

# Perineural Anesthesia with Ambulatory AmbIT Pump: Patient Controlled Perineural Analgesia (PCPA) Pain Management

## Site Applicability/

SPH Surgical Program

## Practice Level

- RN with supplemental perineural education

## Need to Know

1. Perineural infusions should NOT be used in conjunction with a lidocaine infusion OR epidural infusions with BUPivacaine or ROPivacaine. Cumulative systemic effects of local anesthetics can cause toxicity.
2. A perineural block provides regional anesthesia or analgesia by temporarily interrupting the conduction of nerve impulses to a specific site or limb. Anesthesia/analgesia is achieved by the infiltration of local anesthetic around nerve trunks leading to the surgical or injured site. A continuous perineural nerve block (CPNB) provides for longer lasting pain management. Perineural anesthesia/analgesia may also result in temporary loss of sensation and/or motor function to the affected limb.
3. Perineural anesthesia with an ambulatory pump intended for home is primarily suited for patients having upper limb or foot and ankle surgery. The types of nerve blocks may be infraclavicular catheters for the hand, wrist or elbow surgery; intrascapular catheters for shoulder surgery or popliteal/sciatic catheters for foot and ankle surgery.
4. The dressing over a perineural infusion site should not be changed by an RN but can be reinforced.
5. The ambulatory pump (i.e. ambIT preset pump) with PCPA (i.e. PCA bolus) button is usually programmed to deliver a continuous infusion with PCPA bolus of a local anesthetic such as ropivacaine 0.2 % or bupivacaine 0.125%  
e.g.: 10 mL per hour & PCPA dose 4 mL.
6. **Acute Pain Service (APS) must be notified if a patient becomes admitted and is not going home on the day of surgery.**
7. The regional anesthesiologists will be primarily responsible for these ambulatory perineural infusions. They are responsible for:
  - Securing the catheter and covering the catheter site

- Programming and connecting the ambIT preset pump that is intended to go home with the patient
- Providing information regarding a contact person and number for patient concerns
- Providing education regarding the ambIT preset pump and safety precautions related to the perineural infusion that includes verbal and written information:
  - FM.820.L953.PHC Lower Limb nerve Catheter Care at Home
  - FM.820.Up6.PHC Upper Limb Nerve Catheter Care at Home
- Notifying APS if the patient is admitted to an inpatient unit with the plan for same day discharge

## Protocol

### Assessment

#### A. Initial

1. Assess pain intensity at rest/movement, Pasero Opioid Induced Sedation Scale (POSS), respiratory rate, blood pressure, pulse, temperature, and sensation and motor function.

#### B. Ongoing


1. Assess pain intensity using the numeric pain scale (0 to 10) on admission and discharge from each unit. (i.e. PACU/ SDC/inpatient unit)
2. Assess patient's understanding of safety and readiness to care for perineural at home

Signs and Symptoms of Local Anesthetic Systemic Toxicity (LAST)		
Mild Symptoms	Moderate Symptoms	Severe Symptoms
<ul style="list-style-type: none"> <li>• Perioral Numbness and tingling</li> <li>• Metallic taste in mouth</li> <li>• Ringing in ears</li> <li>• Lightheadedness</li> <li>• Dizziness</li> <li>• Visual disturbances</li> <li>• Confusion</li> </ul>	<ul style="list-style-type: none"> <li>• Nausea and vomiting</li> <li>• Severe dizziness</li> <li>• Decreased hearing</li> <li>• Tremors</li> <li>• Changes in heart rate and blood pressure (hyper/hypotension)</li> <li>• Confusion</li> </ul>	<ul style="list-style-type: none"> <li>• Drowsiness</li> <li>• Confusion</li> <li>• Muscle twitching</li> <li>• Convulsions</li> <li>• Loss of consciousness</li> <li>• Cardiac arrhythmias</li> <li>• Cardiac arrest</li> </ul>

3. Assess for possible systemic side effects related to the local anesthetic (can occur on insertion or if a perineural catheter migrates into a vein – rare) on admission and discharge of unit and PRN (i.e. PACU/ SDC/inpatient unit).

4. Assess the insertion site for any signs of redness or swelling and assess the integrity of the catheter site on admission and discharge. Ensure all connections are secure and the tubing is taped and secure.
5. Assess sensation and movement on admission and discharge.
6. Assess limb for potential damage to the numb area:
  - It is expected that the patient may have decreased sensation to the affected limb and may not be able to protect the limb from injury
  - Provide assistance for ambulation for lower extremity blocks
  - Provide the use of a sling for upper extremity block
  - Provide assistance with repositioning and place the affected limb in anatomical position
  - Use caution if using heat or ice

### Interventions

1. Maintain the PCPA and the continuous perineural infusion using ambulatory infusion pump i.e. ambIT Preset Pump
2. Notify the regional anesthesiologist (in PACU/SDC) or Acute Pain Services (APS) (for inpatient surgical unit) for the following:
  - a. Inadequate analgesia or other problems related to the perineural infusion.
  - b. If any signs or symptoms of local anesthetic systemic toxicity (see [Assessment](#)), STOP THE INFUSION IMMEDIATELY by pressing the play/pause button  and call regional anesthesia or APS. (See [Appendix A](#))
  - c. If any signs of redness, swelling or leaking at the catheter insertion site.
  - d. If the perineural catheter is disconnected – wrap the catheter end in sterile gauze and then notify the regional anesthesiologist or APS.
  - e. Notify APS as soon as possible if patient becomes admitted and is not going home same day of surgery.

If any concerns regarding the ambIT pump, press the play/pause button or remove batteries from the bottom of the pump and call regional anesthesia or APS.

### Documentation


- **The regional anesthesiologist will document in the “Anesthesia Nerve Block Note”:**
  - Where the perineural is inserted i.e. popliteal/sciatic, intrascapular, infraclavicular
  - What solution, rate and PCPA dose is programmed/infusing via home ambIT pump
  - Education, pamphlet and teaching **completed** by anesthesia
  - To call APS if any issues with site or infusion or side effects
  - Will place sticker on infusion bag with the drug name and solution concentration

- **The RN (PACU/SDC or inpatient surgical unit ) will document in Cerner Interactive View and I & O under Pain Management IVIEW band**
  - Site assessment
  - Pain assessment
  - Assessment for local anesthetic systemic toxicity (LAST)
  - Sensation and movement to affected limb
  - Vital signs as per unit standard

### Patient and Family Education

Set up and education regarding how to use the pump will be provided by the regional anesthesiologist.

Patient to be given pamphlet “Going home with a Peripheral Nerve Block Catheter” ([PHEM](#) catalogue)

- Reinforce information found in the pamphlet:
  - If the patient has tingling around their mouth or tongue, have ringing in their ears or feel lightheaded. This could be a sign of local anesthetic toxicity. Reinforce that **this is very rare**. If experiencing any of these symptoms, clamp the tubing, press the play/pause button  and call the Anesthesiologist on call right away (information found in the pamphlet)

### Related Documents

1. [B-00-13-10221](#) - Perineural Anesthesia/Analgesia Pain Management with or without Patient Controlled Perineural Analgesia (PCPA)

### References

1. Guary J, Griffiths, MJ., Kopp, S. (2017). Cochrane Review – Peripheral nerve blocks for hip fractures (Review). *The Cochrane Collaboration*
2. Griffiown, M. & O’Brien G., (2018). Analgesics administered for pain during hospitalization following lower extremity fracture: A review of the literature. *Journal of Trauma Nursing*, 25 (6), 360-365. Doi: 10.1097/JTN.0000000000000402
3. Miso, L. (2017). Acute perioperative pain management in total joint arthroplasty: Summary of available agents. *Topics in Pain Management* 32, (7),
4. Neal, J. M., Brull, R., Horn, J.-L., Liu, S. S., McCartney, C. J. L., Perlas, A., Salinas, F. V., & Tsui, B. C.-H. (2016). The Second American Society of Regional Anesthesia and Pain Medicine Evidence-Based Medicine Assessment of Ultrasound-Guided Regional Anesthesia: Executive Summary. *Regional Anesthesia and Pain Medicine*, 41(2), 181–194. <https://doi.org/10.1097/AAP.0000000000000331>

5. Rowlands, M., van de Walt, G., Bradley, J., Mannings, A., Armstrong, S., Bedforth, N., Moppett, I., Sahota, O. (2018). Femoral nerve block intervention in neck of femur fracture (FINOF) a randomised controlled trial. *British Medical Journal* 8 doi: 10.1136/bmjopwn-2017-1019650
6. Sinha, S. & Suter, S. (2018). New blocks for the same old joints. *Co- Anesthesiology*, 31 (5) doi: 10.1097/ACO.000000000000641

### Developed By

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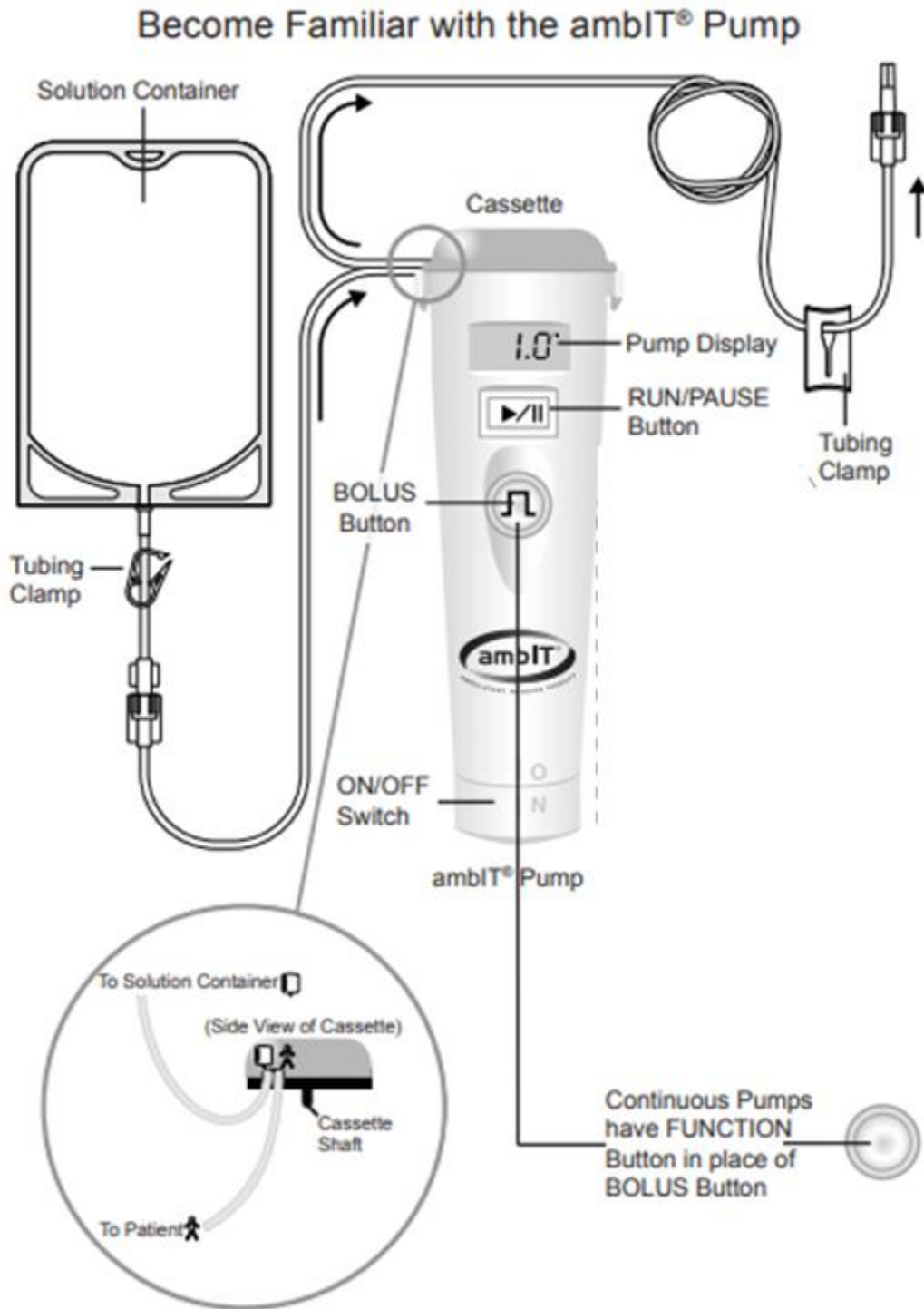
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## Appendix A: AmbIT preset pump diagram



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	Steps to take	Audible Indicator	Visual Indicator
<b>Start Infusion</b>	 Press and release Run/Pause button	1 beep to start	Green RUN light (inside the bolus button) blinks and 'ml' is in the pump display
<b>Pause Infusion</b>	 Press and release Run/Pause button	2 beeps every 4 minutes when paused	PAUSE icon (I I) flashes in the display. Green RUN light (inside the bolus button) <b>stops blinking</b>
<b>Silence Alarm</b>	 Press and release Run/Pause button	Alarm sound stops	PAUSE icon (I I) flashes in the display. Green RUN light (inside the bolus button) <b>stops blinking</b>
<b>Deliver Bolus</b>	 Press and release Bolus button	1 beep	Green Run light (inside the Bolus button) double blinks