

# BC Pediatric Early Warning System (PEWS) Frequently Asked Questions

## Who is Child Health BC?

Child Health BC (CHBC), an initiative of BC Children's Hospital, is a network which includes all health authorities, key child-serving ministries, health professionals, and provincial partners dedicated to improving the health status and health outcomes of BC's children and youth. CHBC is supporting the implementation of the Provincial Pediatric Early Warning System in Emergency Departments (ED) and inpatient areas across BC.

## Situational Awareness Factors

### 1. What is the value of Situational Awareness Factors and why are they not scored?

Situational Awareness Factors identify additional evidence-based risks to pediatric patients and influence the escalation of care, support, increased monitoring and observation. Identifying and predicting future state based on these risks provides further opportunity for the team to mitigate risk, to plan and follow up care. Watcher patient is most commonly used and warrants more communication, planning and follow up by the team. There are factors such as surgical risk, abnormal labs, abnormal neurovitals, and mental health concerns that may not be captured by a PEWS score alone. These can/should be captured under watcher patient to increase the patient's risk profile.

### 2. Do Situational Awareness Factors increase the PEWS score?

Situational awareness factors are not included in the total PEWS score. If one or more of the situational awareness factors are present they will influence the escalation of care process. Refer to the Escalation Aid for your hospital or Health Authority.

### 3. Caregivers coming to the hospital have brought their child in because they are concerned about their child, does this mean I have to check the Situational Awareness box for care-giver concern for every patient every time?

Unfortunately there have been cases resulting in serious adverse events where upon review it was determined that the parents or caregivers told the team that something was wrong and were not listened to. Families have to feel they can express their concerns, and that the team is listening to their concerns. Families have the greatest knowledge and experience of their child, and offer valuable insight and information in helping assess their child's pain, anxiety, comfort levels and response to treatment. Caregiver concern is not the same as presenting complaint or frustration over a wait time, although they may be connected. Listen for, and document, parent concerns regarding the child's condition, worsening condition, and changing condition.

Sabina Robin's experience is illustrative of the importance of Situational Awareness factors and can be watched in this short video:

<http://www.patientsafetyinstitute.ca/en/toolsResources/Member-Videos-and-Stories/Patient-Safety-Stories---Mataya's-Story.aspx>

## PEWS Scoring

### **4. In the ED we already use a CTAS score, why add another PEWS score to the assessment?**

While your vital signs assessment informs the scoring of both CTAS and PEWS, the tools are designed for different purposes. CTAS is designed to sort patients by acuity at triage and accounts for presenting history. PEWS assists in identifying children at risk of clinical deterioration by providing both an “in the moment” picture of physiologic status and the ability to trend over the ED stay.

Children may not show obvious symptoms of deterioration as readily as adults. Our research has demonstrated that there is cumulative benefit in the combination of tools thus they should be used together. Implementing PEWS at triage can support decision making with the triage score resulting in safer patient placement, observation, reassessment and intervention. Both tools are to be used in conjunction with clinical assessment, reassessment and clinical judgement. CAEP has reviewed and endorsed this approach.

### **5. There is a discrepancy between the patient's CTAS score and PEWS score. What are the next steps?**

CTAS and PEWS are both determined primarily on your vital signs assessment, so there will be congruence between the scores in most situations. There may be discrepancy in some rare instances for instance: a) the child has a low acuity with a high PEWS score (e.g., a child is crying or upset and the PEWS score is elevated for non-clinical reasons), or b) high acuity with a low PEWS score (e.g. a young child who had an apneic spell prior to arriving in ED would have a higher acuity score to account for history). If there is a discrepancy, reassess the child and use your judgement. If you are unsure about severity of illness or acuity, seek support.

### **6. How were the pediatric vital sign parameters determined?**

The pediatric vital sign ranges for BC PEWS are based on the Canadian Triage and Acuity Scale (CTAS) level 4-5 norms. Before BC PEWS, a large number of vital sign normative ranges were used in pediatric units across the province (e.g. Nelson's, Wong's) however these ranges were not all validated (Flemming et al., 2011). CTAS reference ranges are validated and standardized across Canada. Using CTAS ranges in both ED and inpatients provides continuity of care across the site and throughout the stay. The vital signs were collapsed into 6 age ranges to reduce the number of paper forms required and thereby reduce the risk of choosing the incorrect age category of paper form. For each collapsed age range a committee took the lowest of the low and highest of the high value for each category. As Health Authorities implement electronic charting, many are implementing the full CTAS vital sign reference ranges.

### **7. How do you assess peripheral and central capillary refill time; which should I chart in the box?**

Assess capillary refill time by pressing lightly on a peripheral site such as a nail or central site such as the forehead or sternum. Assess peripheral capillary refill time first and document in the cardio-vascular category of the PEWS score. Delayed peripheral capillary refill time is a sign of poor cardiac output; the child may be in a compensatory state and further reassessment and intervention is promptly required. For the full procedure refer to the Provincial PEWS Vital Sign, Assessment and Documentation Guidelines.

## PEWS Scoring Continued

### 8. How do I score for respiratory distress?

The levels of respiratory distress are defined per CTAS manual 2013 (p.42):

**Severe:** Excessive work of breathing, cyanosis; lethargy, confusion, inability to recognize caregiver, decreased response to pain; single word or no speech; tachycardia or bradycardia; tachypnea or bradypnea; apnea irregular respirations; exaggerated retractions, nasal flaring, grunting; absent or decreased breath sounds; upper airway obstruction (dysphagia, drooling, muffled voice, labored respiration's and stridor); unprotected airway (weak to absent cough or gag reflex); poor muscle tone.

**Moderate:** Increased work of breathing, restlessness, anxiety, or combativeness; tachypnea; hyperpnea; mild increased use of accessory muscles, retractions, flaring, speaking phrases or clipped sentences, stridor, but airway protected, prolonged expiratory phase.

**Mild:** Dyspnea; tachypnea; shortness of breath on exertion; no obvious increased work if breathing; able to speak in sentences; stridor without obvious airway obstruction; mild shortness of breath on exertion; frequent cough.

### 9. Why do patients get an increase PEWS score for sleeping?

Patients who are sleeping receive a behavior score of 1. According to the Brighton tool (Monaghan, 2005); the patient cannot be fully assessed for behavior in this state, thus there is heightened risk (i.e. can't communicate or demonstrate other signs of deterioration). A PEWS score of 1 is not going to escalate care unless there are other physiologic changes for that patient which would be reflected in the other systems. We do expect that children may stir, complain or wake when nurses complete vital signs and assessments when they are sleeping.

### 10. What skin colour score do I give for my jaundice patient?

Although jaundice isn't a normal skin colour, it is not included it as part of the cardiovascular PEWS score. If your patient is jaundice, document in the Pediatric Emergency Nursing Assessment Record (ENAR) or PEWS flowsheet.

### 11. The child score is elevated after I've given them medication, what should I do?

Understanding the medications you are giving and the possible short and long term effects will help to guide your clinical decision making. For instance if a medication temporarily raises a patient's heart rate, you will still want to monitor the patient closely but using your clinical judgement you may decide to repeat the PEWS score within a specific period of time prior to escalating care. Use your clinical judgement and continue to reassess. If the score remains high, follow your escalation aid. If the score stabilizes or decreases, it may not be necessary to escalate care. If you are feeling uncertain, consult with a more experienced health care provider.

### 12. The child is crying or upset and I can't get an accurate PEWS score, what should I do?

Crying or having a being upset can be a typical reaction to fear, anxiety, pain or distress in a pediatric patient, particularly in a busy and unfamiliar environment. It can also make it difficult to obtain an accurate physiologic assessment and PEWS score. In this case, do the best you can to work with the caregiver to calm the child. Ask for the caregiver's assistance as they know the child best (e.g. talking, cuddling or a warm blanket, breastfeeding, providing a favorite toy,

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etc.), move them to a quieter area if possible, consider providing some age appropriate distraction if available and give them time to calm. Repeat the scoring when the child is calmer.

## 13. How do I score PEWS while using the provincial trauma record?

There is a separate PEWS scoring page to use as an adjunct to the provincial trauma record. See your PEWS ED site champion for assistance with ordering.

## 14. How frequently should I re-assess the PEWS score?

A PEWS score should be calculated every time vital signs are re-assessed. Higher or increasing PEWS score indicates you should re-assess more frequently. In addition, if there are situational awareness factors identified this indicates elevated risk. Re-assess your patient following your clinical judgement, care provider orders, care plan, health authority policy, and escalation aid.

## 15. Why is Blood Pressure not part of the PEWS scoring?

Children are unable to increase their stroke volume and therefore compensate by becoming tachycardic. This places them at risk for decompensating rapidly and subsequently hypotension is a late and ominous sign rather than an 'early warning sign' included in the PEWS system.

Capillary refill time provides early indication of cardiac compromise along with extremity temperature and weakening pulse pressure.

It is important to take a child's blood pressure with the child's first set of vital signs and then as clinically indicated in the emergency department. Children with abnormal readings, clinical deterioration or a history of hypertension, cardiac, renal, pre or postoperative, neurological disease or require sedation require more frequent blood pressure measurements.

Ensure the monitor is set to the appropriate age category-this will ensure that the cuff inflation pressure does not go too high and select the appropriate cuff size.

Refer to the Provincial PEWS Vital Sign, Assessment and Documentation Guideline

## Escalation

## 16. Does the time of escalation always have to be documented?

The time of escalation needs to be documented. Professional practice and nursing documentation standards require nurses to document that an intervention was taken when risk was identified. If a patient's PEWS score is elevated and requires activation of the escalation process the RN writes the time in the box. If any additional information is required, it is written in nurse's notes. Escalation is not always to the physician, it may include consulting another health care professional such as a respiratory therapist or a nurse with more experience in pediatrics.

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## Pediatric Emergency Nursing Assessment

### 17. Actual, stated or estimated weight, which one do I need?

Weight based calculations are used for all pediatric patients (0 days of age-17 years minus one day) for fluid calculations and medication dosing therefore the most accurate weight is preferred. All weights are to be measured in metric (kg/gm) on arrival. Whenever possible the actual weight should be taken. Naked weight should always be measured in newborns and toddlers (diapers off). Remove as much clothing as privacy or the child/family allows. For obtunded patients use resuscitation tapes, such as Broselow, and estimated weights where no other option is available. In the resuscitation scenario always display the working weight where the team can easily view it.

### 18. Should weight be taken daily in Pediatric Patients? Are medication doses calculated using the daily weight?

Daily weights are encouraged to be taken once a day on all pediatric patients. Please refer to the physician orders for frequency of weights for your patient. For example a long term patient may be ordered weights twice a week, and a nephrotic syndrome patient may be ordered weights twice a day.

When checking the medication administration record (MAR) ensure the patient's current weight is recorded, as this facilitates calculation of drug dosages. In addition please communicate any discrepancy in your patient's weight to the Most Responsible Practitioner (MRP) and pharmacy to ensure correct delivery of medication. You will need to make pharmacy aware of your patient's current weight by sending a health authority/site approved Pharmacy communication tool.

### 19. What does persistent vomiting following surgery mean in the PEWS system?

The decision to score persistent vomiting follow surgery is based on clinical assessment and judgement. It is not tied to a specific frequency or volume of post-surgical emesis, if in doubt, score the child the extra point. Persistent vomiting following surgery may include a child who had a tonsillectomy and is presenting with a post op hemorrhage or a child who is vomiting more than usual leading to risk of dehydration. PEWS is more effective at picking up medical risk than surgical risk. Even if PEWS score is relatively low for a surgical patient you may want to consider a post-surgical patient as a watcher patient in the emergency department setting.

### 20. What is PRAM? Why is it on the ENAR if it isn't used at my hospital?

Pediatric Respiratory Assessment Measure (PRAM) is a validated tool to classify the severity of exacerbations and its response to treatment in children with asthma. Please speak with the nurse educator of your unit or the CHBC regional coordinator for your health authority for additional information on PRAM at your hospital.

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## Other Resources

### 21. Is there a central location where I can access all of the PEWS resources?

All of the Provincial PEWS clinical practice guidelines are available on the Child Health BC website, providing access to the most up-to-date electronic versions.

<http://www.childhealthbc.ca/initiatives/pediatric-early-warning-system-pews>

### 22. What resources are available for Physician education?

Two webinars have been developed to support physician education.

The first is focused on physicians who work in inpatient areas and is led by Dr. Erik Swartz, Regional Maternal Child Program Medical Director, Pediatric Vancouver Coastal Health Authority and Providence Health on behalf of CHBC

[http://media.phsa.ca/home/iframeflash?url=CHBC%5C20151105\\_BC\\_PEWS\\_Physician\\_Education\\_ID40366\\_Nov5\\_revised\\_Nov16\\_20151118](http://media.phsa.ca/home/iframeflash?url=CHBC%5C20151105_BC_PEWS_Physician_Education_ID40366_Nov5_revised_Nov16_20151118)

The second is focused on physicians who work in emergency departments and is led by Dr. Richard Chan, Associate Medical Lead, Vancouver Coastal Health Authority: Regional Emergency Services Program on behalf of CHBC.

<http://mediasite.phsa.ca/Mediasite/Play/b01f690ed5eb4eb0b2e6f717fd6a4e251d>

In addition Physicians are encouraged to complete the Child and Youth at Risk of Clinical Deterioration (PEWS) - FOR PHYSICIANS ONLY e-Learning Course available on the PHSA LearningHub:

<https://learninghub.phsa.ca/Courses/6796/children-and-youth-at-risk-of-clinical-deterioration-pews-for-physicians-only>

There is also a short 5 minute video which provides a quick overview of PEWS that provides a quick introduction and can be used in conjunction with other resources:

<https://www.youtube.com/watch?v=JTO7ilry6k&authuser=0>