

## PURPOSE

To provide guidance and direction for the administration of Naloxone to patients with suspected or confirmed opioid overdose.

The overarching goal for this clinical practice is to prevent death and disability in this vulnerable patient population by reversing the opioid overdose.

## PRACTICE LEVEL / COMPETENCIES

For Fire First Responders (FFR) who:

- have completed the education to assess for clinical signs and symptoms of opiate overdose recognition;
- demonstrate an understanding of indications and contraindications for naloxone administration;
- received an endorsement from the EMALB.

This education, skill and practice is implemented with the expectation that approved medical oversight, quality review and patient care records are implemented for any fire based first responder agency. Standards and requirements are set by BCEHS medical oversight.

## BACKGROUND

Opioid overdose from prescription and illicit drugs is an important public health issue. In 2015, there were 476 deaths due to drug overdose, and the BC Ambulance Service administered naloxone, an opioid antagonist, in 3094 patient overdose events to reverse opioid-related respiratory depression.

### Opiate overdose

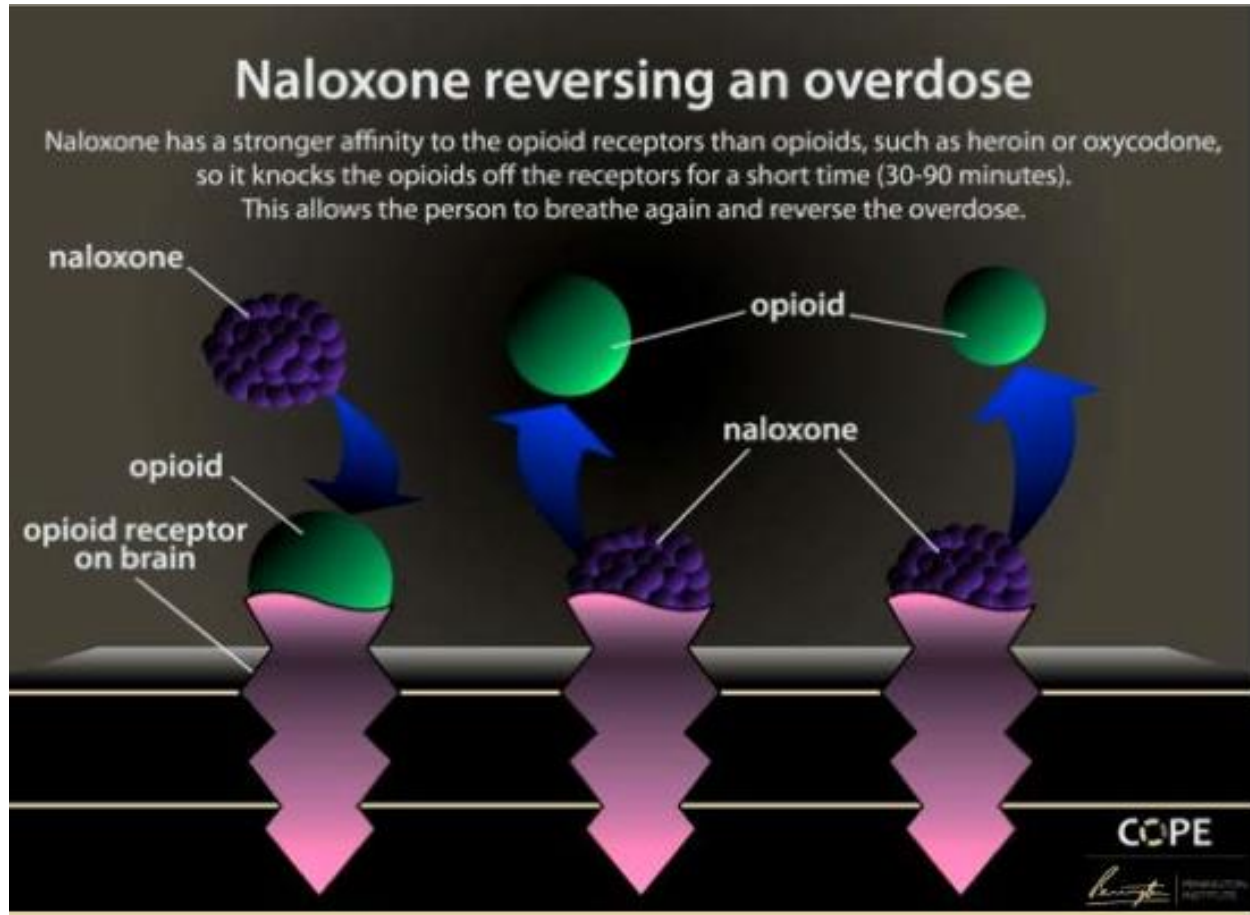
Opioid drugs such as morphine, heroin, methadone, oxycodone, and fentanyl cause harm in overdose because they bind to opiate receptors in the brain that control breathing and cause the patient to stop breathing. Within minutes of stopping breathing the patient experiences severe hypoxia which shortly causes brain damage, followed by cardiac arrest. Naloxone binds to these same receptors in the brain, displacing the opiate from the receptor and allowing the patient to breathe.

### What is naloxone?

Naloxone, or Narcan<sup>®</sup>, is an antidote to opioid overdose. Taking too much of opioid drugs (like morphine, heroin, methadone, oxycodone, and fentanyl) can make breathing slow down or stop. Naloxone reverses this, restoring normal breathing and consciousness. Giving naloxone can prevent death or brain damage from lack of oxygen during an opioid overdose. It does not work for non-opioid overdoses (like cocaine, ecstasy, GHB or alcohol). However, if an overdose involves multiple substances, including opioids, naloxone helps by temporarily removing the opioid from the equation.

### How does naloxone work?

Both naloxone and opioids bind to the same sites in the brain, and these sites affect breathing. However, naloxone binds more tightly than the opioids, knocking the opioids off the receptors and restores breathing (see picture). Naloxone acts fast (usually within 5 minutes), and the protective effect lasts for 30 to 90 minutes. The body will begin to break down some of the opioids, but naloxone does not destroy the opioids. So, if large doses, strong opioids (like fentanyl), or long-acting opioids (like methadone) are involved, or the individual has liver damage, another dose of naloxone may be needed. Thus it is always important to have these patients assessed and moved to the hospital emergency department promptly.



*Pennington Institute's Community Overdose Prevention and Education (COPE) Project; Adapted from artwork by Maya Doe-Simkins*

### **Can naloxone be harmful or be abused?**

Naloxone has been used in Canada for over 40 years and is on the World Health Organization List of Essential Medicines. Naloxone does nothing in someone that has not taken opioids, since all it does is block the effects of opioids in the brain. Naloxone cannot get a person high, and does not encourage opioid use. While naloxone is a very safe drug, it may cause individuals dependent on opioids to go into withdrawal. However, the doses outlined here minimize this risk.

### **Are there risks associated with using naloxone?**

The only contraindication to naloxone is hypersensitivity. Naloxone may cause opioid withdrawal in those with opioid dependence. Withdrawal symptoms include pain, high blood pressure, sweating, agitation and irritability. In addition, it can be unsettling to come out of an overdose unaware of what has happened. Finally, people with health conditions (heart, liver, respiratory, etc.) and/or that have taken other substances need additional medical attention. Rarely some patients will develop acute pulmonary edema after reversal of their opiate overdose. It is important to perform auscultation of the patient's chest and to monitor oxygen saturation after administration of naloxone. Some patients may develop nausea and vomiting after naloxone administration, thus it is important to monitor the patient after administration and to place them in a position of recovery should they develop vomiting.

Remember the goal of naloxone therapy in the prehospital setting is to restore effective breathing and oxygenation of the patient. A return of the patient's status to full wakefulness and complete temporary detoxification is not necessary.

**What does FFR overdose education and naloxone training involve?**

Participants are taught how to recognize opiate overdose and respond appropriately. Appropriate response to an opioid overdose includes performing rescue breathing with bag valve mask ventilation and oral airway placement, placing the patient in the recovery position, and administering naloxone. These skills can help keep someone alive until a higher level of care arrives.

**APPLICABILITY**

This practice applies to all patients – adolescent to adult with suspected or confirmed opioid overdose.

**DEFINITIONS**

**Naloxone:** an opioid antagonist reverses an opioid overdose and restores breathing (See Appendix A on more info about naloxone).

**Opioid:** Any morphine-like synthetic narcotic that produces the same effects as drugs derived from the opium poppy (opiates), such as pain relief, sedation, constipation and respiratory depression.

**PROCEDURE**

**IDENTIFICATION OF PATIENTS WITH SUSPECTED OR CONFIRMED OPIOID OVERDOSE  
FIRE FIRST RESPONDER**

*Rationale*

**Opioid Use History**

- Current and past opioid use
- History of any previous overdoses
- History of substance misuse (including medications, alcohol, smoking)
- Assess current drug use, including prescribed medications, over-the-counter medications, herbal products, and illicit drugs

*Establishes a baseline.*

**PHYSICAL ASSESSMENT**

In addition to your basic scene and patient assessment pay particular attention to the unconscious patient looking for signs of trauma, environmental exposure (hypothermia) and hypoglycemia. Many patients may have these co-morbidities in addition to an opiate overdose.

Patients may not necessarily be demonstrating symptoms of an opioid overdose or drug intoxication at the time of assessment.

Evidence of substance use may be present, including but not limited to:

- Signs of injection drug use (e.g. track marks)
- Signs of inhalation in oral and nasal mucosa
- Evidence of intoxication during assessment (e.g. alcohol, stimulants, depressants, other)

For patients suspected to be acutely intoxicated, assess the following:

- Level of consciousness - the person can't stay awake, walk or talk, unresponsiveness
- Little or no response to a sternal rub
- Pinpoint pupils or eyes rolled back
- Body is limp
- Slow or absent pulses
- Slow or absent breathing (< 8 breaths per minute), snoring or gurgling
- Low oxygen saturation (< 92% oxygen saturation on room air)
- Skin looks pale or blue, especially nail beds and lips, feels cold
- Vomiting

*Establishes a baseline.*

HOW TO RESPOND TO AN OPIATE OVERDOSE	Rationale
<p>1. <b>STIMULATE</b> the patient by talking loudly at them, <b>PERFORMING</b> a sternal rub and telling them to breathe.</p>	
<p>2. <b>ASSESS</b> and <b>SUCTION</b> the airway to clear it of vomitus or excess secretions.</p>	
<p>3. If they remain unresponsive <b>PLACE</b> an oral airway of appropriate size. Deeply unconscious patients will tolerate an oral airway.</p>	
<p>4. <b>BEGIN</b> bag valve mask ventilation with oxygen and deploy the oxygen saturation monitor.</p>	
<p>5. <b>CHECK</b> for the presence of a pulse. If absent <b>COMMENCE</b> CPR.</p> <p><b>Note:</b> If performing CPR assess for the presence of pulses as per cardiac arrest guidelines currently in use.</p>	<p><i>Patients with opiate overdose who are in cardiac arrest are so because of acute hypoxia. It is critical to ventilate and oxygenate these patients if restoration of spontaneous circulation is to occur. Follow your usual cardiac arrest management principles with these patients and apply the AED and shock as advised.</i></p>
<p>6. <b>PHONE EPOS (PRP) – USE SBAR mnemonic to get authorization to administer 0.4 mg of naloxone IM. Request permission to give 2<sup>nd</sup> dose of 0.4 mg IM if 1<sup>st</sup> dose ineffective after 5 minutes.</b></p>	<p><i>Metro Area 1-855-951-4789 Rural Area: 1-855-951-2369</i></p>
<p>7. <b>DRAW UP</b> and prepare 0.4 mg of naloxone (1 ml or the content of one ampoule) into a 3 mL syringe as per appendix B.</p>	
<p>8. <b>ADMINISTER</b> the naloxone intra-muscularly in the lateral thigh, or lateral shoulder as shown in Appendix C.</p>	<p><i>Use of Z track technique ensures no medication tracks out from site.</i></p>
<p>9. <b>CONTINUE</b> BVM ventilation, taking care to assess for the presence of vomitus or excess secretions. If necessary <b>SUCTION</b> the airway.</p>	
<p>10. If the patient has little or no response after 5 minutes of assisted ventilation prepare and <b>RE-ADMINISTER</b> 0.4 mg of naloxone IM as per Appendix B. Continue with assisted ventilation.</p> <p><b>Note:</b> The total maximum dose allowable is 0.8 mg IM.</p>	<p><i>This will ensure a minimum of adverse effects and events in this patient population (refer to Appendix A, Naloxone Drug Monograph).</i></p>
<p>11. Continue to <b>ASSIST</b> ventilation and keep the airway clear of vomitus and secretions. Be prepared to roll the patient to assist in clearing the mouth of vomitus and secretions.</p>	

<p>12. Continue to <b>MONITOR</b> oxygen saturation aiming for a goal of greater than 92%</p>	
<p>13. <b>OBSERVE</b> respiratory rate, oxygen saturations, heart rate, colour, pupil size and level of consciousness.</p> <p><b>Note:</b> Remember that a return to a full detoxified state is often not necessary in the prehospital environment. The goal is to restore adequate ventilation and oxygenation.</p>	<p><i>It is important to document the response to naloxone administration, particularly the oxygen saturation, the patient's respiratory rate in those patients spontaneously breathing and level of wakefulness. Also make note of the patients colour and any changes in pupil size.</i></p>
<p><b>WHAT TO DO WHEN THE PATIENT WAKES UP</b></p>	<p><b>Rationale</b></p>
<p>1. <b>REASSURE</b> and speak calmly to the patient explaining what has just happened. <b>PREVENT</b> the patient from injuring themselves.</p>	<p><i>Patients who regain consciousness may be disoriented and combative. Reassure and speak calmly to the patient explaining what has just happened. Prevent the patient from injuring themselves. Many chronic opiate users will be irritable after naloxone administration as it displaces the opiate and users are suddenly slightly 'detoxed' and put in a mild withdrawal state. This does not last particularly long and most patients will settle rapidly.</i></p>
<p>2. Continue to <b>ADMINISTER</b> oxygen to maintain saturations of &gt; 92%</p>	
<p>3. Calmly <b>REASSURE</b> the patient that the naloxone will wear off in about 30 minutes and any opioids in their system can reach the receptors again.</p>	
<p>4. <b>ADVISE</b> them that they need a higher level of care in the emergency department.</p>	

**EQUIPMENT FOR NALOXONE ADMINISTRATION**

Appropriate equipment should be included in your medical kits in addition to current equipment carried as outlined below:

- Naloxone (2 x 1.0 ml ampules of 0.4 mg/mL naloxone)
- Needle and syringe sets (3 mL syringe barrel, 22G x 1 inch needle)
- alcohol swabs or chlorhexidine swabs
- non sterile nitrile gloves
- plastic ampoule breakers

Naloxone Administration Information Form

**DOCUMENTATION**

Document interventions performed on the standard patient care form. A copy of this should be given to the attending paramedics. Complete the BCEHS Naloxone Administration Form. This should be forwarded to BCEHS Medical Programs through operational leadership. This information is vital for patient safety monitoring and quality improvement feedback.

**DRUG STOCKING AND REPLACEMENT**

See Appendix D. Process managed by each Fire Department.

**APPENDICIES**

- A. Naloxone Monograph
- B. Intramuscular Injection of Naloxone for Fire First Responders (FFR) in Suspected Opiate Overdose
- C. Sites for Injection of Naloxone
- D. Product Distribution Centre Order Information for Fire Responder Agencies Expense Authority

**DOCUMENT CREATION / REVIEW**

Create Date: January 4, 2016

Revision Date: May 18, 2016



**APPENDIX A: Naloxone Monograph****Classification**

- narcotic antagonist/antidote

**Pharmacodynamic**

- Reverses the effects of opioids including respiratory depression, sedation, hypotension
- Antagonizes the opioid effects by competing for the same receptor sites, especially the opioid mu receptor.
- Also shown to all three opioid receptors (mu, kappa and gamma) with the strongest binding to the mu receptor.

**Pharmacokinetics**

## Intravenous

- Onset - 5 minutes
- Duration - 30 minutes

**Indications**

- to reverse respiratory depression/depressed mental status secondary to actual or suspected narcotic use - examples of other narcotics: morphine, demerol, heroin, codeine, oxycodone, hydromorphone (Dilaudid), diphenoxylate (Lomotil), propoxyphene (Darvon), and pentazocine (Talwin)

**Contraindications**

- allergy or known hypersensitivity to naloxone

**Precautions**

- be prepared for patient combativeness
- in the chronic narcotic abuser, may precipitate withdrawal symptoms
- very short half-life; monitor patient closely and prepare to re-dose if deterioration occurs

**Adverse Effects**

- reversal of narcotic effect and combativeness
- signs and symptoms of severe drug withdrawal
- hypotension, hypertension
- nausea, vomiting, sweating, tachycardia
- Very rarely: ventricular fibrillation, asystole (see special notes)

**Dosage**

- 0.4 mg IM. This may be repeated once after 5 minutes if no effect is seen with the first dose.
- Total dose is not to exceed 0.8 mg IM

**Special Notes**

- naloxone is generally considered a very safe drug - however, potentially life-threatening problems (such as status seizures and asystole) occur very rarely in patients treated. It is hypothesized that these episodes may be related to an acute withdrawal syndrome in chronic heavy users associated with reversal of opioid-induced epinephrine blockade rather than to a direct intrinsic effect of naloxone. This effect is very rarely expected at the doses allowed by this protocol.
- Administration of naloxone to a comatose patient who has taken other medications/substances may result in a partial elevation of the level of consciousness and/or combativeness.
- Naloxone administration may cause improved spontaneous respiratory effort without complete reversal of opiate effects and without full return to consciousness



**APPENDIX B: Intramuscular Injection of Naloxone for Fire First Responders (FFR) in Suspected Opiate Overdose****A. Rationale for FFR education in intramuscular naloxone administration**

- Opioid overdose from prescription and illicit drugs is an important public health issue in British Columbia.
- This education resource is provided to prevent death and disability in patients who present with an opiate overdose through prompt administration of naloxone.
- Timing of administration is crucial.
- Caution: Always be mindful and careful when handling syringes and needles to avoid stabbing yourself.

**B. Steps in administering naloxone intramuscularly**

1. Once you have determined the patient is experiencing a suspected opiate overdose instruct your fellow First Responders to assess and manage airway and cardiac output (if required).
2. Phone EPOS to confirm need to administer naloxone.
3. Select your injection site (See Appendix C).
4. When administering naloxone it is preferable to prepare the injection site beforehand by:
  - i. Opening the alcohol swab.
  - ii. Wiping the injection site with the alcohol swab using some friction.
  - iii. Allow to air dry (no longer shiny wet).

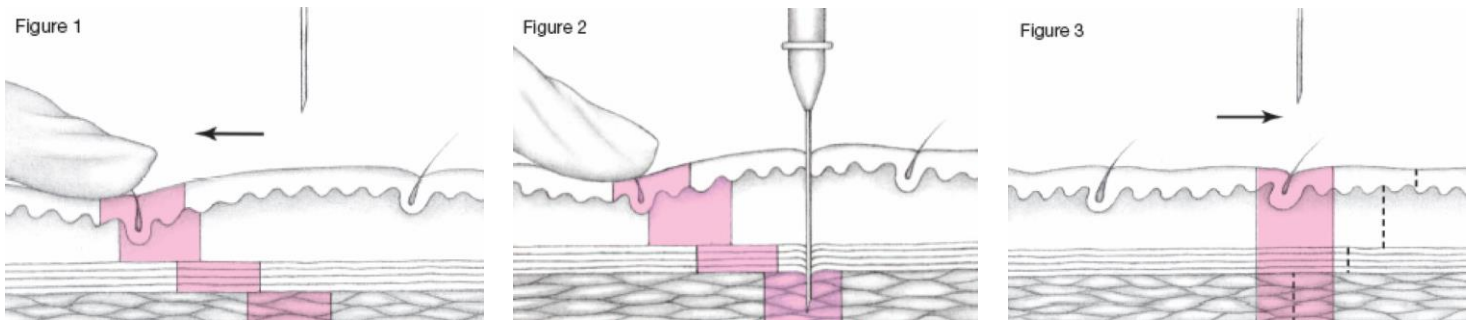
**NOTE:** However, in situations when this is not possible to access the skin, it is allowable to inject naloxone through clothing into one of the injection sites.

5. Prepare the medication:
  - i. Confirm the following:
    - Medication name.
    - Dosage and concentration (i.e. Naloxone, 0.4 mg/ml, 1 mL ampoule).
    - Expiration date.
    - Appearance of solution (ensure clear solution → no cloudy appearance, abnormal colour or precipitate present).
  - ii. Ensure your 3mL syringe and 22 Gauge needle are together and ready for you to use. Keep needle capped until ready to draw up the medication.
  - iii. Hold the Naloxone ampule upright and tap the bottom gently to dislodge any trapped solution from the neck of the vial.
  - iv. Break the Naloxone ampule open by:
    - Placing the plastic cap over the ampule neck.
    - Holding the ampule base securely between your thumb and index finger of your non-dominant hand.
    - With your dominant hand, place your thumb at the base of the plastic plunger (which should be near the scored portion of the ampule neck) and your index finger near the top.
    - Using your thumb push into the vial and pull toward you with your index finger (like you are snapping the neck of the vial).
  - v. Using a syringe, insert needle into ampule and draw plunger back until correct dosage obtained.



SEOH Ampule Cracker Safety Collar

- vi. Remove air bubbles from syringe by:
  - holding syringe with the needle up.
  - tap the barrel of the syringe with finger to move the bubbles to the top.
  - pull back slightly on the plunger to make sure all of the fluid is out of the needle.
  - gently push the plunger until you see a drop of fluid on the bevel of the needle.
6. Administer the medication:
  - i. Needle Insertion
    - Hold the muscle broadly, do not pinch skin.
    - Use non-dominant hand to pull skin and displace tissue by 1 inch (Figure 1)
    - Insert needle at 90 degrees, into the muscle in smooth, steady motion (Figure 2)
      - This “Z-track” technique can be used to avoid drug tracking back and bleeding out.

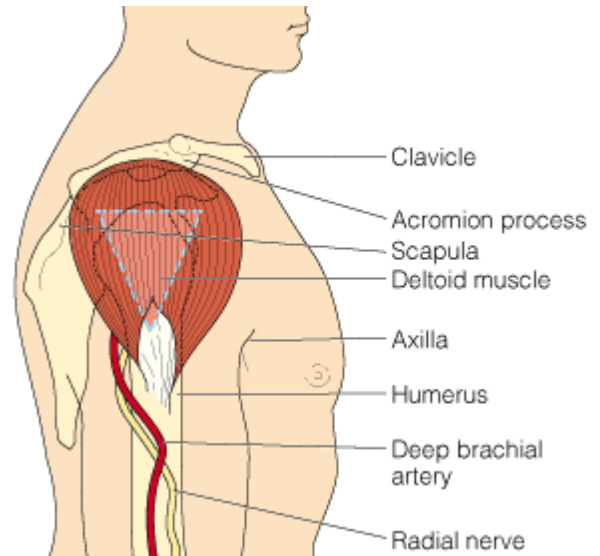


- Once medication is administered, withdraw needle by pressing on the BLUE button on end of syringe
  - Release skin to original position (Figure 3)
- ii. Medication administration
    - Inject the medication in a slow, steady motion into one of the large muscle groups previously identified (See Appendix C)
    - Post-injection:
      - Withdraw needle slowly.
      - Apply gentle pressure and bandage to injection site.
      - Immediately dispose of used needles into the sharps container.
      - **DO NOT** recap needles.
  6. Document the administration of the medication including: time of naloxone administered, dose, site injected and patient response on the First Responder Care record in the Additional Treatments and/or Comments section.
  7. Continue to monitor and support respiratory and cardiac status.
  8. May repeat administration of 0.4 mg naloxone after 5 minutes if little or no response to first injection. Note the total maximum dose is 0.8 mg of naloxone.
  9. Document the administration of the medication including: dose administered, site injected and patient response.
  10. Continue to monitor and support respiratory and cardiac status until higher level of care arrives.

**APPENDIX C: Sites for Injection of Naloxone**IM Site Anatomy:

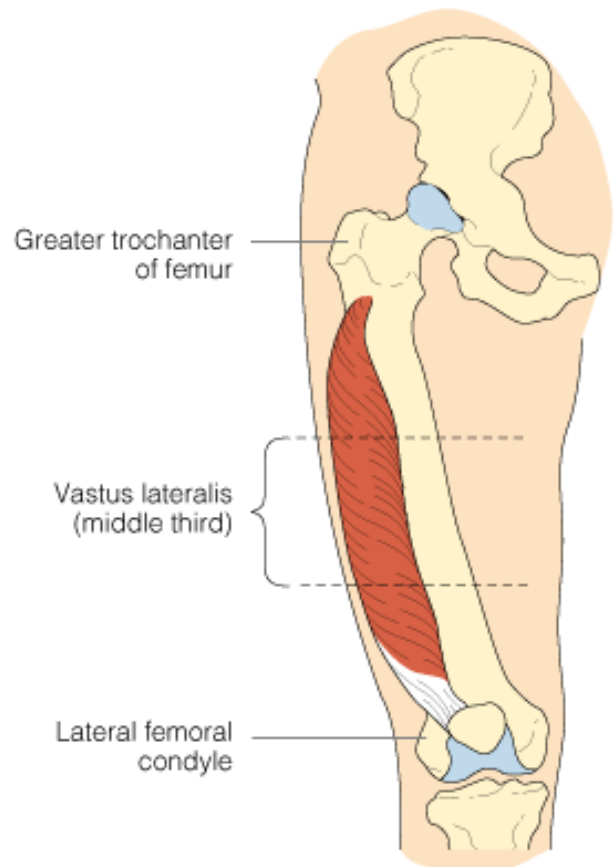
## Shoulder:

- Identify the meaty part of the lateral shoulder (the deltoid muscle)
- Injection site 2-3 fingerbreadths (2") below the bony part of the lateral shoulder above the level of the armpit and into central and thickest portion of deltoid muscle (the meatiest part)



## Thigh:

- Identify the lateral quadriceps muscle (vastus lateralis)
- Identify the anterior thigh
- IM Injection is into the middle third of these muscles (outlined in red)



**APPENDIX D: Product Distribution Centre (PDC) Order Information for Fire Responder Agencies Expense Authority (EA)**

1. Fire agency to complete *SEAL Application* (provided in training package)
2. Fire agency personnel who will be responsible for ordering Narcan from PDC must designate their EA and complete the forms.
3. Email forms to PDC customer service once completed @ [PDCCustomerSer@gov.bc.ca](mailto:PDCCustomerSer@gov.bc.ca).

**Narcan and Simu-dose ordering procedures:**

Fire agency to either fax (*PDC Order Form*) or email Customer Service @ [PDCCustomerSer@gov.bc.ca](mailto:PDCCustomerSer@gov.bc.ca) for their Narcan orders.

Ensure PDC material code is included. Code is: **6505061633 NALOXONE INJ 0.4MG/ML 1ML/AMPOULE ALV EA \$1.95 EA vial**

**Do not use Naloxone for training purposes. Please use Simu-dose** 6530682010 AMPOULE TRAINER 1ML SIMU-DOSE 10/PK \$8.22. Simu-dose is available on line in the generic shopping cart.

**Special notes on Naloxone:**

- Expiry date for Naloxone ampoules is about 6 months.
- PDC does not allow returns or exchanges on injectable drugs.
- When ordering please keep in mind that you will most likely only require two naloxone kits per truck. This will eliminate any issues with expiry dates.
- Any expired drugs must be taken to the closest pharmacy for proper disposal.

Orders will require either a signature or expressed approval from the EA:

1. Faxed orders: Signed by the designated EA
2. Email orders: EA clearly stating the order for Narcan is approved when the email request is sent to PDC Customer service.
3. A letter from the Vice President of Medical Programs with his name and number will be required to be on file prior to any drug order being filled.
4. The PDC order form for those fire agencies who would like to fax their orders has been attached to this document.

For each Narcan order, please include the following:

- Customer Number or Account number
- PDC product code: 6505061633 NALOXONE INJ 0.4MG/ML 1ML/AMPOULE ALV EA \$1.95 EA vial
- QTY required
- EA authorization in the form of a signature and/or expressed approval

**NOTE:** *SEAL Application* and *PDC Order Forms* are provided to Fire Departments with their training documents.