PURPOSE

The purpose of this document is to outline assessment standards for patients seen throughout BC Children's Hospital (BCCH) inpatient units. Components of assessment including physical assessment, vital sign measurement and Pediatric Early Warning System (PEWS) score are described.

Comprehensive physical assessment, as outlined in this document, is the responsibility of all nurses at BCCH. By recording and comparing physical observations a nurse is able to identify problems early and reduce the likelihood of an adverse event. Due to the rapid onset of complications in the pediatric patient, frequent observations and focused assessments are necessary.

POLICY PRINCIPLES

Site Applicability

Policies and procedures for vital sign assessments are applicable across inpatient units (excludes Mental Health Inpatients, Critical Care Areas and Ambulatory Services). The PEWS System and Escalation Aid is applicable in those areas where the PEWS process has been introduced.

Practice Level Competencies

Conducting physical assessments, vital sign measurements and PEWS scoring are foundational level competencies of registered nurses (RN), registered psychiatric nurses (RPN) and licensed practical nurses (LPN).

In areas where various levels of care providers (LPN, Care Aide) are assigned to patients, care of a deteriorating patient will be assumed by the Registered Nurse.

GUIDELINES

1. Full physical assessments (e.g. head-to-toe, systems) are conducted on all inpatients:
   - On admission
   - Following transfer to the unit
   - At the beginning of each shift
   - When assuming patient assignment mid-shift from another care provider
   - At the discretion of the Nurse

2. “Focused” physical assessments are conducted on all patients:
   - With transferring Nurse at time of patient transfers
   - With any decline in patient status
   - At the discretion of the Nurse

3. Vital signs (Heart/Pulse Rate (HR/P), Respiratory Rate (RR), Temperature (T), Blood pressure (BP), Pain Score and PEWS will be measured as per:
   - Unit minimum Vital Sign monitoring standard (see #4)
   - Physicians orders (if different from minimum standard)
   - BCCH Medical Surgical Inpatient/SHHC Nursing Care Plans
   - Nursing clinical judgment
   - As required for a particular procedure or medication

4. Frequency of Vital Sign Measurement and Recording is as follows:
   - The minimum standard of Vital Sign and PEWS score monitoring is every 4 hours for patients in the non-critical in-patient care areas of BCCH and every 12 hours for in-patients at SHHC (0800 and 2000).
   - The physician may decrease the frequency of monitoring to a minimum of once a day once the child’s Vital Sign & PEWS score baseline has been established. A physician order will indicate Vital Sign monitoring x times/day or every x hours.
   - Day patients at SHHC will have their Vital Signs/PEWS Scores assessed once a day.
Patients seen in ambulatory clinics will have vital signs assessed on an as needed basis based on clinical judgment.

Frequency of vital sign measurement in the Pediatric Intensive Care Unit (PICU) is as follows (PEWS is not recorded in PICU):

- Unstable patient: every 15 minutes
- Stabilizing patient: every 30 minutes
- Stable patient: hourly (HR, RR, SpO₂, BP)
- Stable temperature: every 4 hours
- Support Drug Changes: every 15 minutes x 1 hr, every 30 minutes x 2 hrs then hourly
- Deteriorating patient: every 15 minutes and PRN
- Post operatively: every 15 minutes x 1 hr, every 30 minutes x 2 hrs then hourly
- Post cardiac catheterization: every 15 minutes x 1 hr, then hourly
- Continuous monitoring of core temperature for patient on cooling blanket
- Continuous monitoring of skin temperature for patient under warmer
- Pain (MAPS) and sedation (SBS) assessment and score every 4 hours and PRN
- Neurological vital signs every 12 hours and PRN

Refer to the **Pediatric Emergency Department (PED) Standards for Nursing Assessment and Documentation** for details on nursing standards for assessment at various points of patient encounters within the PED.

Refer to **Assessment of Patient in PACU** for frequency of VS measurement in the Post Anesthetic Care Unit.

Refer to **SDCU Assessment Standards** for VS measurement standards in the Surgical Day Care Unit.

Refer to **Mental Health Programs Assessment Standards**.

5. **PEWS score** will be assessed in conjunction with Vital Signs.

6. **Sepsis Screening** is to be conducted if the PEWS score increases by 2 or if patient’s temperature is above 38.5°C or below 36°C.

7. **Neuro Vital Signs** (NVS) will be assessed minimum of once per shift for all inpatients or as per:
   - Physician order
   - BCCH/SHHC Nursing Care Plans
   - Nursing clinical judgment
   - As required for a particular procedure or medication
   - Upon admission to SHHC, NVS will be done for children admitted with a diagnosis of Brain Injury

**NOTE:** Nursing staff will perform a visual joint NVS assessment:

- at shift to shift handover if patient on q2h or more frequent NVS assessment
- at shift to shift handover if patient on 1:1 or 2:1 nursing care
- if patient shows a change in GCS or other neurologic indicators that might indicate a potential deterioration
- if patient is difficult to assess due to age or other factors
- if patient requires a set of NVS done by a nurse other than the primary nurse caring for the patient that shift
- when patient is transferred/admitted to another unit

8. Vital Sign monitoring may also include **Oxygen Saturation** (SpO₂), **Spinal Cord Assessments** and/or **Neurovascular Assessments**.
   - Monitoring of Oxygen Saturation, Spinal Cord Assessments and/or Neurovascular Assessments will be initiated as per:
     - Physician order
     - BCCH/SHHC Nursing Care Plans
     - Nursing clinical judgment
     - As required for a particular procedure or medication
9. Patients on ECG monitoring/telemetry will have a rhythm strip printed at initiation of monitoring, every 12 hours and prn with rhythm changes or change in patient status or at discretion of provider.

10. Changes in Vital Signs and/or PEWS scores will be communicated and documented as per the PEWS Process.

11. Communication between team members will utilize the Situation Background Assessment Recommendation (SBAR) format.

### PROCEDURES

#### 1. Respirations
- **COUNT** respirations for one full minute
- **MEASURE** the RR in an infant or young child by auscultating the chest for one full minute
- **COUNT** abdominal movements in infants and children less than six to seven years of age
- **OBSERVE** or **AUSCULTATE** respirations in the older child
- **OBSERVE** pattern, effort and rate of breathing
- **NOTE** any signs of respiratory distress such as:
  - nasal flaring
  - grunting
  - wheezing
  - dyspnea
  - use of accessory or intercostal muscles
- **CHEST** shape and movement

**Rationale**
- A minute of assessment is recommended to ensure accuracy of data.
- Infants often have irregular respiratory rates.
- Infants and children up to 6-7 years of age are predominantly abdominal breathers.

#### 2. Heart/Pulse Rate
- **COUNT** Heart/pulse rate for one full minute
- **USE** a stethoscope to auscultate the apical heart rate of children less than two years of age or in any child with an irregular HR or known congenital heart disease
- **CROSS-CHECK** electronic data by auscultation or palpation of the heart/pulse rate

**Rationale**
- A minute of assessment is recommended to ensure accuracy of data and to compensate for normal irregularities in HR.
- The apical pulse is the best site for auscultation of the HR in an infant and young child. The radial pulse is appropriate to use in the child older than 2 years.

#### 2. PEWS Scoring
- **PLOT** vital sign measurements and observations on age appropriate flowsheet for each category of the PEWS indicators (respiratory, cardiovascular, behaviour, persistent vomiting, & bronchodilator every 15 minutes)
- **CALCULATE** Category PEWS score
- **TOTAL PEDIATRIC EARLY WARNING SYSTEM (PEWS) SCORE:**
  - To obtain a total PEWS score, **ADD** the category scores together (respiratory + cardiovascular + behaviour + vomiting + bronchodilator = maximum achievable score of 13)

**Rationale**
- The overall PEWS score is applied to determine Nursing Actions and the accessing of physician and emergency supports

#### 3. Temperature
- **REFER** to Temperature Taking Policy and

**Rationale**
- Temperature is an objective and reliable indicator of illness and measuring temperature is an integral part of
### Nursing Assessment of Pediatric Patients and Related Documentation

**Procedure**
- SCREEN all patients for temperature as part of routine VS monitoring
- TAKE a definitive temperature when there is a noted increase in the screened temperature or the child shows physical signs of temperature increase such as: warm to touch
- A fever is defined as a temperature:
  - above 38°C oral
  - above 38.5°C rectal
  - above 37.5°C axilla

**4. Blood Pressure**
- REFER to Blood Pressure Measurement Policy and Procedure

Blood Pressure alterations may indicate particular diseases, response to illness and outcomes of treatment.

**5. Pulse Oximetry**
- REFER to Oximetry Monitoring Policy and Procedure

Pulse oximetry is measured in patients at risk for lowered SpO₂ levels:
- patients requiring oxygen therapy
- patients on opioid infusions, PCA or epidural analgesia
- patients receiving or recovering from sedation
- patients with altered or changing respiratory status

**6. Neurovital Signs (NVS)**
- FULLY AWAKE patient to assess NVS, regardless of time of day
- ENSURE the lights in the room are turned on
- INCLUDE the primary caregiver, when appropriate, in the NVS assessment.
- ESTABLISH an understanding of each patient's 'best response' baseline in order to determine any subtle downward trends in function
- COMPLETE NVS assessment utilizing the Pediatric Modified Glasgow Coma Scale as well as assessment of muscle strength and pupillary size and response. Components of the Pediatric Modified Glasgow Coma Scale include:
  - Best Eye Response
  - Best Verbal Response
  - Best Motor Response
- ASSESS Best Verbal and Best Motor Response based on child’s age and verbal/developmental ability
- ASSESS pupil size and response (1-8 mm and brisk, sluggish or fixed)
- ASSESS the fontanel in an infant to determine if it is soft and flat while he/she is quiet
- REVIEW the Pediatric Neurovital Sign Assessment Self-Learning Module for further information regarding NVS assessment

The Glasgow Coma Scale provides an objective measure of the child's level of consciousness. Potential signs of distress in an infant include a sunken, tense, or bulging fontanel when the infant is quiet.

Primary caregiver can assist in establishing/confirming patient's normal baseline response.

**7. Spinal Cord Assessment/Check:**
- CONDUCT spinal cord checks as ordered or assessing children.

Early detection of change in spinal cord function is key in preventing permanent damage and disability.
when clinically indicated if there is risk of spinal cord function alteration.

- Spinal cord assessment includes:
  - Motor response
  - Muscle Strength
  - Colour, sensation & movement of extremities
  - Bladder function
  - Pain

- **PERFORM** spinal cord checks using the Spinal section of the Neurovital Sign Assessment Section.

- **COMPARE** assessment findings to previous findings to track any changes in assessment data.

- **NOTIFY** physician immediately of any change indicative of deterioration such as:
  - urinary retention or change in bladder function
  - limb weakness
  - change in sensation or colour of the limbs
  - diminished pedal pulses

### 8. Neurovascular Assessment:

- **CONDUCT** neurovascular assessments:
  - as ordered,
  - post-operatively when there is a risk of neurovascular compromise (i.e. orthopedic surgery),
  - for patients in traction,
  - for any patient requiring CWMS assessment of limbs.

- **ASSESS** affected limb and compare to unaffected limb
  - **ASSESS** CWMS (colour, warmth, movement, sensation)
  - **ASSESS** for presence and quality of peripheral pulses
  - **NOTE** presence of edema
  - **ASSESS** for pain and pain with passive range of motion (ROM)
  - **ASSESS** capillary refill time

- **DOCUMENT** neurovascular assessment on the Neurovascular Assessment Flowsheet.

Neurovascular assessment involves the evaluation of the neurological and vascular integrity of a limb.

Prompt recognition of any neurovascular deficits will lead to appropriate treatment and minimize complications such as compartment syndrome which can lead to irreversible damage to tissues and nerves.

Colour and warmth are provided by a healthy blood supply. A cool pale limb may indicate reduced arterial supply, while a dusky, blue or cyanotic limb is likely to be poor venous return. Warmth in combination with other signs may indicate poor venous return.

The most reliable and consistent sign of compartment syndrome is pain during movement as ischemic muscles are highly sensitive to stretching. Pain tends to be poorly localized, persistent, progressive and often not relieved by analgesia.

A pulseless limb is a late and unreliable sign as arterial flow may continue even though peripheral perfusion may be compromised.

Capillary refill is a significant part of neurovascular assessment as it assesses peripheral perfusion and cardiac output.

### 9. Capillary Refill Time (CRT)

- **ASSESS** capillary refill time by pressing lightly on a:
  - peripheral site such as a nail

CRT is one of the physiological assessments of peripheral perfusion in combination with other markers such as heart rate, respiratory rate and level of consciousness.
NURSING ASSESSMENT OF PEDIATRIC PATIENTS AND RELATED DOCUMENTATION

- Central site such as the forehead or sternum
  - Where fingers are used, **ELEVATE** the hand to the level of the heart
  - **APPLY** pressure sufficient to blanch site
  - **MAINTAIN** pressure for five seconds, then **RELEASE** quickly
  - **COUNT** in seconds how long it takes for skin to return to its normal colour
  - **RECORD** site used

**CRT** is the rate at which blood returns to the capillary bed after it has been compressed digitally.

**10. Post Operative Vital Sign Assessment**

a. **Recovery Room:** Refer to Assessment of Patient in PACU

b. **Surgical Day Care Unit:** Refer to SDCU Assessment Standards

c. **Upon Return to inpatient unit:**
   - Measure vital signs with initial post-operative assessment
   - If vital signs are stable, then do the following:
     - hourly x 4 hours, THEN
     - every 2 hours x 2 sets, THEN
     - As per physician’s order thereafter or as per unit routine
   - following complex procedures – in addition to above measurements, consider continuous cardio-respiratory monitoring and pulse oximetry for a minimum of four hours, in the following circumstances:
     - OR time greater than six hours
     - significant fluid/blood loss
     - age under one year
     - physiological instability pre-operatively
     - physiological instability during the recovery period.

Immediate interventions can be provided in case of post-operative deterioration in patient’s condition.

**DOCUMENTATION**

Vital Signs are to be documented and graphed on the patient’s age appropriate PEWS Flowsheet. Vital Signs are to be recorded at the point of care (the bedside) when possible or as soon after the care event as possible.

Assessment findings are to be documented on age appropriate PEWS Flowsheet or other BCCH specific documentation tool(s).

Document in nursing notes any assessment findings or changes noted during shift in greater detail. Record time of entry and use focus charting including data, action and response (DAR).

Affix ECG/telemetry rhythm strips to nurse’s notes/flowsheet and document interpretation including rate, rhythm, appearance of P wave, PR interval, QRS interval.

**REFERENCES**


