guidelines, will become an invaluable reference tool for all new nurses in our hospital.

As you progress in your nursing career with our hospital, it is my sincere desire that you will continually strive towards attaining professional expertise in your chosen specialty. Best wishes for your future.

Dr Lim Suet Wun
Chief Executive Officer
Tan Tock Seng Hospital
National Healthcare Group
PREFACE

Greetings and welcome to Tan Tock Seng Hospital! We are delighted that you have chosen our hospital to continue your lifelong journey of professional development and advance your nursing career. You are now part of a community dedicated to caring and excellence, and I hope that you will grow into your role as a highly skilled professional caregiver within the healthcare team.

We are pleased to provide you with a pocket-sized guide that was designed specifically to meet your needs as a new nurse to Tan Tock Seng Hospital. Its purpose is to provide a useful reference on many aspects of nursing practice and documentation and to facilitate your learning journey. I hope you will find it an indispensable companion.

Wishing you every success

Kwek Puay Ee
Director of Nursing
Tan Tock Seng Hospital
# TABLE OF CONTENTS

**Assessment And Monitoring**
- Braden Scale 8
- Staging Of Pressure Ulcer 9
- Care of Oral Hygiene 10
- Neurological Assessment Using Conscious Level Chart (CLC) 11

**Assisting in Invasive Procedures**
- Bone Marrow Aspiration, Assisting 21
- Chest Tube Drainage, Assisting 22
- Lumbar Puncture, Assisting 25
- Peripherally Central Inserted Catheter, Care and Management 28
- Thoracocentesis, Assisting 30
- Management of Tracheostomy Emergency 32

**Management Of Clinical Conditions**
- Chest Pain / Angina Pectoris 36
- Hyperglycemia 38
- Hypoglycemia 40
- Insulin use in Diabetes Management 41
- Hyperkalemia 43
- Hypokalemia 46
- Hypotension 49
- Impaired Swallowing, Nursing Care 51
- Phlebitis 53
- Seizures 55

**Oxygen Therapy**
- Use Of Devices In Oxygen Therapy 58
Resuscitation

Action Plan For Resuscitation In The Ward
Role And Responsibilities Of Registered And Enrolled Nurses During Resuscitation

Blood Product Transfusion

Administration of Blood and Blood Products
Reporting Averse Blood Transfusion Reaction
Types of Blood and Blood Products

Orthopedic Traction

Requisites For Different Types Of Traction

Infection Control

Standard Precaution
Contact Precautions
Transmission-Based Precautions Reference
Management Of Blood And Body Fluid Spills

Controlled Drugs

Controlled Drug Matters

Documentations

A-R-M-S Communication And Documentation
SBAR Methodology Of Communication

My Notes
Assessment and Monitoring
BRADEN SCALE

1. Definition

Braden Scale is used to predict pressure sore risk for our patients. It is reviewed every Tuesday and Friday in general ward settings and daily in intensive care and high dependency settings. It has a total score of 23.

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Scoring</th>
</tr>
</thead>
</table>

Reference: www.NPUAP.org

Conduct initial assessment during admission. Reassess whenever patient’s condition deteriorates, after major surgeries or procedures and or upon transfer from another ward.

A total score of 16 or less is indicative of risk for developing pressure ulcers and preventive measures are to be initiated.
<table>
<thead>
<tr>
<th>Stage</th>
<th>Ulcer Characteristics</th>
</tr>
</thead>
</table>
| I     | Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area.  
**Look out for:** painful, firm, soft, warmer or cooler as compared to adjacent tissue. |
| II    | Partial thickness loss of dermis presenting as a shallow open ulcer with a red or pink wound bed, without slough. May also present as an intact or open/ruptured serum-filled blister.  
**Look out for:** shiny or dry shallow ulcer without slough or bruising. |
| III   | Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscles are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.  
The depth of a Stage III pressure ulcer varies by anatomical location.  
**Look out for:** The bridge of the nose, ear, occiput, and malleolus as these areas do not have subcutaneous tissue and Stage III ulcers can be shallow in these locations. |
| IV    | Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often include undermining and tunneling.  
**Look out for:** The bridge of the nose, ear, occiput, and malleolus do not have subcutaneous tissue and these ulcers can be shallow. Stage IV ulcers can extend into muscle and/or supporting structures (e.g., fascia, tendon or joint capsule) making osteomyelitis possible. Exposed bone/tendon is visible or directly palpable. |
| Unstageable | Full thickness tissue loss in which the base of the ulcer is covered by slough (yellow, tan, gray, green or brown) and/or eschar (tan, brown or black) in the wound bed.  
Until enough slough and/or eschar is removed to expose the base of the wound, the true depth, and therefore stage, cannot be determined. Stable (dry, adherent, intact without erythema or fluctuance) eschar on the heels serves as ‘the body’s natural (biological) cover’ and should not be removed. |
## Care Plan for Oral Hygiene

<table>
<thead>
<tr>
<th>Low Risk Interventions</th>
<th>Moderate Risk Interventions</th>
<th>High Risk Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perform oral hygiene BD (0800h / 2000h)</td>
<td>1. Perform oral hygiene TDS (0800h / 1400h / 2000h)</td>
<td>1. Perform oral hygiene QDS (0800h / 1400h / 2000h / 0200h)</td>
</tr>
<tr>
<td>a) TOOTHBRUSH</td>
<td>• Perform 2a or 2b. gargle with normal saline at 2pm</td>
<td>• Perform 2a or 2b. gargle with normal saline at 2pm &amp; 2am*</td>
</tr>
<tr>
<td>• Use soft-bristled small-end ed toothbrush with Fluoride toothpaste</td>
<td>• If using foam swabs, swab all surfaces of oral cavity with: Chlorhexidine 0.2% mouthwash at 8am &amp; 8pm Sodium Bicarbonate swab at 2pm</td>
<td>*omit if necessary</td>
</tr>
<tr>
<td>Or</td>
<td></td>
<td>• If using foam swabs, swab all surfaces of oral cavity with: Chlorhexidine 0.2% mouthwash at 8am &amp; 8pm Sodium Bicarbonate swab at 2pm &amp; 2am</td>
</tr>
<tr>
<td>b) MOUTHWASH</td>
<td></td>
<td>3. Apply lip moisturizer prn</td>
</tr>
<tr>
<td>• Gargle with 10mls of Chlorhexidine 0.2% mouthwash</td>
<td></td>
<td>3. Apply lip moisturizer prn</td>
</tr>
<tr>
<td>Or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) FOAM SWAB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Swab all surfaces of oral cavity using plain foam swabs with Chlorhexidine 0.2% mouthwash</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. Carry out following interventions for Moderate and High Risk groups of patients:
   a) Perform oral suction prn.
   b) Inform Dr when ulcer or bleeding seen in oral cavity.
   c) Administer treatment or medications as prescribed by Doctor / Dentist.
2. Avoid food and drinks for 30 minutes after using Chlorhexidine mouthwash.
3. Use normal saline if patient is hypersensitivity to chlorhexidine or is on Nystatin treatment.
4. Discard unsued Chlorhexidine 0.2% mouthwash 48 hours after opening.
1. **Purpose**

   Neurological assessment is monitored as clinically indicated to:
   
   1.1 Standardize clinical observations and provide a baseline for future comparisons.
   
   1.2 Identify patients at risks of deterioration and facilitate prompt action to be carried out.
   
   1.3 Aid in diagnosis and treatment.

2. **GCS - Glasgow Coma Scale**

   Is a standardized tool that evaluates the degree of brain impairment and to identify the seriousness of injury in relation to outcome. GCS involves 3 determinants:
   
   2.1 Eye opening (maximum score of 4)
   
   2.2 Best Verbal response (maximum score of 5)
   
   2.3 Best Motor response (maximum score of 6)

   Levels of responses indicate the total Glasgow Coma Scale Score = Eye + Verbal + Motor (scores range from 3 - 15)

   Remember GCS as EVM or ‘Extra Value Meal’ with the score of 4, 5 and 6.

3. **Instructions (Assessment By RN only)**

   3.1 Commence assessment with an assumption that the patient has an intact neurological system.
   
   3.2 Determine any physiological factors and/or pre-existing conditions that may impede a patient from being able to
respond to stimulus. E.g. airway obstructions, breathlessness, swollen eyelids, localized trauma (lacerations, bleeding, bodily injuries) or edema, hypoglycemia, shock, ingestion of alcohol, sedatives etc.

3.3 Evaluate mental status by observing the patient’s response to visual, auditory and adverse painful stimuli. Press hard on one of patient’s fingernails to produce an adverse stimulus in comatose patient.

3.4 Record patient’s best response unless otherwise indicated.

3.5 Indicate response obtained with “X” against the codes.

3.6 Use the maximum stimulus in the following sequence to obtain a response.

3.6.1 Voice
3.6.2 Shout
3.6.3 Shake
3.6.4 Pain

4. Conducting the neurological assessment

4.1 Check Eye Response

4.1.1 Wake the patient up if sleeping.

4.1.2 Lift the upper eyelid gently, if not contraindicated, and if the patient is unable to open eyes upon request.

4.1.3 Indicate “C” under “None”, if eyes are closed due to swelling.

4.1.4 Assess the patient’s eye-opening response using the appropriate stimulus:
<table>
<thead>
<tr>
<th>Type of response</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous</td>
<td>4</td>
<td>Opens eyes spontaneously. To obtain score, the patient need not demonstrate awareness of what he sees; he only needs to open his eyes.</td>
</tr>
<tr>
<td>Speech</td>
<td>3</td>
<td>Opens eyes to the voice (speech or shout) of assessor when called.</td>
</tr>
<tr>
<td>Pain</td>
<td>2</td>
<td>Opens eyes when painful stimulus (firm pressure) is applied onto nail bed.</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
<td>Does not open eyes to pain.</td>
</tr>
</tbody>
</table>

Swollen or permanently closed eyes that do not open do not necessarily indicate a falling conscious level.

### 4.2 Check Verbal Response
Assess patient’s verbal response by asking questions related to: **Person, Place and Time**

<table>
<thead>
<tr>
<th>Type of response</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oriented</td>
<td>5</td>
<td>Able to answer above questions (person, place, and time) correctly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Can you tell me what your name is?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Can you tell me where you are now?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Can you tell me if it is day or night now?”</td>
</tr>
<tr>
<td>Confused</td>
<td>4</td>
<td>Responds in a conversational manner, but with irrational replies to any of the questions asked.</td>
</tr>
<tr>
<td>Inappropriate words</td>
<td>3</td>
<td>Speaks in words or phrases that are random and/or exclamatory. There is no conversation exchange. Words make little or no sense in relation to the questions asked.</td>
</tr>
<tr>
<td>Incomprehensible sounds</td>
<td>2</td>
<td>Moans, groans, grunts and mumbles without uttering any recognizable or intelligible words.</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
<td>Shows no verbalization of any type.</td>
</tr>
</tbody>
</table>
Indicate “T” if the patient has a tracheostomy or endotracheal tube in the box under “None”. However if the patient is able to speak with aid of a speaking valve, indicate “T” on the score.

Absence of speech may not always indicate a falling conscious level.

### 4.3 Check Motor Response

Assess motor responses in all limbs; but score ONLY the best arm response.

<table>
<thead>
<tr>
<th>Type of response</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obeys commands</td>
<td>6</td>
<td>Able to follow simple commands. E.g. “Can you show me one finger?”, “Lift up your left hand off the bed.”</td>
</tr>
<tr>
<td>Localise pain</td>
<td>5</td>
<td>Moves limb in an attempt to avoid painful stimulus e.g. moves the other hand to the site of the stimulus.</td>
</tr>
<tr>
<td>Flexion to pain</td>
<td>4</td>
<td>Flexes limbs in response to painful stimulus in a purposeless movement.</td>
</tr>
<tr>
<td>Abnormal flexion</td>
<td>3</td>
<td>Flexes elbows and wrists while extending lower legs to pain. (Decortication)</td>
</tr>
<tr>
<td>Extension to pain</td>
<td>2</td>
<td>Extends upper and lower extremities to pain. (Decerebration)</td>
</tr>
<tr>
<td>No movement</td>
<td>1</td>
<td>Does not respond to any painful stimulus</td>
</tr>
</tbody>
</table>

- Test ONLY ability to follow instructions. DO NOT test motor power.

Spinal Cord Injury (C4 – C5) Patient is alert but has no upper limb movement. Assess patient by requesting him/her to stick out tongue or raise eyebrows. If patient is able to follow command, score ‘6’ to indicate intact motor power.

### 5. Pupil Reaction and Size

5.1 Shine light from the outer canthus to the inner canthus of each eye and watch for a reaction. The pupil should constrict promptly. The pupil should dilate when the light is removed.
5.2 Compare both pupils for size, shape and equality. Use the CLC to evaluate pupil size more accurately. The pupil size ranges from 1 to 8 millimeters (mm). Indicate “I” for irregular pupils.

Document the pupillary reaction as follows:

5.2.1 “B” for brisk (fast).

5.2.2 “S” for sluggish (slow).

5.2.3 “F” for fixed (non-reactive).

5.2.4 “C” for closed due to swelling.

5.2.5 “NT” if patient has an eye operation done and cannot be assessed.

Document the size of the pupil after the light source is shone in the eyes.

6. **Limb Movement**

Document motor strength of arms and legs using the scale as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>5</td>
<td>Overcomes gravity and maximum resistance.</td>
</tr>
<tr>
<td>Mild weakness</td>
<td>4</td>
<td>Moves arm or leg. against gravity though limbs are weak that is, able to overcome mild to moderate resistance.</td>
</tr>
<tr>
<td>&gt;Anti-gravity strength</td>
<td>3</td>
<td>Able to lift limbs off bed but cannot overcome resistance when applied</td>
</tr>
<tr>
<td>&lt;Anti-gravity strength</td>
<td>2</td>
<td>Moves a limb along non-gravity plane only (gravity eliminated) and not able to lift off the bed.</td>
</tr>
<tr>
<td>Minimal strength</td>
<td>1</td>
<td>Shows slight traces of muscle movement.</td>
</tr>
<tr>
<td>Shows absence of movement</td>
<td>0</td>
<td>Indicate no motor strength.</td>
</tr>
</tbody>
</table>
Indicate “R” and “L” responses separately if there is a difference between the two sides.

7. **Vital Signs**

Monitor and document blood pressure, pulse rate and respiratory rate accordingly. Monitoring of vitals signs must be performed concurrently with GCS.

Look out for increased or decreased Systolic BP, widening of pulse pressure, decreased heart rate, change in breathing pattern. These are the indications of increased intracranial pressure (ICP).

What do you do when there is a change in neurological status?

7.1 Counter check with more experience staff.

7.2 Check patient’s $\text{SPO}_2$. If < 95%, administer intranasal oxygen. Notify doctor.
Assisting in Invasive Procedures
1. Definition
Bone marrow aspiration (BMA) or biopsy is the insertion of a needle through the marrow of a flat bone, usually the pelvis or sternum to aspirate a sample of blood of the marrow. Subsequently, an internal coring device is passed through the needle to remove a small core of the intact bone marrow. This procedure is usually performed in the presence of the laboratory technician who advises on the requirements of the specimen(s) to be collected.

2. Purpose
To diagnose the cause and severity of haematological or osteopathic conditions.

3. Requisites
   3.1 Sterile bone marrow puncture set
   3.2 Trephine biopsy needle (disposable)
   3.3 Cleansing lotions: Chlorhexidine Gluconate 2% w/v Isopropyl Alcohol 70% and Povidine Iodine 1%
   3.4 Local anaesthetic (LA) agent : Lignocaine 1% solution
   3.5 Injection Lignocaine 1% (LA)
   3.6 Syringes (10 mls x 2 & 20mls X 4)
   3.7 Needles sizes 19G & 23G
   3.8 Sterile gauze pack X 2
   3.9 Specimen bottles X 5
   3.10 Formaldehyde solution
   3.11 Protective sheet
   3.12 Pressure dressing e.g. elastoplasts
3.13 Sterile gloves
3.14 Sterile gown
3.15 Face mask with shield
3.16 Sharps box
3.17 Disposal bag

4. Specimen Required
4.1 Bone marrow specimens in the bottles (with formaldehyde solution)
4.2 Peripheral blood films and bone marrow smears. All slides should be air-dried, unfixed and unstained. – Extra slides maybe required for cytochemical stains for the diagnosis of new leukemia and lymphoma case.

Laboratory technician will prepare the blood film slides.

5. Procedural Instructions
5.1 Ensure that written consent is obtained.
5.2 Make an appointment with the laboratory technician.
5.3 Ensure that blood results and X-rays are available.
5.4 Identify the correct patient for the procedure (two patient identifiers - Name and NRIC /Passport/Work Permit Number).
5.5 Assist to position patient accordingly:
   5.5.1 Supine, lateral or prone for iliac crest approach.
   5.5.2 Supine with the back supported on a firm base for sternal approach.
   5.5.3 Supine for the tibial approach
5.6 Instruct the patient to remain still during the procedure to prevent trauma.
5.7 Check pre-procedural vital signs. Place patient on continuous monitoring device and monitor the vital signs at regular intervals if the patient’s condition necessitates.

5.8 Implement “time-out” process with the procedurist just before the start of procedure.

5.9 When the procedure is in progress, the RN assisting the doctor shall:
   
   5.9.1 NOT leave the patient’s bedside unless necessary.
   
   5.9.2 Ensure patient’s safety and provide reassurance and psychological support.
   
   5.9.3 Monitor patient’s vital signs and observe for pain, pallor, discomfort and/or breathlessness as frequently as possible.
   
   5.9.4 Confirm with the laboratory technician if he/she has collected the required specimens.

Make appointments for bone marrow assistance 24 hours prior to the procedure at Ext. 8955.

6. **Post Procedure**

6.1 Apply pressure with gauze dressing and elastoplasts.

6.2 Instruct patient on CRIB for at least 4 hours. If the puncture site is on the iliac crest, inform patient to lie on the affected side to promote haemostasis.

6.3 Monitor and document the following:

   6.3.1 Vital signs for **at least 4 hours** or as ordered by doctor.

   6.3.2 Condition of patient and puncture site for presence of pain, discomfort, warmth, swelling, bleeding and/or tenderness.

6.4 Notify the doctor immediately if any of the above finding(s) is/are present.
CHEST TUBE DRAINAGE, ASSISTING
Reference: SD –NUR- RES – 004 and SD –NUR- RES – 003

1. Definition
Underwater seal chest drainage system is a medical-surgical intervention of a drainage tube to remove accumulated air or fluid from the pleural space in order to re-establish normal negative pressure in the pleural space.

2. Purpose
2.1 To relieve pressure on the lungs.
2.2 To remove excessive fluid or air from the space surrounding the lungs.

3. Requisites
3.1 Spontaneous pneumothorax set.
3.2 Sterile water.
3.3 Sterile chest drainage bottle with drainage tubing
3.4 Chest tube (appropriate size as prescribed).
3.5 Sterile gloves.
3.6 Gown and mask.
3.7 Cleansing solutions: Chlorhexidine Gluconate 2%, w/v Isopropyl Alcohol 70% and Povidone Iodine 1%
3.8 Local anaesthetic (LA) agent - Lignocaine 1% solution.
3.9 Syringes and needles for LA.
3.10 Sutures and blades.
3.11 Appropriate adhesive Tape – Zinc oxide.
3.12 Dressing material e.g. gauze
3.13 Adhesive tape e.g. Zinc oxide and Elastoplast
3.14 Protective material
3.15 Two Pairs of Artery Forceps.
3.17 Disposal Bag.
3.18 Safety clip.
3.19 Thoracic Pump if required (function test must be done prior to connecting to drainage system.

4. **Pre Procedural Care**

4.1 Check the orders in the treatment sheet / patient clinical notes for the correct site/side for chest drain/tube insertion.

4.2 Check that the doctor has obtained written consent using “Time Out” process, and explained the procedure details to patient and/or caregiver.

4.3 Assess patient’s understanding of the procedure and provide additional information and/or reinforcement as required.

4.4 Set up underwater seal drainage system using aseptic technique. Prepare thoracic suction pump, if ordered by doctor.

5. **Post Procedural Care**

5.1 Monitor and record vital signs for at least 4-6 hours

5.2 Ensure that post procedural CXR is done and reviewed by prescribing doctor as soon as possible.

5.3 Ensure that the doctor reviews CXR and confirms placement of the chest tube.

5.4 Ensure 2 pairs of artery forceps are available by bedside in case of accidental disconnection.

Do not clamp chest tube drainage unless ordered by doctor.
6. Potential Complications (Inform the Doctor Immediately When Complications Arises)

6.1 Subcutaneous emphysema - presents with crepitus in the arms, chest and neck.

6.2 Excessive drainage

6.3 Infection.

7. Documentation

7.1 Nursing Kardex

7.1.1 Type and size of chest tube inserted.

7.1.2 Date chest tube inserted.

7.2 Patient Care Record (PCR)

7.2.1 Patient’s condition and tolerance during the procedure.

7.2.2 Name of doctor who performed the procedure.

7.2.3 Amount of suction applied, if prescribed.

7.3 Intake and Output (I/O) Chart and Chest Tube Monitoring Chart

7.3.1 Amount and nature of the chest tube drainage, if any.

7.3.2 Record drainage in the intake and output chart where in use.

7.4 Hourly Chart

7.4.1 Vital signs obtained hourly for at least 4 hours or according to the prescribed interval.

7.5 Patient and Family Education (PFE)

7.5.1 Content of patient/caregiver teaching provided.

Remember to implement a “time – out” process
8. **Change of Chest Drainage Bottle**

8.1 Change drainage bottle when ¾ full (2400mls), or according to the manufacturer’s recommendation.

8.2 Document the bottle changed and the drainage contents accordingly.

9. **Removal of Chest Tube Drainage**

The chest tube is removed when full expansion of the lung has occurred.

9.1 **Requisites**

9.1.1 Special dressing set

9.1.2 Appropriate suture size for purse string, if not done during insertion

9.1.3 Sterile dressing towel

9.1.4 Sterile gloves

9.1.5 Gown and mask

9.1.6 Cleansing Solutions: Chlorhexidine Gluconate 2%, Isopropyl Alcohol 70% and Povidone Iodine 1%

9.1.7 Local anaesthetic (LA) agent - Lignocaine 1% solution

9.1.8 Dressing material and adhesive tape – Gauze & Elastoplast

9.1.9 Protective material

9.1.10 Disposal Bag
1. **Definition**

Lumbar puncture (LP) is a medical procedure in which a needle is inserted into the subarachnoid space of the spinal cord between the 3rd, 4th, and 5th lumbar vertebrae. (Normal CSF pressure is 60 – 180mm H$_2$O.).

2. **Purpose**

2.1 To obtain cerebrospinal fluid (CSF) for investigation.

2.2 To remove CSF for the symptomatic relief of increased intracranial pressure (ICP).

3. **Requisites**

3.1 Lumbar puncture set (Disposable)

3.2 Spinal manometer with 3-way adaptor

3.3 Disposable spinal / lumbar puncture needle

3.4 Sterile specimen containers x 10

3.5 5ml syringes x 2

3.6 Local anaesthetic (LA) agent: Injection Lignocaine 1%

3.7 Needles sizes 19G & 23G

3.8 Cleansing solutions: Chlorhexidine Gluconate 2%, Isopropyl Alcohol 70%

3.9 Pressure dressing e.g. elastoplast

3.10 Sterile gauze pack X 2

3.11 Face mask

3.12 Sterile gloves
3.13  Disposable apron
3.14  Protective sheet
3.15  Disposal bag
3.16  Sharp box

4.  **Pre Procedure**

4.1  Identify correct patient (patient identifiers).
4.2  Written Consent is obtained.
4.3  Gather prepared requisites.
4.4  Patient preparation- Monitor vital signs, Place patient on continuous monitoring device and monitor vital signs at regular intervals.

**Instruct the patient to:**

4.4.1  Flex his/her knees to the abdomen and bend the head so that his/her chin touches her/chest.
4.4.2  Clasp the knees to the abdomen (fetal position) with his/her hands.

5.  **During Procedure**

5.1  Implement a “**time-out**” process that is Correct Patient, Correct Procedure, Correct Side/Site, Correct Case sheet / X-rays.

5.2  Assist the doctor as required, ensuring asepsis at all times during the procedure.

**Observe the following throughout the procedure:**

5.2.1  Ensure patient’s safety at all times.
5.2.2  Observe for pain or discomfort.
5.2.3  Continuously monitor the clinical condition & vital signs.
5.2.4  Report any abnormalities.
6. **Post Procedure**

6.1 Assessment - puncture site is not bleeding and there is no haematoma prior to applying the occlusive dressing.

6.2 Monitor and record vital signs & conscious level for **at least 6 hours**.

6.3 **CSF Specimens** can be sent for the followings: Feme, C/S, AFB Smear, TB C/S, Fungal smear C/S, HSV PCR, Cytology, Cryptococcus antigen.

6.4 Despatch collected specimens through the porter with ward despatch book documenting the type of specimens sent to the laboratory with the correct laboratory requisition forms.

6.5 Instruct patient to maintain supine position **without pillows and avoid excessive movements of the affected site at least 6 hours**.

6.6 Advise the patient to inform nurse if presence of headache, extreme pain and/or weakness of the lower limbs, which may indicate injury to the spinal cord.

6.7 Observe for leakage of CSF from the puncture site.

6.8 Document any observed abnormalities in the PCR and inform the doctor immediately.

7. **Documentation**

7.1 Date and time of procedure done.

7.2 Characteristics of the CSF obtained.

7.3 Type and number of CSF specimens collected and despatched.
PERIPHERALLY INSERTED CENTRAL CATHETER, CARE AND MANAGEMENT
Reference: SD-NUR-CVS-06

1. Definition
Peripherally inserted central catheter (PICC) is inserted into the peripheral vein (usually basilic or cephalic vein) with the catheter tip terminating in the subclavian vein or superior vena cava.

2. Care Of PICC
2.1 Check injection cap/plug and external portion of PICC to ensure that it is intact.
2.2 Keep PICC patent by flushing with 10ml of injection sodium chloride 0.9% followed by 5 ml of heparinised saline (10unit/ml) after each use. *(Heparinsed saline must be ordered by doctor).
2.3 Flush PICC with 10ml of injection sodium chloride 0.9% followed by 5 ml of heparinised saline (10unit/ml) daily if not in use. *(Heparinsed saline must be ordered by doctor).
2.4 Use pulsatile (push-pause motion) technique when injecting drug/solution through the PICC. Avoid injecting intravenous medicines forcefully through the PICC as this will cause catheter rupture.
2.5 Use a 10ml syringe (or larger-sized) for this purpose as the resultant fluid pressure is lower and the risk of catheter rupture will also be lower.
2.6 Use access device, e.g., CLC 2000, which can create a positive pressure within the catheter and maintain catheter patency. Do not clamp when CLC2000 is in use.
2.7 Inform the doctor if the catheter is blocked. Do not attempt to unblock the catheter as this will cause thromboembolism.

If CLC 2000 is not available, create positive pressure by clamping the catheter whilst instilling the last 0.5ml of the heparinised saline before withdrawing the syringe from the catheter.
3. **Changing Of PICC Dressing Using Aseptic Technique**

3.1 Change dressing on PICC site **24 hours after insertion** and as needed every **24-48 hours** or whenever it is **soiled**.

3.2 Stabilize the catheter while removing the old dressing. Remove dressing in the direction towards the shoulder to reduce the risk of accidental catheter removal.

3.3 Clean the PICC insertion site with 2% Chlorhexidine gluconate swabstick in a downward left to right motion ensuring to cover a surface large enough for the dressing to be applied. Allow the site to dry completely.

3.4 Clean away blood or crusted dry blood with gauze soaked with sterile water and dry area before cleaning the catheter exit site with 2% Chlorhexidine gluconate swabstick.

3.5 Apply transparent dressing over the PICC insertion site. Form an occlusive seal by pinching the adhesive portion of the dressing around the catheter.

3.6 Secure the PICC with anchoring tape to provide stability so as to prevent catheter migration.

3.7 Indicate the date of insertion and date of change on the dressing.

4. **Documentation**

4.1 **Nursing Kardex:**

4.1.1 Date of PICC insertion.

4.1.2 Date of CLC2000 change.

4.2 **Patient Care Record (PCR):**

4.2.1 Skin condition around the PICC site.

4.2.2 Dressing changes.
THORACENTESIS, ASSISTING
Reference: SD – NUR – RES – 007

1. Purpose
   1.1 For symptomatic relieve of shortness of breath.
   1.2 For diagnostic investigations.

2. Requisites
   2.1 Mask, gown/apron
   2.2 Sterile gloves
   2.3 Simple dressing set
   2.4 Sterile specimen bottles
   2.5 Cleaning solutions: Chlorhexidine Gluconate 2%, Isopropyl Alcohol 70% and Povidone Iodine 1%
   2.6 Local anaesthetic (LA) agent: Injection Lignocaine 1%
   2.7 Protective dressing
   2.8 Syringes 10/20ml
   2.9 Sterile needles – FG sizes 21 & 23
   2.10 Protective material
   2.11 Measuring jug
   2.12 Disposal Bag
   2.13 Dressing material and adhesive tape e.g. Elastoplast

3. Prepare and assist the doctor as required.
4. **Post Procedure**

4.1 Monitor the patient’s vital signs and SpO² every 30 minutes for 1 hour, followed by every hour for the next 3 hours or as specified by the doctor.

4.2 Observe for the following:

   - 4.2.1 Bleeding from puncture site.
   - 4.2.2 Increased heart rate.
   - 4.2.3 Respiratory distress.
   - 4.2.4 Complains of chest pain.
   - 4.2.5 Subcutaneous emphysema.
   - 4.2.6 Ensure that Chest X ray is performed if ordered.

5. **Documentation**

5.1 **Patient Care Record (PCR)**

   - 5.1.1 Date and time of procedure.
   - 5.1.2 Patient’s condition and tolerance during the procedure.
   - 5.1.3 Name of doctor who performed the procedure.
   - 5.1.4 Amount, color and nature of the fluid withdrawn.

5.2 **Hourly Chart**

   - 5.2.1 Monitor and document the patient’s condition and the vital signs (respiration rate, pulse rate, blood pressure) and SpO² every 30 minutes for 1 hour, followed by every hour for the next 3 hours or as specified by the doctor.

   Remember to implement a “time – out” process
MANAGEMENT OF TRACHEOSTOMY EMERGENCY

Tube Dislodgement

Presence of noisy sounds, no airflow from the tracheostomy tube, awkward tube placement, increased respiratory rate, decreased SpO₂

START

Breathing PRESENT

• Ensure cuffed tube is deflated

• Supplement with Oxygen if indicated

• Monitor patient
• Do not attempt to ventilate patient via trachy unless confirmation of tube is done

• Inform Dr
• Prepare new tracheostomy tube or ETT intubation

START

Breathing ABSENT

• Ensure cuffed tube is deflated

• Place patient in supine position
• Bag valve mask patient
• Stand by tracheal dilator for Dr
MANAGEMENT OF TRACHEOSTOMY EMERGENCY

**Tube Obstruction**

Presence of airway narrowing sound, increased respiratory rate, decreased SpO₂, difficult insertion of suction catheter, none or minimum airflow felt

**START**

- SINGLE lumen TT
  - Reposition patient’s neck
  - Encourage patient to Cough OR Suction patient
  - If failed to introduce suction catheter or experience partial lumen occlusion, Ensure cuff deflated

**Breathing ABSENT**
- Prop up patient, if no contraindication
- Deflate cuff if cuffed tube is used
- Provide oxygen via face mask
- Monitor patient
- Inform Dr, prepare new tracheostomy tube or ETT intubation

**Breathing PRESENT**
- Deflate cuff if cuffed tube is used
- Bag valve mask patient
- Monitor patient
- Inform Dr
- Prepare new tracheostomy tube or ETT intubation

**START**

- DOUBLE lumen TT
  - Encourage patient to cough
  - Remove inner tube, inspect for tube occlusion
  - If symptoms persist,

**Suction patient**

**Breathing ABSENT**
Management of Clinical Conditions
CHEST PAIN / ANGINA PECTORIS

1. Definition

1.1 Chest discomfort or pain associated with myocardial ischemia is called angina pectoris.

1.2 It can occur at rest or with exertion.

2. What to look out for?


2.2 Patient may describe the pain as squeezing, aching, tightness, burning sensation or feeling of pressure on chest

2.3 Tachycardia

2.4 Hypertension or hypotension

2.5 Dyspnoea

2.6 Cold clammy skin

2.7 Diaphoresis

2.8 Anxiety or feeling of impending doom

2.9 Indigestion
3. **What to do**

3.1 Perform pain assessment.

3.2 Check patient’s vital signs i.e. Heart rate, bp, spo2, respiratory rate & conscious level. If possible, connect patient to cardiac monitor.

3.3 Administer supplemental oxygen & ensure crib.

3.4 Inform Dr using SBAR including drug allergy.

3.5 Administer s/l GTN (1 tablet every 5 minutes to a maximum of 3 tablets as needed) if prescribed.

3.6 Perform 12-leads ECG.

3.7 Ensure IV access is established & patent.

3.8 Administer IV fluids & medications as ordered.

Be prepared to
- Administer IV morphine, aspirin, plavix, famotidine or Nitrodisc patch & / Dopamine or Dobutamine.
- Label blood tubes for Cardiac Enzymes & Troponin I.
- Transfer patient to CCU/HDU if patient’s condition deteriorates.

4. **Follow up care**

4.1 Continue to assess patient for chest pain, if unrelieved, to inform Dr

4.2 Monitor vital signs & conscious level as above

4.3 Evaluate effectiveness of medications & side effects especially hypotension, bradycardia & respiratory depression.
HYPERGLYCAEMIA

1. Definition

Blood Glucose Level that is consistently more than 15mmol/L is considered hyperglycemia. Severe hyperglycemia is defined as blood glucose more than 20mmol/L.

2. What To Look For (Sign And Symptoms)

2.1 Frequent urination, increased thirst, increased hunger.
2.2 Generalized weakness / increase lethargic.
2.3 Blurred vision.
2.4 Dizziness.
2.5 Dry & flushed skin poor skin turgor and dry mucous membrane.

Late signs and symptoms
- Nausea and vomiting, Abdominal cramp.
- Deep and rapid respiration with fruity smell breath.
- Hypotension, tachycardia
- Grossly elevated blood glucose levels.
- Abnormal blood electrolyte (Na K urea and creatinine).
- Drowsiness progressing to coma or seizures if not treated.

3. What To Do

3.1 Monitor patient’s blood sugar level as ordered by the physician.
3.2 To inform Doctor if blood sugar level range more than 20mmol.
3.3 To serve the oral anti-hyperglycemia medication or insulin according to sliding scale as ordered by the Doctor.
3.4 Monitor vital signs and report abnormal readings.
3.5 Administer I/V insulin via syringe pump if ordered by the Doctor.

3.6 Ensure the I/V insulin solution is infused separately from other hydration solutions.

3.7 To administer intravenous fluid to correct the dehydration and restore electrolytes as ordered.

3.8 To inform doctor the need to review IV therapy if patient is on dextrose infusion, and blood sugar is poorly controlled.

4. Follow-Up Care

4.1 Monitor blood sugar level 15-20 minutes after intervention done.

4.2 Observe signs and symptoms of hyperglycemia

4.3 Documentation of what had happened to the patient in nursing report.

4.4 Refer dietitian and Diabetic Nurse Educator if necessary.

The management for diabetic ketoacidosis and Hyperosmolar hyperglycemic nonketotic (HHNK) syndrome, is much more complicated.

Blood should not be taken from the I/V insulin site.

HYPOGLYCAEMIA

1. Definition
Hypoglycemia is an abnormally low level of glucose in the blood (< 4 mmol), often associated with neurological side effects and arousal of the sympathetic nervous system.

2. What To Look Out For (Sign And Symptoms)
   2.1 Cool, pale, and diaphoretic skin.
   2.2 Agitation, disorientation, slurred speech, blank stare.
   2.3 Headache, palpitations/tachycardia, trembling, hunger.
   2.4 Decrease level of conscious (LOC) progressing to coma and/or seizures if not treated.

3. What To Do
   3.1 Check blood glucose stat and assess level of consciousness.
   3.2 Inform doctor stat if BGL is < 3mmol/L.
   3.3 Serve oral glucose drink if patient is conscious (mix 15g of glucose powder to half cup of water).
   3.4 Re-checked blood glucose 15 minutes later after glucose drinks.
   3.5 Repeat treatment if still unsatisfactory (Must be > than 4 mmol/L).
   3.6 Ensure a snack (bread or biscuit) or a meal is serve after intervention and patient’s symptoms improved.
   3.7 Assist doctor in administer stat dose of I/V Dextrose 50% (40mls) if patient is drowsy or confused.
   3.8 Re-checked blood glucose 15 minutes after I/V administration.
4. Follow-Up Care

4.1 Document all BGL and intervention into the Diabetic Chart.
4.2 Closely monitor the blood glucose level as per physician order.
4.3 Continue to monitor the vital signs and report any abnormalities.
4.4 Inform doctor to review treatment if necessary.
4.5 Report if the occurrence of similar event.
4.6 Refer DNEs / Dieticians if indicated.

**INSULIN USE IN DIABETES MANAGEMENT**
Reference: NOVO NORDISK A/S 200/2005

**Types of insulin used in TTSH**

<table>
<thead>
<tr>
<th>Type</th>
<th>Brand name</th>
<th>Pharmacokinetics</th>
<th>How it works?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular/Short-Acting (soluble insulin)</td>
<td>Actrapid®</td>
<td>Onset: within 30 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humulin® R</td>
<td>Maximum effect: 1-3 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Duration: 3-4 hours</td>
<td></td>
</tr>
<tr>
<td>Intermediate-acting (isophane insulin - NPH)</td>
<td>Insulatard®</td>
<td>Onset: within 1.5 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humulin® N</td>
<td>Maximum effect: 4-12 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Duration: 24 hours</td>
<td></td>
</tr>
<tr>
<td>Short acting and intermediate-acting</td>
<td>Mixtard® 30</td>
<td>Onset: within 30 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humulin® 70/30</td>
<td>Maximum effect: 2-8 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Duration: up to 24 hours</td>
<td></td>
</tr>
<tr>
<td>Long Acting</td>
<td>Lantus®</td>
<td>Onset: within 1 hour</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maximum effect: none</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Duration: 24 hours</td>
<td></td>
</tr>
</tbody>
</table>
1. **Subcutaneous injection sites**

   ![Subcutaneous Injection Sites]

2. **Precautions to take before administering insulin**

   2.1 Check the label to make sure it is the right type of insulin.
   2.2 Check expiry date of insulin vial.
   2.3 Disinfect the rubber membrane with an alcohol swab.
   2.4 Never inject the insulin directly into the vein or muscle.
   2.5 Always vary the sites you inject, to avoid lumps.

3. **Always mix fast acting and long acting in this order**

   Mix Actrapid HM with long-acting insulin as follows:
   
   3.1 Roll the vial of long acting insulin between your hands until the liquid is uniformly white and cloudy.
   3.2 Inject air into the long acting insulin vial. (The amount of air to be injected into the vial is the same as the ordered dose.)
   3.3 Inject air into the Actrapid HM vial. Then turn the vial and syringe upside down.
   3.4 Draw the right dose of Actrapid. Make sure there is no air left in the syringe. Check the dose.
   3.5 Push the needle into the vial of long acting insulin.
   3.6 Turn the vial and syringe upside down. Draw the right dose of long acting insulin.
   3.7 Make sure that no air is left in the syringe. Check the dose.
   3.8 Inject the mixture immediately.

HYPERKALEMIA

1. Definition

A higher than the normal level of potassium (K+) in the serum, i.e. intravascular compartment.

Small changes can have profound effects on the cardiovascular and neuromuscular systems.

2. Table of values

<table>
<thead>
<tr>
<th>Condition</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>3.5 - 5.0 mEq/L</td>
</tr>
<tr>
<td>Mild hyperkalemia</td>
<td>5.1 – 6.0 mEq/L</td>
</tr>
<tr>
<td>Moderate hyperkalemia</td>
<td>6.1 – 7.0 mEq/L</td>
</tr>
<tr>
<td>Severe hyperkalemia</td>
<td>&gt; 7.0 mEq/L</td>
</tr>
</tbody>
</table>

3. Causes of Hyperkalemia

<table>
<thead>
<tr>
<th>Impaired K+ excretion</th>
<th>Increased K+ load</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Acute, chronic renal failure</td>
<td>• K+ supplement e.g., Span K tablets, K+ citrate</td>
</tr>
<tr>
<td>• K-sparring diuretics</td>
<td>• Hemolysis, e.g., burns, blood transfusion</td>
</tr>
<tr>
<td>• Urinary obstruction</td>
<td></td>
</tr>
<tr>
<td>• Addison’s disease, SLE</td>
<td></td>
</tr>
<tr>
<td>• Venepuncture</td>
<td></td>
</tr>
<tr>
<td>• Rhabdomyolysis (rapid breakdown of skeletal muscle tissue)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transmembrane shift</th>
<th>Pseudo-hyperkalemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Acidosis</td>
<td>• Laboratory errors?</td>
</tr>
<tr>
<td>• Medication effect eg: digitalis, beta-blocker,</td>
<td>• High WBC / high platelet count</td>
</tr>
<tr>
<td>• Succinylcholine (paralytic agent)</td>
<td></td>
</tr>
</tbody>
</table>
### 4. Clinical Manifestation
- Palpitation
- Weakness / dizziness due to arrhythmia (AV blocks, VT)
- Fatigue
- Generalized weakness
- Respiratory failure
- Distal limb paresthesia
- Muscle cramps
- Fasciculation
- Late sign – sudden cardiac arrest (VF, PEA), asystole

### 5. Treatment of Hyperkalemia

1. Calcium chloride 10%, 10mls (protects heart from harmful effects of hyperkalaemia)
2. Given in large veins through syringe pump for 20mins / as ordered
3. Onset: 1-3mins, Duration: 30-60mins
4. Repeat dose if ECG changes do not normalize within 3-5mins
5. Na bicarbonate - 1mEq/kg over 5min. Only if severely acidosis, se bicarbonate < 5-10
6. Infuse Na bicarbonate via dedicated IV line / do not infuse with other drugs / infusion
7. Dialysis – intractable hyperkalemia and renal failure

1. Insulin /Dextrose: 5-10 units insulin with 40mls D50% over 5-10mins
2. Onset: 30mins, Duration: 4-6 hrs
3. Resonium A 15gm PO 4-6hrly
4. Salbutamol nebulization 5mg in 3-4mls saline
5. Onset: 30mins, Duration: 2hrs
6. Nursing Actions

6.1 Inform the doctor of the critical abnormal K+ level. Look for sources of exogenous K⁺ administration, e.g., K+ supplement or IV fluids with KCL. Confirm with the doctor whether to stop/continue.

6.2 Assess patient for Airway, Breathing and Circulation and clinical manifestations of hyper K⁺.

6.3 Obtain a 12-lead ECG and put patient on continuous cardiac monitoring, if available.

6.4 Administer O₂ if patient becomes breathless.

6.5 Establish IV access and start treatment as ordered by Dr.

6.6 Monitor / assess following pre-, during and post-infusion:
   6.6.1 IV site for extravasations or thrombophlebitis
   6.6.2 Patient’s BP, PR, RR and Spo₂

6.7 Check patient’s capillary blood sugar ½hr post treatment to prevent hyperglycemia / hypoglycemia

6.8 Check patient’s K⁺ level 2hrs after treatment / as ordered.

6.9 Ensure dialysis is carried out ASAP if ordered.

6.10 Reinforce bed rest till K⁺ level is normalized.

6.11 Educate patient on the discontinued use of medication that will worsen hyperkalemia.

6.12 Document in clinical notes, PCR and PFE

Clinical presentation of hyperkalemia is non-specific; always look for risk factors.

Assess and treat the patient, not the potassium level.

References:

HYPOKALEMIA

1. Definition:

A lower than normal level of potassium (K+) in the serum, i.e. intravascular compartment.

Small changes can have profound effects on the cardiovascular and neuromuscular systems.

2. Table of values

<table>
<thead>
<tr>
<th>Normal</th>
<th>3.5 - 5.0 mEq/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypokalemia</td>
<td>&lt;3.5mEq/L</td>
</tr>
</tbody>
</table>

3. Causes of Hypokalemia

<table>
<thead>
<tr>
<th>Renal loss</th>
<th>Gastro-intestinal loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Renal tubular acidosis</td>
<td>• Vomiting or naso-gastric suctioning</td>
</tr>
<tr>
<td>• Magnesium depletion</td>
<td>• Diarrhea</td>
</tr>
<tr>
<td>• Hyperaldosteronism</td>
<td>• Enemas or laxatives use</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medication effects</th>
<th>Transmenbrane shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Diuretics</td>
<td>• Insulin</td>
</tr>
<tr>
<td>• Steroids</td>
<td>• Alkalosis</td>
</tr>
<tr>
<td>• Aminoglycosides</td>
<td>• *Malnutrition or diet intake, parenteral nutrition</td>
</tr>
<tr>
<td>• Theophylline</td>
<td>• Severe hyperglycemia</td>
</tr>
<tr>
<td>• Beta-adrenergic agonists</td>
<td></td>
</tr>
</tbody>
</table>

Hypokalemia can potentiate digitalis toxicity in patients who are taking Digoxin.
4. Clinical manifestations

- Nausea and vomiting
- Abdominal pain
- Signs of ileus (disruption of the normal propulsive gastrointestinal motor activity)
- Fatigue, generalized weakness
- Tendons reflexes
- Level of consciousness
- Lethargy, confusion
- Constipation

- Muscle cramps / weakness
- Flaccid paralysis (starts from legs and progressing to trunk, arms, facial and respiratory muscles)
- Polyuria, Nocturia, Polydipsia
- Orthostatic hypotension
- Late sign – Sudden cardiac arrest (VF, PEA), asystole
- Respiratory difficulty

5. Treatment of Hypokalemia

**Mild Hypokalemia**
1. Replacement with oral mist KCL
2. Minimize further K+ loss

**Moderate and Severe Hypokalemia (K+ <2.5mEq/L)**
1. Replacement with parenteral K+, e.g., pre-mixed KCL via Baxter pump

6. Nursing Actions

6.1 Inform doctor of the critical abnormal K+ level.

6.2 Assess patient for Airway, Breathing and Circulation and clinical manifestations of hypo K+.

6.3 Obtain a 12-lead ECG and put patient on continuous cardiac monitoring, if available.

6.4 Administer O2 if patient becomes breathless.

6.5 Check patient’s capillary blood sugar to exclude hyperglycemia / hypoglycemia.
6.6 Establish IV access.
6.7 Administer Pre-mixed KCL as ordered via Baxter pump.
6.8 Administer fluids as ordered if patient is dehydrated. Caution with patients who has fluid overload.
6.9 Monitor the following before, during and after infusion therapy:
6.9.1 IV site for extravasations or thrombophlebitis.
6.9.2 BP, PR, RR and Spo2.
6.10 I/O chart strictly, especially urine output, vomiting, diarrhea, etc.
6.11 Check patient’s K+ level 2hrs after treatment / as ordered.
6.12 Discontinue prescribed laxatives in the IMR.
6.13 Serve anti-emetics and anti-diarrhea medications as prescribed.
6.14 Reinforce and encourage oral intake.
6.15 Reinforce bed rest till K+ level is normalized.
6.16 Educate patient on the discontinued use of medication that will worsen hypokalemia.
6.17 Document in clinical notes, PCR and PFE.

Clinical presentation of hypokalemia is non-specific, always look for risk factors. Assess and treat the patient, not the potassium level.

References:
HYPOTENSION

1. Definition:
   1.1 SBP < 90mmHg
   1.2 SBP declined by > 40mmHg from baseline OR
   1.3 MAP < 65mmHg

2. What to look out for
   2.1 Tachycardia.
   2.2 Decreased level of consciousness e.g. Dizziness or syncope.
   2.3 Diaphoresis.
   2.4 Cool, pale, mottled skin.
   2.5 Reduced urine output.
   2.6 Chest pain.

3. What to do
   3.1 Place patient in supine position & reinforce bed rest due to risk of falling as a result of decrease level of consciousness.
   3.2 Check patient’s vital signs i.e. Heart rate, BP, SPO\textsuperscript{2}, respiratory rate & conscious level. If possible, connect patient to cardiac monitor.
   3.3 Assess for bleeding, increased surgical or enteral drainage.
   3.4 Check whether patient has been given any medication which may decrease BP e.g. Anti-hypertensive agents (Nifedipine) or beta-blocker (Atenolol).
   3.5 Inform Dr using SBAR including drug allergy.
   3.6 Ensure IV access is established & patent.
3.7 Perform 12-leads ECG.

3.8 Administer IV fluids & medications as ordered.

**Be prepared to:**

- Monitor all hypotensive patients (without invasive arterial monitoring line) with NIBP set to cycle at 5 min intervals.
- Monitor with NIBP at 5 min intervals during the 1st hour whilst Resuscitation & management of hypotension is ongoing OR until invasive monitoring of BP is instituted or stable BP is restored.
- Administer IV crystalloid (Normal Saline), colloids (Gelafundin) IV Dopamine or Dobutamine via Infusion pump.
- Transfer patient to ICU/HDU if patient’s condition deteriorates.

4. **Follow up care**

4.1 Monitor vital signs & conscious level as above.

4.2 Monitor intake output especially urine output to evaluate renal perfusion.

4.3 Evaluate effectiveness of medications & side effects e.g. Respiratory distress (fluid overload), tachypnea or tachycardia (due to dopamine infusion).
1. **Definition**

Impaired swallowing is the abnormal functioning of the swallowing mechanism associated with deficits in oral, pharyngeal or esophageal structure or function.

2. **What to look out for**

   2.1 Uncoordinated/poorly coordinated chewing or swallowing.
   2.2 Immediate coughing during and after swallowing.
   2.3 Delayed coughing.
   2.4 Pocketing of food.
   2.5 Wet, gurgly sounding voice.
   2.6 Sneezing when eating.
   2.7 Choking, drooling.
   2.8 Change in respiratory pattern.
   2.9 Multiple swallow of each mouthful.

3. **What to do**

   3.1 Stop feeding and inform doctor
   3.2 Doctor to decide
   3.3 Mode of feeding
   3.4 Referral to Speech Therapist (ST)

4. **Follow up care**

   4.1 Oral hygiene.
   4.2 Check the oral cavity for pocketing of food after patient finishes the meal.
   4.3 Supervised feeding as per ordered by ST.
   4.4 Monitor patient’s hydration, food intake.

   Read the mode of feeding written on the head board.
5. **Type Of Fluid Consistencies**

5.1 Thin Fluid, e.g., water, tea, coffee, juice etc.

5.2 Nectar Thickened Fluid, e.g., thick barley drink, mango juice, melted ice-cream.

5.3 Honey Thickened Fluid, e.g., pouring yoghurt, smooth runny honey.

5.4 Pudding Thickened Fluid, e.g., mayonnaise.

6. **Types of Diet**

**Blended**
- Food that requires no chewing.
- Honey-like thickened consistency.
- It should be pureed with no lumps, i.e. smooth.
- Patients are likely on thickened fluids.
- Advised for edentulous patients.

**Soft and moist**
- Food that are moist and soft in texture.
- Side dishes are Minced.
- Should not be of mixed consistency.
- Patients should have some chewing ability.
- Patients are likely to be on thickened fluids.

**Easy chew diet**
- Food that requires some chewing.
- Soft in texture.
- Side dishes can be easily broken into pieces with a fork.
- Mixed consistencies allowed (e.g. noodles in soup).
- Dentition preferred.

**Diet of Choice**
- Food that requires chewing.
PHLEBITIS
Reference: SD-NUR-SCP-003

1. Definition

Inspect and palpate the cannula insertion site every shift for tenderness swelling and redness through the intact dressing.

2. Assessment Tool For The Grading Of Phlebitis

<table>
<thead>
<tr>
<th>Phlebitis Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No clinical symptoms</td>
</tr>
<tr>
<td>1+</td>
<td>Erythema with or without pain. Oedema may or may not be present No streak formation No palpable cord</td>
</tr>
<tr>
<td>2+</td>
<td>Erythema with or without pain. Oedema may or may not be present Streak formation No palpable cord</td>
</tr>
<tr>
<td>3+</td>
<td>Erythema with or without pain. Oedema may or may not be present Streak formation Palpable cord</td>
</tr>
</tbody>
</table>

3. What To Do When Phlebitis Occurs

3.1 Stop drug administration and/or infusion immediately if signs and symptoms of phlebitis are suspected or developed.

3.2 Check extent of phlebitis. Refer to the assessment guide for grading of phlebitis.

3.3 Wear gloves. Remove the IV cannula.

3.4 Inform the doctor. Consult the doctor regarding prescription for antibiotic coverage and application of Glycerin Magnesium Sulphate (GMS) paste or Hirudoid cream to the affected site (as per hospital guidelines).

3.5 Apply light crepe bandage after application of GMS to help reduce swelling.
3.6 Report the incident to the Nurse Manager / Nurse Clinician (ward) or Unit Nurse Manager. Raise the Electronic-Hospital Occurrence Report (e-HOR).

3.7 Check the affected site every shift for pain, redness, swelling, ulceration or necrosis. Document as appropriate on the Patient Care Record (PCR).

3.8 Change the dressing daily for the next three days.

3.9 Advise the patient to inform the nurse if he/she experiences any pain, burning sensation, swelling at the affected site and/or difficulty in moving the hand or wrist. Document the teaching provided in the Patient and Family Education Record.

If patient is for discharge during the 3 days of phlebitis management, write a referral to the GP, outpatient services, nursing home or home nursing foundation indicating the extent of phlebitis, present condition of site and continual care required.
SEIZURES
Reference: SD-NUR-NRL-002

1. Definition
Seizures are caused by abnormal electrical discharges in the brain usually of abrupt onset. Symptoms vary depending on the part of the brain that is stimulated. Seizures may be associated with unusual sensations, uncontrollable muscle spasms, and with or without the loss of consciousness.

This standard of practice is not intended for patients who have had prolonged seizures (more than 15 minutes, generalized or recurrent in 24 hours).

2. What To Do
2.1 Stay clam, be with the patient during the seizure activity and do not attempt to restrict patient’s movement.
2.2 Protect patient from injury.
2.3 Clear the surrounding area of potential hazards to minimize risk of injury. Do not transfer the patient unless he/she is in danger or near hazardous materials.
2.4 Do not insert any object into the patient’s mouth during the seizure activity.
2.5 Maintain clear airway by positioning patient laterally.
2.6 Administer intranasal oxygen at 2 liters/minute to prevent hypoxia.
2.7 Loosen patient’s clothing, if necessary.
2.8 Initiate fit chart and document the seizure activity level (duration, nature, and location) accordingly.
2.9 Inform the physician immediately of the seizure activity.
2.10 Obtain a stat blood sugar level.
Oxygen Therapy
USE OF DEVICES IN OXYGEN THERAPY
Reference: SD-NUR-RES-001

1. Nasal Prongs / Cannula
Delivers low concentration of Oxygen ($O_2$) from 1 to 6 Litres per Minute (LPM). Use humidifiers if >4 liters/min.

Check flow rate of $O_2$. Estimated $O_2$ concentration via nasal prongs/ cannula at various flow rates are:

<table>
<thead>
<tr>
<th>$O_2$ flow (LPM)</th>
<th>$O_2$ Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24%</td>
</tr>
<tr>
<td>2</td>
<td>28%</td>
</tr>
<tr>
<td>3</td>
<td>32%</td>
</tr>
<tr>
<td>4</td>
<td>36%</td>
</tr>
<tr>
<td>5</td>
<td>40%</td>
</tr>
<tr>
<td>6</td>
<td>44%</td>
</tr>
</tbody>
</table>

2. Ventimask
Humidification is not required as it can cause backpressure, due to the large amount of air being entrained in the mask. If the pressure is not checked and relieved, the humidifier can over expand and burst.
<table>
<thead>
<tr>
<th>$O_2$ Concentration (%)</th>
<th>$O_2$ flow (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24, 26</td>
<td>3</td>
</tr>
<tr>
<td>28, 30</td>
<td>6</td>
</tr>
<tr>
<td>35</td>
<td>9</td>
</tr>
<tr>
<td>40</td>
<td>12</td>
</tr>
<tr>
<td>50</td>
<td>12</td>
</tr>
</tbody>
</table>

### 3. Non-Rebreathing Mask

3.1 Attached with 500-1000 ml reservoir bag. Administered at flow rates of 15 LPM (99%) to achieve high concentration of $O_2$. It has low resistance 3-valve (“flaps”) system that allows exhaled gas to escape.

3.2 The patient must be monitored closely since the mask has no provision for entrapment room air if $O_2$ flow is interrupted or ceased.

3.3 **DO NOT** use the non-breathing mask with a humidifier.

3.4 To be reviewed by doctors everyday.

### 4. High Concentration Mask

It administers at flow rate of 8 to 12LPM to achieve $O_2$ concentration of 60 to 80%. Attached with 500-1000 ml reservoir bag. Unlike the non-rebreathing mask this mask does not contain any valves.
5. **Simple Face Mask**

It delivers $O_2$ concentration of 5 to 8 LPM. A minimum of 5 LPM is required to flush the exhaled carbon dioxide ($CO_2$) from the patient’s mask to prevent the patient from rebreathing the $CO_2$. **DO NOT** use facemasks at flow rates lesser than 5 LPM.

6. **Tracheostomy (Trachy) Mask**

It is usually used with heated humidifiers to provide warm, humidified $O_2$ to patients. The mask inlet swivels 360 degree to position the tubing for supine or upright patients.

7. **Care Of O2 Administrative Devices / Equipment**

7.1 Check all $O_2$ delivery devices at least once a shift or more frequently when heated humidifiers are used.

7.2 High flow systems that employ heated humidifiers and aerosols e.g. trachy masks, should be changed **every 48 hours** or earlier when soiled and dirty.
Resuscitation
ACTION PLAN FOR RESUSCITATION IN THE WARD
Reference: WI-NUR-GEN-023

RN/EN discovers an unconscious patient

Assess responsiveness

Unresponsive

• Activate Return of code blue
  • Inform Doctor
  • Get “E” trolley
• Open airway, check breathing, check pulse
• Place patient in a supine position
• No breathing, no pulse, start CPR

When the “E” trolley arrives, nurse assumes their respective role:
A & B
RN/EN: Airway & Breathing nurse
C
RN/EN: Circulation nurse
D
RN: Drug nurse (leader of the nursing team until doctor arrived). Hand over patient’s condition using SBAR
E
RN/EN: Runner (if available)

NOTE:
THE NURSE MUST REMAIN WITH THE PATIENT AND COMMENCE RESUSCITATION

Unresponsive

Responsive

• Monitor vital signs
• Inform doctor

Arrival of Doctors
• Dr defibrillates (if necessary)
• Dr insert IV and administer drugs
• Nurse assist intubations
• Continues chest compressions

Unresponsive

Yes

• Update relatives Post resuscitation care
• Dr and nurse to accompany patient to ICU/CCU

• Update relatives Post resuscitation care
• Dr and nurse to accompany patient to ICU/CCU
ROLE AND RESPONSIBILITIES OF REGISTERED AND ENROLLED NURSES DURING RESUSCITATION
Reference: WI-NUR-GEN-023

**Leader co-ordinator (remain at scene until end of resuscitation)**
- Assign responsibilities to nurses
- Connect ECG leads
- Turn on defibrillator
- Monitor ECG (stop CPR, to check rhythm)
- Hand over patient to doctor using SBAR
- Prepare & administer drugs as appropriate
- Perform IV cannulation/venepuncture, if trained
- Assist in defibrillation as appropriate
- Prepare requisites for ETT intubation
- Maintain record/summary of events
- Monitor parameters
- Prepare patient for transfer to ICU/HD
- Carry out any other duties as deemed necessary

**AB nurse (RN/EN)**
- Position patient supine
- Insert oro-airway as appropriate
- Set up suction equipment
- Bag-valve-mask ventilation
- Perform suctioning
- Assist in ETT intubation

**Patient**

**D Nurse (Must be a RN, Preferably PN of patient)**

**C Nurse (RN/EN)**
- Perform chest compression

**Primary Role (runner)**
- Informs doctor/family
- Sets up suction/O2 apparatus
- Prepares equipment and requisites for procedures
- Monitor parameters

**E nurse, if available (RN/EN/HCA)**

**Secondary Role (runner)**
Takes on the role of C nurse if required
Blood Product Transfusion
## ADMINISTRATION OF BLOOD AND BLOOD PRODUCTS

**Reference:** SD-NUR-GEN-004

### Before Transfusion

1. Ensure consent is obtained
2. Call BTS and request for the amount of blood/blood product ordered.
3. Ensure “Blood/Blood Products Request Form” is completed.
4. Arranged for blood to be collected either by ward HA or porter.
5. Once blood/blood product is collected, Inform doctor to check. Administer ASAP or within 30mins.
6. If delay is anticipated (> 60mins), inform BTS and return the blood/blood product to BTS with a completed “Blood/Blood Product Returuned to Blood Transfusion Service From”
7. Obtain baseline vital signs: BP, PR and RR and Temperature.
8. Transfusion Checking Procedure must be done by 2 RNs at the bedside

### During Transfusion

1. Prime infusion set with the blood product.
2. Monitor patient’s BP, PR and T° for the 1st 15 mins, then 30 mins, followed by hourly throughout the transfusion
3. Observe for signs of adverse transfusion reaction (especially during the 1st 15 mins).
   - Rigor and chills
   - Elevated T°
   - Significant ↓ in BP
   - Dyspnoea
   - Pain and urticaria
4. Advise patient to report nursing staff of the above signs.

### After Transfusion

1. Flushing of blood tubing is not necessary.
2. Disposal of empty blood bags and infusion set- discard empty bag and infusion set into biohazard bag.
3. If there is > one unit of blood, do not discard till all units of blood have been transfused
4. Complete Blood Bank Transfusion Slip and return it to BTS.
5. Observation of another hour post transfusion
1. STOP ongoing transfusion if transfusion reaction is suspected and inform doctor STAT.

2. Continue to monitor patient’s clinical condition and parameters including the urine output.

3. Recheck the blood bag label, transfusion slip and the patient’s identification wrist tag to be sure that the intended blood/blood product was being transfused to the correct patient.

4. The doctor shall evaluate the patient to determine whether a transfusion reaction has occurred and the necessary course of action to be undertaken.

5. Inform BTS immediately.

6. Doctor reports adverse reaction (e.g. acute haemolytic reaction) to BTS by completing the “Report of Reaction to Blood and Blood Components” form.

   Blood specimens intended for transfusion reaction must be taken, labeled and signed by the doctor.

7. Send blood component bag (with contents remaining), administration set, transfusion slip, blood specimens and completed Report of “Reaction to Blood and Blood Components Form” to BTS immediately by hand.

8. Document time of onset of all clinical symptom/s in the PCR / Carevue as required.
## TYPES OF BLOOD AND BLOOD PRODUCTS

Reference: Intranet => e-Laboratory Services Guide => Appendix => Blood component

<table>
<thead>
<tr>
<th>Blood component</th>
<th>Indications</th>
<th>Action</th>
<th>Rate of Infusion Per Unit/Infusion Set</th>
</tr>
</thead>
</table>
| Whole Blood                          | 1. Symptomatic anemia with large volume deficit                             | Restoration of 1. oxygen carrying capacity 2. blood volume              | For massive loss, as fast as patient can tolerate  
**Usual:** 1.5 to 4 hours  
**Infusion Set:** Standard component set with filter |
| Red Blood Cells                      | 1. Symptomatic anemia, e.g. anemia due to trauma, surgical blood loss, chemotherapy | 1. Restoration of oxygen-carrying capacity                             | As patient can tolerate, but less than 4 hours  
**Usual:** 1.5 to 4 hours  
**Infusion Set:** Standard component set with filter |
| Red Blood Cells, leukocytes reduced  | 1. Symptomatic anemia  
2. Prevent recurrence of febrile non-hemolytic transfusion reactions from leukocyte antibodies and cellular products released during storage (cytokines) | 1. Restoration of oxygen-carrying capacity                             | As patient can tolerate, but less than 4 hours  
**Usual:** 1.5 to 4 hours  
**Infusion Set:** Standard component set with filter |
| Red Blood Cells, washed              | 1. Symptomatic anemia  
2. Prevent recurrence of severe allergic reactions to unwashed red cell products  
• IgA deficiency with anaphylactoid reactions | 1. Restoration of oxygen-carrying capacity  
2. Washing reduces plasma proteins  
3. Risk of allergic reactions may be reduced | As patient can tolerate, but less than 4 hours  
**Usual:** 1.5 to 4 hours  
**Infusion Set:** Standard component set with filter |
| Red Blood Cells, irradiated          | 1. Symptomatic anemia  
2. Prevent post-transfusion graft vs host disease (GVHD). | 1. Restoration of oxygen-carrying capacity  
2. Gamma irradiation inactivates donor lymphocytes  
3. GVHD is reduced | As patient can tolerate, but less than 4 hours  
**Usual:** 1.5 to 4 hour  
**Infusion Set:** Standard component set with filter |
<table>
<thead>
<tr>
<th>Blood component</th>
<th>Indications</th>
<th>Action</th>
<th>Rate of Infusion Per Unit/Infusion Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh Frozen Plasma</td>
<td>1. Deficiency of stable and non-stable plasma coagulation factors 2. Thrombotic thrombocytoopenic purpura (TTP)</td>
<td>1. Source of stable and non-stable plasma factors</td>
<td>Usual: 30 to 60 minutes</td>
</tr>
<tr>
<td>Platelets, Platelets Pheresis</td>
<td>1. Bleeding from thrombocytopenia or platelet function abnormality, e.g., thrombocytopenia caused by marrow hypoplasia, congenital and acquired platelet disorders.</td>
<td>1. Improves hemostasis</td>
<td>Less than 4 hours</td>
</tr>
<tr>
<td>Intravenous Immunoglobulin (IVIG)</td>
<td>1. Replacement therapy for agammaglobulinemia or hypogammaglobulinemia 2. Prophylaxis or treatment of bacterial and viral diseases 3. Immune thrombocytopения</td>
<td>1. Replacement IgG therapy</td>
<td>Refer to manufacturer's insert</td>
</tr>
<tr>
<td>Human Albumin Solution, 5% or 20%</td>
<td>1. Treatment of hypovolemic shock 2. Hemodialysis 3. Therapeutic plasma exchange</td>
<td>1. Supplies oncotic equivalent of approximately its volume of human plasma</td>
<td>Refer to manufacturer's insert</td>
</tr>
<tr>
<td>Cryoprecipitated AHF</td>
<td>1. Hemophilia A (Factor VIII deficiency) 2. Von Willebrand disease (deficiency of von Willebrand or cWF) 3. Hypofibrinogenemia 4. Factor XIII deficiency</td>
<td>1. Provides Factor VIII, fibrinogen, WVF, Factor XIII</td>
<td>Less than 4 hours</td>
</tr>
</tbody>
</table>
Orthopedic Traction
REQUISITES FOR DIFFERENT TYPES OF TRACTION

1. **Straight Leg Traction**
   1.1 Bed With Orthopedic Frame
   1.2 Traction Apparatus
   1.3 9 Inch Single Clamp Bar X 2
   1.4 Heavy Duty Puller X1
   1.5 Wright As Ordered
   1.6 Weight Carrier
   1.7 Skin Traction Kit – Adhesive / Non Adhesive

   Use Zimmer Hook if bed is without orthopedic frame

2. **Russell Skin Traction**
   2.1 Bed With Orthopedic Frame
   2.2 9 Inch Single Clamp Bar X 2
   2.3 18 Inch Single Clamp Bar X 2
   2.4 Heavy Duty Pulley X 3
   2.5 Single (Red) Pulley
   2.6 Canvas Knee Sling
   2.7 Traction Cord
   2.8 Weight As Ordered
   2.9 Weight Carrier
   2.10 Skin Traction Kit – Adhesive / Non Adhesive
   2.11 Micro pore Tape
3. **Thomas Splint Skin Traction**

   3.1 Bed With Orthopedic Frame
   3.2 Traction Apparatus
   3.3 Thomas Leg Splint X 1 (Appropriate Size)
   3.4 Lint and Safety Pins (To Line the Splint)
   3.5 18 Inch Single Clamp Bar X 3
   3.6 Heavy Duty Pulley X 3
   3.7 Traction Cord
   3.8 Padding (Softban / Orthoban)
   3.9 Skin Traction Kit
   3.10 Weight As Ordered
   3.11 Weight Carrier
   3.12 6 Inch Crepe Bandages X 2
   3.13 Micro pore Tape
### Material Guide for Splints and Cast

Reference: Christopher Lee, Senior Nurse Clinician

<table>
<thead>
<tr>
<th>Casting of</th>
<th>Cast Type</th>
<th>Plaster Of Paris POP</th>
<th>Resin Based Or Synthetic</th>
<th>Padding</th>
<th>Stockinette</th>
<th>Felt for Resin/ Syn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Limb</td>
<td>Metacarpal, Radial &amp; Ulna gutter slabs</td>
<td>10cm x 8 ply</td>
<td>1 Roll</td>
<td>10cm x 1 roll</td>
<td>7.5 or 5 cm, 1 meter Length</td>
<td>Crepe 7.5 cm 1 roll</td>
</tr>
<tr>
<td></td>
<td>Dorsal Slab</td>
<td>10 x 8 ply</td>
<td>1 Roll</td>
<td>10 x 1</td>
<td>7.5 or 5</td>
<td>Crepe 7.5 x 1</td>
</tr>
<tr>
<td></td>
<td>Palmar Slab</td>
<td>10 x 8 ply</td>
<td>1 Roll</td>
<td>10 x 1</td>
<td>7.5 or 5</td>
<td>Crepe 7.5 x 1</td>
</tr>
<tr>
<td></td>
<td>Above Elbow slab</td>
<td>15cm or 10 x 2</td>
<td>10cm x 1 + 1</td>
<td>10 x 2</td>
<td>7.5 or 5</td>
<td>Crepe 10x1, 7.5x1</td>
</tr>
<tr>
<td></td>
<td>Colles’ Cast</td>
<td>10 x 2</td>
<td>7.5 / 5 x 1 or 2 roll</td>
<td>10 x 1</td>
<td>7.5 or 5</td>
<td>2mm felt</td>
</tr>
<tr>
<td></td>
<td>Scaphoid Cast</td>
<td>10 x 2</td>
<td>7.5 / 5 x 1 or 2</td>
<td>10 x 1</td>
<td>7.5 or 5</td>
<td>2mm</td>
</tr>
<tr>
<td></td>
<td>Above Elbow Cast</td>
<td>10 x 4</td>
<td>7.5 x 2</td>
<td>10 x 2</td>
<td>7.5 or 5</td>
<td>2mm</td>
</tr>
<tr>
<td></td>
<td>Arm Cylinder</td>
<td>10 x 4</td>
<td>7.5 x 2</td>
<td>10 x 2</td>
<td>7.5 or 5</td>
<td>2mm</td>
</tr>
<tr>
<td></td>
<td>“U” Slab</td>
<td>15 x 2 or 3</td>
<td>10 x 2</td>
<td>10 or 7.5, 1.5m</td>
<td>5/2mm, Crepe 10x1</td>
<td></td>
</tr>
<tr>
<td>Lower Limb</td>
<td>Below Knee Slab</td>
<td>15cm x 8</td>
<td>15cm x 1 roll</td>
<td>15cm x 2</td>
<td>10 or 7.5cm, 1m</td>
<td>Crepe 15cm x 2</td>
</tr>
<tr>
<td></td>
<td>Slipper Cast or Dutch shoe</td>
<td>10 x 2 +1</td>
<td>7.5 x 2 or 5 x 1</td>
<td>10 x 1</td>
<td>7.5</td>
<td>2mm</td>
</tr>
<tr>
<td></td>
<td>Bootee</td>
<td>10 x 2</td>
<td>7.5 x 2 or 5 x 1</td>
<td>10 x 1</td>
<td>7.5</td>
<td>5mm</td>
</tr>
<tr>
<td></td>
<td>Below Knee – Weight Bearing</td>
<td>15 x 4 or 5</td>
<td>10 x 2 + 7.5 x 1</td>
<td>15 x 1</td>
<td>10 or 7.5</td>
<td>2mm</td>
</tr>
<tr>
<td></td>
<td>Below Knee – Non Weight Bear</td>
<td>15 x 4</td>
<td>10 x 2</td>
<td>15 x 2</td>
<td>10 or 7.5</td>
<td>2mm</td>
</tr>
<tr>
<td></td>
<td>Sarmiento / PTB Cast</td>
<td>15 x 2, Resin 10 x 2 for Combi</td>
<td>10 x 2 7.5 x 1</td>
<td>15 x 1</td>
<td>10 or 7.5 x 2mL</td>
<td>2mm</td>
</tr>
<tr>
<td></td>
<td>Leg Cylinder cast</td>
<td>15 x 6</td>
<td>10 x 3</td>
<td>15 x 2</td>
<td>10 or 7.5, 2m</td>
<td>5 &amp; 2mm</td>
</tr>
<tr>
<td></td>
<td>Above Knee Cast</td>
<td>15x10</td>
<td>10x3 &amp; 7.5x1</td>
<td>15x2</td>
<td>12.5/10/7.5, 2m</td>
<td>2mm</td>
</tr>
<tr>
<td></td>
<td>Above Knee Slab as with cast</td>
<td>15x10</td>
<td>10x3 &amp; 7.5x1</td>
<td>15x2</td>
<td>12.5/10/7.5, 2m</td>
<td>2mm</td>
</tr>
<tr>
<td>Adjustment</td>
<td>Window</td>
<td>POP 1 roll</td>
<td>Resin 1 roll</td>
<td>Cast cutter</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bivalve</td>
<td>Crepe 1 roll</td>
<td>Crepe 1 roll</td>
<td>Cast cutter</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Split</td>
<td>Crepe 1 roll</td>
<td>Crepe 1 roll</td>
<td>Cast cutter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Infection control
**STANDARD PRECAUTIONS**

Reference: Intranet=> Infection Control=> Isolation Precaution poster=> Standard precaution

Assume that every person is potentially infected or colonized with an organism that could be transmitted in the healthcare setting and apply the following infection control practices during the delivery of health care.

**4 main components** of standard precautions includes

1. Gloves
2. Goggles or Face Shield
3. Mask
4. Gown

---

Gloves

Goggles

Gown

Face Mask

Face Shield
STANDARD PRECAUTIONS

An Effective Hand Hygiene Program to Reduce Risk of Health Care Acquired Infections
(Goal 5 of JCI International Patient Safety Goals.)

1. Comply with current published and generally accepted hand hygiene guidelines.
2. Practice hand hygiene between patients.
3. **Handrub** if not visibly soiled and **Hand wash** if visibly soiled.

Patient with CD toxin, do not use handrub.

The 5 Moments of Handwashing / Handrub used
- Before patient contact
- After body fluid exposure risk
- After contact with patient surrounding
- Before an antiseptic task
- After patient contact

CONTACT PRECAUTIONS
(In addition to Standard Precautions)

<table>
<thead>
<tr>
<th></th>
<th>MRSA</th>
<th>MDR Gram negative bacteria (eg. Pseudomonas, Acinetobacter Baumanii)</th>
<th>CD Toxin Positive</th>
<th>Scabies</th>
<th>VRE (Suspect/Confirmed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical Mask</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Apron/Gown</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Gown Only</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Gloves</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Hand Wash/Hand Rub</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Hand Wash Only</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

✓ Mandatory requirements

**Note:** Above are common conditions that the patient will be put on Contact Precautions.
<table>
<thead>
<tr>
<th>Type of precaution</th>
<th>Colour Code</th>
<th>Poster</th>
<th>Patient on precaution due to</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Precaution</td>
<td>Yellow</td>
<td></td>
<td>Known or suspected to be infected or colonized with epidemiologically important microorganisms that can be transmitted by direct contact with the patient (hand or skin-to-skin) or indirect contact (touching) with environmental surfaces or patient-care items in the patient's environment.</td>
<td>MRSA</td>
</tr>
<tr>
<td>Suspected VRE</td>
<td>Blue</td>
<td></td>
<td>VRE</td>
<td></td>
</tr>
<tr>
<td>Confirmed VRE</td>
<td>Blue with red in centre</td>
<td></td>
<td>VRE</td>
<td></td>
</tr>
<tr>
<td>Droplet Precaution</td>
<td>Green</td>
<td></td>
<td>Known or suspected to be infected with microorganisms transmitted by droplets (&gt;5 µm in size) that can be generated by the patient during coughing, sneezing, talking or the performance of procedure</td>
<td>Chicken Pox</td>
</tr>
<tr>
<td>Airborne Precaution</td>
<td>Orange</td>
<td></td>
<td>Known or suspected to be infected with microorganisms transmitted by airborne droplet nuclei (≤ 5m in size) of evaporated droplets containing microorganisms that remain suspended in the air and can be widely dispersed by air currents within a room or over a long distance.</td>
<td>Chicken Pox, TB</td>
</tr>
<tr>
<td>Full Precaution</td>
<td>Red</td>
<td></td>
<td>Fever from unknown origin, Suspect Avian Influenza or SARS.</td>
<td>SARS, Bird Flu, Atypical Pneumonia,</td>
</tr>
<tr>
<td>Reverse Barrier Nursing (Protective Isolation)</td>
<td>White</td>
<td></td>
<td>Known for low total white count Immuno-comprosied patients</td>
<td></td>
</tr>
</tbody>
</table>

Each Isolation Room has:

1. Negative air pressure in relation to the surrounding area.
2. A minimum of 6 to 12 air changes per hour.
   Pressure of the room should be maintained within -2.5 to -20 pa
# TRANSMISSION-BASED PRECAUTIONS

(In addition to Standard Precautions)

<table>
<thead>
<tr>
<th></th>
<th>DROPLET</th>
<th>AIRBORNE 3</th>
<th>FULL</th>
</tr>
</thead>
<tbody>
<tr>
<td>N95 mask</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Surgical Mask</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apron/Gown</td>
<td></td>
<td>As per Standard Precautions</td>
<td></td>
</tr>
<tr>
<td>Gown Only</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Gloves</td>
<td></td>
<td>As per Standard Precautions</td>
<td>✓</td>
</tr>
<tr>
<td>Hand Wash/Hand Rub</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

✓  Mandatory requirements
MANAGEMENT OF BLOOD AND BODY FLUID SPILLS
Reference: WI-NIC-INF-024

1. Management Of Spot/ Small Blood Spills (less than 5mls, about the size of a Singapore fifty cents coin)
   1.1 Wear gloves before handling the spill.
   1.2 Wipe the area immediately with paper towel followed by disposable alcohol wipes.

2. Management Of Large Spills In A ‘Wet’ Area (more than 5mls, bigger than the size of a Singapore fifty cents coin)
   2.1 Don Personal Protective Equipment or PPE (Gloves, Apron/ Gown, Goggles/ Faceshield).
   2.2 The Spill should be carefully hosed off into the sewerage system.
   2.3 Flush the area with water and detergent.

3. Management Of Large Spills In ‘Dry’ Areas
   3.1 Don PPE (Gloves, Apron/ Gown).
   3.2 Contain and decontaminate the spill by Sodium Dichloroisocynurate Dihydate (NaDCC) granules onto the spill.
   3.3 Leave for at least 2 minutes.
   3.4 Scoop the spill and granules into a biohazard waste bag with care, or if glass or other sharp material is involved, into the sharps container. Use a disposable scoop, or suitable pieces of cardboard.
   3.5 The area of the spill should then be cleaned with a mop and bucket of water and detergent.

For all types of blood spillage, if contact with bare skin is likely, the area should be disinfected with NaDCC (10000 ppm available chlorine) or other suitable disinfectant.
Controlled Drugs
### 1. List of Controlled Drugs (CDs) in TTSH

Controlled Drugs that are available in TTSH are:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Alfentanil 1mg/2ml inj</td>
</tr>
<tr>
<td>2.</td>
<td>Codeine Phosphate 50mg/ml inj</td>
</tr>
<tr>
<td>3.</td>
<td>Fentanyl Citrate 100mcg/2ml inj</td>
</tr>
<tr>
<td>4.</td>
<td>Fentanyl Citrate 500mcg/10ml inj</td>
</tr>
<tr>
<td>5.</td>
<td>Fentanyl 12mcg/h patch (not a wardstock, order by named-patient only)</td>
</tr>
<tr>
<td>6.</td>
<td>Fentanyl 25mcg (not a wardstock, order by named-patient only)</td>
</tr>
<tr>
<td>7.</td>
<td>Fentanyl 50mcg/hr patch (not a wardstock, order by named-patient only)</td>
</tr>
<tr>
<td>8.</td>
<td>Ketamine 500mg/10ml inj</td>
</tr>
<tr>
<td>9.</td>
<td>Methadone 5mg tab</td>
</tr>
<tr>
<td>10.</td>
<td>Methylphenidate 10mg tab</td>
</tr>
<tr>
<td>11.</td>
<td>Morphine sulphate 10mg/ml inj</td>
</tr>
<tr>
<td>12.</td>
<td>Morphine sulphate 10mg SR tab</td>
</tr>
<tr>
<td>13.</td>
<td>Morphine sulphate 30mg SR tab</td>
</tr>
<tr>
<td>14.</td>
<td>Oxycodone 5mg cap (Oxynorm) (not a wardstock, order by named-patient only)</td>
</tr>
<tr>
<td>15.</td>
<td>Oxycodone 10mg SR tab (Oxycontin) (not a wardstock, order by named-patient only)</td>
</tr>
<tr>
<td>16.</td>
<td>Pethidine HCl 50mg/ml inj</td>
</tr>
<tr>
<td>17.</td>
<td>Remifentanil 1mg inj</td>
</tr>
</tbody>
</table>

The following are NOT controlled drugs. However, proper storage as well as recording of receiving and usage is needed to prevent it’s misuse and abuse.

1. Diazepam 2mg tab
2. Diazepam 5mg tab
3. Phenobarbitone 10mg tab
4. Phenobarbitone 60mg tab
2. **Important notes on CD handling**

2.1 Only authorized personnel can have access to the controlled drug cupboard.

2.2 The ward NM/NC is responsible for assigning a staff nurse to be in-charge of holding the controlled drug cupboard keys throughout the working shift.

2.3 The keys must at all times be in the personal possession of the staff nurse.

2.4 If the assigned staff nurse has to leave the ward, the keys to the controlled drug cupboard must be returned to the ward NM/NC who may then assign another staff nurse to take charge of the controlled drugs.

2.5 At no time should the keys be handled by persons other than the staff nurse assigned by the ward NM/NC.

3. **Recording of CD transactions**

3.1 All controlled drugs must be counted at every change of shift.

3.2 The physical stock must tally with the stock balance recorded in the respective “Controlled Drug Administration Book” at all times.

3.3 All Controlled Drug Administration Book and duplicate records of controlled drug request vouchers must be retained for a period of 3 years from the date on which the last entry is made. This is to be kept in the respective wards/OT/clinics.

3.4 Recording of CD transactions would include:

3.4.1 Receiving of stock from pharmacy department (record in red ink). Receiving of stock transferred in from other ward/OT/clinic (record in red ink). Receiving of stock balance from previous fully filled Controlled Drug.

3.4.2 Administration Book (record in red). Transferring of stock out to other ward/OT/clinic (record in blue/black ink).
3.4.3 Administration of drug to patient (record in blue/black ink).

3.4.4 Return of stock (expired, broken or wasted) to pharmacy department (record in blue/black ink).

3.5 No cancellation, erasing or alteration (eg use of “liquid paper” to cover the recording error) of any entry is allowed in the book.

3.6 If an error in recording has occurred, a correction of such an entry shall be marked by an asterisk * on the left column on the same line as the recording error. The reason for the error must be given on the next line as “wrong entry, drug not given to the patient”.

3.7 If multiple entries had been made before discovery of the error, the reason shall be stated on the line after the last transaction as “wrong entry from date ___ to date ____ followed by the reason”.

You can refer to the intranet for more information on Controlled Drug Matters
Internet Explorer > Intranet Homepage > e-bulletin/Notice Board > Pharmacy Notice Board > Controlled Drug Matters
Documentation
A-R-M-S COMMUNICATION AND DOCUMENTATION

Reference: SD-NUR-GEN-010

1. Purpose

1.1 To enhance coordination of patient care through better doctor-nurse communication and Collaboration.

1.2 To feedback nursing care issues to doctors, allied health and fellow nurses so as to enhance nursing influence on patient care.

2. A-R-M-S represents

A – Assessment/Activities of Daily Living (ADL)
R – Recommendations for patient care
M – Medication/Treatment
S – Social

3. Verbal communication and documentation using A-R-M-S

3.1 Verbal communication

3.1.1 During participation in ward round.

3.1.2 Structured handover to doctor if unable to participate in ward round

3.1.3 Inter-ward transfer (initiated by transferring nurse by phone).

3.1.4 During Nursing Round.

3.1.5 Between nurses before going on meal break / out of ward.
4. **Documentation in Continuation Sheet - Night duty nursing report**

4.1 Structured nursing documentation to provide a holistic understanding of patient care.

4.2 Document at least once by the night duty Principle Nurse (Except Day 1), including patients on clinical pathway.

4.3 Summary of patient assessments/ADL, recommendations, medications/treatment, and social issues (of the day) or any observed change in patient condition that need to be highlighted to the team doctors.

5. **Documentation of A-R-M-S includes the following list, though not exhaustive:**

5.1 **Assessment/ADL**

5.1.1 Changes in vital signs that need to be reported (To, BP, PR, RR, SpO2).

5.1.2 Changes in CLC (GCS score).

5.1.3 Changes in skin condition / wound condition.

5.1.4 Changes in mental status / behavioral.

5.1.5 Poor intake / output, bowel movement.

5.1.6 Changes in neurovascular status.

5.1.7 Feeding difficulties, risk of aspiration.

5.1.8 Hyperglycemia/ hypoglycemia.

5.1.9 Pain (include chest pain).

5.1.10 Changes in functional status.

5.1.11 SMD – any drainage system, e.g. radivac, EVD, chest tube).

5.1.12 Nature of secretion for tracheostomy tube.

5.1.13 Any incidence happens at night, e.g. fall.
5.2 **Recommendations**

5.2.1 Review charts e.g. hourly parameter/CLC/urine-output monitoring.

5.2.2 Review frequency of blood glucose monitoring.

5.2.3 Review requirement for intravenous therapy.

5.2.4 Review clean intermittent catheterization, indwelling catheter.

5.2.5 Titrate O2.

5.2.6 Restraint patient.

5.2.7 Referral to nurse clinician, allied health professionals e.g. dietitian, physiotherapist, occupational therapist, speech therapist, podiatrist.

5.2.8 Consideration for peripherally inserted central catheter (PICC) line insertion.

5.2.9 Reminders e.g. change indwelling catheter (male), change tracheostomy tube and STO.

5.2.10 Update patient / family.

5.3 **Medication/Treatment**

5.3.1 Review home medication.

5.3.2 Review medication that patient has been refusing to take.

5.3.3 Review intravenous / oral antibiotic.

5.3.5 Consider analgesia, laxatives.

5.3.6 Non-compliance of treatment / medication.

5.3.7 Transcribe IMR.

5.4 **Social**

5.4.1 Discharge planning.

5.4.2 Any care giver issue, care giver training progress.

5.4.3 Family request for medical social worker referral, community hospital.
5.4.4 Referral, nursing home.
5.4.5 Family request for extension of stay.
5.4.6 Family request for discharge on weekend.
5.4.7 Family request to speak to doctor regarding discharge plan.

Example of A-R-M-S documentation

Mr. Tan YY, a 54 years old male was admitted for upper gastro-intestinal tract bleeding on the 15/1/06, 4pm. The night duty report documented by the PN in the medical continuation sheet is as follows:

<table>
<thead>
<tr>
<th>16/1/06</th>
<th>Nursing</th>
</tr>
</thead>
<tbody>
<tr>
<td>4am</td>
<td>Mr. Tan had one episode of malena stools yesterday at 6pm. Vital signs stable. No further malena observed. Patient is pale looking and the last Hb was 9. NG tube aspiration of 800mls coffee ground fluids since admission to 12am. NBM. Listed for OGD today at 2.30pm. Family is anxious of his condition and will like to speak to doctor in the morning.</td>
</tr>
</tbody>
</table>

SN Tan Mary
SBAR METHODOLOGY OF COMMUNICATION

BEFORE calling the Physician
- Assess the patient.
- Review the chart for the appropriate physician to call.
- Know the admitting diagnosis.
- Read the most recent physician & nursing notes.
- Have the chart in hand & be ready to report allergies, medications, IV fluids, lab & test results.

Situation
State:
- Your Name & Department, Patient Name & Room Number.
- Problem you are calling about.

Background
State:
- Reason for Admission & treatment to date.
- Parameters & Patient Complaint (e.g., Level of Pain).
- Relevant Physical Assessment, especially any changes.

Assessment
- Give your conclusions on the present situation. Diagnosis is not necessary.
- If situation is unclear, state the Body system which might be involved.
- State the Severity of the problem.
- If appropriate, state the problem could be life threatening.
Recommendation
• Say what would be helpful/needs to be done which might include:

- Medications
- ECG
- Physician evaluation or consultation evaluation
- Tests
- Transfer to critical care
- X-rays

• Clarify how often to do vital signs & when to call back.

Read-Back (JCI Requirement)
• Read-Back the Complete order or Treatment.

Every SBAR report is different
Focus on the problem.
Be concise.
Just report what is needed for the situation
My Notes