

Saskatchewan Health Authority
(The former Saskatoon Health Region)

Department of Nursing Practice and Education

ADMINISTRATION OF INTRAVENOUS PUSH/DIRECT MEDICATIONS

LEARNING PACKAGE

RN/GN, RPN – Entry Level Competency

This package provides information for the nurse to review administration of intravenous push/direct medication theory and nursing care.

LPN – Additional Competency

This learning package provides the information for certification of LPNs in this additional competency: Administration of IV Push/Direct Medications with an established plan of care in **specific clinical areas where targeted by the manager**. The completion of this learning package and quiz qualifies as certification in the theory portion of the certification. Completion of certification (skill) will be required with an RN, RPN or certified LPN.

Revision Date: February 2018

This material was developed for the use of Saskatoon Nursing Divisions, Saskatchewan Health Authority. This material may not be suitable for other agencies. SHA makes no warranties or representation regarding this information and each agency is urged to update and modify this information for its own use.

Permission for extensive copying of this Learning Package for scholarly purposes may be granted by Nursing Practice & Education. It is understood that due recognition will be given to the Coordinator(s) of this Learning Package and to Nursing Practice & Education in any use of this material. Copying, publication or any other use of this Learning Package for financial gain without approval is prohibited.

Requests for permission to copy or to make other use of the material in this Learning Package, in whole or in part should be addressed to:

Department of Nursing Practice & Education

c/o Nursing Office
Royal University Hospital
Saskatoon, Sask.
S7N 0W8

c/o Nursing Office
Saskatoon City Hospital
Saskatoon, Sask.
S7K 0M7

c/o Nursing Office
St. Paul's Hospital
Saskatoon, Sask.
S7M 0Z9

ACKNOWLEDGMENTS:

Coordinated by:

Helen Sabadash Clinical Nurse Educator, Royal University Hospital

Special thanks to:

Deb Billy Clinical Nurse Educator, Saskatoon City Hospital

Shannon Waldner Clinical Nurse Educator, Royal University Hospital

TABLE OF CONTENTS:

	Page No.
1.0 Introduction	1
1.1 Administration of IV Push/Direct medication Certification	1
1.2 Review Completion	1
1.3 Objectives	1
2.0 Theory	2
2.1 Definition	2
2.2 Checking	2
2.3 Administration of IV Push Decision Tree	3
2.4 IV Medication Reference Manual Monographs	4
2.5 Potential Complications	5
2.6 Administering the Medication	6
2.7 Documentation and Reporting	7
2.8 Summary	7
2.9 Answers for Study Questions.....	8
3.0 Policy and Procedure: Administration of Intravenous Push/Direct Medication.....	9
5.0 Appendix - A. IV Reference Manual Monograph Sample	16
B. IV Reference Manual Monograph-Answer Sheet.....	18
C. Sample MAR.....	20
6.0 Review Quiz	22
7.0 IV Push Skill Competency checklist	24

1.0 INTRODUCTION

1.1 Administration of IV Push/Direct Medications Review/Certification

Registered Nurses, Grad Nurses and Registered Psychiatric Nurses will review Administration of IV Push/Direct Medication. IV Push/Direct is an entry level competency which does not require certification.

Licensed Practical Nurses (LPN): This learning package provides the information for certification of LPNs in this additional competency: Administration of IV Push/Direct Medications with an established plan of care in **specific clinical areas where targeted by the manager**. The completion of this learning package and quiz qualifies as certification in the theory portion and skill certification will be required with an RN,RPN or certified LPN.

1.2 Certification/Review Completion

1.2.1 Review of the learning package.

1.2.2 Completion of the Review Quiz (Section 5)

1.2.3 Demonstration of the skill.

1.3 Objectives

Upon completion of this learning package you should be able to:

- Define IV push/direct administration of medications
- Identify the steps in safely administering medication by the IV push/direct route
- Identify medication information resources
- Calculate the dosage of medications
- Identify complications of IV push/direct route



Medication given IV Push/Direct

2.0 THEORY

2.1 Definition

What is an IV push/direct medication?

- IV push/direct means the manual administration of a small volume of medication or concentrated solution directly into the venous system.
- It does **not** refer to a medication placed on a pump or added to an IV bag.

Why give a medication by the IV push/direct route?

- Physician has ordered the medication to be given IV Push (LPN)
- Giving a medication IV push/direct means more immediate and predictable therapeutic effects.
- The health care team is able to quickly respond to a patient's needs.
- Some medications can only be absorbed intravenously.
- The IV route is often required if the patient is unable to take oral medications.
- Administration can be discontinued immediately if an adverse reaction occurs.



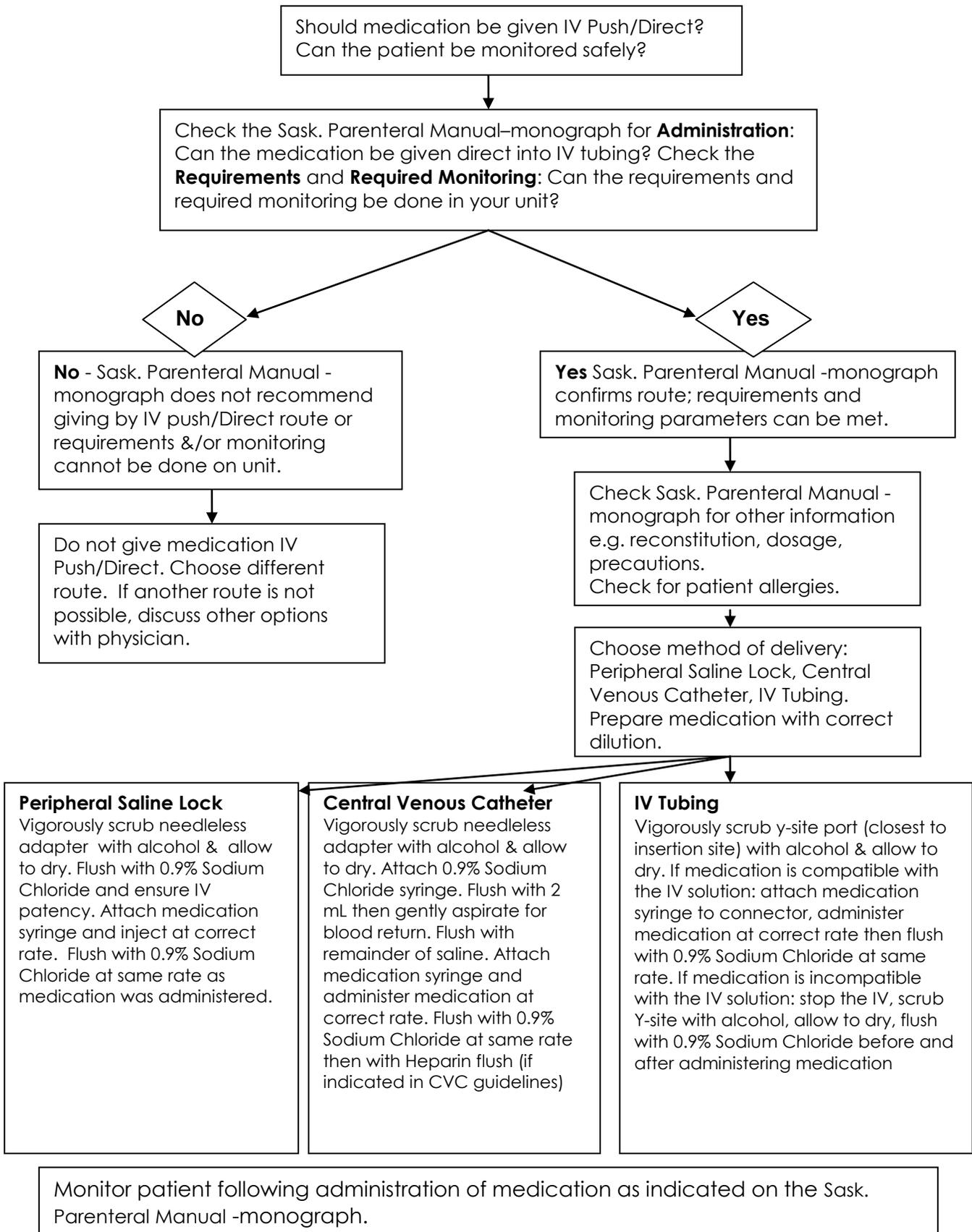
Please review SHR policy: Administration of IV Push/Direct medications (Page 9)

2.2 Checking

Prior to giving an IV Push Medication various safety checks are performed:

- Check **physician's** order to determine medication, dose, route and frequency of administration. (LPN: Physician must write the order for the medication to be given IV push)
- Using available resources **IV Medication Reference Manual (Sask. Parenteral Manual-ADULT and Pediatric Parenteral Drug Manual), CPS, Pharmacy):**
 1. Check if medication can be given IV push/direct
 2. Check if the monitoring requirements can be met on your unit (see Decision Tree 2.3)
 3. Review information about the medication, including **action, purpose, peak onset, normal dose, side effects, and dilution**
- Check that it is the **right patient, right drug, right dosage, right time, right dilution/compatibility, right flow rate and right route.**
- For **High alert** medications, an independent double check and documentation is required.
- Check for any **incompatibilities** of IV medications.
- Check for any known **allergies** and monitor for any reactions during administration.
- Watch for IV related complications; ensure venous access is patent prior to administering the medication. Some medications can cause severe tissue damage if injected into the tissue (extravasation).

2.3 Administering a Medication IV Push/Direct Decision Tree



2.4 IV Medication Reference Manual Monographs

Practice using the IV Medication Reference Manual (Sask. Parenteral Manual-ADULT and Pediatric Parenteral Drug Manual) **monograph with this patient scenario:**



Maureen McFee is a 70 year old woman who is a patient on a surgical unit. She is a post-op patient recovering from abdominal surgery. The physician has an order on the chart for 2- 5 mg Morphine IV push q 4 hrs.



Using the IV Medication Reference Manual Monograph Sample- **Appendix A**, answer the following questions:

- Is this medication drug appropriate for IV push?
- Is this the correct dose?
- What monitoring is required?
- What are the desired effects?
- What are the possible adverse effects?

Check your answers:



See **Appendix B** - IV Medication Reference Manual Monograph Sample-Answer page
This is a **High Alert medication** –it requires an independent double check and documentation.

(For complete policy see: Regional Policy 7311-60-020 High Alert Medications- Identification, Double Check and Labelling)

High-Alert Medications are medications that bear a heightened risk of causing significant patient harm when used in error (as defined by the Institute for Safe Medication Practices).

Independent Double-Check means a second independent check by a second healthcare professional confirming the medication correctly reflects the original prescribed medication order, and the medication administration is in accordance with the drug monograph and / or respective policy.

An **independent double-check** is required prior to the administration of any dose which requires use of the following high-alert medications:

- insulin (excluding subcutaneous insulin administered through Home Care),
- intravenous anticoagulants
- concentrated electrolytes,
- chemotherapeutic agents,
- Opioids (Morphine, Dilaudid, Fentanyl, Demerol)
- intravenous vasoactive agents and

- neuromuscular blocking agents.

2.5 Potential Complications

Complications to watch for in a patient receiving IV Push medications include complications associated with venous access: thrombophlebitis, infection, infiltration and complications associated with medications: extravasation, allergic reactions and speed shock. Review the complications with these problem solving questions:

1. Prior to administering an IV push medication, you assess the patient's IV. The IV cannot be flushed and the patient tells you his IV "hurts."
 - i) What are the causes of thrombophlebitis in an IV?
 - ii) What is one symptom of thrombophlebitis?
 - iii) You cannot flush the IV. Can you still give the IV push medication through this IV?
2. Your patient has an order for Ancef (Cefazolin). You check the patient's chart and ask the patient if he has any allergies. After finding no evidence that this person would be allergic to the medication, you begin to administer the medication IV Push. After about 1/3 of the medication has been administered, you notice that the patient's face is suddenly flushed.
 - i) What could be the cause?
 - ii) What is a sign or symptom of an allergic reaction?
 - iii) What is the appropriate intervention when an allergic reaction is suspected
3. You are receiving an admission from ER. They report on the care the patient received. The patient experienced Speed Shock after receiving a medication IV push.
 - i) What is Speed shock?
 - ii) What are the signs and symptoms?
 - iii) How can you prevent this from happening?
4. Prior to administering medications you check the IV for any signs of Infection.
 - i) Signs of infection in an IV include.
 - ii) IV infections can be prevented by:

5. An interstitial IV allows the IV fluid or medication to infiltrate into the tissues instead of into the vein. Extravasation is when this medication causes damage to the tissues.

- i) What are signs/symptoms of infiltration?
- ii) How can you decrease the risk of infiltration and extravasation?

(check your answers Section 2.9)

2.6 Administering the Medication

After you have done the appropriate checking, you can gather your supplies, calculate the correct dosage and administer the drug.

Supplies required:

- Medication Administration Record (MAR) (take it into the room)
- IV medication
- Alcohol swabs
- Syringe with needle or blunt needle
- Medication
- Medication label
- Diluents (sterile saline/water)
- 0.9% Sodium Chloride flush syringes
- Heparin flush (if using a central venous catheter that requires it)



Calculate the dosage

Note: In some circumstances the medication dose will need to be calculated by age, height, and weight or body surface area.

Calculate the dosage for these examples:

Example 1: A physician writes an order for administration of an IV push medication for a patient with pulmonary edema. The order is for **Furosemide (Lasix) 35mg IV push**. The vial of Furosemide contains 4mls – each ml contains 10 mg of Furosemide. How much would you draw up?

Example 2: Diphenhydramine (Benadryl) 12.5 mg IV is ordered for a patient having an allergic reaction. The ampule of Diphenhydramine contains 1 ml – each ml contains 50mg of Diphenhydramine. How many mLs do you draw up?
(check your answers –Section 2.9)

Administer the Medication

IV push medication can be given through a Peripheral Saline Lock, IV tubing or through a Central Venous Catheter. (For procedures see SHR policy: Administration of IV Push/Direct medications -Page 9)

2.7 Documentation and Reporting

The final step in the IV push process is documentation and reporting.

- Chart on the Medication Administration Record (MAR). IV medications should be documented immediately after administration.
- Include the time, dosage, route, initials and co-signer if dose needs to be double-checked. (see **Appendix C - Sample MAR**)
- Chart patient response to medication.
- For pediatric patients: record flush solution on MAR and volume if fluid restricted on daily flow sheet/fluid balance record.
- NICU/PICU record medication and flush volume on IV intake record.
- Report to physician if medication is not effective or if the medication causes any adverse effects.

2.8 Summary

Now that you've reviewed the steps of IV push medication administration, it's time to test your knowledge. To complete this module, you must read the policy and take the final Review Quiz.

2.9 Answers for Study Questions

Potential Complications - Problem Solving (Section 2.5)

Answers:

1. i) clot formation due to irritation ii) pain along the vein iii) no
2. i) possible allergic reaction to the medication ii) Rash, facial swelling iii)discontinue administering the medication & notify the physician
3. i) medication given too fast ii) hypotension, headache flushed face iii) infuse medication and flush at prescribed rate and dilution
4. i) pain, edema, purulent discharge, fever ii) good hand washing prior to care, aseptic technique during insertion, catheter care and removal, changing IV every 96 hours unless contraindicated
5. i) pain, burning and swelling around the insertion site; IV infusing poorly
ii) check patency of IV prior to administering medications, observe site while administering medications and ask patient to alert you regarding any discomfort.

Administering the Medication - Calculate the dosage (2.6)

Answers:

Example #1 - 3.5 mls should be drawn up

Example #2 - 0.25 mls should be drawn up

	<p><u>Policies and Procedures</u></p> <p>Title: INTRAVENOUS – PUSH/DIRECT MEDICATION ADMINISTRATION</p> <p>LPN Additional Competency (LPNAC): Intravenous Push/Direct Medication Administration with an established Plan of Care</p> <p>RN - Entry Level Competency</p> <p>I.D. Number: 1089</p>
<p>Authorization:</p> <p><input checked="" type="checkbox"/> Former SKtnHR Nursing Practice Committee</p>	<p>Source: Nursing</p> <p>Date Reaffirmed: March 2013</p> <p>Date Revised: February, 2018</p> <p>Date Effective: February 2001</p> <p>Scope: Former SKtnHR and Affiliates</p>

Any PRINTED version of this document is only accurate up to the date of printing 29-May-18. Former SKTNHR cannot guarantee the currency or accuracy of any printed policy. Always refer to the Policie and Procedures site for the most current versions of documents in effect. SHR accepts no responsibility for use of this material by any person or organization not associated with former SKtnHR. No part of this document may be reproduced in any form for publication without permission of the former SKtnHR.

HIGH ALERT: If the monitoring requirements cannot be met, do not administer medication IV Push. Refer to the [Saskatchewan Parenteral Manual](#)

DEFINITIONS:

Client- term used to refer to a client, patient or resident

Intravenous Push/Direct medication administration: refers to the manual administration of a relatively small volume of a concentrated solution or medication directly into the venous system via a peripheral or central venous access device.

Speed Shock - a sudden adverse physiological reaction to IV medication or drugs that are administered too quickly. Some signs of speed shock are a flushed face, headache, a tight feeling in the chest, irregular pulse, loss of consciousness, and cardiac arrest.

Established Plan of Care- based on an RN assessment of care needs, the plan of care for IV push/direct medication may be considered established where a scheduled medication is prescribed by IV push/direct route, and following the initial dose of a medication with no adverse reactions, and when IV access is through a peripheral IV or saline lock or through a PICC. The IV push/direct plan of care must be documented in a nursing care plan. The plan of care is no longer considered established if the client is not achieving expected outcomes or if an adverse reaction occurs.

ROLES:

Licensed Practical Nurses (LPNs) LPNs identified by the manager in targeted practice settings will be certified in the LPN Additional Competency: Intravenous – Push/Direct Medication Administration with the following conditions:

- When an established Plan of Care is in place
- For specific medications targeted for the practice setting
- When a written prescriber order specifies that the medication is to be given IV Push/Direct.

Certified LPNs may administer IV Push/Direct medication autonomously via peripheral IV or PICC, (Kidney Health: through accessed Arteriovenous Fistula or Graft) as assigned, for clients who are less complex, more predictable and at lower risk for negative outcomes. If a change is required in the IV push/direct route medication plan of care, the LPN will consult with a RN, RN(NP),RPN or physician and work collaboratively to establish a new plan of care.

Note: Prerequisite:

LPN must have completed the Sask Polytechnic IV Therapy/Blood & Blood Products completer course or equivalent.

Registered Nurse (RN) - may administer an IV push/direct medication by any IV route.

Registered Psychiatric Nurse (RPN) who has the knowledge and skill may administer an IV push/direct medication by peripheral IV or saline lock routes, or by PICC if certified in care and use of PICCs.

1. PURPOSE

- 1.1 To safely administer medications intravenously by IV push/direct route.
- 1.2 The IV push/direct route should be chosen in emergencies or whenever an immediate drug effect is needed.

2. POLICY

- 2.1 Registered Nurses and Registered Psychiatric Nurses will administer IV push/direct medication in accordance with the guidelines of this policy, the nursing units and with the [Saskatchewan Parenteral Manual](#).
- 2.2 Licensed Practical Nurses identified by their manager require certification to administer IV push/direct medication in accordance with the guidelines of this policy, the nursing units and with the [Saskatchewan Parenteral Manual](#). (See LPN role in the previous section for conditions).

Note: Refer to policy [Licensed Practical Nurse Additional Competencies #1071](#) for a list of targeted areas and specific targeted medications.

- 2.3 LPNs certified in this LPNAC will have first completed the following learning modules/activities prior to administering IV push/direct medication:

- Review of current IV push/direct policy.
- Review of procedure in the event of adverse or unexpected reaction.
- Complete the required learning module and quiz (teaching and learning methods may vary e.g. classroom and/or self- study using paper module or on line)
- Complete a skills checklist with an RN, RPN or certified LPN during simulation or during care, to ensure safety checks are followed appropriately.
- Provide documentation of learning module quiz and skills checklist to educator/supervisor

2.4 Prior to administration of IV Push/direct medication, the nurse must refer to the [Saskatchewan Parenteral Manual](#) and be knowledgeable regarding:

- desired therapeutic effects
- possible adverse effects
- appropriate preparation and dilution
- required monitoring parameters
- maximum dosage and rate of administration

Note: *Giving a medication too fast can cause speed shock or death*

NICU: see appropriate IV medication resource.

2.5 **If the monitoring requirements cannot be met, do not administer medication IV Push.**

If another route or method of administration is not possible, discuss other options with the practitioner.

2.6 The nurse must ensure the following

- Right patient
- Right drug
- Right dosage
- Right route
- Right time
- Right dilution/fluid compatibility
- Right flow rate
- Right monitoring
- Right documentation

2.7 Perform hand hygiene prior to preparing the medication, prior to administering the medication and after medication is administered.

2.8 Withdraw IV push/direct medications from single use glass ampules using a clean blunt filter needle (then discard needle).

Note: Ampule breakers are recommended to avoid injury when the glass vial does not have a rubber stopper.

(Ordering information: Ampule Cracker 1-4 mL - Pharma Systems Inc. Product code: 7372)

2.9 Draw up the medication in an appropriate sized syringe. Dilute medication as directed in package insert or [Saskatchewan Parenteral Manual](#) if required.

Note: Do not use a prefilled saline flush syringe to draw up the medication.

2.10 If the client has a central venous catheter (CVC), administer IV push/direct medication as directed in this policy and refer to Nursing Policy and Procedure: [Central Venous Catheters-Care of PICCS #1001](#) or [Central Venous Catheters-Short Term, Tunneled, Implanted – Care of #1086](#) for assessment of patency, flushing and locking guidelines.

2.11 If adverse reaction noted, stop the medication administration immediately and withdraw any remaining medication if possible. Notify practitioner immediately.

3. PROCEDURE

3.1 Supplies

- alcohol swabs
- syringe
- medication
- PPE supplies as appropriate
- ampule breaker (if available)
- medication labels
- diluent, if applicable
- 0.9% Sodium Chloride flush

Note: NICU – use D5W as per protocol

PICU – as per unit protocol

3.2 Check for client allergies (refer to Allergy/Intolerance Record and Medication Administration Record).

3.3 Perform hand hygiene.

3.4 Prepare medication per IV monograph ensuring compatible diluent and correct dilution. Attach a completed medication label. Refer to Nursing Policy and Procedure: [Medication Administration #1170](#).

Note: If more than one medication is to be administered and incompatibilities exist, flush with 0.9% Sodium Chloride (NICU – D5W as per protocol) between each medication.

Note: A separate syringe must be used for each medication.

3.5 Examine insertion site and ensure patency

3.5.1 If administering through a running intravenous, observe for free flow of IV solution.

3.5.2 If using a saline lock, assess for any occlusion by ease of flush.

- 3.5.3 If using a CVC, assess patency and flush as appropriate before and after medication: refer to policy: [Central Venous Catheters-Care of PICC](#) or [Central Venous Catheters-Short Term, Tunneled or Ports](#)).
- 3.5.4 Ensure the CVC can be easily flushed prior to administering medication with a 10ml syringe filled with 0.9% Sodium Chloride. Once patency has been confirmed using a 10mL flush syringe, administration of the medication can be given in a syringe appropriately sized to measure and administer the required dose.

3.6 Injecting medication through Peripheral Intravenous Tubing Port (Y-Site)

- 3.6.1 IV Push medications cannot be administered with Parenteral Nutrition (PN), continuous medication infusions or blood.
- 3.6.2 Perform hand hygiene.
- 3.6.3 Vigorously scrub Y-site closest to insertion site with alcohol for 15 seconds. Allow to dry.
- 3.6.4 If medication is compatible with the IV solution, attach medication syringe to Y-site port by pushing and twisting until tight. Occlude IV line by pinching tubing just above injection port, inject medication at the correct rate, and then flush port with 0.9% Sodium Chloride.
- 3.6.5 If medication is incompatible with the IV solution, stop the IV infusion, perform hand hygiene, scrub Y-site port with alcohol, flush with 10 mLs 0.9% Sodium Chloride (Pediatrics 5mLs) and inject medication at the correct rate. Scrub Y-site port with alcohol and flush again with 10mLs 0.9% Sodium Chloride (Pediatrics: 5 mLs).

Note: The flush following medication administration must be delivered at the same rate as the medication injection.

- 3.6.6 Re-establish infusion.

3.7 Injecting medication through a Peripheral Saline Lock

- 3.7.1 Perform hand hygiene.
- 3.7.2 Vigorously scrub needleless adapter with alcohol for 15 seconds. Allow to dry.
- 3.7.3 Attach syringe with 0.9% Sodium Chloride to needleless adapter by pushing and twisting until tight and flush (Adults: 3mLs, Pediatrics: 1-2 mLs).
- 3.7.4 Repeat 3.7.2 and attach medication syringe. Inject at correct rate.
- 3.7.5 Repeat 3.7.2 and flush with 0.9% Sodium Chloride. Remove syringe from needleless adapter.

(NICU – lock with a minimum of double the lumen volume with 0.9% Sodium Chloride after use and q6h) (PICU – heparin flush as per unit protocol).

3.8 Documentation and Reporting

- 3.8.1 On the Medication Administration Record (or appropriate record) include date, time, name of drug, dosage, route, initials and co-signer initials if medication requires an independent double check. Refer to Nursing Policy and Procedure: [Medication Administration Record \(MAR\) #1091](#).
- 3.8.2 On flow sheet/progress note include rationale for administration and client response.
- 3.8.3 Pediatric Units: record flush solution on the MAR and volume if fluid restricted on daily flow sheet/fluid balance record.
- 3.8.4 NICU/PICU: record medication and flush volume on IV intake record.
- 3.8.5 Report any adverse effects immediately to the practitioner.

4. REFERENCES

Caple C, Walsh K. Administration of Medication: Administering Medications via IV Bolus or IV Push. CINAHL Nursing Guide. September 16, 2016.

<http://ezproxy.saskatoonhealthregion.lib.sk.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=nup&AN=T705920&site=nup-live&scope=site>

Elkin, M. & Potter, P (2018) Clinical Skills & Techniques. 9th Edition – Elsevier. St. Louis, MO Chapter 22: Administering Medications by Intravenous Bolus. Pg. 607-613.

The Institute for Safe Medication Practices (2015) ISMP Safe Practice Guidelines for Adult IV Push medications Retrieved from

<http://www.ismp.org/Tools/guidelines/IVSummitPush/IVPushMedGuidelines.pdf>

Paparella SF, Mandrack MM.(2016) IV Push Medication Administration: making Safe Choices: Choosing Best Practice. J Emerg Nurs. Jan: 42 (1): 64-7

Regina Qu'Appelle Health Region Policy: Direct IV (IV Push) medication Administration for the Adult (2016) <http://www.rqhealth.ca/service-lines/clinical-quality-professional-practice/files/D.5.pdf>

Saskatchewan Parenteral manual. Retrieved from:

<https://collaboration.web.ehealthsask.ca/sites/smartpump/Pages/Homepage.aspx>

Online Medical dictionary <https://medical-dictionary.thefreedictionary.com/speed+shock>

5.0 APPENDICES

5.1 APPENDIX A – IV Medication Reference Manual - Monograph Sample

Sask. Parenteral Manual - ADULT

HIGH ALERT

morphine

Disclaimer: Official controlled document is the Sask Parenteral Manual- Adult online copy. The user should ensure that any paper copy version is the same as the online version before use.

OTHER NAMES		CLASSIFICATION	*ELDER ALERT - See Cautions
		Opiate Agonist/Narcotic Analgesic	
INDICATIONS FOR IV USE			
<ul style="list-style-type: none"> Severe acute or chronic pain.¹ Analgesic of choice for acute myocardial infarction² Acute pulmonary edema secondary to heart failure² Sedation to supplement anesthesia and for analgesia during labour² 			
CONTRAINDICATIONS			
<ul style="list-style-type: none"> Hypersensitivity to sulfites: certain formulations contain sulfite preservatives Hypersensitivity to morphine (rare). Cross reaction may occur with codeine, oxycodone, hydromorphone, oxymorphone 			
CAUTIONS			
<ul style="list-style-type: none"> Elderly: may be at increased risk of respiratory depression after the first dose³ Debilitated or other poor risk patients (e.g. Addison's disease), respiratory disease and patients with decreased respiratory reserve (e.g. obesity, kyphoscoliosis): increased risk of delayed respiratory depression³ Severe renal or hepatic impairment or patients with reduced metabolic rates: dose reduction may be required, due to decreased elimination³ Increased intracranial pressure, or head injury: respiratory depression or obscuring of clinical course may occur^{1,3} 			
DRUG INTERACTIONS: CNS depressants – additive effects increase the risk of respiratory depression ³			
PREGNANCY/BREASTFEEDING: Safe use other than in labour not established. Contact pharmacy for most recent info			
ADMINISTRATION			
In order to administer a medication in the Sask. Parenteral Manual-ADULT you must be able to meet the "REQUIREMENTS" and "MONITORING REQUIRED" sections within the monograph. If you are unable to meet these parameters, contact the Most Responsible Physician for further direction (e.g. higher level of care needed).			
MODE	DIRECT IV	INTERMITTENT INFUSION	CONTINUOUS INFUSION
	YES	YES	YES
ADULT	Undiluted into running IV, or diluted in 4 to 5 mL SWW or NS Maximum rate: 2 mg/min*	Dilute in 50 mL minibag Infuse over 20 minutes Maximum rate 2 mg/min* Patient Controlled Analgesia: Provided by Pharmacy, where available/applicable, in standard conc. – see Reconstitution Adult Syringe Driver, where available/applicable See Regional Syringe Driver prep chart for guidelines.	Provided by Pharmacy, where available/applicable, in standard concentration 100 mg in 100 mL for 1 mg/mL Palliative Adult CCA: allows for concentrations of 1 mg/mL or 5 mg/mL See Reconstitution section
REQUIREMENTS	Continuous infusion: Use IV infusion device with Dose Error Reduction Software (DERS) when available. PCA: Use PCA programmed pump		
MONITORING REQUIRED			
As per regional policy/work standard or Baseline: RR, HR, BP, sedation scale before dose or start of infusion Adult doses greater than 5 mg given direct IV:			
<ul style="list-style-type: none"> RR, HR, BP, sedation scale at 5 and 15 minutes post dose/post infusion. Urine output 			
Adults: Intermittent infusions or Direct IV doses 5 mg or less:			
<ul style="list-style-type: none"> Monitoring as per regional policies. Maximum rate of administration 2 mg/min* 			
Continuous infusion: RR and sedation scale at 5 and 15 minutes then every 2 hours			
Patient controlled analgesia (PCA):			
<ul style="list-style-type: none"> As per regional policy or Pain Management Flow sheet RECOMMENDED Monitor fluid + output; check for bladder distension. Check for abdominal distension, gas or constipation Continuous Infusion: Use IV infusion device Dose Error Reduction System when available 			

Sask. Parenteral Manual - ADULT

HIGH ALERT

morphine

Disclaimer: Official controlled document is the Sask Parenteral Manual - Adult online copy. The user should ensure that any paper copy version is the same as the online version before use.

RECONSTITUTION

- None required. Available in a variety of concentrations and volumes. Contact pharmacy for information
- Provided by Pharmacy, where available/applicable, in standard concentration: morphine 2 mg/mL in NS - 100 mL minibag

COMPATIBILITY/STABILITY

- Stable in dextrose 5% and NS for at least 24 hours at room temperature and in the refrigerator when mixed on ward⁷
- Compatible with dextrose, saline, dextrose-saline combinations and lactated Ringer's solutions⁷
- Products premixed by pharmacy are individually labelled with an expiry date and storage instructions
- For drug-drug compatibility contact pharmacy

ADVERSE EFFECTS²**RESPIRATORY**

- Respiratory depression and apnoea: decreasing quality/depth of respirations may be the initial indication of respiratory depression. Will not occur without sedation, as higher doses are required to produce respiratory depression than to produce sedation. Treatment: naloxone IV and respiratory support

CNS: Sedation; most patients experience sedation at beginning of therapy and whenever dose is increased significantly

CARDIOVASCULAR: Transient bradycardia: responds to atropine if treatment is required

- Transient hypotension, facial flushing

MISCELLANEOUS

- Nausea, vomiting. Most common with the initial dose. Dose related. Slow + steady dose titration helps reduce nausea
- True allergy (very rare). Constipation; tolerance does not develop

DOSE:

➤ There is no limit to dose as long as patient is free of adverse side effects

- The following doses should only be considered as guidelines. Safe and effective doses for individual patients will vary considerably, depending on age, medical condition, type of pain, concomitant medications and other factors

ADULT

- Direct IV bolus:⁸ usual dose range 2 to 15 mg/70 kg; frequency determined by patient's clinical condition and response
- Continuous infusion:³ 1.25 to 2.5 mg/hour for opioid naïve patients with moderate to severe pain. Supplemental or breakthrough dose: 25 to 50% of the hourly dose, offered at least every 30 minutes
- PCA dosing for opioid-naïve patients with severe pain⁸ Also refer to PCA Dosage/Dose Delay Guidelines:

Loading dose	PCA dose	Delay (lock out)	Basal Rate	4 Hour Limit
2.5 mg repeat PRN	0.6 to 2 mg	5 to 10 minutes	0 to 1.25 mg/h	30 to 50 mg

- For moderate pain decrease dose by 50%, for mild pain decrease dose by 75%³

ELDERLY⁸: Consider decreasing starting dose by 25 to 50%. Titrate up or down according to patient's response

- Consider a PCA delay (lock out) of 8 to 10 minutes to ensure titration upward is done slowly

RENAL IMPAIRMENT ADJUSTMENTS¹

- May have a prolonged duration of action 6, 8 or even 24 h following a standard dose. Titrate up or down accordingly. Continuous infusions should be avoided

HEPATIC IMPAIRMENT ADJUSTMENTS¹: May have a prolonged duration of action 6, 8 or even 24 h following a standard dose. Titrate up or down accordingly. Continuous infusions should be avoided

HEMODIALYSIS: No supplemental dose required.¹³ Some recommend using HYDRMORPHONE vs. morphine³

CAPD/CRRT: No information available at this time

MISCELLANEOUS

- May be given IM or subcutaneously¹

5.2 Appendix B- IV Medication Reference Manual- Monograph Sample-Answer page

Sask. Parenteral Manual - ADULT

HIGH ALERT

morphine

Q. What are the desired effects?
A. Analgesic

Disclaimer: Official controlled document is the Sask Parenteral Manual- Adult online copy. The user should ensure that any paper copy version is the same as the online version before use.

OTHER NAMES	CLASSIFICATION Opiate Agonist/Narcotic Analgesic	*ELDER ALERT - See Cautions
--------------------	------------------------------------------------------------	---------------------------------------

INDICATIONS FOR IV USE

- Severe acute or chronic pain.¹ Analgesic of choice for acute myocardial infarction²
- Acute pulmonary edema secondary to heart failure²
- Sedation to supplement anesthesia and for analgesia during labour²

CONTRAINDICATIONS

- Hypersensitivity to sulfites: certain formulations contain sulfite preservatives
- Hypersensitivity to morphine (rare). Cross reaction may occur with codeine, oxycodone, hydromorphone, oxymorphone

CAUTIONS

- Elderly: may be at increased risk of respiratory depression after the first dose³
- Debilitated or other poor risk patients (e.g. Addison's disease), respiratory disease and patients with decreased respiratory reserve (e.g. obesity, kyphoscoliosis): increased risk of delayed respiratory depression³
- Severe renal or hepatic impairment or patients with reduced metabolic rates: dose reduction may be required, due to decreased elimination³
- Increased intracranial pressure, or head injury: respiratory depression or obscuring of clinical course may occur^{1,2}

DRUG INTERACTIONS: CNS depressants – additive effects increase the risk of respiratory depression³

PREGNANCY/BREASTFEEDING: Safe use other than in labour not established. Contact pharmacy for most recent info

ADMINISTRATION

To administer a medication in the Sask. Parenteral Manual-ADULT you must be able to meet the "REQUIREMENTS" and "MONITORING REQUIRED" sections within the monograph. If you are unable to meet the parameters, contact the Most Responsible Physician for further direction (e.g. higher level of care needed).

Q. Is this drug appropriate for IV use?
A. Yes, this drug can be given by IV push

	DIRECT IV	INTERMITTENT INFUSION	CONTINUOUS INFUSION
	YES	YES	YES
ADULT	Undiluted into running IV, or diluted in 4 to 5 mL SWW or NS Maximum rate: 2 mg/min*	Dilute in 50 mL in bag Infuse over 20 minutes Maximum rate 2 mg/min* Patient Controlled Analgesia: Provided by Pharmacy, where available/applicable, in standard conc. – see Reconstitution Adult Syringe Driver, where available/applicable See Regional Syringe Driver prep chart for guidelines.	Provided by Pharmacy, where available/applicable, in standard concentration 100 mg in 100 mL for 1 mg/mL Palliative Adult CCA: allows for concentrations of 1 mg/mL or 5 mg/mL See Reconstitution section
REQUIREMENTS	Continuous infusion: Use IV infusion device with Dose Error Reduction Software (DERS) when available. PCA: Use PCA programmed pump		

Q. What monitoring is required?
A: See monograph

MONITORING

REQUIRED

As per regional policy/work standard

Baseline: RR, HR, BP, sedation scale before dose or start of infusion

Adult doses greater than 5 mg given direct IV:

- RR, HR, BP, sedation scale at 5 and 15 minutes post dose/post infusion. Urine output

Adults: Intermittent infusions or Direct IV doses 5 mg or less:

- Monitoring as per regional policies. Maximum rate of administration 2mg/min*

Continuous infusion: RR and sedation scale at 5 and 15 minutes then every 2 hours

Patient controlled analgesia (PCA):

- As per regional policy or Pain Management Flow sheet

RECOMMENDED

- Monitor fluid + output; check for bladder distension. Check for abdominal distension, gas or constipation

- Continuous Infusion: Use IV infusion device Dose Error Reduction System when available

Disclaimer: Official controlled document is the Sask Parenteral Manual - Adult online copy. The user should ensure that any paper copy version is the same as the online version before use.

RECONSTITUTION

- None required. Available in a variety of concentrations and volumes. Contact pharmacy for information
- Provided by Pharmacy, *where available/applicable*, in standard concentration: morphine 2 mg/mL in NS - 100 mL minibag

COMPATIBILITY/STABILITY

- Stable in dextrose 5% and NS for at least 24 hours at room temperature and in the refrigerator when mixed on ward⁷
- Compatible with dextrose, saline, dextrose-saline combinations and lactated Ringer's solutions⁷
- Products premixed by pharmacy are individually labelled with an expiry date and storage instructions
- For drug-drug compatibility contact pharmacy

ADVERSE EFFECTS ²

RESPIRATORY

- Respiratory depression and apnoea: decreasing quality/depth of respirations may be the initial indication of respiratory depression. Will not occur without sedation, as higher doses are required to produce respiratory depression than to produce sedation. Treatment: naloxone IV and respiratory support

CNS: Sedation; most patients experience sedation at beginning of therapy and whenever dose is increased significantly

CARDIOVASCULAR: Transient bradycardia: responds to atropine if treatment is required

- Transient hypotension, facial flushing

MISCELLANEOUS

- Nausea, vomiting. Most common with the initial dose. Dose related. Slow + steady dose titration helps reduce nausea
- True allergy (very rare). Constipation; tolerance does not develop

DOSE:

➤ There is no limit to dose as long as patient is free of adverse side effects

- The following doses should only be considered as guidelines. Safe and effective doses for individual patients will vary considerably, depending on age, medical condition, type of pain, concomitant medications and other factors

ADULT

- Direct IV bolus:⁸ usual dose range 2 to 15 mg/70 kg; frequency determined by patient's clinical condition and response
- Continuous infusion:³ 1.25 to 2.5 mg/hour for opioid naïve patients with moderate to severe pain. Supplemental or breakthrough dose: 25 to 50% of the hourly dose, offered at least every 30 minutes
- PCA dosing for opioid-naïve patients with severe pain⁸ Also refer to PCA Dosage/Dose Delay Guidelines:

Loading dose	PCA dose	Delay (lock out)	Basal Rate	4 Hour Limit
2.5 mg repeat PRN	0.6 to 2 mg	5 to 10 minutes	0 to 1.25 mg/h	30 to 50 mg

- For moderate pain decrease dose by 50%, for mild pain decrease dose by 75%³

ELDERLY⁸: Consider decreasing starting dose by 25 to 50%. Titrate up or down according to patient's response

- Consider a PCA delay (lock out) of 8 to 10 minutes to ensure titration upward is done slowly

RENAL IMPAIRMENT ADJUSTMENTS ¹

- May have a prolonged duration of action 6, 8 or even 24 h following a standard dose. Titrate up or down accordingly. Continuous infusions should be avoided

HEPATIC IMPAIRMENT ADJUSTMENTS¹: May have a prolonged duration of action 6, 8 or even 24 h following a standard dose. Titrate up or down accordingly. Continuous infusions should be avoided

HEMODIALYSIS: No supplemental dose required.¹³ Some recommend using HYDROMORPHONE vs. morphine³

CAPD/CRRT: No information available at this time

MISCELLANEOUS

- May be given IM or subcutaneously¹

Q. What are the possible adverse effects?
A. Respiratory depression, hypotension, pruritis, sedation, confusion, nausea, vomiting, urinary retention.

Q. Is this the correct dose?
A. Yes, it is within the recommended range.
Note: Elder Alert

5.3 APPENDIX C- Sample MAR

Saskatoon Health Region – Medication Administration Record
 24 HOURS FROM 00:00 18-June-10 THRU 23:59 18-June-10

Name: McFee, Maureen L
BirthDate: Apr-15-1940

Facility: ROYAL UNIVERSITY HOSPITAL
Location: 6500-b **MRN#** 53658635
Age: 70 yrs **Sex:** F

Allergies: CEPHALEXIN (Hives), MOXIFLOXACIN
Comments:

00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23

---- Scheduled Medications ----

Order# 1 RAMIPRIL CAP 10 MG Dr. Smith, John
 Dose: 10 MG (1 CAP) PO OD
 (08) KL

---- PRN Medications ----

Order# 2 dimenhyDRINATE Dr. Smith, John *1st * ✓/BL
 Dose: 25-50MG IV/PO Q6H PRN (WARDSTOCK)

Order# 3 MORPhine Dr. Smith, John *1st * ✓/BL
 Dose: 2-5 MG IV q 4hr PRN (NARCOTIC) (WARDSTOCK)
 2mg
 (10) KL/RS

Medication Administration List for: **McFee, Maureen L**

Verified Correct: *Blairfull* Registered/Licensed Nurse

Saskatoon Health Region – Medication Administration Record

24 HOURS FROM 00:00 18-June-10 THRU 23:59 18-June-10

Name: McFee, Maureen L
BirthDate: Apr-15-1940

Facility: ROYAL UNIVERSITY HOSPITAL
Location: 3000-1 3007 **MRN#** 536586
Age: 70 yrs **Sex:** F

Allergies: CEPHALEXIN (Hives), MOXIFLOXACIN
Comments:

00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23

---- Scheduled Medications ----

Order# 1	RAMIPRIL CAP 10 MG Dose: 10 MG (1 CAP) PO OD	Dr. Smith, John	*1st*	✓ BC
	(08) JS			

---- PRN Medications ----

Order# 2	dimenhydrINATE Dose: 25-50MG IV/PO Q6H PRN	Dr. Smith, John (WARDSTOCK)	*1st*	✓ BC
Order# 3	MORPHINE 2-5 mg IV q 4hr prn Dose: 2-5 MG IV q 4hr PRN	Dr. Smith, John	*1st*	✓ BC
	(05) BC 2mg (10) JS 2mg			

Medication Administration List for:

McFee, Maureen L

Verified Correct: *B. Careful*

Registered/Licensed Nurse

6.0 REVIEW QUIZ

Administering IV Push/Direct Medications Quiz

- Which method of administering a medication is not considered to be IV Push/Direct?
 - medication is given into a Central Venous Catheter over 3 minutes
 - medication is given into a peripheral saline lock
 - medication is given through the secondary port of the IV pump
 - medication is given through the y-site of the IV tubing
- The Sask. Parenteral Manuals (Adult and Pediatric) are a resource used to: (circle all that apply):
 - check for therapeutic dose ranges for different ages of the population
 - check if the drug needs to be diluted before giving
 - find out information on the recommended monitoring for the drug
 - find out if the medication is on the Saskatchewan Formulary
- Your patient is exhibiting respiratory depression. Naloxone (Narcan) is ordered 0.1 mg IV Push (supplied 0.4mg/ml ampule). How many mls would you draw up?
 - 2.5 mls
 - 0.025 mls
 - 0.25 mls
 - 4 mls
- True or False (circle the correct answer):

T F Flush IV line before and after medication administration with 0.9% Sodium Chloride or D5W (NICU) if incompatibilities exist.

T F When using a Y-site, the flush following medication administration must be delivered at the same rate as the medication injection.

T F Signs of infection in an IV can include: pain, edema, purulent discharge, fever.
- What is Speed shock?
 - medication is given without enough diluent
 - medication is given too fast
 - medication is given too slow
 - medication is given with too small a syringe causing pressure or “shock”
- How can you prevent speed shock?
 - Good hand washing prior to accessing IV
 - Use appropriate size syringe for medication
 - Infuse medication and flush at prescribed rate and dilution
 - Assess IV site for infiltration

7. What is extravasation injury?
 - a) patient has a blocked IV
 - b) patient has an infected IV
 - c) vesicant or irritant medication was given
 - d) damage to subcutaneous tissue from an interstitial medication

8. What is one way nurses can help decrease the chances of extravasation?
 - a) Use aseptic technique during administration
 - b) ensure patency and position of IV prior to infusion
 - c) Change IV site before administering any IV push drug
 - d) Ensure medication and IV solution are compatible

9. Your patient requires Digoxin by IV push/direct. The order is for 0.0625 mg. Digoxin is supplied in a 0.25mg/ml ampule. How many mls will you draw up?
 - a) 4mls
 - b) 0.4 mls
 - c) 2.5 mls
 - d) 0.25 mls

10. It is 0530; you have just received an admission from ER. Your patient has an order for IV antibiotics for an infected wound. His IV won't flush. What is the appropriate next step?
 - a) Call Pharmacy and see if they can send the oral form of the antibiotic
 - b) Leave it for the next shift to deal with
 - c) Discontinue the IV , insert a new one, so the antibiotic can be given IV
 - d) Try giving the antibiotic through the IV anyway

7.0 LPN Certification Skill Competency Checklist

Competency Checklist: Administering IV Push Medications

Did LPN complete listed competency?	Yes	No	Certifier Initials
<p>1. Safety Checks</p> <ul style="list-style-type: none"> ○ Check physician's order and MAR (Medication Administration Record) to determine medication, dose, route and frequency of administration. ○ Using available resources (e.g. Sask. Parenteral Manual), use the medication monograph to check the following: <ul style="list-style-type: none"> ● Can medication be given IV push/direct? ● Can the monitoring requirements be met on your unit? If monitoring requirements cannot be met, do not administer medication. ● Review information about the medication, including: action, purpose, peak, onset, normal dose, side/adverse effects, and dilution requirements ● Check for any incompatibilities of this IV medication. ○ Calculate the correct rate (mL/minute) ○ Check and ensure that it is the right patient, right drug, right dosage, right time, right dilution/compatibility, right flow rate and right route. 			
<p>2. Gather Supplies</p> <ul style="list-style-type: none"> ○ MAR (Medication Administration Record) and take into the patient's room ○ IV medication: <p>If medication has not been prepared by pharmacy, the medication must be prepared <i>and then</i> taken to patient bedside. Prepare medication ensuring compatible diluent, correct dilution, and correct dose. Label the medication.</p> <p>Additional supplies needed are:</p> <ul style="list-style-type: none"> ● Alcohol swabs ● Medication label ● If medication is in a glass ampule - syringe with filtered needle ● If medication requires reconstitution – diluent and syringe with blunt needle ● 0.9% sodium chloride flush syringes 			
<p>3. Identify the Patient and Perform Safety Checks</p> <ul style="list-style-type: none"> ○ For High Alert Medications, an independent double check and appropriate documentation of the independent double check is required. ○ Check for any known allergies 			
<p>4. Administer the Medication (A,B or C)</p> <ul style="list-style-type: none"> ○ Perform hand hygiene A. IV Push Through Peripheral Saline Lock <ul style="list-style-type: none"> ○ Examine insertion site for redness, swelling or signs of complications. ○ Vigorously scrub needleless adapter with alcohol (15 secs) + allow to dry ○ Attach saline flush syringe to needleless adapter ○ Flush with 3 mL normal saline using stop-start technique. Assess for 			

<p>ease of flush. If resistance is felt, do not apply force.</p> <ul style="list-style-type: none"> ○ Remove saline flush syringe ○ Re-swab with alcohol ○ Attach medication syringe and inject medication at the correct rate. ○ Re-swab with alcohol ○ Flush with 3 mL normal saline. Use the same rate the medication was pushed ○ Remove saline flush syringe <p>B. Y-Site (Infusing Peripheral IV or Central Venous Catheter)</p> <ul style="list-style-type: none"> ○ Examine insertion site and ensure patency by observing for free flow of IV solution. ○ Stop IV infusion ○ Vigorously scrub Y site port (closest to the patient) with alcohol (15 secs) + allow to dry <p><i>1. If medication is compatible with IV solution:</i> Attach medication syringe to connector Occlude the IV line by pinching the tubing just above the injection port. While keeping the IV tubing occluded (pinched off),</p> <ul style="list-style-type: none"> ● Administer medication at the correct rate. ● Then flush with normal saline ● Peripheral IV - Flush with 3 mL NS. Use the same, steady rate the medication was pushed ● Central Venous Catheter – Flush with 10 mL normal saline. Use the same rate and use stop-start technique <p><i>2. If medication is incompatible with the IV solution</i> Procedure as above except the line <i>must also be flushed with normal saline before administering medication</i> (3mLs for peripheral IV or 10 mLs for central catheter)</p> <ul style="list-style-type: none"> ○ Release the IV tubing and re-establish IV infusion <p>C. Central Venous Catheter (Port Not Connected to IV Infusion)</p> <ul style="list-style-type: none"> ○ Examine insertion site for redness, swelling or signs of complications. ○ Vigorously scrub needleless adapter with alcohol (15 secs) + allow to dry ○ Attach saline flush syringe to needleless adapter. For non-valved CVC (has external clamps) open the clamp. ○ Assess CVC Patency by gently flushing with 1-2 mL of saline ○ Gently aspirate for blood return just until blood can be seen in the CVC lumen ○ Flush with remaining saline using stop-start technique. Assess for ease of flush. If resistance is felt, do not apply force. ○ Remove saline flush syringe ○ Re-swab with alcohol ○ Attach medication syringe, inject at correct rate, and remove syringe. ○ Re-swab needleless adapter with alcohol ○ Attach 10 mL saline flush syringe and flush at the same, steady rate 			
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--

(first 2 mL) the medication was pushed, then use stop-start technique for remaining 8 mL ○ Re-clamp if using non-valved CVC			
5. Documentation and Reporting ○ Chart on the Medication Administration Record (MAR). ○ Include the time, dosage, route, initials/ designation and co-signer if dose needs to be double-checked. ○ Chart patient response to medication in nursing progress notes (if medication was ordered PRN or if the patient experienced an unusual reaction to a scheduled medication). ○ Report to physician if medication is not effective or if the medication causes any adverse effects.			

adapted from SCBScN Program CNUR 305 Skill Checklist April, 2017

Signature of Certifier _____

Date _____

Signature of

LPN _____ Date _____