

Venipuncture Training Arms Curriculum



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Table of Contents

Table of Contents	3
Author	4
Curriculum Structure	4
Lesson Structure	5
Lesson One – Introduction to Intramuscular Injections	6
FOCUS: Part 1 - Developing Awareness of Patient-Focused Care	8
LEARN: Intramuscular Injections Slide Presentation	13
REVIEW: Practice and Assessment of Intramuscular Injections	15
Sources	24
Lesson Two – Introduction to Intravenous (IV) Bolus Medication Administration	25
FOCUS: Developing Awareness of Patient-Focused Care and Safety	27
LEARN: Introduction to IV Bolus Medication Administration Slide Presentation	32
REVIEW: Practice and Assessment of IV Bolus Medication Administration	35
Sources	46
Lesson Three - Introduction to Phlebotomy	47
FOCUS: Developing Awareness of Patient-Focused Care and Anatomy	48
LEARN: Introduction to Phlebotomy Slide Presentation	54
REVIEW: Practice and Assessment of Phlebotomy	56
Sources	63
Lesson Four – Introduction to IV Insertion	64
FOCUS: Developing Awareness of Patient-Focused Care and Anatomy	65
LEARN: Introduction to IV Insertion Slide Presentation	70
REVIEW: Practice and Assessment of IV Insertion	72
Sources	79

Venipuncture Training Arms Curriculum

This curriculum and accompanying Venipuncture Training Arms will help students learn about medication administration through the intramuscular route.

Author



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Curriculum Structure

The *Venipuncture Training Arms Curriculum* is composed of the following lessons. Approximate lesson times are included.

Lesson	Title	Approximate Time
One	Introduction to Intramuscular Injections	60-90 minutes
Two	Introduction to Intravenous (IV) Bolus Medication Administration	70 minutes
Three	Introduction to Phlebotomy	70 minutes
Four	Introduction to IV Insertion	70 minutes
	Total	4-5 hours

Lesson Structure

Each lesson begins with a Lesson Overview, Lesson Objectives and a Lesson at a Glance table which lists the lesson activities, materials required, suggested preparation steps and approximate class time.

Lesson Sections

The actual lesson follows the overview, which will contain some of the sections described below.

FOCUS

Every lesson begins with a FOCUS activity intended to capture participants' attention. This may be in the form of a small or large class discussion, a game, a review of previous lesson information, or a demonstration. During this activity, participants are introduced to the topic of the lesson.

LEARN

The LEARN activity in each lesson varies in its presentation mode. It may be a slide presentation, group activity, or demonstration.

REVIEW

The majority of lessons end with a REVIEW activity intended to briefly review the lesson's key messages or main points.

Lesson One – Introduction to Intramuscular Injections

Lesson Overview

In this lesson, students learn about medication administration through the intramuscular route.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify guidelines for safe medication administration
- Discuss indications for the intramuscular route
- Identify locations for intramuscular injections
- Demonstrate intramuscular injection technique
- Explain how to document an intramuscular injection

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS:	• <i>Introduction to Intramuscular Injections (Focus on Empathy)</i> worksheet • <i>Introduction to Intramuscular Injections (Focus on Empathy)</i> – Answer Key • <i>Introduction to Intramuscular Injections (Focus on Anatomy)</i> worksheet • <i>Introduction to Intramuscular Injections (Focus on Anatomy)</i> – Answer Key	1. Print/photocopy the <i>Introduction to Intramuscular Injections (Focus on Empathy)</i> and <i>Introduction to Intramuscular Injections (Focus on Anatomy)</i> worksheets (one of each per participant).	20 minutes
LEARN	• <i>Introduction to Intramuscular Injections</i> slide presentation • <i>Introduction to Intramuscular Injections (Focus on Empathy)</i> worksheet (completed) • <i>Introduction to Intramuscular Injections (Focus on Anatomy)</i> worksheet (completed) • Venipuncture Training Arms	1. Prepare the <i>Introduction to Intramuscular Injections</i> slide presentation for viewing.	20 minutes
REVIEW	• <i>Introduction to Intramuscular Injections Check-Off</i> – Instructor Resource • <i>Introduction to Intramuscular Injections Check-Off (Sample Medication Administration Record)</i> • <i>Introduction to Intramuscular Injections Check-Off (Sample Provider's Orders)</i> • <i>Introduction to Intramuscular Injections Check-Off</i> worksheet • <i>Introduction to Intramuscular Injections Check-Off (Medication Administration Record)</i> worksheet • <i>Introduction to Intramuscular Injections Check-Off (Sample Medication Administration Record)</i>	1. Print/photocopy (one of each per participant): • <i>Introduction to Intramuscular Injections Check-Off (Sample Provider's Orders)</i> • <i>Introduction to Intramuscular Injections Check-Off (Sample Medication Administration Record)</i> • <i>Introduction to Intramuscular Injections Check-Off</i> worksheet • <i>Introduction to Intramuscular Injections Check-Off (Medical Administration Record)</i> worksheet	30 minutes

Venipuncture Training Arms Curriculum

	• Venipuncture Training Arms • <i>Introduction to Intramuscular Injections Quiz</i> • <i>Introduction to Intramuscular Injections Quiz</i> - Answer Key • Med cart or mock med cart • Mock/demo vial of ketorolac (Toradol) 15 mg/ml • Intramuscular syringe/needle • Alcohol swab • Hand sanitizer or access to a sink • Clean gloves	• <i>Introduction to Intramuscular Injections Quiz</i> 2. Get the supplies ready for the lesson.	
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Note: For FOCUS and REVIEW activities, students may complete both or one of the two activities. Focus activities may also be completed prior to class.

Lesson One – Introduction to Intramuscular Injections

FOCUS: Developing Awareness of Patient-Focused Care

20 minutes

Purpose:

Help students develop awareness of patient-focused care and identify the layers of the skin.

Materials:

- *Introduction to Intramuscular Injections (Focus on Empathy)* worksheet
- *Introduction to Intramuscular Injections (Focus on Empathy)* – Answer Key
- *Introduction to Intramuscular Injections (Focus on Anatomy)* – Answer Key
- *Introduction to Intramuscular Injections (Focus on Anatomy)* worksheet

Facilitation Steps:

1. Distribute the *Introduction to Intramuscular Injections (Focus on Empathy)* and *Introduction to Intramuscular Injections (Focus on Anatomy)* worksheets prior to or at the start of the class.
2. Have the answer keys available.
3. Have students read through the information and complete the worksheets.
4. Have students pair up upon completion and share answers.

Name: _____ Class: _____

Introduction to Intramuscular Injections (Focus on Empathy)

READ the following:

Belonephobia (fear of injections) is a disorder that affects 3.5 to 10 percent of the population. The median age of onset is 5.5 years. Adults may have panic or anxiety attacks. Children may have similar symptoms in addition to crying, tantrums, agitation, and clinging to a parent. Many people with belonephobia may also react to injections with a vasovagal reflex response. This response may include paleness, sweating, nausea, shortness of breath, loss of bladder and bowel control, and various levels of unresponsiveness (light-headedness or fainting). The onset of the vasovagal response may be two to three seconds following the needlestick or up to several hours later.

REFLECT on the situation

How would you know if your patient has a fear of needles?

What could you do if your patient admits to a fear of needles?

SHARE your thoughts with a peer.

Introduction to Intramuscular Injections (Focus on Empathy) – Answer Key

READ the following:

Belonephobia (fear of injections) is a disorder that affects 3.5 to 10 percent of the population. The median age of onset is 5.5 years. Adults may have panic or anxiety attacks. Children may have similar symptoms in addition to crying, tantrums, agitation, and clinging to a parent. Many people with belonephobia may also react to injections with a vasovagal reflex response. This response may include paleness, sweating, nausea, shortness of breath, loss of bladder and bowel control, and various levels of unresponsiveness (light-headedness or fainting). The onset of the vasovagal response may be two to three seconds following the needlestick or up to several hours later.

REFLECT on the situation

How would you know if your patient has a fear of needles?

First, ask your patient prior to the procedure. During the procedure, make sure you look for symptoms of anxiety or vasovagal response.

What could you do if your patient admits to a fear of needles?

Check to see if the medication could be given via a different route. If it cannot, then make sure you discuss the procedure in detail to alleviate fear of the unknown and have the patient ask questions. Encourage the patient to participate in the decision-making and ask about ways to relieve anxiety.

Tha patient may want a particular person (parent, friend) or distraction during the procedure. Gradually expose the patient to unopened supplies and observe their repsonse. Numbing medication may be used if the fear is of pain.

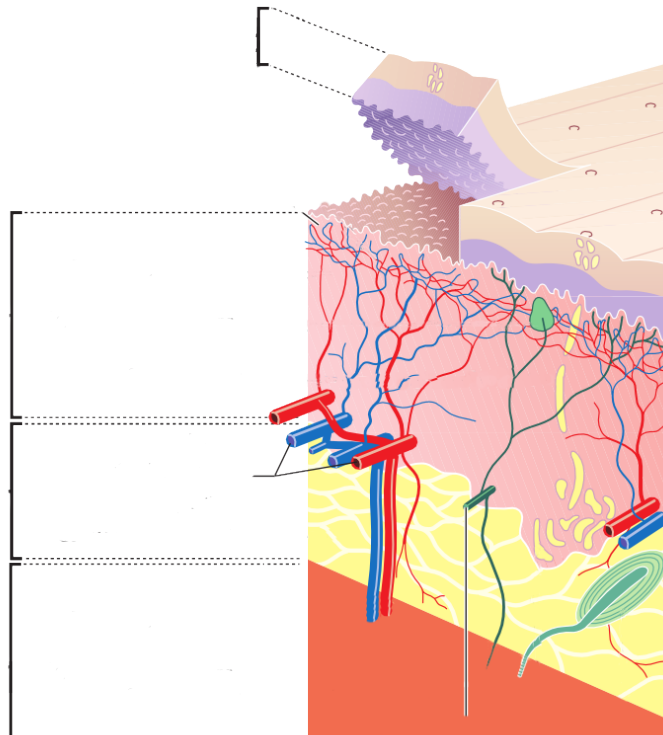
SHARE your thoughts with a peer.

Name: _____ Class: _____

Introduction to Intramuscular Injections (Focus on Anatomy)

Intramuscular is defined as “situated within, occurring within, or administered by entering a muscle” (Merriam-Webster). Below is a diagram of the layers of the skin. Label the diagram with the words listed and answer the questions below.

1. Subcutaneous fat
2. Blood vessels
3. Nerve fibers
4. Epidermis
5. Dermis
6. Muscle



1. Can intramuscular injections bleed? Why or why not?
2. Do intramuscular injections hurt? Why or why not?

Modified work.

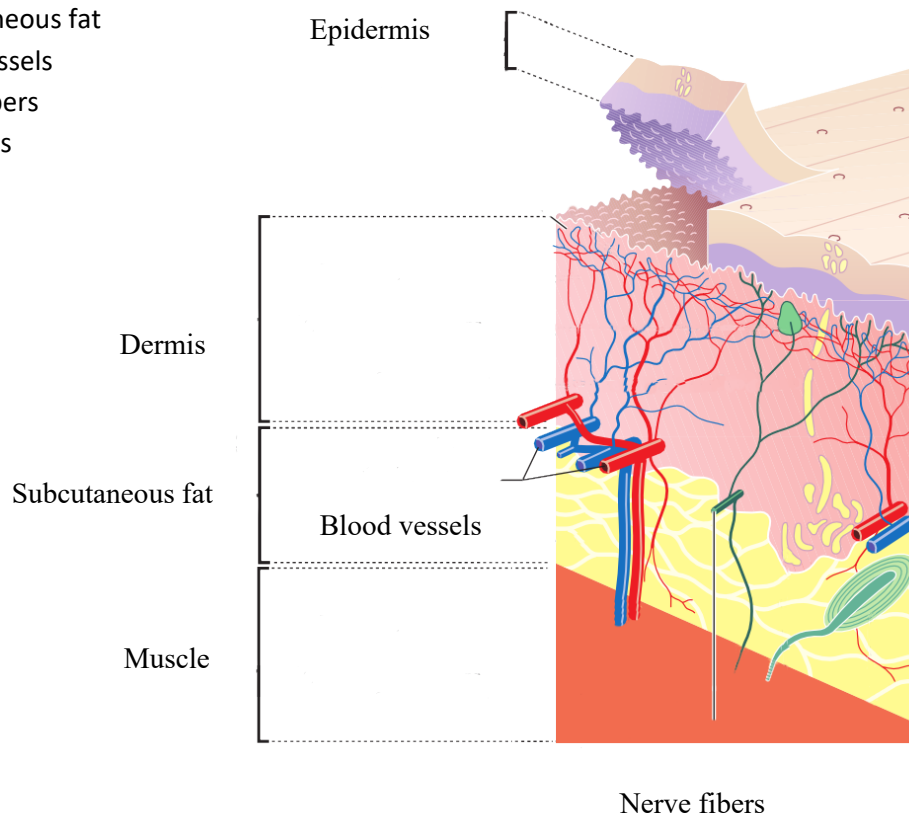
By Madhero88 (Own work) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0/>)], via Wikimedia Commons(https://commons.wikimedia.org/wiki/File%3ASkin_layers.png)

Merriam-Webster (2016). Dictionary. Retrieved from <https://www.merriam-webster.com/>

Introduction to Intramuscular Injections (Focus on Anatomy) – Answer Key

Intramuscular is defined as “situated within, occurring within, or administered by entering a muscle” (Merriam-Webster). Below is a diagram of the layers of the skin. Label the diagram with the words listed and answer the questions below.

1. Subcutaneous fat
2. Blood vessels
3. Nerve fibers
4. Epidermis
5. Dermis
6. Muscle



1. Can intramuscular injections bleed? Why or why not?

Yes. The vessels are larger in the muscle. We want to make sure the medication is placed in the muscle and not the blood vessels.

2. Do intramuscular injections hurt? Why or why not?

Yes. As you can see, the nerve fibers do go throughout the dermis, subcutaneous fat, and muscle so intramuscular injections are the most painful injections.

Modified work.

By Madhero88 (Own work) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0/>)], via Wikimedia Commons(https://commons.wikimedia.org/wiki/File%3ASkin_layers.png)

Merriam-Webster (2016). Dictionary. Retrieved from <https://www.merriam-webster.com/>

Lesson One – Introduction to Intramuscular Injections

LEARN: Intramuscular Injections Slide Presentation

20 minutes

Purpose:

Participants receive a thorough introduction to intramuscular injections and the proper procedure and documentation surrounding it.

Materials:

- *Introduction to Intramuscular Injections* slide presentation
- *Introduction to Intramuscular Injections (Focus on Empathy)* worksheet (completed)
- *Introduction to Intramuscular Injections (Focus on Anatomy)* worksheet (completed)
- Venipuncture Training Arms

Facilitation Steps:

1. Share the following information as you show the slide presentation.

Slide 1: Introduction to Intramuscular Injections

Source: Perry, A., Potter, P., & Ostendorf, W. (2014). *Clinical Nursing Skills and Techniques*. 8th Edition. Publisher: Mosby, Inc.

Slide 2: What Is an Intramuscular Injection? Parenteral means administered in a manner other than through the digestive tract (in this case, by intramuscular injection)

See the FOCUS worksheet on anatomy. Discuss the location of muscle.

Why is it absorbed faster? Muscle has a rich blood supply.

Slide 3: What Do We Use Intramuscular Injections For?

Most vaccines are given into the muscle

Some conditions, such as multiple sclerosis (a nerve disorder), are treated with IM anti-inflammatories called interferons.

If the patient cannot take oral pain medications (in cases like nausea/vomiting) and there is no IV access or medication cannot be given IV, then IM would be the chosen route.

Slide 4: Sites for Intramuscular Testing

Site should be free of pain, infection, necrosis, bruising, and abrasions.

Consider the location of underlying bones, nerves, and blood vessels and the volume of medication you will administer.

Because of the sciatic nerve location, the dorsogluteal muscle is not recommended as an injection site. If a needle hits the sciatic nerve, the patient may experience partial or permanent paralysis of the leg. If it must be used, aspiration is recommended.

The recommendation for pediatric intramuscular (IM) injection sites includes use of the anterolateral thigh for infants up to 12 months of age, deltoid in children 18 months and older, and ventrogluteal for children of all ages.

Doses over three milliliters should be split. For example, if a dose is five milliliters (although unusual), three milliliters could go in the left vastus lateralis and two milliliters in the right.

Have students locate these muscles on each other.

Slide 5: Supplies Needed

Gauge refers to the diameter of the needle. The higher the gauge, the thinner the needle.

The viscosity of the medication, injection site, patient's weight, and amount of subcutaneous tissue influence needle size selection.

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For example, medications in aqueous (thin) solutions with a 20- to 25-gauge needle. Give viscous (thick) with an 18- to 21-gauge needle.

Use a small-gauge (22- to 25-gauge) needle for children.

Show the students the supplies and where to find the length/gauge of a needle on the package.

Slide 6: Completing the Rights of Administration

Review the FOCUS worksheet on empathy.

Prior to administering any medication, it is important to review the medication administration record and provider's order. It is essential to review general information about the medication as well.

Make sure the medication is appropriate for your patient.

Because IM injections cause pain, have the order changed if the medication could be given via a different route.

Slide 7: Drawing Up the Medication

Demonstrate swabbing of a vial, removing the needle cap in one smooth motion to prevent a rebound needle stick, and drawing of medication

One-Handed Scoop Method: Place the cap on a flat surface and hold the syringe in one hand. Keep the other hand by your side. Slide the needle into the cap, then lift it up and snap it on securely using only one hand.

Adding air equal to the dose into the vial prior to removing the medication equalizes the pressure in the vial.

Finish completing the rights of administration once dose is drawn. This may be done at a medication cart or at bedside depending on facility.

Slide 8: The Patient

Review proper identifiers (name, date of birth, medical record number, photograph in MAR)

Ask students how they would explain an intramuscular injection. Discuss FOCUS worksheet on empathy.

Slide 9: The Site

Assist patient to comfortable position. Make sure you communicate the process to the patient.

Slide 10: Administering the Medication

Demonstrate an intramuscular injection.

Z-track: Pull on skin with side of hand moving tissue to prevent later tracking. The Z-track left after injection prevents deposit of medication through sensitive tissue.

Per recent literature, aspiration is not needed for pediatric IM injections if proper technique and location is used except for the dorsogluteal site where it should be used. Some textbooks still recommend it though. Aspiration is not needed for vaccines per CDC.

Sisson, H. (2015). Aspirating during the intramuscular injection procedure: a systematic literature review. Journal of Clinical Nursing. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/25871949>

Centers for Disease Control (2016). Vaccine Administration. Retrieved from <https://www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html>

Slide 11: After Administration

Patient teaching can include when pain relief is to be expected, reassessment in 15-30 minutes, and signs/symptoms of an adverse reaction.

Slide 12: Documentation Sample

Every MAR is different.

Demonstrate documentation of intramuscular injections.

Lesson One – Introduction to Intramuscular Injections

REVIEW: Practice and Assessment of Intramuscular Injections

30 minutes

Purpose:

Participants practice intramuscular injections on models and complete a quiz to assess mastery.

Materials:

- *Introduction to Intramuscular Injections Check-Off* – Instructor Resource
- *Introduction to Intramuscular Injections Check-Off (Sample Medication Administration Record)*
- *Introduction to Intramuscular Injections Check-Off (Sample Provider's Orders)*
- *Introduction to Intramuscular Injections Check-Off* worksheet
- *Introduction to Intramuscular Injections Check-Off (Medication Administration Record)* worksheet
- *Introduction to Intramuscular Injections Quiz*
- *Introduction to Intramuscular Injections Quiz - Answer Key*
- Med cart or mock med cart
- Mock/demo vial of ketorolac (Toradol) 15 mg/mL
- Venipuncture Training Arms
- Intramuscular syringe/needle
- Alcohol swab
- Hand sanitizer or access to a sink
- Clean gloves

Facilitation Steps:

1. Give students the following worksheets:
 - *Introduction to Intramuscular Injections Check-Off (Sample Medication Administration Record)*
 - *Introduction to Intramuscular Injections Check-Off (Sample Provider's Orders)*
 - *Introduction to Intramuscular Injections Check-Off* worksheet
2. Access the *Introduction to Intramuscular Injections Check-Off (Instructor Resource)* page. Following the steps on the check-off page, demonstrate an intramuscular injection on the model, task trainer, or simulator.
3. Have students review the *Introduction to Intramuscular Injections Check-Off (Sample Medication Administration Record)* and *Introduction to Intramuscular Injections Check-Off (Sample Provider's Orders)*. Answer any questions students may have on using these.
4. Following the steps on their *Introduction to Intramuscular Injections* worksheet, have students practice intramuscular injections on the model, task trainer, or simulator available.
5. Students should properly document their injection on the *Introduction to Intramuscular Injections Check-Off (Medication Administration Record)* worksheet.
6. Distribute the *Introduction to Intramuscular Injections Quiz* to students. Give them a couple of minutes to complete it.
7. Have students self-check or peer check their answers as you share them from the *Introduction to Intramuscular Injections Quiz - Answer Key*.

Introduction to Intramuscular Injections

Check-Off (Sample Medication Administration Record)

Patient	Grant, Morgan	MRN	1524833
Date of Birth	07/31/XXXX	Provider	Frey
Age	22 years	Allergies	NKDA

Initials	Signature/Title			Initials		Signature/Title				
NW	Nick Wells SN									
Medication		Time	Mon	Tue	Wed		Thurs	Fri	Sat	Sun
Ketorolac (Toradol) 30 mg IM		Initials	NW							
		Site	Right vastus lateralis							
Ketorolac (Toradol) 30 mg IM every 6 hours PRN		Initials								
		Site								

Introduction to Intramuscular Injections

Check-Off – Instructor Resource

PREPARATION:

Supplies:

- Provider Order
- MAR
- Med cart or mock med cart
- Mock/demo vial of ketorolac (Toradol) 15 mg/mL
- Intramuscular injection models (can be placed on a manikin)
- Intramuscular syringes and needles
- Alcohol swab
- Hand sanitizer or access to sink
- Clean gloves

After demonstration, have students practice intramuscular injections on the models using the following steps:

1.	Verify the MAR with the written order from the provider	
2.	Review the medication reference information (proper dosage, side effects, contraindications, etc.)	
3.	Gather the supplies needed to prepare and administer medication	
4.	Wash your hands with sanitizer or soap/water	
5.	Compare the MAR with the medication and complete the rights of administration	
6.	Draw up the correct dose and complete the rights of administration	
7.	Wash your hands with sanitizer or soap/water	
8.	Gather supplies, lock medication cart, and ensure no patient information is visible per HIPAA	
9.	Knock, enter room, and provide for privacy	
10.	Identify yourself with your name and title (student nurse, medical assistant, etc.)	
11.	Wash your hands with sanitizer or soap/water	

Venipuncture Training Arms Curriculum

12.	Identify the patient by asking for their name and date of birth and verify this information with the MAR	
13.	Explain the procedure to the patient, ask if they have any questions, and verify allergies with the MAR	
14.	If not completed at the cart, complete the rights of administration	
15.	Apply clean gloves	
16.	Assist the patient to a comfortable position and select the appropriate site	
17.	Clean the site with an alcohol swab	
18.	Remove the needle cap and hold the syringe securely (pull the skin to the side if performing Z-track)	
19.	Inset the needle in a dart-like motion at 90-degree angle and aspirate for blood (depending on site)	
20.	Administer the injection into the arm and withdraw the needle (let skin return if performing Z-track)	
21.	Apply an alcohol swab or gauze firmly over site for several seconds	
22.	Ask the patient if they are comfortable and if they have any questions, observing them for signs of allergic reaction	
23.	Remove gloves and wash your hands with sanitizer or soap/water	
24.	Document medication administration on the MAR	
	Score	

Optional: Evaluate the student's ability to complete an intramuscular injection using the above steps. May score via points or satisfactory/unsatisfactory. See sample completed MAR for proper documentation.

Introduction to Intramuscular Injections

Check-Off (Sample Provider's Orders)

Date	Time	Orders
<i>Today</i>	<i>2300</i>	<i>Admit to medical floor for migraine symptoms</i>
		<i>Ketorolac (Toradol) 30mg IM NOW</i>
		<i>Ketorolac (Toradol) 15-30mg IM every 6 hours PRN</i>
		<i>Dr. Sue Frey</i>

GRANT, MORGAN

MRN: 1524833

Age: 22 years

Date of Birth: 07/31/XXXX

Introduction to Intramuscular Injections Check-Off

PART ONE: Practice intramuscular injections on the model using the following steps.

1.	Verify the MAR with the written order from the provider
2.	Review the medication reference information (proper dosage, side effects, contraindications, etc.)
3.	Gather the supplies needed to prepare and administer medication
4.	Wash your hands with sanitizer or soap/water
5.	Compare the MAR with the medication and complete the rights of administration
6.	Draw up the correct dose and complete the rights of administration
7.	Wash your hands with sanitizer or soap/water
8.	Gather supplies, lock medication cart, and ensure no patient information is visible per HIPAA
9.	Knock, enter room, and provide for privacy
10.	Identify yourself with your name and title (student nurse, medical assistant, etc.)
11.	Wash your hands with sanitizer or soap/water
12.	Identify the patient by asking for their name and date of birth and verify this information with the MAR
13.	Explain the procedure to the patient, ask if they have any questions, and verify allergies with the MAR
14.	If not completed at the cart, complete the rights of administration
15.	Apply clean gloves
16.	Assist the patient to a comfortable position and select the appropriate site
17.	Clean the site with an alcohol swab
18.	Remove the needle cap and hold the syringe securely (pull the skin to the side if performing Z-track)
19.	Inset the needle in a dart-like motion at 90-degree angle and aspirate for blood (depending on site)
20.	Administer the injection into the arm and withdraw the needle (let skin return if performing Z-track)
21.	Apply an alcohol swab or gauze firmly over site for several seconds
22.	Ask the patient if they are comfortable and if they have any questions, observing them for signs of allergic reaction
23.	Remove gloves and wash your hands with sanitizer or soap/water
24.	Document medication administration on the MAR

Name: _____ Class: _____

Introduction to Intramuscular Injections

Check-Off (Medication Administration Record)

Patient	Grant, Morgan	MRN	1524833
Date of Birth	07/31/XXXX	Provider	Frey
Age	22 years	Allergies	NKDA

Medication	Time	Mon	Tue	Wed	Thurs	Fri	Sat	Sun
Ketorolac (Toradol) 30mg IM	Initials							
	Site							
Ketorolac (Toradol) 30mg IM every 6 hours PRN	Initials							
	Site							

Initials	Signature/Title	Initials	Signature/Title

Name: _____ Class: _____

Introduction to Intramuscular Injections Quiz

Instructions: Select the best answer to the following multiple-choice questions.

1. Intramuscular injections are used for which of the following?
 - a. Pain medications
 - b. Local anesthetics
 - c. Insulin
 - d. Sensitivity tests
2. Which of the following is the proper site for an intramuscular injection for toddlers to adults?
 - a. Anterior forearm
 - b. Abdomen
 - c. Back of upper arm
 - d. Deltoid
3. You need to give an intramuscular injection to a patient. Which of the following needles should you select?
 - a. 1 to 3 inch, 18- to 16-gauge needle
 - b. 5/8 to 1½ inch, 25- to 18-gauge needle
 - c. 5/8 to 1 inch, 27- to 30-gauge needle
 - d. 3/8 to 5/8 inch, 25- to 27-gauge needle
4. When administering an intramuscular injection, what angle should be used?
 - a. 5-15 degrees
 - b. 15-45 degrees
 - c. 45-90 degrees
 - d. 90 degrees only
5. After you give a pain medication to a patient, what should be completed 15-30 minutes later?
 - a. Reassess patient's pain level
 - b. Document the medication administration
 - c. Administer another dose
 - d. Give patient food

Introduction to Intramuscular Injections Quiz – Answer Key

1. Intramuscular injections are used for which of the following?

a. Pain medications

- b. Local anesthetics
- c. Insulin
- d. Sensitivity tests

Intramuscular can also be used in vaccines or if patient cannot take medication orally or medication cannot be given via IV.

2. Which of the following is the proper site for an intramuscular injection?

- a. Anterior forearm
- b. Abdomen
- c. Back of upper arm

d. Deltoid

Choice a is used for intradermal. Choices b and c are used for subcutaneous injections.

3. You need to give an intramuscular injection to a patient. Which of the following needles should you select?

- a. 1 to 3 inch, 18- to 16-gauge needle
- b. 5/8 to 1½ inch, 25- to 18-gauge needle**
- c. 5/8 to 1 inch, 27- to 30-gauge needle
- d. 3/8 to 5/8 inch, 25- to 27-gauge needle

Choice a is too large of a gauge. Choices c is too small of gauge. D is used for intradermal injections.

4. When administering an intramuscular injection, what angle should be used?

- a. 5-15 degrees
- b. 15-45 degrees
- c. 45-90 degrees

d. 90 degrees only

An angle of 90 degrees allows for access to the muscle.

5. After you give a pain medication to a patient, what should be completed 15-30 minutes later?

a. Reassess patient's pain level

- b. Document the medication administration
- c. Administer another dose
- d. Give patient food

Per the Joint Commission, all organizations should have a policy on pain reassessment and respond to a patient based on reassessment criteria.

Sources

1. Baker, D. (2016). Joint Commission statement on pain management. Retrieved from The Joint Commission at https://www.jointcommission.org/joint_commission_statement_on_pain_management/
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4. Merriam-Webster (2016). Dictionary. Retrieved from <https://www.merriam-webster.com/>
5. Perry, A., Potter, P., & Ostendorf, W. (2014). *Clinical Nursing Skills and Techniques*. 8th Edition. Publisher: Mosby, Inc.
6. Sisson, H. (2015). Aspirating during the intramuscular injection procedure: a systematic literature review. *Journal of Clinical Nursing*. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/25871949>

Lesson Two – Introduction to Intravenous (IV) Bolus Medication Administration

Lesson Overview

In this lesson, students learn about medication administration using an IV bolus.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify guidelines for safe medication administration
- Discuss indications for IV boluses
- Demonstrate proper IV bolus technique
- Explain how to document an IV bolus

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS:	• <i>Introduction to IV Bolus Medication Administration (Focus on Empathy)</i> worksheet • <i>Introduction to IV Bolus Medication Administration (Focus on Empathy) – Answer Key</i> • <i>Introduction to IV Bolus Medication Administration (Focus on Safety)</i> worksheet • <i>Introduction to IV Bolus Medication Administration (Focus on Safety) – Answer Key</i>	1. Print/photocopy the <i>Introduction to IV Bolus Medication Administration (Focus on Empathy)</i> and <i>Introduction to IV Bolus Medication Administration (Focus on Safety)</i> worksheets (one of each per participant).	20 minutes
LEARN	• <i>Introduction to IV Bolus Medication Administration</i> slide presentation • Venipuncture Training Arms • <i>Introduction to IV Bolus Medication Administration (Focus on Safety)</i> worksheet	1. Prepare the <i>Introduction to IV Bolus Medication Administration</i> slide presentation for viewing.	20 minutes
REVIEW	• <i>Introduction to IV Bolus Medication Administration Check-Off</i>– Instructor Resource • <i>Introduction to IV Bolus Medication Administration Check-Off (Sample Provider's Orders)</i> • <i>Introduction to IV Bolus Medication Administration Check-Off</i> worksheet • <i>Introduction to Intramuscular Injections Check-Off (Medication Administration Record)</i> worksheet	1. Print/photocopy (one of each per participant): • <i>Introduction to IV Bolus Medication Administration Check-Off (Sample Provider's Orders)</i> • <i>Introduction IV Bolus Medication Administration Check-Off</i> worksheet • <i>Introduction to IV Bolus Medication Administration Check-Off (Medical</i>	30 minutes

Venipuncture Training Arms Curriculum

	• <i>Introduction to IV Bolus Medication Administration Check-Off (Sample Medication Administration Record)</i> • Venipuncture Training Arms • <i>Introduction to IV Bolus Medication Administration Quiz</i> • <i>Introduction to IV Bolus Medication Administration Quiz - Answer Key</i> • Med cart or mock med cart • Mock/demo vial of hydromorphone (Dilaudid) • 3-cc syringe/needle • Alcohol swab • Normal saline flush solution • Hand sanitizer or access to a sink • Watch or access to clock • Clean gloves • Sharps container	<i>Administration Record)</i> worksheet • <i>Introduction to IV Bolus Medication Administration Check-Off (Sample Medication Administration Record)</i> • <i>Introduction to IV Bolus Medication Administration Quiz</i> 2. Get the supplies ready for the lesson.	
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Note: For FOCUS and REVIEW activities, the instructor may choose to have students complete both or one of the two activities. FOCUS activities may also be completed prior to class.

Lesson Two – Introduction to IV Bolus Medication Administration

FOCUS: Developing Awareness of Patient-Focused Care and Safety

20 minutes

Purpose:

Help students develop awareness of patient-focused care and learn to identify safety concerns related to IV bolus medications.

Materials:

- *Introduction to IV Bolus Medication Administration (Focus on Empathy)* worksheet
- *Introduction to IV Bolus Medication Administration (Focus on Empathy) – Answer Key*
- *Introduction to IV Bolus Medication Administration (Focus on Safety)* worksheet
- *Introduction to IV Bolus Medication Administration (Focus on Safety) – Answer Key*

Facilitation Steps:

1. Distribute the *Introduction to IV Bolus Medication Administration* worksheets prior to or at the start of class.
2. Have the answer keys available.
3. Have students read the information and complete the worksheets.
4. After completing the worksheets, have students pair up to share answers.

Name: _____ Class: _____

Introduction to IV Bolus Medication Administration (Focus on Empathy)

READ the following:

Most IV bolus medications are given for pain. Imagine your patient is crying out in pain after surgery and says “Please give me something. It hurts so bad.” You check the medication administration record and realize the patient is overdue for pain medication. You go back to the nurse’s station to retrieve the medication and then back to the patient’s room, where you find them curled up wincing.

“Just give it to me quick,” the patient says. However, medication administration is not quick if you need to gather supplies, draw up from a vial, do your medication checks, and administer it. You must carefully administer IV bolus medications.

REFLECT on the situation:

Picture yourself as the patient. What do you think they believe is taking so long?

What can you say to this patient when time is important?

SHARE your thoughts with a peer.

Introduction to IV Bolus Medication Administration (Focus on Empathy) – Answer Key

READ the following:

Most IV bolus medications are given for pain. Imagine your patient is crying out in pain after surgery and says “Please give me something. It hurts so bad.” You check the medication administration record and realize the patient is overdue for pain medication. You go back to the nurse’s station to retrieve the medication and then back to the patient’s room, where you find them curled up wincing.

“Just give it to me quick,” the patient says. However, medication administration is not quick if you need to gather supplies, draw up from a vial, do your medication checks, and administer it. You must carefully administer IV bolus medications.

REFLECT on the situation:

Picture yourself as the patient. What do you think they believe is taking so long?

Some patients think they have been forgotten about or the nurse does not care about their pain. Other patients understand that nurses are busy and perhaps the nurse is trying their best.

What can you say to this patient when time is important?

Reassurance and communication are key. Explain to the patient that you must go get the medication and about how long it will take you. If you give a patient a timeframe, it is important that you abide by it. Acknowledge the patient’s pain.

SHARE your thoughts with a peer.

Name: _____

Class: _____

Introduction to IV Bolus Medication Administration (Focus on Safety)

The mnemonic CATS PRRR can help staff remember safety checks for administering IV medications. Use your knowledge of basic IV to try matching the word to the correct description of the safety concern below.

- | | |
|---|--|
| A. Compatibilities | ___ Do I know the right rate/time to push the drug over? |
| B. Allergies | ___ How did the patient tolerate the drug? Is the drug helping? How do you know? |
| C. Tubing Correct | ___ Does it appear infiltrated? Does it look inflamed? |
| D. Site Checked | ___ Can the drug be given with the fluid currently infusing? |
| E. Pump Safety Checked | ___ Do I need to change any component of the IV setup? Is everything correct for the drug I will administer? Is there a sticker present? |
| F. Right Rate | ___ Did I stop the primary? Did I restart the primary? Was the IV flowing before I left the room? |
| G. Release Clamps | ___ Will my patient have a reaction to this medication? |
| H. Return and Reassess the Patient | ___ Is the primary IV programmed and working correctly? Is it plugged in? |

Billings, D, Kowalski, K: Do your CATS PRRR? A mnemonic device to teach safety checks for administering intravenous medications. *J Contin Educ Nurs*. 36(3), 2005, 104.

Introduction to IV Bolus Medication Administration (Focus on Safety) – Answer Key

The mnemonic CATS PRRR can help staff remember safety checks for administering IV medications. Use your knowledge of basic IV to try matching the word to the correct description of the safety concern below.

- | | |
|---|---|
| A. Compatibilities | F Do I know the right rate/time to push the drug over? |
| B. Allergies | H How did the patient tolerate the drug? Is the drug helping? How do you know? |
| C. Tubing Correct | D Does it appear infiltrated? Does it look inflamed? |
| D. Site Checked | A Can the drug be given with the fluid currently infusing? |
| E. Pump Safety Checked | C Do I need to change any component of the IV setup? Is everything correct for the drug I will administer? Is there a sticker present? |
| F. Right Rate | G Did I stop the primary? Did I restart the primary? Was the IV flowing before I left the room? |
| G. Release Clamps | B Will my patient have a reaction to this medication? |
| H. Return and Reassess the Patient | E Is the primary IV programmed and working correctly? Is it plugged in? |

Billings, D, Kowalski, K: Do your CATS PRRR? A mnemonic device to teach safety checks for administering intravenous medications. *J Contin Educ Nurs.* 36(3), 2005, 104.

Lesson Two – Introduction to IV Bolus Medication Administration

LEARN: Introduction to IV Bolus Medication Administration Slide Presentation

20 minutes

Purpose:

Participants receive a thorough introduction to IV bolus medication administration and the proper procedure and documentation surrounding it.

Materials:

- *Introduction to IV Bolus Medication Administration* slide presentation
- Venipuncture Training Arms
- *Introduction to IV Bolus Medication Administration (Focus on Safety)* worksheet

Facilitation Steps:

1. Share the following information with students as you show the slide presentation.

Slide 1: Introduction to IV Bolus Medication Administration

Slide 2: What Is an IV Bolus?

IV boluses are commonly practiced in acute care settings. It requires a small volume of medication administered via an existing IV access, such as a saline lock or primary IV.

Show students the Venipuncture Training Arms and what a saline lock looks like.

Boluses are also called IV push medications or IVP. However, according to the Institute for Safe Medication Practices, the term “push” or “bolus” should not be used with medications that need to be administered over one minute or longer. Use more descriptive terms, such as IV, over five minutes.

Boluses are used in emergencies or when a fast-acting medication is needed. Facilities have policies that identify which medications should be given in this manner. IV bolus is a dangerous method of administering medications because there is no time to correct errors. The medication goes directly into the bloodstream.

Slide 3: Safety Considerations – CATS **PRRR**
Review the Introduction to IV Bolus Medication Administration (Focus on Safety) worksheet.

The C stands for compatibility and reminds nurses to assess whether the IV drug is compatible with the other ordered IV components currently infusing.

The A stands for Allergies. Check with the patient regarding allergies and if an allergy is present, make sure an allergy band is applied.

The T stands for Tubing and reminds nurses to assess whether it is time to change the tubing, the correct tubing is being used, there are no kinks or other problems with the tubing, and a designated sticker is on the tubing.

The S stands for Site. Determine whether the site is safe to use and check for infiltration (swelling, pain) or signs of phlebitis (warmth, redness on the vein). A site cannot be used if not patent.

The P stands for Pump safety and is important if you administer a bolus with a primary IV running. Is it programmed correctly? Pumping? Plugged in?

The first R stands for Rate and reminds nurses to know the correct rate for giving an IV push medication

The second R stands for Release the clamp on the IV tubing if it was clamped.

The last R reminds nurses to Return to reassess the patient. Observe how well the medication was tolerated and to assess whether the medication was effective. Remember to document!

Slide 4: Rate of Administration

Verify the rate of administration of IV push medication using pharmacy or an IV medication reference manual.

Review the amount of medication that a patient will receive each minute, the concentration, and rate of administration.

Recognize the medication given and any potential adverse reactions related to the rate and route of administration.

Some IV medications can only be given safely if a patient is continuously monitored for dysrhythmias, blood pressure changes, or other adverse effects. Some medications can only be administered in specific areas within a healthcare agency (critical care unit, emergency room). Confirm guidelines regarding requirements for special monitoring.

Slide 5: Let's Practice

Demonstrate how to calculate IV rate times. If available, students (or instructor) could look Lasix up and discuss other information, such as Y-site compatibilities and pediatric rates.

Answer: Lasix should be given over three minutes. You should draw up six milliliters. Thus, dividing the dose into two milliliters per minute (0.5 milliliters every 15 seconds).

$$\frac{6 \text{ ml}}{60 \text{ mg}} \times \frac{20 \text{ mg}}{1 \text{ min}} = 2 \text{ ml/min}$$

Slide 6: Adverse Reactions

Many medication errors are associated with IV boluses being administered too quickly. A study performed in the United Kingdom in 2003 uncovered errors in 49% of all IV medications. The study noted that 79% of these errors occurred during the administration of drugs given an IV push; 95% of the IV push drugs were reported as having been given too fast.

This can result in speed shock and possibly even death.

If your patient develops a reaction to the medication – stop the IV bolus!

If the site looks reddened or starts to swell – stop the IV bolus!

Slide 7: Supplies Needed

Some facilities provide pre-drawn saline flushes. If the facility does not, you must draw up two to three milliliters of saline in two syringes for the flush.

The needle is only used to draw up the medication, unless it comes pre-filled. Saline locks and ports are needleless.

Show students the supplies.

Slide 8: Completing the Rights of Administration

Prior to administering any medication, it is important to review the medication administration record and provider's order. It is essential to review general information about the medication as well, including the rate and incompatibilities.

Make sure the medication is appropriate for your patient.

Show MAR provided. Note that this is a PRN medication, meaning pain level must be assessed/documented before and after.

Slides 9-10: Drawing Up the Medication

Demonstrate swabbing of vial, adding air, removing needle cap in one smooth motion to prevent a rebound needle stick, and drawing of medication.

Depending on the dose, it may be necessary to add air equal to the dose into the vial prior to removing the medication. This equalizes the pressure in the vial. Remove air bubbles.

One-Handed Scoop Method: Place the cap on a flat surface and hold the syringe in one hand. Keep the other hand by your side. Slide the needle into the cap, then lift it up and snap it on securely using only one hand.

Finish completing the rights of administration once the dose is drawn. This may be done at a medication cart or at bedside depending on the facility. Most facilities require a second person to check high alert medication dosages.

Review proper identifiers (name, date of birth, medical record number, photograph in MAR)

Ask students how they would explain an IV bolus medication administration.

Slide 11: The Patient

Apply clean gloves and assist the patient to a comfortable position, exposing the port needed. Swab the port with alcohol and allow it to dry, which sanitizes the port.

Hold onto the port to keep it clean.

Slide 12: The Port

Demonstrate flush.

Since the medication goes directly into the vein, it is important to expel any air from the syringes. When connecting the syringe to the port, make sure the luer lock end and port does not become contaminated.

Pull gently and look for a flash of blood in the syringe. This indicates patency. With smaller gauge IVs, it is possible not to get a blood return.

Flushing clears the port and tubing of blood. It should flush without difficulty and there should be no signs of infiltration.

Slide 13: Checking Patency with Flush

Demonstrate IV bolus administration.

Once again, clean the port and remove capped needle from med syringe. Expel any air bubbles without losing medication. When connecting the syringe to the port, make sure the luer lock end and port do not become contaminated.

Take your time administering the medication and watch your patient for reactions!

Slide 14: Administer Medication

Flushing IV line with saline prevents obstruction of the IV port and confirms that all medication is delivered.

Flushing the IV site at the same rate as the medication ensures that any medication remaining within the IV needle is delivered at the correct rate.

Have students reflect on the Lasix problem. How long would this medication administration take? Lasix was over three minutes; flush is over three minutes.

Slide 15: Flush with Saline

Most IV medications require a follow-up assessment. Some medications, such as pain medications, can be followed up in minutes. Also, look for any adverse reactions to the procedure before leaving the room.

Slide 16: Documentation Sample

Every MAR is different depending on the facility. Some facilities will also require an IV site assessment as well.

Demonstrate documentation of IV bolus.

Lesson Two – Introduction to IV Bolus Medication Administration

REVIEW: Practice and Assessment of IV Bolus Medication Administration

30 minutes

Purpose:

Participants practice IV bolus medication administration on Venipuncture Training Arms and complete a quiz to assess mastery.

Materials:

- *Introduction to IV Bolus Medication Administration Check-Off* – Instructor Resource
- *Introduction to IV Bolus Medication Administration Check-Off (Sample Medication Administration Record)*
- *Introduction to IV Bolus Medication Administration Check-Off (Sample Provider's Orders)*
- *Introduction to IV Bolus Medication Administration Check-Off* worksheet
- *Introduction to IV Bolus Medication Administration Check-Off (Medication Administration Record)* worksheet
- *Introduction to IV Bolus Medication Administration Quiz*
- *Introduction to IV Bolus Medication Administration Quiz - Answer Key*
- Venipuncture Training Arms
- Med cart or mock med cart
- Mock/demo vial of hydromorphone (Dilaudid)
- 3-cc syringes with needles
- Alcohol swab
- Normal saline flush solution
- Hand sanitizer or access to a sink
- Watch or access to clock
- Clean gloves
- Sharps container

Facilitation Steps:

1. Give students the following worksheets:
 - *Introduction to IV Bolus Medication Administration Check-Off (Sample Provider's Orders)*

- *Introduction to IV Bolus Medication Administration* worksheet
- *Introduction to IV Bolus Medication Administration Check-Off (Medication Administration Record)* worksheet
- *Introduction to IV Bolus Medication Administration Check-Off (Sample Medication Administration Record)* worksheet

2. Access the *Introduction to IV Bolus Medication Administration Check-Off (Instructor Resource)*. Following the steps on the check-off page, demonstrate IV bolus medication administration on the Venipuncture Training Arms.
3. Have students review the *Sample Medication Administration Record* and *Sample Provider's Orders*. Answer any questions students may have on using these.
4. Following the steps on their *Introduction to IV Bolus Medication Administration* worksheet, have students practice IV bolus medication administration on the Venipuncture Training Arms.
5. Students should properly document their injection on the *Introduction to IV Bolus Medication Administration Record* worksheet.
6. Distribute the *Introduction to IV Bolus Medication Administration Quiz* to students. Give them a couple of minutes to complete it.
7. Have students self-check or peer check their answers as you share them from the *IV Bolus Medication Administration Quiz – Answer Key*.

Introduction to IV Bolus Medication Administration Check-Off (Sample Medication Administration Record)

Patient	Feltes, Thomas H.	MRN	6985477
Date of Birth	10/23/XXXX	Provider	Benson
Age	47 years	Allergies	NKDA

PRN Medications		Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Dilaudid (hydromorphone hydrochloride 1 mg in 1 ml) 0.5 mg PRN IV over 3 minutes every 2 hours for pain greater than 7/10	Time	0800						
	Initials	JH						
	Dose	0.5 ml						
	IV Site	Left hand						

Initials	Signature/Title	Initials	Signature/Title
JH	Janice Hanger SN		

Introduction to IV Bolus Medication Administration Check-Off – Instructor Resource

PREPARATION:

Supplies:

- Provider Order
- MAR
- Med cart or mock med cart
- Mock/demo vial of hydromorphone (Dilaudid)
- Venipuncture Training Arms
- 3-cc syringes with needles
- Alcohol swab
- Normal saline flush solution
- Hand sanitizer or access to soap/water
- Watch or access to clock
- Clean gloves
- Sharps container

After demonstration, have students practice IV bolus medication administration on the Venipuncture Training Arms using the following steps:

Optional: Evaluate the student's ability to administer an IV bolus medication using the following steps. This could be scored via points or satisfactory/unsatisfactory. See sample completed MAR for proper documentation.

1.	Verify the MAR with the written order from provider	
2.	Review medication reference information (proper dosage, side effects, compatibility, rate, etc.)	
3.	Gather the supplies needed for preparing and administering medication	
4.	Wash your hands with sanitizer or soap/water	
5.	Compare the MAR with medication and complete the rights of administration	
6.	Wash your hands with sanitizer or soap/water	

Venipuncture Training Arms Curriculum

7.	Gather the supplies, lock medication cart, and ensure no patient information is visible per HIPAA	
8.	Knock, enter room, and provide for privacy	
9.	Identify yourself with your name and title (student nurse, medical assistant, etc.)	
10.	Wash your hands with sanitizer or soap/water	
11.	Identify the patient by asking name and date of birth; verify this information with the MAR	
12.	Explain the procedure to the patient and ask if they have any questions; verify allergies with the MAR	
13.	If not completed at the cart, draw up the correct dose and complete the rights of administration	
14.	Apply clean gloves	
15.	Assist the patient to comfortable position and inspect the IV site	
16.	Hold onto the port closest to the patient and clean the port with an alcohol swab; allow it to dry	
17.	Remove the cap from the saline flush, expel air, and connect it to the port	
18.	Pull back gently on the plunger of the syringe to aspirate for blood return	
19.	Flush with two to three milliliters of saline and remove the syringe; keep holding the port or clean it again with a new swab	
20.	Remove the needle from the medication syringe, expel air, and attach the syringe to the port	
21.	Administer the medication at the correct rate	
22.	Remove the syringe and attach the saline flush, keeping luer lock sterile and port clean or swabbing it again	
23.	Flush with two to three milliliters of saline at the same rate as the medication was administered; remove the syringe	
24.	Dispose of the needle in a sharps container	
25.	Ask the patient if they are comfortable and if they have any questions, observing them for any reactions	
26.	Remove the gloves and wash your hands with sanitizer or soap/water	
27.	Document medication administration on the MAR	
	Score	

Introduction to IV Bolus Medication Administration Check-Off (Sample Provider's Orders)

Date	Time	Orders
<i>Today</i>	<i>0700</i>	<i>Admit to medical floor post op</i>
		<i>Dilaudid (hydromorphone hydrochloride 1 mg in 1 ml) 0.5 mg PRN IV over 3 minutes every 2 hours for pain greater than 7/10</i>
		<i>If pain persists, call provider</i>
		<i>Dr. Robert Benson</i>

Feltes, Thomas H.
MRN: 6985477
Age: 47 years
Date of Birth: 10/23/XXXX

Introduction to IV Bolus Medication Administration Check-Off

PART ONE: Practice IV bolus medication administration on the Venipuncture Training Arms using the following steps.

Verify the MAR with the written order from provider
Review medication reference information (proper dosage, side effects, compatibility, rate, etc.)
Gather the supplies needed for preparing and administering medication
Wash your hands with sanitizer or soap/water
Compare the MAR with medication and complete the rights of administration
Wash your hands with sanitizer or soap/water
Gather the supplies, lock medication cart, and ensure no patient information is visible per HIPAA
Knock, enter room, and provide for privacy
Identify yourself with your name and title (student nurse, medical assistant, etc.)
Wash your hands with sanitizer or soap/water
Identify the patient by asking name and date of birth; verify this information with the MAR
Explain the procedure to the patient and ask if they have any questions; verify allergies with the MAR
If not completed at the cart, draw up the correct dose and complete the rights of administration
Apply clean gloves
Assist the patient to comfortable position and inspect the IV site
Hold onto the port closest to the patient and clean the port with an alcohol swab; allow it to dry
Remove the cap from the saline flush, expel air, and connect it to the port
Pull back gently on the plunger of the syringe to aspirate for blood return
Flush with two to three milliliters of saline and remove the syringe; keep holding the port or clean it again with a new swab
Remove the needle from the medication syringe, expel air, and attach the syringe to the port
Administer the medication at the correct rate

Venipuncture Training Arms Curriculum

Remove the syringe and attach the saline flush, keeping luer lock sterile and port clean or swabbing it again
Flush with two to three milliliters of saline at the same rate as the medication was administered; remove the syringe
Dispose of the needle in a sharps container
Ask the patient if they are comfortable and if they have any questions, observing them for any reactions
Remove the gloves and wash your hands with sanitizer or soap/water
Document medication administration on the MAR

Introduction to IV Bolus Medication Administration Check-Off (Medication Administration Record)

Patient	Feltes, Thomas H.	MRN	6985477
Date of Birth	10/23/XXXX	Provider	Benson
Age	47 years	Allergies	NKDA

PRN Medications		Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Dilaudid (hydromorphone hydrochloride 1 mg in 1 ml) 0.5 mg PRN IV over 3 minutes every 2 hours for pain greater than 7/10	Time							
	Initials							
	Dose							
	IV Site							

Initials	Signature/Title	Initials	Signature/Title

Name: _____

Class: _____

Introduction to IV Bolus Medication Administration Quiz

Instructions: Select the best answer to the following multiple-choice questions.

1. Why are IV boluses considered one of the most dangerous routes?
 - a. The medications go through the arteries
 - b. There is no time to correct errors once administered
 - c. It is not done with a pump
 - d. All bolus doses need to be calculated by the nurse
2. Which of the following is a potential complication of IV boluses?
 - a. Speed shock
 - b. Pain
 - c. Allergic reaction
 - d. All the above
3. Why is saline used to flush before and after the medication?
 - a. Patients are not allergic to saline
 - b. Saline reduces the pain of the medication
 - c. It is used to ensure patency of the lock
 - d. It helps the medication be absorbed
4. When flushing an IV prior to medication administration, what should the nurse do if swelling occurs at the site?
 - a. Continue to flush as this is normal
 - b. Apply ice
 - c. Stop flushing and inspect for infiltration
 - d. Wait 2 minutes and flush slowly
5. It is important to teach patients that effects of IV bolus medications occur over what time period?
 - a. Almost immediately
 - b. From 5-10 minutes
 - c. About 15 minutes
 - d. In 30 minutes

Introduction to IV Bolus Medication Administration Quiz - Answer Key

1. Why are IV boluses considered one of the most dangerous routes?
 - a. The medications go through the arteries
 - b. There is no time to correct errors once administered**
 - c. It is not done with a pump
 - d. All bolus doses need to be calculated by the nurse

*The medication is directly delivered into the veins and then circulated by the heart.
Boluses are via IV push and not all doses are calculated by nurses.*
2. Which of the following is a potential complication of IV boluses?
 - a. Speed shock
 - b. Pain
 - c. Allergic reaction
 - d. All the above**

Speed shock, pain, and allergic reactions are all potential complications.
3. Why is saline used to flush before and after the medication?
 - a. Patients are not allergic to saline
 - b. Saline reduces the pain of the medication
 - c. It is used to ensure patency of the lock**
 - d. It helps the medication be absorbed

Saline is used prior to the medication to verify patency and after to ensure the medication is not within the lock.
4. When flushing an IV prior to medication administration, what should the nurse do if swelling occurs at the site?
 - a. Continue to flush as this is normal
 - b. Apply ice
 - c. Stop flushing and inspect for infiltration**
 - d. Wait 2 minutes and flush slowly

Swelling indicates that the fluid is entering the tissue and not the vein. Flushing should be stopped and if infiltrated, the IV should be replaced.

5. It is important to teach patients that effects of IV bolus medications occur over what time period?

a. Almost immediately

b. From 5-10 minutes

c. About 15 minutes

d. In 30 minutes

Since the medication is delivered directly into the bloodstream, effects are faster than other routes.

Sources

1. Billings, D, Kowalski, K: Do your CATS PRRR? A mnemonic device to teach safety checks for administering intravenous medications. *J Contin Educ Nurs*. 36(3), 2005, 104.
2. Hydromorphone (2017). *Merck Manual Professional Version*. Retrieved from <http://www.merckmanuals.com/professional/>
3. Institute for Safe Medication Practices (ISMP): *Acute care guidelines for timely administration of scheduled medications*. Retrieved from <http://www.ismp.org/Tools/guidelines/acute/tasm.pdf>
4. Perry, A., Potter, P., & Ostendorf, W. (2014). *Clinical Nursing Skills and Techniques*. 8th Edition. Publisher: Mosby, Inc.
5. Taxis, B., & Barber, N. (2003). Ethnographic study of incidence and severity of intravenous drug errors. *British Medical Journal*, 326, 684.

Lesson Three - Introduction to Phlebotomy

Lesson Overview

In this lesson students learn about blood specimen collection through phlebotomy.

Lesson Objectives

After completing this lesson, participants will be able to:

- Locate veins used for phlebotomy
- Demonstrate how to prepare a patient for phlebotomy
- Perform the steps in conducting phlebotomy

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS:	• <i>Introduction to Phlebotomy (Focus on Empathy)</i> worksheet • <i>Introduction to Phlebotomy (Focus on Empathy)</i> – Answer Key • <i>Introduction to Phlebotomy (Focus on Anatomy)</i> worksheet • <i>Introduction to Phlebotomy (Focus on Anatomy)</i> – Answer Key	1. Print/photocopy the <i>Introduction to Phlebotomy (Focus on Empathy)</i> and <i>Introduction to Phlebotomy (Focus on Anatomy)</i> worksheets (one of each per participant).	20 minutes
LEARN	• <i>Introduction to Phlebotomy</i> slide presentation • Venipuncture Training Arms	1. Prepare the <i>Introduction to Phlebotomy</i> slide presentation for viewing.	20 minutes
REVIEW	• <i>Introduction to Phlebotomy Check-Off</i> – Instructor Resource • <i>Introduction to Phlebotomy Check-Off</i> worksheet • <i>Introduction to Phlebotomy Quiz</i> • <i>Introduction to Phlebotomy Quiz</i> - Answer Key • Venipuncture Training Arms • Hand sanitizer or access to soap/water • Laboratory sample tubes upright in a rack • Clean, non-sterile gloves • Different sizes of blood-sampling devices (safety-engineered devices or needles and syringes) • Tourniquet • Alcohol swabs for skin disinfection • Gauze or cotton ball to be applied over puncture site • Laboratory specimen labels and forms • Laboratory transportation bags/containers • A sharps container	1. Print/photocopy the <i>Introduction to Phlebotomy Check-Off</i> worksheet and <i>Introduction to Phlebotomy Quiz</i> (one of each per participant). 2. Get the supplies ready for the lesson.	30 minutes

Lesson Three – Introduction to Phlebotomy

FOCUS: Developing Awareness of Patient-Focused Care and Anatomy

20 minutes

Purpose:

Help students develop awareness of patient-focused care and locate veins used in phlebotomy.

Materials:

- *Introduction to Phlebotomy (Focus on Empathy)* worksheet
- *Introduction to Phlebotomy (Focus on Empathy)* – Answer Key
- *Introduction to Phlebotomy (Focus on Anatomy)* worksheet
- *Introduction to Phlebotomy (Focus on Anatomy)* – Answer Key

Facilitation Steps:

1. Distribute the *Introduction to Phlebotomy (Focus on Empathy)* and *Introduction to Phlebotomy (Focus on Anatomy)* worksheets prior to or at the start of the class.
2. Have the answer keys available.
3. Have students read the information and complete the worksheets.
4. After completing the worksheets, have students pair up and share answers.

Name: _____ Class: _____

Introduction to Phlebotomy (Focus on Empathy)

READ the following:

Children receive 18 million needle sticks per year. IV placement and venipuncture are some of the most frequently performed interventions by nurses. In a study, children 3-18 years of age were asked to describe getting their blood drawn. They described it as:

- “It is like when someone stabs you”
- “It hurts and it is horrible”
- “Felt like someone smashing a hammer”

Of these children, 65 percent said it was worse than anything else they could imagine despite the presence of parents.

REFLECT on the above.

1. If you were going to draw blood from a child, how could you make the process less upsetting?
2. How could the parents help?
3. How could the parents hinder the process?

SHARE your thoughts with a peer.

University of Iowa. (n.d.) Pediatric Venipuncture. Retrieved from http://www.healthcare.uiowa.edu/training/medtest/in-service/ped_stick.pdf

Introduction to Phlebotomy (Focus on Empathy) – Answer Key

READ the following:

Children receive 18 million needle sticks per year. IV placement and venipuncture are some of the most frequently performed interventions by nurses. In a study, children 3-18 years of age were asked to describe getting their blood drawn. They described it as:

- “It is like when someone stabs you”
- “It hurts and it is horrible”
- “Felt like someone smashing a hammer”

Of these children, 65 percent said it was worse than anything else they could imagine despite the presence of parents.

REFLECT on the above.

4. If you were going to draw blood from a child, how could you make the process less upsetting?

Calm voice, reassurance, touch, use of a topical numbing agent, distract child, answer questions and explain all actions, allow child to touch and see items

5. How could the parents help?

Have parent hold child in an upright position, be calm, focus on the child instead of the procedure

6. How could the parents hinder the process?

Parent anxiety is highly predictive of a child's anxiety.

Use of restraints or holding the child down

Criticism of child

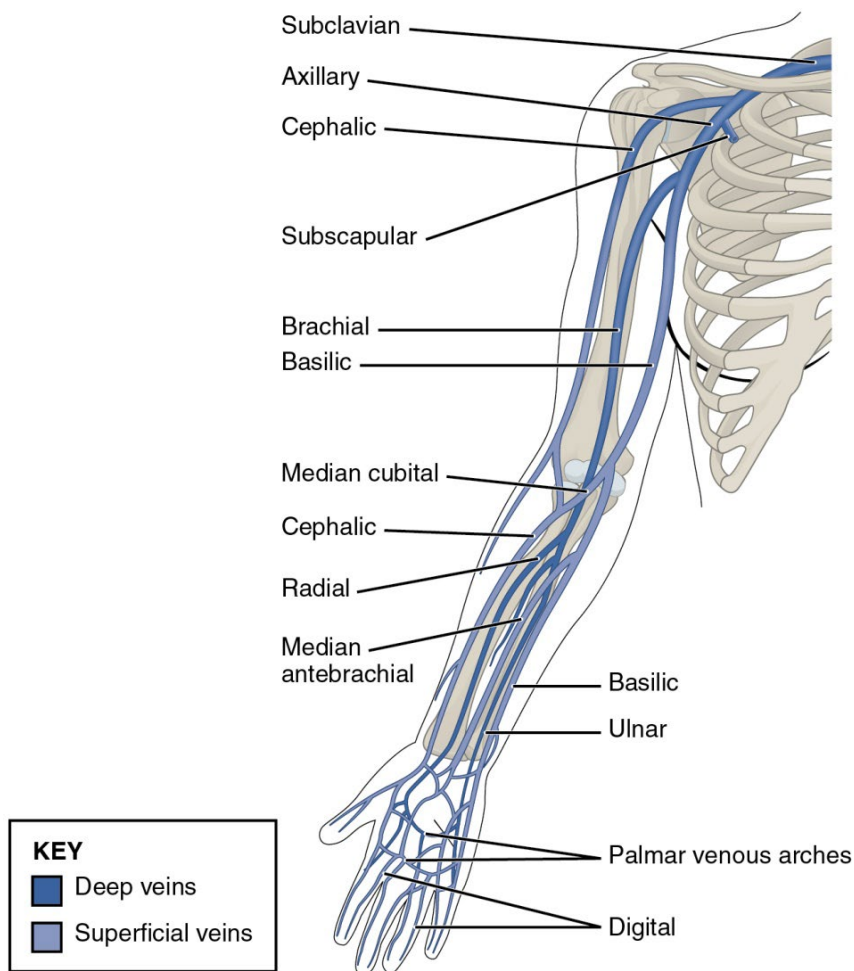
SHARE your thoughts with a peer.

Name: _____ Class: _____

Introduction to Phlebotomy (Focus on Anatomy)

Phlebotomy is defined as a “the removal of blood from a vein chiefly for transfusion or diagnosis.” Below is a depiction of the veins in the arm.

Exercise: Locate and trace the median cubital, cephalic and basilic veins. These are commonly used to draw blood from.



OpenStax College [CC BY 3.0 (<http://creativecommons.org/licenses/by/3.0/>)], via Wikimedia Commons. Retrieved from https://commons.wikimedia.org/wiki/File%3A2134_Thoracic_Upper_Limb_Veins.jpg
Merriam-Webster (2016). Dictionary. Retrieved from <https://www.merriam-webster.com/>

Venipuncture Training Arms Curriculum

Why do you think these veins are used for phlebotomy?

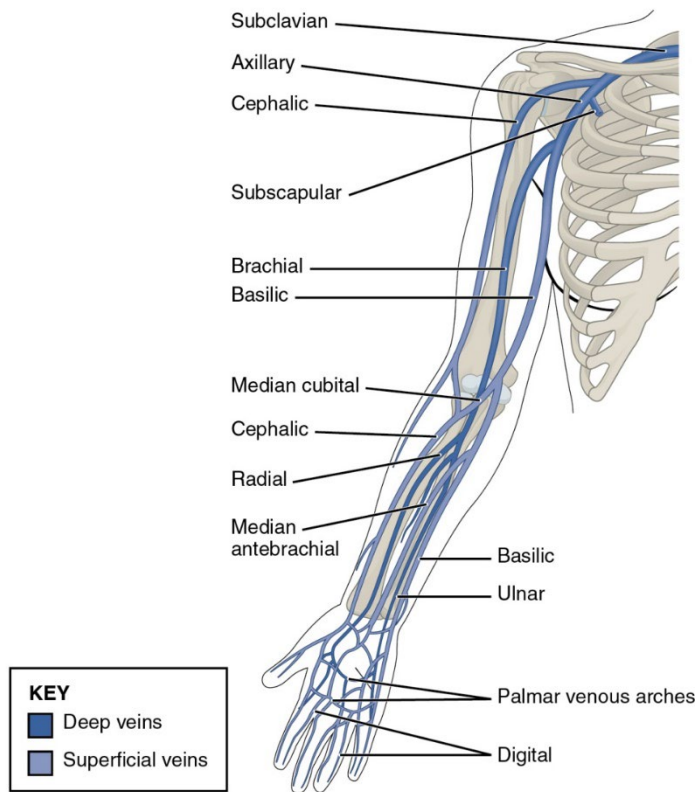
Which direction does the blood flow?

Why are arteries not used?

Introduction to Phlebotomy (Focus on Anatomy) – Answer Key

Phlebotomy is defined as a “the removal of blood from a vein chiefly for transfusion or diagnosis.” Below is a depiction of the veins in the arm.

Exercise: Locate and trace the median cubital, cephalic, and basilic veins. These are commonly used to draw blood from.



OpenStax College [CC BY 3.0 (<http://creativecommons.org/licenses/by/3.0/>)], via Wikimedia Commons. Retrieved from https://commons.wikimedia.org/wiki/File%3A2134_Thoracic_Upper_Limb_Veins.jpg

Merriam-Webster (2016). Dictionary. Retrieved from <https://www.merriam-webster.com/>

1. Why do you think these veins are used for phlebotomy?

These veins are superficial and easier to access.

2. Which direction does the blood flow?

Blood flow goes up the arm

3. Why are arteries not used?

Veins are safer to access than arteries because they contain less pressure in the vessels. Less pressure means less bleeding.

Lesson Three – Introduction to Phlebotomy

LEARN: Introduction to Phlebotomy Slide Presentation

20 minutes

Purpose:

Participants learn about blood specimen collection through phlebotomy.

Materials:

- *Introduction to Phlebotomy* slide presentation
- Venipuncture Training Arms
- *Introduction to Phlebotomy (Focus on Empathy)* worksheet
- *Introduction to Phlebotomy (Focus on Anatomy)* worksheet

Facilitation Steps:

1. Share the following information with students as you show the slide presentation.

Slide 1: Introduction to Phlebotomy

Source: World Health Organization. (2010). *WHO guidelines on drawing blood: best practices in phlebotomy*. Retrieved from http://www.who.int/injection_safety/sign/drawing_blood_best/en/

Slide 2: What Is Phlebotomy?

Phlebotomy is using a needle to access a vein.

Slide 3: Phlebotomy Best Practices

According to the World Health Organization, these factors are considered best practices. It is important to be skilled in phlebotomy to avoid injury to the veins.

Ask students:

- *What protective equipment could be used? Answer: Gloves*
- *Why is post exposure prophylaxis needed? Answer: Hepatitis, HIV, etc.*

Slide 4: Patient-Focused Care

See FOCUS worksheet on empathy for issues surrounding pediatric blood draws.

Cultural considerations are important and may affect a patient's response and willingness to participate. For example, people from Southeast Asia consider blood to be a vital life force that is irreplaceable. They may become anxious about a needle penetrating the skin, allowing blood to seep out.

Ask students how they would deal with some of these factors.

Slide 5: Safety Considerations

Some tests require meeting specific conditions to obtain accurate measurement.

Example: Fasting blood sugar requires patient to fast (NPO). Drug peak and trough levels are based on the time of medication administration.

Review standard precautions and needle safety with students.

See Table 2.2 Infection Prevention and Control Practices in the WHO Best Practices in Phlebotomy

http://apps.who.int/iris/bitstream/10665/44294/1/9789241599221_eng.pdf

Specimens should be labeled with the patient's identification number, date and time the specimen was obtained, name of the test, and source of the specimen/culture for each container.

Deliver specimens to the laboratory within the recommended time.

Slide 6: Equipment

In some facilities, there are specially trained phlebotomists who obtain the blood samples. It is important to know the facility's policies and procedures.

Blood can be collected with a needle and syringe or a needle with a vacutainer.

Explain which method student will use to collect the blood.

Slide 7: Assess Patient

Drawing specimens from contraindicated sites can result in false test results or may injure the patient.

Slide 8: Position Patient and Tourniquet

The median cubital area is the most common site. Locate a vein that is visible, straight, and clear

Review the FOCUS worksheet on anatomy for location of veins.

Healthy veins are elastic and rebound with palpation. Unhealthy veins are rigid and roll easily.

A tourniquet blocks venous return, causing veins to dilate for easier visibility. It is important that it does not block arterial blood flow. Tourniquets left on for longer than one minute may cause complications.

Slide 9: Obtain the Sample

Have a needle attached to a syringe or vacutainer, depending on the method chosen.

Vacutainers are not recommended in children younger than two years old.

The alcohol drying process kills bacteria and decreases the stinging feeling with the needle stick. The presence of alcohol may contaminate the sample.

Demonstrate the method used.

Slide 10: Complete the Procedure

Reminder to not shake the tubes because this can cause a breakdown of red blood cells

May use pressure dressing. Patients with bleeding disorders and those taking anticoagulants should apply pressure for at least five minutes.

Slide 11: When to Notify Provider

Lesson Three – Introduction to Phlebotomy

REVIEW: Practice and Assessment of Phlebotomy

10 minutes

Purpose:

Participants practice phlebotomy on models and complete a quiz to assess mastery.

Materials:

- *Introduction to Phlebotomy Check-Off* – Instructor Resource
- *Introduction to Phlebotomy Check-Off* worksheet
- *Introduction to Phlebotomy Quiz*
- *Introduction to Phlebotomy Quiz* - Answer Key
- Venipuncture Training Arms
- Hand sanitizer or access to soap/water
- Laboratory sample tubes upright in a rack
- Clean, non-sterile gloves
- Different sizes of blood-sampling devices (safety-engineered devices or needles and syringes)
- Tourniquet
- Alcohol swabs for skin disinfection
- Gauze or cotton ball to be applied over puncture site
- Laboratory specimen labels and forms
- Laboratory transportation bags/containers
- A sharps container

Facilitation Steps:

1. Give students the *Introduction to Phlebotomy Check-Off* worksheet.
2. Access the *Introduction to Phlebotomy Check-Off* – Instructor Resource page.
3. Following the steps on the check-off page, demonstrate phlebotomy on the Venipuncture Training Arms.
4. Following the steps on their *Introduction to Phlebotomy Check-Off* worksheet, have students practice phlebotomy on the Venipuncture Training Arms.
5. Distribute the *Introduction to Phlebotomy Quiz* and give students a couple of minutes to complete it.
6. Have students self-check or peer check their answers as you share them from the *Introduction to Phlebotomy Quiz* – Answer Key.

Introduction to Phlebotomy Check-Off – Instructor Resource

PREPARATION:

Supplies:

- Hand sanitizer
- Laboratory sample tubes upright in a rack
- Clean, non-sterile gloves
- Different sizes of blood-sampling devices (safety-engineered devices or needles and syringes)
- Tourniquet
- Alcohol swabs for skin disinfection
- Gauze or cotton ball to be applied over puncture site
- Laboratory specimen labels and forms
- Laboratory transportation bags/containers
- A sharps container

After demonstration, have students practice phlebotomy on the models using the steps on the following page.

Optional: Evaluate the students' ability to complete phlebotomy using the steps on the following page. You can score this via points or satisfactory/unsatisfactory.

1.	Verify the written order from the provider to determine the type of test	
2.	Gather the supplies needed	
3.	Knock, enter the room, and provide for privacy	
4.	Identify yourself with your name and title (student nurse, medical assistant, etc.)	
5.	Wash your hands with sanitizer or soap/water	
6.	Identify the patient by asking for their name and date of birth; verify this information	
7.	Explain the procedure to the patient and ask if they have any questions	
8.	Place the patient in an appropriate position and extend the patient's arm	
9.	Inspect the antecubital area and locate a vein that is visible, straight, and clear	
10.	Apply a tourniquet four to five finger widths above the potential site	
11.	Palpate the radial pulse to confirm arterial blood flow	
12.	Ask the patient to open and close their fist several times; leave the fist clenched	

Venipuncture Training Arms Curriculum

13.	Verify written order from provider to determine type of test	
14.	Gather supplies needed	
15.	Knock, enter room, and provide for privacy	
16.	Identify yourself with name and title (student nurse, medical assistant, etc.)	
17.	Wash your hands with sanitizer or soap/water	
18.	Identify patient by asking name and date of birth; verify this information	
19.	Explain the procedure to the patient and ask if they have any questions	
20.	Place the patient in an appropriate position and extend the patient's arm	
21.	Inspect the antecubital area and locate a vein that is visible, straight, and clear	
22.	Apply a tourniquet four to five finger widths above the potential site	
23.	Palpate the radial pulse to confirm arterial blood flow	
24.	Ask the patient to open and close their fist several times; leave the fist clenched	
25.	Inspect the antecubital area to confirm the site	
26.	Apply clean gloves and palpate the selected vein	
27.	Cleanse the site with an alcohol swab	
28.	Anchor the vein by holding the patient's arm and placing a thumb below the venipuncture site	
29.	Enter the vein at a 30-degree angle or less	
30.	Draw blood collection tubes in the correct order (if applicable)	
31.	Once you have collected a sufficient amount of blood, release the tourniquet before withdrawing the needle	
32.	Withdraw the needle gently and apply gentle pressure to the site with a clean gauze	
33.	Discard the used needle and syringe or blood sampling device in sharps container	
34.	Verify the label on samples and forms for accuracy	
35.	Remove gloves and perform hand hygiene	
24.	Check the insertion site for bleeding; provide for patient comfort and safety	
25.	Prepare samples for transportation	
	Score	

Introduction to Phlebotomy Check-Off

Practice venipuncture on the Venipuncture Training Arms using the following steps. Depending on the method used (syringe, vacutainer, etc.) to draw the blood specimen, you may have to verbalize some steps.

Verify the written order from the provider to determine the type of test
Gather the supplies needed
Knock, enter the room, and provide for privacy
Identify yourself with your name and title (student nurse, medical assistant, etc.)
Wash your hands with sanitizer or soap/water
Identify the patient by asking for their name and date of birth; verify this information
Explain the procedure to the patient and ask if they have any questions
Place the patient in an appropriate position and extend the patient's arm
Inspect the antecubital area and locate a vein that is visible, straight, and clear
Apply a tourniquet four to five finger widths above the potential site
Palpate the radial pulse to confirm arterial blood flow
Ask the patient to open and close their fist several times; leave the fist clenched
Inspect the antecubital area to confirm the site
Apply clean gloves and palpate the selected vein
Cleanse the site with an alcohol swab
Anchor the vein by holding the patient's arm and placing a thumb below the venipuncture site
Enter the vein at a 30-degree angle or less
Draw blood collection tubes in the correct order (if applicable)
Once you have collected a sufficient amount of blood, release the tourniquet before withdrawing the needle
Withdraw the needle gently and apply gentle pressure to the site with a clean gauze
Discard the used needle and syringe or blood sampling device in sharps container
Verify the label on samples and forms for accuracy

Venipuncture Training Arms Curriculum

Remove gloves and perform hand hygiene
Check the insertion site for bleeding; provide for patient comfort and safety
Prepare samples for transportation

Name: _____ Class: _____

Introduction to Phlebotomy Quiz

Instructions: Select the best answer to the following multiple-choice questions.

1. When completing a blood draw, which of the following veins is most commonly used?
 - a. Radial
 - b. Brachial
 - c. Median cubital
 - d. Subclavian
2. When palpated, which of the following is a characteristic of a healthy vein?
 - a. It rolls
 - b. It rebounds
 - c. It is rigid
 - d. It feels cordlike
3. Which of the following should be included on a specimen label?
 - a. Admission date
 - b. Medical diagnosis
 - c. Patient's phone number
 - d. Date/time of collection
4. Why are specimen tubes rotated 8-10 times immediately after collection?
 - a. To mix the additives in the tubes
 - b. To warm the specimen
 - c. To sift out any residue
 - d. To create a clearer sample
5. Specimens should be delivered to a laboratory within what time period?
 - a. 5 minutes
 - b. 15 minutes
 - c. 30 minutes
 - d. 60 minutes

Introduction to Phlebotomy Quiz – Answer Key

1. When completing a blood draw, which of the following veins is most commonly used?
- a. Radial
 - b. Brachial
 - c. Median cubital**
 - d. Subclavian

The median cubital is the most common site. The other options are deep veins.

2. When palpated, which of the following is a characteristic of a healthy vein?
- a. It rolls
 - b. It rebounds**
 - c. It is rigid
 - d. It feels cordlike

Healthy veins are elastic and rebound with palpation. Unhealthy veins are rigid and roll easily.

3. Which of the following should be included on a specimen label?
- a. Admission date
 - b. Medical diagnosis
 - c. Patient's phone number
 - d. Date/time of collection**

Specimens should be labeled with patient's identification number, date and time the specimen was obtained, name of the test, and source of the specimen/culture for each container.

4. Why are specimen tubes rotated 8-10 times immediately after collection?
- a. To mix the additives in the tubes**
 - b. To warm the specimen
 - c. To sift out any residue
 - d. To create a clearer sample

Rotate tubes 8-10 times to mix with additives. Shaking can disrupt the red blood cells.

5. Specimens should be delivered to a laboratory within what time period?
- a. 5 minutes
 - b. 15 minutes
 - c. 30 minutes**
 - d. 60 minutes

30 minutes is the recommended amount of time for most specimens.

Sources

1. Merriam-Webster (2016).Dictionary. Retrieved from <https://www.merriam-webster.com/>
2. Perry, A., Potter, P., & Ostendorf, W. (2014).*Clinical Nursing Skills and Techniques*. 8th Edition. Publisher: Mosby, Inc.
3. University of Iowa. (n.d.) Pediatric Venipuncture. Retrieved from http://www.healthcare.uiowa.edu/training/medtest/inservice/ped_stick.pdf
4. World Health Organization. (2010). *WHO guidelines on drawing blood: best practices in phlebotomy*. Retrieved from http://www.who.int/injection_safety/sign/drawing_blood_best/en/

Lesson Four – Introduction to IV Insertion

Lesson Overview

In this lesson, students learn about insertion of intravenous (IV) catheters.

Lesson Objectives

After completing this lesson, participants will be able to:

- Define key terms associated with IV insertions
- Locate veins subject to IV insertions
- Explain patient considerations when inserting an IV
- Perform the steps to insert an IV
- Explain how to document IV insertions

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• <i>Introduction to IV Insertion (Focus on Empathy)</i> worksheet • <i>Introduction to IV Insertion (Focus on Empathy)</i> – Answer Key • <i>Introduction to IV Insertion (Focus on Anatomy)</i> worksheet • <i>Introduction to IV Insertion (Focus on Anatomy)</i> – Answer Key	1. Print/photocopy the <i>Introduction to IV Insertion (Focus on Empathy)</i> and <i>Introduction to IV Insertion (Focus on Anatomy)</i> worksheets (one of each per participant).	20 minutes
LEARN	• <i>Introduction to IV Insertion</i> slide presentation • Venipuncture Training Arms	1. Prepare the <i>Introduction to IV Insertion</i> slide presentation for viewing.	20 minutes
REVIEW	• <i>Introduction to IV Insertion Check-Off</i> – Instructor Resource • <i>Introduction to IV Insertion Check-Off</i> worksheet • <i>Introduction to IV Insertion Quiz</i> • <i>Introduction to IV Insertion Quiz</i> - Answer Key • Venipuncture Training Arms • IV catheters • IV start kit • Clean gloves • Hand sanitizer or access to soap/sink	1. Print/photocopy the <i>Introduction to IV Insertion Check-Off</i> worksheet and <i>Introduction to IV Insertion Quiz</i> (one of each per participant). 2. Get the supplies ready for the lesson.	30 minutes

Note: For FOCUS and REVIEW activities, you may have students complete both or one of the two activities. FOCUS activities may also be completed prior to class.

Lesson Four – Introduction to IV Insertion

FOCUS: Developing Awareness of Patient-Focused Care and Anatomy

20 minutes

Purpose:

This activity helps students develop awareness of patient-focused care and identify parts of venous anatomy.

Materials:

- *Introduction to IV Insertion (Focus on Empathy)* worksheet
- *Introduction to IV Insertion (Focus on Empathy)* – Answer Key
- *Introduction to IV Insertion (Focus on Anatomy)* worksheet
- *Introduction to IV Insertion (Focus on Anatomy)* – Answer Key

Facilitation Steps:

1. Distribute the *Introduction to IV Insertion (Focus on Empathy)* and *Introduction to IV Insertion (Focus on Anatomy)* worksheets prior to or at the start of the class.
2. Have the answer keys available.
3. Have students read the information and complete the worksheets.
4. Once students complete the worksheets, have them pair up and share answers.

Name: _____ Class: _____

Introduction to IV Insertion (Focus on Empathy)

READ the following:

200 million IVs are inserted in the United States annually. Approximately 90 percent of people admitted into a hospital have an IV line inserted. In a recent survey of 122 nurses, 61 percent worry that at least one patient will dislodge/remove an IV during the shift and 64 percent say IV dislodgement happens at least once per week.

REFLECT on the statistics above.

1. How do you think an IV becomes dislodged or accidentally removed?
2. If 90% of patients need IVs, how do you think a patient feels about being repeatedly poked?
3. Are there any consequences if a patient refuses another IV if the first one is dislodged?

SHARE your thoughts with a peer:

Lineus Medical. (2015). Vascular access and IV dislodgement info. Retrieved from <http://lineusmed.com/clinical-info/>

Introduction to IV Insertion (Focus on Empathy) – Answer Key

READ the following:

200 million IVs are inserted in the United States annually. Approximately 90 percent of people admitted into a hospital have an IV line inserted. In a recent survey of 122 nurses, 61 percent worry that at least one patient will dislodge/remove an IV during the shift and 64 percent say IV dislodgement happens at least once per week.

REFLECT on the statistics above.

1. How do you think an IV becomes dislodged or accidentally removed?

Accidentally – caught on something (bed, clothing, etc)

Purposefully – patient pulled it out or there was a complication and the IV needed to be removed and replaced

2. If 90% of patients need IVs, how do you think a patient feels about being repeatedly poked?

Every effort is made to maintain IVs. Therapeutic communication with the patient is important.

3. Are there any consequences if a patient refuses another IV if the first one is dislodged?

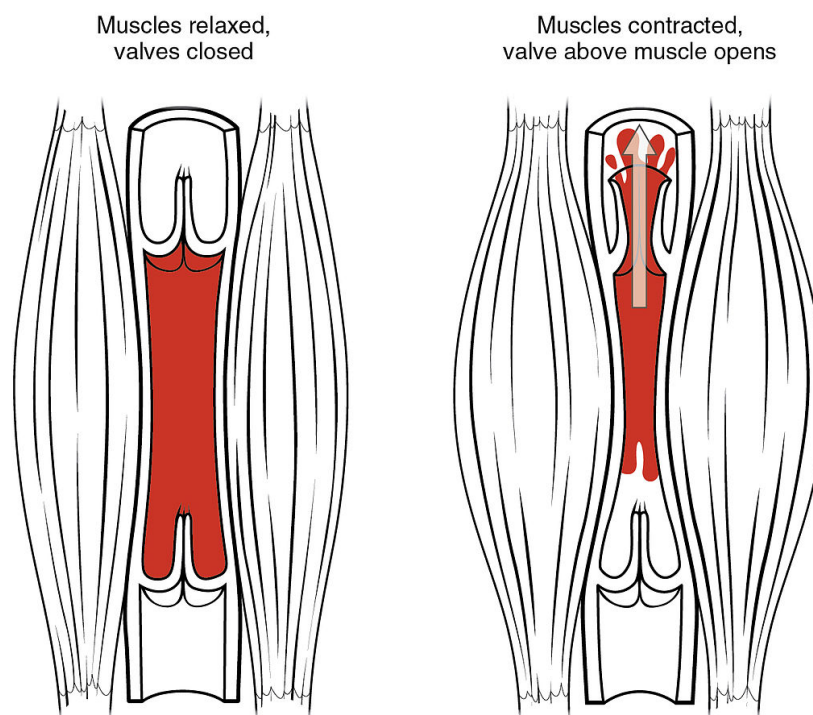
Patients have the legal right to refuse treatment if consequences have been fully explained and the patient acknowledges the risks. Risks can include interruption in treatment or inability to treat. The patient may have to take medications or fluids through a different route.

SHARE your thoughts with a peer:

Name: _____ Class: _____

Introduction to IV Insertion (Focus on Anatomy)

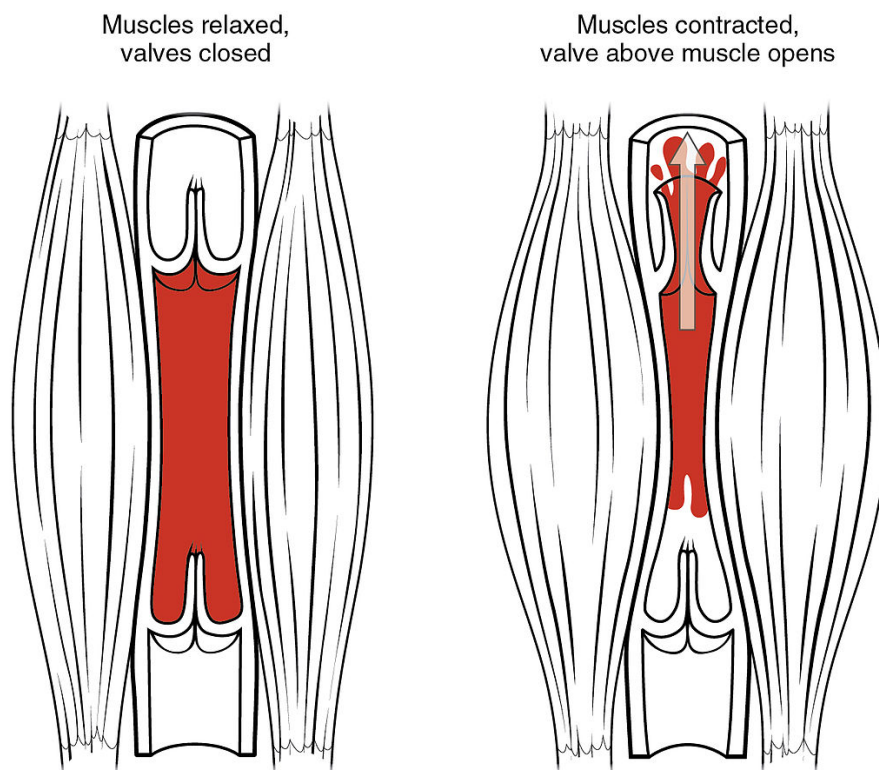
Exercise: Reflect on what you know about the vascular system. Review the picture and answer the questions below.



1. What do you think happens if an intravenous catheter bumps up against a valve?
2. Why are venous catheters used more than arterial catheters?
3. What do you think an intravenous catheter feels like once in place? Do you think it depends on location?

Introduction to IV Insertion (Focus on Anatomy) – Answer Key

Exercise: Reflect on what you know about the vascular system. Review the picture and answer the questions below.



4. What do you think happens if an intravenous catheter bumps up against a valve?
The catheter rubbing on the valve can cause discomfort and impede flow of fluids through the IV.
5. Why are venous catheters used more than arterial catheters?
Venous catheters contain less pressure than the arterial system, leading to less bleeding and complications.
6. What do you think an intravenous catheter feels like once in place? Do you think it depends on location?
Discomfort can come from location. It is important to select a location that is in a straight, non-branching superficial vein. IV access is more common in the extremities especially the hands.

By OpenStax College [CC BY 3.0 (<http://creativecommons.org/licenses/by/3.0>)], via Wikimedia Commons. Retrieved from https://upload.wikimedia.org/wikipedia/commons/3/3f/2114_Skeletal_Muscle_Vein_Pump.jpg

Lesson Four – Introduction to IV Insertion

LEARN: Introduction to IV Insertion Slide Presentation

20 minutes

Purpose:

Participants receive a thorough introduction to insertion of intravenous (IV) catheters.

Materials:

- *Introduction to IV Insertion* slide presentation
- Venipuncture Training Arms

Facilitation Steps:

1. Share the following information with students as you show the slide presentation.

Slide 1: Introduction to IV Insertion

Source: Jarvis, Carolyn (2016). *Physical Examination and Health Assessment*. 8th Edition. Publisher: Elsevier.

Slide 2: Why Is an IV Inserted?

Review the concepts in administering medications/fluids – rights of medication administration. Discuss right drug/solution, right dose/concentration, right patient, right route, right date/time, and right documentation.

Ask students to think of conditions that need intravenous (IV) therapy.

Examples: Dehydration, surgery etc.

Slide 3: Cellular Fluid

When replacing fluids in the body via the IV route, it is important to know the differences between the fluids in the body. When IV therapy is administered it can be to replenish intracellular or extracellular fluids.

Source: Welcome1To1The1Jungle at English Wikipedia [CC BY 3.0

(<http://creativecommons.org/licenses/by/3.0>), via Wikimedia Commons. Retrieved from https://upload.wikimedia.org/wikipedia/commons/2/25/Cellular_Fluid_Content.jpg

Slide 4: IV Fluids

Examples of Isotonic: Dextrose 5% in water (D5W), 0.9% sodium chloride (0.9% NaCl), Lactated Ringer's (LR)

Examples of Hypotonic: 0.45% sodium chloride (half NS) (0.45% NaCl)

Examples of Hypertonic: Dextrose 10% in water (D10W), 3%-5% sodium chloride (3%-5% NaCl)

IV fluids can also be mixed with medications or electrolytes. It is important to know the type of fluids and any additives in case the fluid is incompatible.

Slide 5: IV Catheters

When selecting the appropriate VAD, consider a patient's prescribed therapy, length of treatment, duration the device remains in place, vascular integrity, patient preference, and resources available to care for the device.

Note: This module concentrates on the short-term types.

Slide 6: IV Catheters

Review parts with actual needles.

Slide 7: Size of Catheter

Select the smallest gauge and length possible to administer the prescribed therapy.

Slide 8: Equipment

Supplies can vary if a solution will be hung after IV insertion.

Venipuncture Training Arms Curriculum

Slide 9: Patient Assessment

Check with a drug reference book or pharmacist about IV fluid potential incompatibilities and side effects.

Always wash hands prior to patient contact.

Slide 10: Position Patient and Tourniquet

Locate a vein that is visible, straight, and clear

The veins on the dorsal and ventral surfaces of arms (e.g., cephalic, basilic, or median) are preferred in adults.

Avoid the lateral surface of the wrist because of the potential for nerve damage.

Choose a site that will not interfere with the patient's activities of daily living, use of assist devices, or planned procedures.

You may have students apply tourniquets to each other to view veins.

Healthy veins are elastic and rebound with palpation. Unhealthy veins are rigid and roll easily.

Tourniquets blocks venous return, causing veins to dilate for easier visibility. It is important that it does not block arterial blood flow.

Tourniquets left on for longer than one minute may cause complications.

Slide 11: Insert IV

Demonstrate inserting an IV on the Venipuncture Training Arms.

According to the Infusion Nursing Standards of Practice, a single nurse should not make more than two attempts at initiating IV access. After two attempts, the nurse should have another nurse attempt insertion.

Slide 12: Complete the Procedure

Dressings may differ per facility. Follow the agency's policy.

Label dressing with date and time of IV insertion, gauge size and length, and initials.

Slide 13: Potential Complications

See Table 1 Phelbitis Scale from the Infusion Nursing Standards of Practice.

<https://engage.ahima.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=2238ee0a-c2df-4d1a-affa-f69f2ce41856>

Slide 14: Documentation

Use an infusion therapy flow sheet when available.

Lesson Four – Introduction to IV Insertion

REVIEW: Practice and Assessment of IV Insertion

30 minutes

Purpose:

Participants practice insertion of intravenous (IV) catheters and then complete a quiz to assess mastery.

Materials:

- *Introduction to IV Insertion Check-Off* – Instructor Resource
- *Introduction to IV Insertion Check-Off* worksheet
- *Introduction to IV Insertion Quiz*
- *Introduction to IV Insertion Quiz* – Answer Key
- Venipuncture Training Arms
- IV catheters
- IV start kit
- Clean gloves
- Hand sanitizer or access to soap/sink

Facilitation Steps:

1. Give students the *Introduction to IV Insertion* worksheet.
2. Access the *Introduction to IV Insertion Check-Off* - Instructor Resource.
3. Following the steps on the check-off page, demonstrate IV insertion on the Venipuncture Training Arms.
4. Following the steps on their *Introduction to IV Insertion* worksheet, have students practice IV insertion on the Venipuncture Training Arms.
5. Distribute the *Introduction to IV Insertion Quiz* to students and give them a couple of minutes to complete it.

6. Have students self-check or peer check their answers as you share them from the *Introduction to IV Insertion Quiz* - Answer Key.

Introduction to IV Insertion Check-Off (Instructor Resource)

PREPARATION:

Supplies:

- Hand sanitizer or access to soap/sink
- IV catheter (butterfly and/or over the needle catheter)
- IV start kit supplies
- Clean gloves
- Extension set with needleless connection device (also called saline lock, IV plug, or adapter)
- Prefilled 5-ml syringe with 0.9% normal saline solution
- Alcohol pads
- Needle disposal container

Note: May also include IV fluids if desired

After the demonstration, have students practice IV insertion on the Venipuncture Training Arms using the following steps:

1.	Verify the written order from the provider to determine the type and amount of IV fluid, medication additives, infusion rate, and length of therapy	
2.	Complete the rights of medication administration (if fluids are being used)	
3.	Gather the supplies needed	
4.	Knock, enter the room, and provide for privacy	
5.	Identify yourself with your name and title (student nurse, etc.)	
6.	Wash your hands with sanitizer or soap/water	
7.	Identify the patient by asking for their name and date of birth; verify this information	
8.	Explain the procedure to the patient and ask if they have any questions	
9.	Place the patient in an appropriate position and extend the patient's arm	
10.	Prepare the supplies (open kit, flush extension set with saline)	
11.	Apply the tourniquet four to five finger widths above the antecubital area	

Venipuncture Training Arms Curriculum

12.	Palpate the radial pulse to confirm arterial blood flow	
13.	Locate a vein that is visible, straight, and distal	
14.	Release the tourniquet	
15.	Wash your hands and apply clean gloves	
16.	Cleanse the site with a swab	
17.	Reapply the tourniquet four to six inches above anticipated insertion site	
18.	Anchor the vein by placing your thumb below the site	
19.	Prepare the patient for the needle stick	
20.	Enter the vein at a 10-to-30-degree angle	
21.	Observe the blood flashback	
22.	Lower the catheter until it is flush with the skin and advance the catheter	
23.	Stabilize the catheter and release the tourniquet	
24.	Remove the needle and connect the extension tubing	
25.	Flush the IV and set slowly	
26.	Secure the catheter with dressing and label	
27.	Secure the extension tubing	
28.	Discard the used needle into a sharps container	
29.	Remove gloves and wash hands	
30.	Provide for patient comfort and safety	
31.	Document procedure	
	Score	

Optional: Evaluate the student's ability to complete IV insertion using the above steps. You may score via points or satisfactory/unsatisfactory.

Introduction to IV Insertion Check-Off

Instructions: Practice insertion of an IV on the Venipuncture Training Arms using the following steps.

Verify the written order from the provider to determine the type and amount of IV fluid, medication additives, infusion rate, and length of therapy
Complete the rights of medication administration (if fluids are being used)
Gather the supplies needed
Knock, enter the room, and provide for privacy
Identify yourself with your name and title (student nurse, etc.)
Wash your hands with sanitizer or soap/water
Identify the patient by asking for their name and date of birth; verify this information
Explain the procedure to the patient and ask if they have any questions
Place the patient in an appropriate position and extend the patient's arm
Prepare the supplies (open kit, flush extension set with saline)
Apply the tourniquet four to five finger widths above the antecubital area
Palpate the radial pulse to confirm arterial blood flow
Locate a vein that is visible, straight, and distal
Release the tourniquet
Wash your hands and apply clean gloves
Cleanse the site with a swab
Reapply the tourniquet four to six inches above anticipated insertion site
Anchor the vein by placing your thumb below the site
Prepare the patient for the needle stick
Enter the vein at a 10-to-30-degree angle

Venipuncture Training Arms Curriculum

Observe the blood flashback
Lower the catheter until it is flush with the skin and advance the catheter
Stabilize the catheter and release the tourniquet
Remove the needle and connect the extension tubing
Flush the IV and set slowly
Secure the catheter with dressing and label
Secure the extension tubing
Discard the used needle into a sharps container
Remove gloves and wash hands
Provide for patient comfort and safety
Document procedure

Name: _____ Class: _____

Introduction to IV Insertion Quiz

Instructions: Select the best answer to the following multiple-choice questions

1. The healthcare provider has ordered blood products for an adult patient. Which of the following gauges would be appropriate for this therapy?
 - a. 18 gauge
 - b. 22 gauge
 - c. 24 gauge
 - d. 26 gauge
2. A patient is dehydrated and needs a hypotonic solution. Which of the following would the nurse select?
 - a. Dextrose 5% in water
 - b. 0.9% sodium chloride
 - c. Lactated ringer's
 - d. 0.45% sodium chloride
3. Which of the following sites are contraindicated for IV placement?
 - a. Ventral surface of arm
 - b. Dorsal surface of hand
 - c. Lateral surface of wrist
 - d. Distal surface of hand
4. The nurse is reviewing the patient's history prior to IV insertion. Which medical history is pertinent to this procedure?
 - a. History of appendectomy
 - b. Diabetes
 - c. Hypertension
 - d. History of left mastectomy
5. The patient with an IV is complaining of pain at the insertion site. The nurse finds that there is redness along the path of the vein, and it is warm. What is this condition called?
 - a. Infiltration
 - b. Phlebitis
 - c. Infection
 - d. Hemorrhage

Introduction to IV Insertion Quiz – Answer Key

1. The healthcare provider has ordered blood products for an adult patient. Which of the following gauges would be appropriate for this therapy?
a. 18 gauge
b. 22 gauge
c. 24 gauge
d. 26 gauge
Larger gauges are needed for blood products.
2. A patient is dehydrated and needs a hypotonic solution. Which of the following would the nurse select?
a. Dextrose 5% in water
b. 0.9% sodium chloride
c. Lactated ringer's
d. 0.45% sodium chloride
Choices b and c are isotonic. Choice a is hypertonic.
3. Which of the following sites are contraindicated for IV placement?
a. Ventral surface of arm
b. Dorsal surface of hand
c. Lateral surface of wrist
d. Distal surface of hand
Avoid lateral surface of wrist because of potential for nerve damage.
4. The nurse is reviewing the patient's history prior to IV insertion. Which medical history is pertinent to this procedure?
a. History of appendectomy
b. Diabetes
c. Hypertension
d. History of left mastectomy
A mastectomy increases the risk for complications, such as lymphedema or vessel damage.
5. The patient with an IV is complaining of pain at the insertion site. The nurse finds that there is redness along the path of the vein, and it is warm. What is this condition called?
a. Infiltration
b. Phlebitis
c. Infection
d. Hemorrhage
Phlebitis is defined as pain, warmth, and tenderness at IV site with redness along path of vein.

Sources

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