PACU: Post Anesthetic Patient in Phase 1; Patient Care

Site Applicability

PHC- SPH and MSJ Post Anesthetic Care Units (PACU)

Practice Level

- *Specialized* – Critical Care RNs

Need to Know

A Phase I Post Anesthesia Care Unit (PACU) is a critical care area providing postanesthesia nursing care for patients immediately after operative and invasive procedures prior to discharge to Phase II ambulatory setting, discharge to the inpatient surgical unit, or transfer to the Intensive Care Unit or High Acuity Unit.

Two PACU registered nurses are in the same room/unit during Phase I level of care. A nurse providing care to a Phase I patient is not left alone and a second PACU nurse is available to provide immediate assistance. The patient may receive either 1:1 nursing care or 1:2 nursing care.

1:1 Nursing Care

Examples of 1:1 nursing care (one nurse to one patient) may include, but are not limited to the following:

- until critical elements are met
- airway instability
- hemodynamic instability

Critical elements can be defined as:

- report has been received from anesthesia,
- questions answered and the transfer of care has taken place;
- patient has a stable/secure airway,
- initial assessment is complete,
- patient is hemodynamically stable,
- patient is free from severe agitation, restlessness, and combative behaviours.

Examples of an unstable airway may include:

- advanced airway in place (laryngeal mask, endotracheal tube),
- requiring active interventions to maintain patency such as manual jaw lift or an oral airway,
- evidence of obstruction such as gasping, wheezing, stridor, etc.

1:2 Nursing Care

Examples of 1:2 nursing care (one nurse to two patients) may include but are not limited to:

- two conscious patients
- stable and free of complications but not yet meeting discharge criteria
- one unconscious patient, hemodynamically stable with a stable airway and one conscious patient stable and free of complications.

Protocol

Assessment & Interventions (Initial and Ongoing):

Prior to admitting a patient into a PACU bay complete a bedside safety equipment check. This includes

- ensuring ambu-bag is connected to oxygen; functional and ready to use
- suction canister and yankauer; functional and ready to use,
- available oral airway size, 80, 90 and 100 mm
- available nasal airway size 7.5, 8.0, 8.5 with lubricant,
- available nasal prongs, available face masks
- available 10 mL luer lock syringe
- physiologic monitor with appropriate monitoring cables (ECG, SpO_2, BP, Invasive line) and sufficient ECG recording paper.

PACU RNs are responsible for monitoring and documenting assessment parameters at appropriate intervals and for increasing the frequency and scope of assessments as required by changes in the patient's condition.

Assessment	Frequency	Criteria and Directives
Airway Patency **Intervene immediately if airway obstruction is present:** • **Jaw thrust** • **Head tilt-chin lift** • **Oral/Nasal airways**	Continuous	• Assess ability to maintain an open airway. • Assess ability to lift head independently for greater than 5 seconds • Assess for presence, site, position and function of airway adjuncts (nasopharyngeal, oral, etc.). • If patient still has a laryngeal mask airway, provide continuous attendance at the bedside until patient able to maintain his/her own airway without LMA. • Auscultate trachea/lung fields for the presence of normal breath sounds. • Note the presence and character of any cough. • Assess for signs of partial and/or complete airway obstruction such as gurgling, snoring, wheezing, stridor, tracheal tug or see-saw breathing.

		• Apply CO_2 monitoring for patients with diagnosed or suspected Obstructive Sleep Apnea (OSA) • OSA Monitoring Protocols require longer postoperative monitoring in OSA patients after surgery and prior to discharge from the facility after the last episode of airway obstruction or hypoxemia while breathing room air Notify anesthesia immediately of any compromised airway.
Respiratory Function	On admission and with each vital sign check: Q5min when unconscious then: Q15 min x 8 Q30 min x 4 Q1H until discharge from PACU and PRN.	Assess respiratory status: • Rate, depth, pattern of breathing, and use of accessory muscles. • Symmetry of chest expansion. • System of delivery and amount of supplemental oxygen. • Arterial oxygen saturation. • Peripheral and central skin colour. Initiate end tidal CO_2 monitoring if indicated and available e.g. mechanically ventilated patient without arterial line, spontaneous breathing patient with history of sleep apnea.
Pulse Oximetry **monitor continuously until discharge**	Continuous; document with each vital sign assessment or if intervention required	Oxygen therapy will be determined by patient's need. • Patient's received from OR with oxygen delivery via facemask will remain on facemask until patient is conscious, able to maintain a patent airway, deep breath and cough, maintain a headlift greater than 5 seconds and oxygen saturation greater than 96%. • If room air SpO_2 is less than 92% administer oxygen either via nasal prongs or for patients that are difficult to rouse, weak headlift or cough use facemask to maintain SpO_2 greater than 92%. • Oxygen via facemask will be delivered at a flow rate greater than 6 L/min.
Cardiovascular Function **(heart rate and blood pressure)**	On admission assess and document HR and BP at minimum Q5min while patient unconscious if stable then: Q15 min x 8 if stable then Q30 min x 4 if stable then	Initiate cardiac monitoring and ST segment monitoring (when using 5-leads) with a continuous waveform displayed on a physiological monitor unless ordered otherwise. • Obtain and interpret a baseline cardiac rhythm strip.

	Q1H until discharge from PACU and PRN. Once patient meets discharge criteria from Phase I continuous cardiac monitoring and ST segment monitoring can be discontinued prior to transfer to SDC or inpatient ward.	• Obtain ST analysis using leads III, V_3 and aVF (when using 5-leads). • If pacemaker present confirm type and function. • Assess for signs and symptoms of ischemia i.e. skin colour, temperature, turgor, edema and diaphoresis Assess blood pressure avoiding arm with AV fistula insitu, arm on same side as mastectomy, arm with peripherally inserted central catheter (PICC) line, or operative arm. If the patient is unable to tolerate being supine and is lateral use the lower arm for blood pressure assessment. Use the patient's calf if either arm is not able to be used. Systolic blood pressure reading in the leg can be about 10 to 20% higher than the brachial artery pressure.
Hemodynamic Parameters:Arterial Blood Pressure **Central Venous Pressure**	Monitor continuously and document at minimum Q5min while patient is unconscious then: Q15 min x 8 Q30 min x 4 Q1H until discharge from PACU and PRN. On admission, initiate continuous arterial blood pressure monitoring on all patients with an arterial line insitu (exception when removing within the first 10 minutes of admission).	Assess arterial monitoring equipment: • Assess site, dressing, circulation to limb and flush system. • Level and zero transducer and ensure that this is placed at the level of the phlebostatic axis • Observe arterial wave form for dampening/overshooting. • Obtain systolic, diastolic and mean arterial pressure and compare to non invasive reading. If within 10% of reading may trend and follow arterial pressure unless requested by anesthesia to follow cuff pressure. Assess central venous monitoring equipment: • Confirm central venous catheter (CVC) placement via chest X-ray as soon as possible after admission with anesthesia unless placement previously confirmed. • Use distal port of CVC to measure CVP. • Place the patient flat in a supine position if possible. Alternatively, measurements can be taken with the patient in a semi-recumbent position. • Assess site, dressing and flush system. • Level and zero transducer.

<table>
<tr>
<td>Neurological Function

Remain at bedside with any unconscious patient without a secured advanced airway until conscious and able to demonstrate ability to maintain own airway</td>
<td>Unconscious patients will be assessed Q5 minutes.

Level of consciousness will be assessed with each vital sign assessment.</td>
<td>Assess sedation using the Pasero Opioid-Induced Sedation Scale (POSS).
<table>
<tr><th>Score</th><th>Meaning of Score</th></tr>
<tr><td>1</td><td>Awake and alert</td></tr>
<tr><td>2</td><td>Slightly drowsy, easily roused</td></tr>
<tr><td>3</td><td>Frequently drowsy, rousable,</td></tr>
<tr><td>4</td><td>Somnolent, difficult to rouse</td></tr>
<tr><td>S</td><td>Normal sleep, easy to rouse</td></tr>
<tr><td>U</td><td>Unconscious</td></tr>
</table>
Dependant of type of surgery a more in depth neurological assessment may be required including Glasgow Coma Scale(GCS), pupil size and accommodation to light, motor grip and strength bilateral, cranial nerve assessment and/or ocular motor assessment. See Appendix A for more details.</td>
</tr>
<tr>
<td>Muscle tone</td>
<td>On admission and with each assessment until able to demonstrate adequate strength.</td>
<td>Assess muscle tone, i.e. ability to sustain head lift more than 5 seconds and demonstrate bilateral extremity strength and movement.</td>
</tr>
<tr>
<td>Spinal/ Epidural/ Regional</td>
<td>On admission then:
Q15 min x 8
Q30 min x 4
Q1H and PRN until discharge or motor/sensory block resolved</td>
<td>Assess for signs and symptoms of local anesthetic systemic toxicity.
Neuraxial:

Assess level of sensory block using ice pack and dermatome chart.
Assess motor block

Use the Bromage Scale:
<table>
<tr><th>Score</th><th>Meaning of Score</th></tr>
<tr><td>0</td><td>No residual motor block, free movement</td></tr>
<tr><td>1</td><td>Partial block, just able to flex knee</td></tr>
<tr><td>2</td><td>Almost complete block, able to move feet</td></tr>
<tr><td>3</td><td>Complete block, unable to move legs/feet</td></tr>
</table>

Assess ability to tolerate head of bed elevated at 30°.
Use bladder scanner to assess for bladder fullness if no urinary catheter insitu.
</td>
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<table>
<tr><td></td><td></td><td>Perineural:
Assess motor function and sensation distal to perineural block.</td></tr>
<tr><td>Stir Up Regimen</td><td>With each assessment</td><td>With each assessment perform stir up regimen. This consists of encouraging the patient to take 2 to 3 deep breaths, cough to clear any secretions if present and encouraging the patient to perform leg exercises.</td></tr>
<tr><td>Thermoregulation</td><td>On arrival to Phase I
If hypothermia present assess temperature every 15 minutes until normothermia achieved.
Once normothermic assess temperature every hour.</td><td>Normothermia is defined as a temperature between 36°C and 38°C.
Assess patient’s thermal comfort level.
Assess for signs of hypothermia such as piloerection, shivering or cool extremities.
If hypothermia present use forced air warming to increase patient’s temperature.</td></tr>
<tr><td>Pain</td><td>Begin when patient is conscious
Q15 minutes x 4 (minimum) if stable then
Q30 minutes x 4 if stable then
Q1H until discharge</td><td>Assess pain intensity using a rating scale appropriate to patient’s cognitive and communication ability:
Ask patient to rate their pain using a numerical scale of 0 to 10 with 0 being no pain and 10 being the worst pain.
If patient is more comfortable using verbal descriptors such as no, mild, moderate, lots, intolerable, etc. use appropriate number rating associated with descriptor.
For non verbal patients use faces pain scale See Appendix B: Self Reporting Pain Intensity Scales.</td></tr>
<tr><td>Post Operative Nausea and Vomiting (PONV)

Risk Assessment (Apfel Score)<table><tr><th>Risk Factor</th><th>Point</th></tr><tr><td>Female Gender</td><td>1</td></tr><tr><td>Non-smoker</td><td>1</td></tr><tr><td>History of PONV/motion sickness</td><td>1</td></tr><tr><td>Use of Opioids</td><td>1</td></tr><tr><td>Score</td><td>0 to 4</td></tr></table></td><td>On admission
Q15 minutes x 4 (minimum) if stable then
Q30 minutes x 4 if stable then
Q1H until discharge</td><td>Use the verbal descriptive scale:<table><tr><th>Score</th><th>Meaning of Score</th></tr><tr><td>0</td><td>No nausea</td></tr><tr><td>1</td><td>Mild nausea</td></tr><tr><td>2</td><td>Moderate nausea</td></tr><tr><td>3</td><td>Severe nausea</td></tr><tr><td>V</td><td>Vomiting</td></tr></table>
Patient’s with a high incidence risk score for PONV will generally receive prophylactic doses of anti-emetics in the OR that target different receptor sites e.g. dexamethasone, ondanseteron and droperidol. The higher the risk the more agents used.
Ongoing management of PONV can be more effective with the use of agents that affect</td></tr>
</table>

<table>
<tr>
<td>Incidence of PONV in relation to risk score
<table>
<tr><th>Score</th><th>Incidence</th></tr>
<tr><td>0</td><td>10% (low)</td></tr>
<tr><td>1</td><td>20% (mild)</td></tr>
<tr><td>2</td><td>40% (moderate)</td></tr>
<tr><td>3</td><td>60% (high)</td></tr>
<tr><td>4</td><td>80% (extremely high)</td></tr>
</table></td>
<td></td>
<td>different receptor sites as their effects are additive rather than using any single agent.
• Non-pharmacological interventions can be used to improve patient comfort such as cool cloth, decrease in environmental stimuli such as light or noise, aromatherapy (essential oils such as peppermint), etc.</td>
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<tr>
<td>Surgical Parameters</td>
<td>On admission
Q15minutes x 4 (minimum) if stable then
Q30 minutes x 4 if stable then
Q1H until discharge</td>
<td>Condition of surgical site(s), presence and type of drain(s), immobilizer(s), packing(s), stent(s) and/or dressing(s):
• Condition of dressing(s) and visible incision(s).
• Type, patency and security of drainage tube(s) including amount and type of drainage.
• Condition of cast/splint/brace/tensor or other immobilization device for progressive swelling.
• Evaluate for signs and symptoms of surgical bleeding, local (swelling, hematoma, etc.) and systemic (tachycardia, hypotension, pale skin colour, etc.).
Relevant surgery specific assessment – see Appendix A.</td>
</tr>
<tr>
<td>Urinary/Bladder</td>
<td>On admission and Q1H until discharge

On admission
Q15minutes x 4 (minimum) if stable then</td>
<td>• Assess bladder for visual distension and palpate for firmness.
• If bladder is distended or firm use a bladder scanner to determine the potential volume in patient’s bladder.
If Foley catheter insitu:
• Ensure use of in-dwelling catheter is required (e.g. uro-gyne, colorectal, bladder surgery).
• Catheter is appropriately secured using cath-secure to the thigh.
• Assess colour, clarity and amount Q1H.
If Continuous Bladder Irrigation:
• Catheter is secured to upper thigh or as directed by physician.
• Assess patency of catheter, i.e. flow of irrigation fluid going in should be equal to or less then flow coming out.</td>
</tr>
</table>

	Q30 minutes x 4 if stable then Q1H until discharge	• Assess for bypassing of catheter, i.e. urethral ooze. • Monitor returns for colour and clots; when ordered, titrate flow to manage clots and maintain patency. • Assess for bladder spasms, i.e. increased pain, fluctuations (or pulsing) in catheter tubing or bypassing of catheter.
Fluid Balance	On admission and monitored continuously	• Location of intravenous lines, condition of intravenous sites including size and type (i.e. central vs. peripheral) and amount, type and rate of solution. • Review and document OR fluid (crystalloid, PRBC, colloid, etc.) intake and OR output including estimate blood loss (EBL), urine output and any drainage output e.g. gastric. • Urine output amount assessed on admission and Q1H until discharge. • Drainage/blood loss.
Drug Infusions	On admission and monitored continuously	• Confirm drug concentration, dose and infusion rate. • If reported dose is different than actual inform anesthesia. • Perform additional monitoring as required for medication being infused as per the PDTM.
Mechanical Ventilation	On admission and with each patient assessment On admission assess and document ventilator settings: Q15 min x 8 Q30 min x 4 Q1H until patient extubated or transferred to another critical care area and PRN (i.e with any changes)	Oral Endotracheal Tube (OETT) • Record type and size. • Assess position at the teeth/gums. • Ensure tube is secure with ties, tape or stabiltube. • Ensure patency of tube. • Assess integrity of cuff. Monitor ventilator settings: • Record the type of ventilator being used. • Mode – pressure support ventilation (PSV), assist control (AC). • Respiratory rate – set rate and actual. • Tidal volume – set and actual. • Minute volume. • FiO_2 – record set FiO_2. • Positive end expiratory pressure (PEEP) – record set PEEP.

		• Inspiratory peak pressure. • Pressure Support – set pressure.
Comfort and Safety	Continuous	Assess for risks related to comfort and safety: • Positioning and body alignment. • Complete skin integrity assessment and document • Disorientation and agitation. • Remove wet or soiled linens. • Ensure side rails are up and brakes are on. • Reposition patient every 2 hours and PRN – unless contraindicated. • Complete Braden Assessment as per guidelines • Family visitation as per family and patient request.
Prescriber Orders	On admission	• Review orders on admission to PACU. • Implement anesthesia and surgical orders as directed. • Ensure medication reconciliation orders and admission orders are completed on all admitted patients. • Discontinue any pre-operative orders related to this encounter.

Documentation

Document all assessments and interventions using Cerner PowerChart.

Downtime records:

Form No. PA015 PACU Patient Record

Form No. PHC PH205/6 Medication Administration Record

Form No. PHC NF310 SBAR – PACU Report to Unit

Form No. PHC NF219 24 Hour Pain Management Flow Sheet

Patient and Family Education

Review with patient and family if present:

- The reason and frequency of assessments
- The role of the equipment and supplies related to the assessments
- Protection and support of insensate limbs
- The length of time required in post anesthesia care unit and goals for discharge to a lower level of care

- Following regional anesthesia, inform patient that motor function will return prior to sensation, when sensation is returning may have pins and needles or tingling feeling.
- Review pain management with patient and/or family member.

Related Documents

1. B-00-12-10065 – Blood/Blood Product Administration
2. B-00-12-10105 - Laryngeal Mask Airway Removal in PACU
3. B-00-13-10072 - PACU: Care Post Caesarean Section (General or Regional Anesthetic)
4. B-00-13-10071 – PACU Post Anesthesia: Discharge Criteria
5. B-00-12-10040 – Spinal/Epidural Anesthesia Assessment
6. B-00-12-10015 – Warming Patient using Forced Air Warmer
7. B-00-11-10200 - Family Presence

References

1. American Society of PeriAnesthesia Nurses. (2014). *2015 - 2017 Perianesthesia Nursing Standards, Practice Recommendations and Interpretive Statements.* Cherry Hill, NJ: Author.
2. Beetstra, J., & Peterson, L. (2016). Clinical Practice Document: Care of the Post Anesthetic Patient in Phase I. *PolicyNet – Vancouver Acute*. Vancouver Coastal Health.
3. Kellner DB, Urman RD, Greenberg P, Brovman EY (2018). Analysis of adverse outcomes in the post-anesthesia care unit based on anesthesia liability data. *J Clin Anesth*; 50:48.
4. Gan, T.J., Diemunsch, P., Habib, A.S., Kovac, A., Kranke, P., Meyer, T.A., et al. (2014). Consensus Guidelines for the Management of Postoperative Nausea and Vomiting. *Anesthesia & Analgesia, 118(1),* 85-102.
5. National Association of PeriAnesthesia Nurses of Canada (2017). *Standards for Practice* (4th ed.). Oakville, Ont: Author
6. Rothrock, J.C. (2018). *Care of the Patient in Surgery* (16th ed.). St. Louis, MO: Elsevier.

Appendices

Appendix A: Surgery Specific Assessment Parameters

Appendix B: Self Reporting Pain Intensity Scales

Appendix A: Surgery Specific Assessment Parameters

In addition to comprehensive assessment and surgical parameters listed above complete both the assessment general and the assessment specific for the surgery listed below. Review physician orders for any variations to the following assessment parameters.

Surgery	Assessment General	Assessment Specific
Orthopedic Peripheral vascular Endovascular	• Capillary refill • Movement (active flexion/extension) • Sensation • Temperature • Colour • Swelling • Pulses (if accessible) • Comparative assessment to contra-lateral limb x1	
Orthopedic foot/ankle, hand/wrist		• Elevate affected limb
AV Fistula		• Thrill (palpate) • Bruit (auscultate)
Free Flap (plastics)		• Turgor • Overhead heat (when prescribed) use forced air warmer • Doppler pulse to applicable site (marked with felt or suture)
Endoscopic Sinus Surgery (assess GCS, motor strength, pupils, vision and ocular motor x 1 once able to follow directions)	• Glasgow Coma Scale • Pupil size • Pupil reactivity to light • Bilateral motor strength	• Periorbital edema/ecchymosis • Ocular motor • Vision • Frequent swallowing/back of throat (bleeding)
Carotid Endarterectomy (see below)		Cranial nerve: • VII Facial (smile) • X Laryngeal (voice) • XI Spinal Accessory (shoulder shrug) • XII hypoglossal (tongue deviation)
Tracheostomy (do not need to assess voice hoarseness)	• Trachea position • Head of bed at degrees • Surgical emphysema	
Carotid Endarterectomy (see above)		

<table>
<tr><td>Thyroidectomy

Parathyroidectomy</td><td rowspan="2">• Difficulty/frequent swallowing
• Voice hoarseness</td><td>• Signs and symptoms of hypocalcemia (tetany/muscular twitches, tingling in fingers/toes, oral numbness)</td></tr>
<tr><td>Open Parotidectomy (assess facial nerve x 1 when able to follow directions)</td><td>Facial Nerve:
• Smile
• Puff out cheeks
• Pucker/whistle
• Squeeze eyes/open eyes</td></tr>
<tr><td>Ostomy formation – colorectal, ileal conduit - cystectomy</td><td colspan="2">• Colour (pink, dusky, purple, black areas)
• Height (flush, recessed, protruding)
• Output - amount, consistency and type
• Presence of stent(s)/rod
• Integrity of pouching system – assess for leaking under appliance</td></tr>
<tr><td>General gynecology surgery</td><td rowspan="3">• Per vaginam (PV) flow
• Peri-pad/mesh underwear</td><td></td></tr>
<tr><td>Reconstructive Gynecology</td><td>• Urinary retention
• Post void residual</td></tr>
<tr><td>Caesarean Section</td><td>• Fundal height/firmness</td></tr>
<tr><td>Bronchoscopy/Lung Biopsy</td><td colspan="2">• Integrity of Pleur-Evac® chest drainage system
• Subcutaneous emphysema
• Tubing - spiral taped
• Tidaling in air leak meter
• Air leak
• Negative pressure indicator
Document assessment in iView

Review Orders - chest tube insertion post-procedure inpatient orders</td></tr>
</table>

Appendix B Self Reporting Pain Intensity Scales

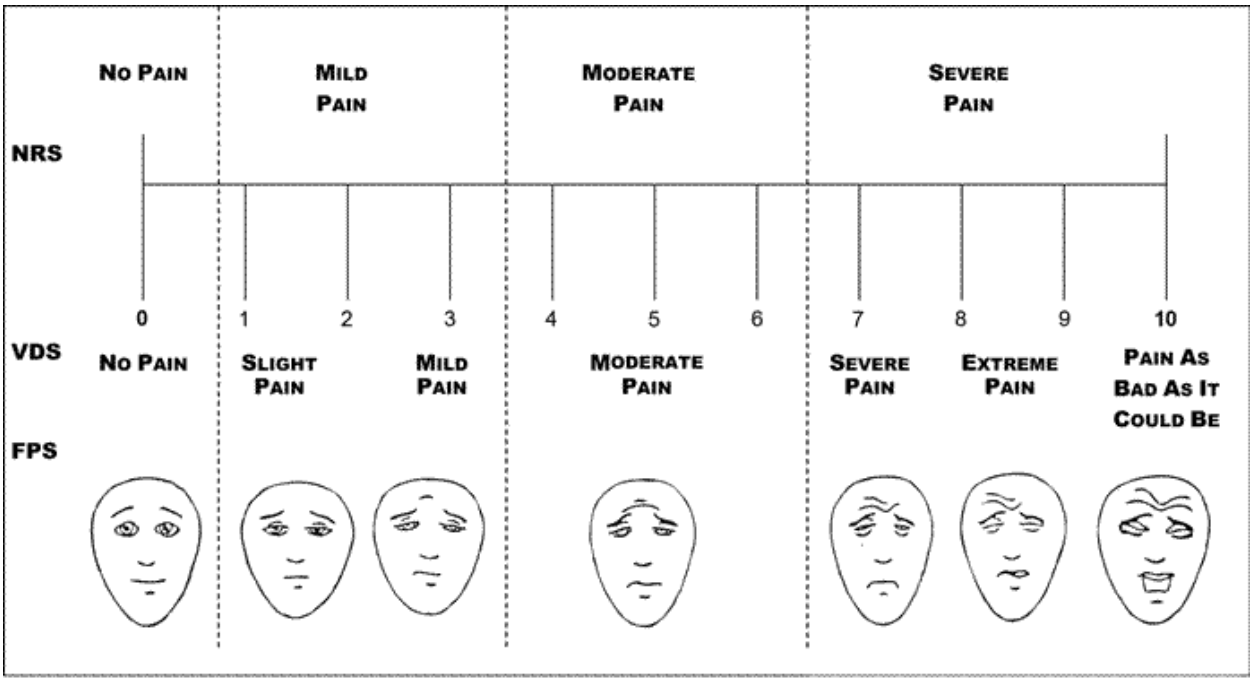

Figure.
Numeric Rating Scale (NRS), Verbal Descriptor Scale (VDS), and Faces Pain Scale (FPS). *Source* (FPS): Bieri D, Reeve RA, Champion GD, Addicoat L, Ziegler JB. The Faces Pain Scale for the self-assessment of the severity of pain experienced by children: Development, initial validation, and preliminary investigation for ratio scale properties. Pain. 1990;41(2):139–50. [PMID: 2367140] Used with permission.

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