ANNEXURES
ANNEXURE 1
PRE REQUISITE TEST ON MEDICATION ADMINISTRATION

Duration: 1 ½ Hour

Total marks 50

Instructions:

1. All questions are compulsory

2. Every question is provided with four alternatives of which only one is correct.

3. Do not write or mark anything on question paper, response sheet is provided with question paper to mark the answer.

4. Fill (dark) the appropriate empty circle below the question number on response sheet.

5. Use a pen to answer the questions.

6. Each question carries one mark.

7. Once a question is answered alterations will not be accepted.

1. The definition of medication administration is:
   a) Documentation of a medication round.
   b) Act in which a single dose of medication is given to a patient
   c) Placing one or more doses of a medication into a container for rounds
   d) None of the above

2. Doctor has ordered parenteral drug therapy, what does it means to you?
   a) Installing medication to cavity
   b) Helping patient to swallow the medication
   c) Keeping the medication in to body cavity
   d) Pushing the medication in the body with needle
3. Controlled drugs are:
   a) Designated as controlled substances
   b) Have a high potential for abuse
   c) Require special storage and reporting requirements
   d) All of the above

4. The therapeutic effects are defined as:
   a) Physiological response that induce by drug
   b) Unintended secondary effect which may be harmless or injurious
   c) Effects which are developed after prolong use of drug
   d) Sensitization of immunologically to initial dose of drug

5. Diuretics and vasodilators act together to keep the blood pressure at a desirable level because there is:
   a) Agonistic action
   b) Synergistic effect
   c) Lethal effect
   d) Antagonist action

6. The abbreviation ‘cc’ stands for:
   a) Coated capsule
   b) Centimeter
   c) Cubic centimeter
   d) Conference call
7. The medical abbreviation “qh” means:
   a) Every four hours
   b) Every eight hours
   c) Every hour
   d) As needed

8. The medical abbreviation for “once a day” is:
   a) q
   b) qd
   c) qid
   d) od

9. Prescription reads: “Tab Calpol 300 mg po qd”. This means:
   a) Tab Calpol 300 one by mouth every day
   b) Tab Calpol 300 mg two by mouth every other day
   c) Tab Calpol 300 mg one rectally twice a day
   d) Tab Calpol 300 mg one by mouth four times a day

10. For the term “twice a day medical abrivation used is:
    a) TID
    b) BID
    c) QID
    d) BIW
11. Abbreviation “HS” means:
   a) Four times a day
   b) After lunch
   c) As needed
   d) At bed time

12. Medication administered “po” is given:
   a) Axillary
   b) Orally
   c) Rectally
   d) Topically

13. NPO stands for:
   a) Per oral
   b) No known allergies
   c) Nil by mouth
   d) All of the above

14. Prescription reads: Inj Plain Insulin 20 units, before lunch. The abbreviation used for before lunch is:
   a) pc
   b) ac
   c) od
   d) bd
15. Abbreviation p.r.n stands for:
   a) Provide regularly by nurse
   b) As needed
   c) Per rectum at night
   d) Not necessary

16. Which one of the following statements is appropriate principle for medication administration?
   a) Right medication, dose, patient, and route with documenting
   b) Right medication, dose, time, and route with documenting
   c) Right medication, patient, time, and route with documenting
   d) Right medication, dose, patient, time, and route, with documenting

17. Why should the nurse always follow the six rights of medication administration each time medication is given even though the patient may have been taking the same medication for a long period of time?
   a) A change may have been made in the medication or dosage
   b) The nurse may have accidentally opened the wrong medication
   c) The pharmacist may have given the prescription incorrectly
   d) All of the above

18. What is the minimum number of times that you check the medication label before administering the medication?
   a) Once only
   b) Twice
   c) Three times
   d) Four times
19. The best way to be sure you are giving the right medication is to:

a) Ask someone you work with  
b) Ask the patient if the medication looks like the right one  
c) Carefully compare the pharmacy label with the medication log and the written instructions from the health care provider  
d) Call the health care provider who ordered the medication

20. If there is any doubt about a patient's identity, what should you do?

a) Check by asking a physician.  
b) Check by asking your supervisor.  
c) Check by asking the patient his name.  
d) Check by seeing case paper

21. Mr. Gangaram is admitted to the unit with a severe kidney infection. His doctor orders an IM antibiotic at 9am. The nurse performs all of the following actions when administering Mr. Gangaram's antibiotic. Which action indicates an error by the nurse?

a) Check Mr. Gangaram's ID bracelet prior to giving the drug.  
b) Check to see if Gangaram is allergic to the ordered medication.  
c) Administer the medication prior to Mr. Gangaram's evening meal to prevent nausea.  
d) Look up the medication action in the unit reference manual.

22. All of the following are required sources to confirm the patient's identity before administering medication EXCEPT:

a) Patient's identification bracelet  
b) Patient's room/bed number  
c) Ask the patient  
d) Patient's chart
23. When medication is required at a specific time, medication may be administered:
   a) Two hours before, one hour after
   b) Two hours before, forty-five minutes after
   c) One hour before, one hour after
   d) Half hour before, thirty minutes after

24. For fast action and less confusion the principle associated with charting medication is
   a) Chart the medication before starting medication administration
   b) Do not chart medication without informing sister.
   c) Chart the medication as soon as you receive order.
   d) Do not chart the medication until it has been administered

25. The nurse comes to work and the nurse from the previous shift has prepared the medication by putting it in medicine cups, explaining that she had plenty of time and wanted to help out. The oncoming Nurse should:
   a) Give thanks for help
   b) Give the medication to the patient and document correctly
   c) Look at the color and number of pills to make sure they are correct
   d) Explain that you cannot give medications that you did not prepare yourself

26. After giving the medication, what information needs to be written on the medication record chart?
   a) Time and dose for the medication that was given and the signature of the person giving the medication
   b) Time and dose for the medication that was given and patient’s initials
   c) Time and dose for the medication that was given and prescription date of the medication
   d) Time and dose for the medication that was given and patient’s signature as received the medication
27. For safe medication administration, the nurse needs to know all except:

   a) Knowing the client’s allergies
   b) The expected benefits, potential risks and side effects
   c) Name of the prescribing doctor
   d) Possible food and medication interactions.

28. One of the principles associated with charting medication:

   a) Do not chart the medication until it has been administered and record all administrations of medications.
   b) Record all patient’s medication combinelly
   c) Chart the medication before it has been administered
   d) Ask other nurse to record

29. Mrs. Shaileja is one of the evening staff who is posted in general ward. In the evening she is giving the injection due, Mrs. Shailaja discovers on the patient’s medication administration record the box for that dose has already been initialed. What should Mrs. Shailaja do in this situation:

   a) Give the medications and cross out the other initials
   b) Give medications and initial just above the box
   c) Call her supervisor
   d) Write on the back of the medication administration record

30. Medication administration record is essential to:

   a) Save the time while administering drug
   b) Prepare reliable source of information
   c) Maintain record of client’s health
   d) Prevent repetition of drug dose
31. Nurse do the initials or signature on medication card to:
   a) Evaluate client response to medication
   b) Establish accountability for medication administration
   c) Improve the prompt documentation
   d) Detect the onset of documentation

32. In addition to name of the patient, diagnosis, doctor name and date MAR should have following information:
   a) Name of the drug, dosage, route and contraindications
   b) Name of the drug, dosage, route and time of administration
   c) Name of the drug, dosage, contraindications and patient response to drug
   d) Name of the drug, dosage, route and name of prescriber

33. After giving the medication, information needs to be written on the medication administration record:
   a) Time and dose for the medication that was given and the signature of the person giving the medication
   b) Prescription number of the medication, prescription time and date and prescribers signature
   c) Time and dose for the medication that was given, prescription time and date and prescribers signature.
   d) Prescription number of the medication, prescription time and date, and the signature of the person giving the medication

34. If nurse make an error when documenting the given medication, she should:
   a) Call the duty nurse and confess
   b) Use whitener and write over the error
   c) Draw a single line through the error and mark it “error,” and sign the initials
   d) Rip out the page and start over
35. When administering medications, the following must be documented:

a) Medication administered
b) Client refusal to take a medication
c) Notification of the nurse who gave medication
d) All of these

36. Select correct Basic Formula from below to calculate drug dosages.

a) \( \frac{\text{Dose ordered}}{\text{Dose on hand}} \times \frac{\text{Amount on hand}}{\text{Dose ordered}} = \text{Amount to administer} \)

b) \( \frac{\text{Dose on hand}}{\text{Dose ordered}} \times \frac{\text{Amount on hand}}{\text{Dose ordered}} = \text{Amount to administer} \)

c) \( \frac{\text{Amount on hand}}{\text{Dose ordered}} \times \frac{\text{Dose on hand}}{\text{Dose ordered}} = \text{Amount to administer} \)

d) \( \frac{\text{Amount to administer}}{\text{Dose on hand}} \times \frac{\text{Amount on hand}}{\text{Dose ordered}} = \text{Dose ordered} \)

37. Dose prescribed is suspension Erythromycin 125 mg. Medication is available as an Erythromycin 50 mg / ml. The nurse should administers:

a) 1.5 ml
b) 2ml
c) 2.5ml
d) 3ml
38. The dose ordered **Inj.Lasix 40 mg.** The ampule of Inj. Lasix is of 2ml, with a concentration of 10mg/ml. Nurse needs to administer:

a) 1 ampule  
b) 2 ampule  
c) 3 ampule  
d) 4 ampule  

39. The doctor ordered **Inj.Garamycin 7.5 mg/kg/day.** The child weighs 30 lb. The nurse gives Gentamycin per day is:

a) 102 mg  
b) 210 mg  
c) 235 mg  
d) 750 mg  

40. Order reads: **Inj “Ampicillin 150 mg.”** On hand: Ampicillin 250 mg / 5 cc. Nurse should give:

a) 3ml  
b) 2ml  
c) 2.5ml  
d) 1.5ml  

41. Order reads: **“Penicillin 100,000 units IV.”** On hand: Penicillin 200,000 units/5 cc. Nurse gives:

a) 3cc.  
b) 2cc  
c) 2.5cc  
d) 1.5cc
42. Order reads: **Tab“Furadantin 0.5 gm po.” On hand: Furadantin 500 mg tablets.** Tablet needs to be given is:

   a)  Half
   b)  One
   c)  One and half
   d)  Two

43. The following is a hormonal agent.

   a)  Premarin
   b)  Prempro
   c)  Estratest
   d)  All of the above

44. An example of a steroid medication would be:

   a)  Inj. Nystatin
   b)  Inj. Amoxicillin
   c)  Inj. Decadron
   d)  Inj. Diclofenacsodium

45. An action of Naturolax powder is :

   a)  Antipyretic
   b)  Laxative
   c)  Antidiarroheal
   d)  Antacid

46. One of the following drugs has antipyretic action:

   a)  Ibuprofen
   b)  Fenoprofen
   c)  Paracetamol
   d)  Vincristin
47. Upset stomach, diarrhea, dry mouth, changes in mood, and drowsiness after taking a medication are all examples of:

   a) Effective medication
   b) Medication errors
   c) Side effects
   d) Overdose of medication

48. Diclophenac sodium is :

   a) Antacid
   b) Antineoplastic
   c) Analgesic
   d) Antipyretic

49. Which of the following is an anticoagulant:

   a) Tab Calpol
   b) Tab Coumadin
   c) Tab Citrucel
   d) Tab Captopril

50. One of the following drugs has an antibiotic action :

   a) Tab Lanoxin
   b) Tab Rantac
   c) Tab Chloroquin
   d) Tab Septon DS
RESPONSE SHEET FOR PREREQUISITE TEST

Name of the college: M.K.S.S.B.T.I.N.E.

Name of the student:

Roll No:

Instruction : Fill (Dark) empty circle of your choice below the question number with pen in the response sheet. An example given below:

1. The capital of India is:
   a. Mumbai
   b. Delhi
   b. Chennai
   d. Calcutta

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Total marks:
## PRE REQUISITE TEST ANSWER KEY:

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<th>Sr No</th>
<th>Question</th>
<th>Answer</th>
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<tr>
<td>1</td>
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<td>Nurse do the initials or signature on medication card to :</td>
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ANNEXURE 2
FORMATIVE UNIT TEST ON INSTRUMENTS REQUIRED FOR PARENTERAL MEDICATION

Instructions:
1. All questions are compulsory.
2. Every question is provided with four alternatives of which only one is correct.
3. Do not write or mark anything on question paper, response sheet is provided with question paper to mark the answer.
4. Fill (dark) the appropriate empty circle below the question number.
5. Use a pen to answer the questions.
6. Each question carries one mark.
7. Once a question is answered alterations will not be accepted.

(15×1= 15marks)

1. The following type of syringe is classified as:

   a. Insulin syringe
   b. Luerlock syringe
   c. Tuberculin syringe
   d. Sleep tip syringe

2. Following type of syringe is used to administer:

   a. Intramuscular injection
   b. Subcutaneous injection
   c. Intra thecal injection
   d. Intravenous
3. Doctor has prescribed Injection Vitamin K, 0.1mg IM to newborn child. The ampule of Vitamin K contains 1 mg in 1ml. To give perfect dose the proper syringe is:
   a. Luerlock 2ml syringe
   b. Hypodermic 2ml syringe
   c. Insulin syringe
   d. Tuberculin syringe

4. The length of needle is chosen on the base of Except:
   a. Type of drug to be administered
   b. Route of the drug administration
   c. Size of the patient
   d. Choice of health provider

5. The gauge of the needle varies as:
   a. Larger the gauge Smaller the needle diameter
   b. Smaller the gauge smaller the needle diameter
   c. Larger the gauge larger the needle diameter.
   d. Needle gauge and diameter do not co-relate each other

6. The tuberculin syringe is calibrated in :
   a. Hundred units per ml
   b. Hundredths of milliliter per ml
   c. Fifty units per ml
   d. Tenths of a millimeter per ml

7. Nurse wants to administer intramuscular injection, she should use a needle of:
   a. 27 G
   b. 26 G
   c. 23 G
   d. 19 G
8. Spirit swab is required for injection procedure
   a. To clean skin surface of injection site.
   b. To disinfect the hands of nurse before procedure
   c. To clean the surface where the field medication need to be kept.
   d. To clean the tip of needle

9. Part of syringe where the hub of a needle is attached, is called as:
   a. Tip
   b. Hub
   c. Nose
   d. Bavel

10. Barrel of syringe:
    a. Holds medicine
    b. Injects medicine
    c. Pushes medicine
    d. Steers medicine

11. The medicine is withdrawn from ampule or vial with:
    a. Hypodermic needle
    b. Filter needle
    c. Small gauge needle
    d. Large gauge needle

12. For handling the syringe safely. Part of a syringe which should be touched is:
    a. The adaptor of the syringe
    b. The plunger seal of the syringe
    c. The plunger shaft of the syringe
    d. The barrel
13. The shaft of the needle indicates:
   a. Bevel size
   b. Gauge
   c. Length
   d. Hub colour

14. On a needle packet the first number indicates:
   a. Length
   b. Gauge
   c. Strength
   d. Segment

15. Color of the hub of twenty three gauge needle is:
   a. Yellow
   b. Blue
   c. Green
   d. Orange
**RESPONSE SHEET FOR FORMATIVE TEST**

Name of the college: .................................................................

Name of the student: .............................................................

Roll No: .................................................................

Instruction: Fill (Dark ) empty circle of your choice below the question number with pen in the response sheet. An example given below:

1. The capital of India is:
   a. Mumbai
   b. Delhi
   b. Chennai
   d. Calcutta

<table>
<thead>
<tr>
<th>Q.No</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
</tr>
<tr>
<td>1</td>
<td></td>
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<tr>
<td>2</td>
<td></td>
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<td>3</td>
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<td>12</td>
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<td>13</td>
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<td>14</td>
<td></td>
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<tr>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>
**ANSWER KEY FOR FORMATIVE UNIT TEST ON INSTRUMENTS REQUIRED FOR PARENTERAL MEDICATION**

<table>
<thead>
<tr>
<th>Sr No</th>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The following type of syringe is classified as</td>
<td>b</td>
</tr>
<tr>
<td>2</td>
<td>Following type of syringe is used to administer:</td>
<td>b</td>
</tr>
<tr>
<td>3</td>
<td>Doctor has prescribed Injection Vitamin K, 0.1mg IM to newborn child. The ampule of Vitamin K contains 1 mg in 1ml. To give perfect dose the proper syringe is</td>
<td>d</td>
</tr>
<tr>
<td>4</td>
<td>The length of needle is chosen on the base of</td>
<td>c</td>
</tr>
<tr>
<td>5</td>
<td>The gauge of the needle varies as</td>
<td>a</td>
</tr>
<tr>
<td>6</td>
<td>The tuberculin syringe is calibrated in</td>
<td>b</td>
</tr>
<tr>
<td>7</td>
<td>Nurse wants to administer intramuscular injection, she should use a needle of:</td>
<td>c</td>
</tr>
<tr>
<td>8</td>
<td>Spirit swab is required for injection procedure</td>
<td>a</td>
</tr>
<tr>
<td>9</td>
<td>Part of syringe where the hub of a needle is attached, is called as</td>
<td>a</td>
</tr>
<tr>
<td>10</td>
<td>Barrel of syringe</td>
<td>a</td>
</tr>
<tr>
<td>11</td>
<td>The medicine is withdrawn from ampule or vial with</td>
<td>b</td>
</tr>
<tr>
<td>12</td>
<td>For handling the syringe safely. Part of a syringe which should be touched is</td>
<td>b</td>
</tr>
<tr>
<td>13</td>
<td>The shaft of the needle indicates</td>
<td>c</td>
</tr>
<tr>
<td>14</td>
<td>On a needle packet the first number indicates</td>
<td>b</td>
</tr>
<tr>
<td>15</td>
<td>Color of the hub of twenty three gauge needle is</td>
<td>b</td>
</tr>
</tbody>
</table>
OBSERVATIONS CHECK LIST FOR PREPARING AND DRAWING THE MEDICATION

Name of the student nurse:

Date of assessment:

Instructions: Check the student performance to prepare and draw medication. Put (✓) against Yes or No.

Directions: Yes = indicates a Correct performance. No= indicates an Incorrect performance.

Marks: Each step carries 1 mark

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Steps to prepare and draw medication</th>
<th>Premixed</th>
<th>Ampoule</th>
<th>Non constitute vial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>Wash hands thoroughly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Collects the required equipments</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>Checks the label for correct medication.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td>Follows the manufacturer’s instructions as to what and how much diluent to use.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Removes the soft metal or plastic cap protecting rubber stopper of the vial.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Cleans the exposed rubber stopper using an alcohol swab.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7</td>
<td>For ampoule holds the gauze at neck of ampoule and breaks the neck</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8</td>
<td>Removes the syringe and needle from the plastic or paper cover.</td>
<td></td>
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<tr>
<td>9</td>
<td>Assembles equipment needle and syringe</td>
<td></td>
<td></td>
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<tr>
<td>10</td>
<td>Removes the cap covering the needle and set it on its side to prevent contamination.</td>
<td></td>
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<tr>
<td>11</td>
<td>Aspirates the required dose by tilting the ampoule upside down</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Takes appropriate amount of diluent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Injects in to non constituted vial</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>14</td>
<td>Shakes the vial to dissolve medicine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Takes appropriate amount of air in to syringe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Pushes the needle in at a 90 degree angle through cleansed rubber stopper on the vial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Turns the vial upside down, with the needle remain in the vial above the medication.Injects the appropriate amount of air into the vial.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Keeps the vial upside down, with the needle remain in the vial. Completely covered by the medication.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Pulls back on the plunger to fill the syringe with the correct dose of medication.</td>
<td></td>
<td></td>
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<tr>
<td>20</td>
<td>Taps the syringe, or “flick” to moves bubbles to the top of the syringe.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>21</td>
<td>Forces the bubbles out of the syringe and back into the vial.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sr.No</td>
<td>Steps to prepare and draw medication</td>
<td>Premixed</td>
<td>Ampoule</td>
<td>Non constitute vial</td>
</tr>
<tr>
<td>-------</td>
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<td>---------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>22</td>
<td>After removing the bubbles, checks the dose of medication in the syringe to be correct amount.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Withdraw the needle from vial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Replaces the needle cap and keeps syringe and needle in deep tray.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overall Comments:

Signature of Evaluator

Evaluator Name:
FORMATIVE TEST FOR IDENTIFICATION OF SITES OF INJECTION

(Total 15 Marks)

Instructions:

1. All questions are compulsory.
2. Every question is provided with four alternatives of which only one is correct.
3. Do not write or mark anything on question paper, response sheet is provided with question paper to mark the answer.
4. Fill (dark) the appropriate empty circle below the question number in response sheet.
5. Use a pen to answer the questions.
6. Each question carries one mark.
7. Once a question is answered alterations will not be accepted.

Q1 Which of the following is the ventrogluteal site for injection?

A   B

C   D

Q2 The correct angle of needle insertion for IM injections is:

a. 30 degree
b. 35 degree
c. 40 degree
d. 90 degree
Q3 When giving an injection in the dorsogluteal site, the position of patient is:
   a. Sidelying
   b. Prone
   c. Fowlers
   d. Supine

Q4 The least preferred site for an intramuscular injection is:
   a. Significant amount of muscular tissue
   b. Away from large blood vessels
   c. Away from nerves
   d. Immobilized limb

Q5 The maximum dose that can be given by intramuscular injection is:
   a. 5ml
   b. 4ml
   c. 3ml
   d. 2ml

Q6 Which action is unnecessary for identifying the anatomical position for injection on deltoid?
   A) Locating the acromion process landmark, B) Palpating anterior superior iliac spine with index finger, C) Placing index & middle finger on landmark, creating an inverted triangle, D) Injecting 1 - 2 inches below the acromion process in center of triangle.
   a. A
   b. B
   c. C
   d. D

Q7 Why is the dorsogluteal site not recommended?
   a. It is difficult to identify
   b. It is sensitive to allergens.
   c. It is near to major vesels & nerves
   d. It is sealed off by bone
Q8  Which of the following correctly locates the deltoid site for injection?

A  

B  

C  

D  

Q9  The vastus lateralis muscle is situated at:

a. Upper arm  

b. Upper Leg  

c. Abdomen  

d. Hip  

Q10  The dorsogluteal muscle is located in:

a. Upper arm  

b. Upper leg  

c. Abdomen  

d. Hip
Q 11  Best and common site for intradermal injection is:
   a. Forearm  
   b. Abdomen  
   c. Thigh  
   d. Scapula  

Q 12  The site used for IM injection in children up to 18 month is:
   a. The vastuslateralis (Outer aspect)  
   b. The vastuslateralis (Anterior aspect)  
   c. The Dorsogluteal (Upper outer quadrant)  
   d. The Deltoid (Upper arm middle third)  

Q 13  The deltoid intramuscular injection site is the preferred site for injection because:
   a. Takes more volume of medication  
   b. Easy to acess  
   c. No risk for nerve injury  
   d. All of the above  

Q 14 While giving Intramuscular injection at dorsogluteal site, there is risk of injury to:
   a. Iliac spine  
   b. Deep brachial artery  
   c. Acromion process  
   d. Sciatic nerve  

Q 15 Good site for a subcutaneous injection is:
   a. Where pinched skin can be pulled  
   b. Where pinched skin can not be pulled  
   c. Where there is no large blood vesels  
   d. Where there is many large blood vesels
## ANSWER KEY FOR FORMATIVE TEST ON IDENTIFICATION OF SITE FOR INJECTION

<table>
<thead>
<tr>
<th>Sr No</th>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Which of the following is the ventrogluteal site for injection</td>
<td>c</td>
</tr>
<tr>
<td>2</td>
<td>The correct angle of needle insertion for IM injections is</td>
<td>d</td>
</tr>
<tr>
<td>3</td>
<td>When giving an injection in the dorsogluteal site, the position of patient is</td>
<td>b</td>
</tr>
<tr>
<td>4</td>
<td>The least preferred site for an intramuscular injection is</td>
<td>d</td>
</tr>
<tr>
<td>5</td>
<td>The maximum dose that can be given by intramuscular injection is</td>
<td>a</td>
</tr>
<tr>
<td>6</td>
<td>Which action is unnecessary for identifying the anatomical position for injection on deltoid</td>
<td>b</td>
</tr>
<tr>
<td>7</td>
<td>Why is the dorsogluteal site not recommended?</td>
<td>c</td>
</tr>
<tr>
<td>8</td>
<td>Which of the following correctly locates the deltoid site for injection?</td>
<td>a</td>
</tr>
<tr>
<td>9</td>
<td>The vastuslateralis muscle is situated at</td>
<td>b</td>
</tr>
<tr>
<td>10</td>
<td>The dorsogluteal muscle is located in</td>
<td>b</td>
</tr>
<tr>
<td>11</td>
<td>Best and common site for intradermal injection is</td>
<td>a</td>
</tr>
<tr>
<td>12</td>
<td>The site used for IM injection in children up to 18 month is</td>
<td>b</td>
</tr>
<tr>
<td>13</td>
<td>The deltoid intramuscular injection site is the preferred site for injection because</td>
<td>b</td>
</tr>
<tr>
<td>14</td>
<td>While giving Intramuscular injection at dorsogluteal site, there is risk of injury to</td>
<td>d</td>
</tr>
<tr>
<td>15</td>
<td>Good site for a subcutaneous injection is</td>
<td>a</td>
</tr>
</tbody>
</table>
ANNEXURE 3
SUMMATIVE TEST

Duration 1 ½ Hour

Total 50 marks

Instructions:

1. All questions are compulsory.
2. Every question is provided with four alternatives of which only one is correct.
3. Do not write or mark anything on question paper, response sheet is provided with question paper to mark the answer.
4. Fill (dark) the appropriate empty circle below the question number on response sheet.
5. Use a pen to answer the questions.
6. Each question carries one mark.
7. Once a question is answered alterations will not be accepted.

1. Parenteral drug administration means:
   a. Administering drug topically
   b. Administering the drug by injection
   c. Administering drug orally
   d. Administering of drug by inhalation

2. Which of the following drug is an example of a parenteral medication?
   a. Karvol
   b. Polio vaccine
   c. Choromycetin applicap
   d. EpiPen

3. Part of syringe where the hub of a needle is attached, is called as:
   a. Tip
   b. Hub
   c. Nose
   d. Bavel
4. Barrel of syringe:
   a. olds medicine
   b. Injects medicine
   c. Pushes medicine
   d. Steers medicine

5. Which of the following syringes has a threaded end:
   a. Insulin syringe
   b. Luerlock syringe
   c. Tuberculin syringe
   d. Luer slip syringe

6. Insulin syringe is used to administer:
   a. Intramuscular injection
   b. Subcutaneous injection
   c. Intrathecal injection
   d. Intravenous injection

7. Doctor has prescribed Injection Vitamin K, 0.1mg IM to newborn child. The ampule of Vitamin K contains 1 mg in 1ml. To give perfect dose the proper syringe is:
   a. Luerlock 2ml syringe
   b. Hypodermic 2ml syringe
   c. Insulin syringe
   d. Tuberculin syringe

8. The gauge of the needle varies as:
   a. Larger the gauge smaller the needle diameter
   b. Smaller the gauge smaller the needle diameter
   c. Needle gauge and diameter do not co-relate to each other
   d. None of the above
9. The tuberculin syringe is calibrated in:
   a. Hundred units per ml
   b. Hundredths of milliliter per ml
   c. Fifty units per ml
   d. Tenths of a millimeter per ml

10. Nurse wants to administer intradermal injection, she should use a needle of:
    a. 20 gauge
    b. 22 gauge
    c. 23 gauge
    d. 27 gauge

11. Color of the hub of twenty three gauge needle is:
    a. Yellow
    b. Blue
    c. Green
    d. Orange

12. An ampule contains the medicine which is to be used for:
    a. Single patient single use
    b. Multiple patients single use
    c. Single patient multiple uses
    d. Multiple patients multiple uses

13. The medicine is withdrawn from ampule or vial with:
    a. Hypodermic needle
    b. Filter needle
    c. Small gauge needle
    d. Large gauge needle
14. The purpose of antiseptic swab for injection procedure is:
   a. To clean skin surface of injection site.
   b. To disinfect the hands of nurse before procedure
   c. To clean the surface field where the medication needs to be kept.
   d. To clean the needle tip

15. The injection given below the outermost layer of skin is:
   a. Intramuscular
   b. Subcutaneous
   c. Intradermal
   d. Intraosseous

16. While giving subcutaneous injection, needle enters the skin at:
   a. 15 degree angle with skin
   b. 25 degree angle with skin
   c. 35 degree angle with skin
   d. 45 degree angle with skin

17. In Intramuscular injection, needle enters the skin at:
   a. $30^\circ$ angle
   b. $35^\circ$ angle
   c. $40^\circ$ angle
   d. $90^\circ$ angle

18. Needle is inserted in to skin at $5^\circ$ to $15^\circ$ angle to skin during:
   a. Intramuscular injection
   b. Intradermal injection
   c. Subcutaneous injection
   d. Intra spinal injection
19. In which method of injection ventrogluteal muscle is used
   a. Intraperitoneal
   b. Intracutaneous
   c. Intradermal
   d. Intramuscular

20. The least prefered site for an intramuscular injection is:
   a. Significant amount of muscular tissue
   b. Away from large blood vessels
   c. Away from nerves
   d. Immobilized limb

21. Appropriate method of administering 2ml dose of oily injection is
   a. Intradermal
   b. Subcutaneous
   c. Intramuscular
   d. Intraosseous

22. Which action is unnecessary for identifying the anatomical position for injection on deltoid:
   A) Locating the acromion process landmark, B) Palpating anterior superior iliac spine with Index finger, C) Placing index & middle finger on landmark, creating an inverted triangle, D) Injecting 1 - 2 inches below the acromion process in center of triangle.
   a. A
   b. B
   c. C
   d. D

23. Immediate sign of perfect intradermal medication administration is:
   a. Irritation
   b. Pain
   c. Bleb
   d. Hardening
24. The purpose of intradermal injection is:
   a. To provide medication
   b. Assessment of sensitivity to allergens.
   c. Alternative route for subcutaneous injection
   d. Fastest drug absorption.

25. In intradermal medication administration the bevel of needle should be:
   a. Upwards
   b. Downwards
   c. Sideways
   d. Any direction

26. Vastus lateralis site for IM injection is desirable in infants, principally because:
   a. It is easy for nurse to hold syringe
   b. There are no major blood vessels or nerves in the area
   c. It has thick gluteal muscle
   d. It is sealed off by bone

27. While giving Intramuscular injection at dorsogluteal site, there is risk of injury to:
   a. Iliac spine
   b. Deep brachial artery
   c. Acromion process
   d. Sciatic nerve

28. Z-track technique is preferred over routine technique for intramuscular injection to:
   a. Provide deep and better injection
   b. Prevent subcutaneous leakage and irritation
   c. Prevent injury to vessels and nerves
   d. Achieve faster absorption
29. After intradermal medicin administration the injection site is marked around with pen for:
   a. Faster absorption of medication
   b. Prevention of severe adverse reaction
   c. Prevention of tissue damage
   d. Latter assessment of local inflammatory reaction

30. The primary reason to rotate sites in subcutaneous method of injection is:
   a. The same site can make the site scarred and hard.
   b. Patient develops injection phobia.
   c. Nurse becomes more confident to give injection at any site.
   d. Patient become panic with injection.

31. Air is injected in the vial prior to withdrawing medication to:
   a. Create vacuum pressure inside the vial
   b. Allow space for the solution that is about to be injected.
   c. Develop more pressure in the vial
   d. Dislodge air bubbles from syringe

32. The step that is performed in an intramuscular or subcutaneous injection, but is not necessary when administering an intradermal injection is:
   a. Aspirating the syringe.
   b. Taking air in the syringe
   c. Cleaning the site of injection
   d. Pushing the drug slowly

33. For handling the syringe safely. Part of a syringe which should be touched is:
   a. The adaptor of the syringe
   b. The plunger seal of the syringe
   c. The plunger shaft of the syringe
   d. The barrel
34. On the hip, preferred site for intramuscular injection is:
   a. Dorsoglutial
   b. Ventrogluteal
   c. Vastus lateralis
   d. Rectus femoris

35. The site often used in infant for intramuscular injection is:
   a. Dorsoglutial
   b. Ventrogluteal
   c. Vastus lateralis
   d. Rectus femoris

36. The shaft of the needle indicates:
   a. Bevel size
   b. Gauge
   c. Length
   d. Hub colour

37. The size of the needle is selected on:
   a. Method of injection
   b. Size of patient
   c. The type of medication
   d. All of the above

38. The safest site for an IM injection is:
   a. Vastuslateralis
   b. Ventrogluteal
   c. Deltoid.
   d. Dorsogluteal.
39. Least preferred site for an IM injection is:
   a. Vastus lateralis
   b. Deltoid.
   c. Dorsogluteal
   d. Ventrogluteal

40. The only dosage, which can be injected in deltoid muscles is:
   a. 5 mL
   b. 4 mL
   c. 3 mL
   d. 2 mL

41. Minimum time required to clean the injection site is:
   a. 15 seconds
   b. 30 seconds
   c. 45 seconds
   d. 60 seconds

42. The Z-track technique is used for:
   a. Vastuslateralis injections
   b. Deltoid muscle injections
   c. Dorsogluteal muscle injections
   d. Ventroglateal muscle injections

43. IM injections cannot be case for the following potential complications:
   a. Abscess
   b. Tissue necrosis
   c. Contracture
   d. Granuloma
44. For an intra dermal injection, it is not necessary to:
   a. Select proper dose
   b. Select proper needle size
   c. Massage
   d. Marking of injection site

45. The best method to administer a drug for rapid absorption and quick result in an emergency is:
   a. Instillation
   b. Injection
   c. Buccal
   d. Transdermal

46. On a needle packet the first number indicates:
   a. Length
   b. Gauge
   c. Strength
   d. Segment

47. The injection given below the epidermis layer of skin is called as:
   a. Intramuscular
   b. Intraperitoneal
   c. Subcutaneous
   d. Intradermal

48. Abdomen, upper outer arms, upper outer thighs, and upper back are sites for:
   a. Intramuscular injection
   b. Intradermal injection
   c. Z track injection
   d. Subcutaneous injection
49. While preparing injection insulin, the vial of insulin is rolled on palm to have:
   a. Warmed insulin for administration
   b. An uniform suspension of insulin
   c. Easy administration of insulin
   d. Intransitive form of insulin

50. Removal of air bubble from filled insulin syringe are necessary to prevent:
   a. Medication leaking
   b. Medication contamination
   c. Medication dosage error
   d. Medication corruption
**RESPONSE SHEET FOR SUMMATIVE TEST**

Name of the college: M.K.S.S.B.T.I.N.E.

Name of the student:

Roll No:

Instruction: Fill (Dark ) empty circle of your choice below the question number with pen in the response sheet. An example given below:

1. The capital of India is:
   a. Mumbai
   b. Delhi
   b. Chennai
   d. Calcutta

<table>
<thead>
<tr>
<th>Q.No</th>
<th>Options</th>
<th>Q.No</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>b</td>
<td>c</td>
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<td>1</td>
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<td>25</td>
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</table>

**Total marks:**
<table>
<thead>
<tr>
<th>Question No</th>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Parenteral drug administration means.</td>
<td>b</td>
</tr>
<tr>
<td>2</td>
<td>Which of the following drug is an example of a parenteral medication?</td>
<td>d</td>
</tr>
<tr>
<td>3</td>
<td>Part of syringe where the hub of a needle is attached, is called as.</td>
<td>a</td>
</tr>
<tr>
<td>4</td>
<td>Barrel of syringe.</td>
<td>a</td>
</tr>
<tr>
<td>5</td>
<td>Which of the following syringes has a threaded end.</td>
<td>b</td>
</tr>
<tr>
<td>6</td>
<td>Insulin syringe is used to administer .</td>
<td>b</td>
</tr>
<tr>
<td>7</td>
<td>Doctor has prescribed Injection Vitamin K, 0.1mg IM to newborn child. The ampule of Vitamin K contains 1 mg in 1ml. To give perfect dose the proper syringe is.</td>
<td>d</td>
</tr>
<tr>
<td>8</td>
<td>The gauge of the needle varies as.</td>
<td>a</td>
</tr>
<tr>
<td>9</td>
<td>The tuberculin syringe is calibrated in .</td>
<td>b</td>
</tr>
<tr>
<td>10</td>
<td>Nurse wants to administer intradermal injection, she should use a needle of.</td>
<td>d</td>
</tr>
<tr>
<td>11</td>
<td>Color of the hub of twenty three gauge needle is.</td>
<td>b</td>
</tr>
<tr>
<td>12</td>
<td>An ampule contains the medicine which is to be used for.</td>
<td>a</td>
</tr>
<tr>
<td>13</td>
<td>The medicine is withdrawn from ampule or vial with.</td>
<td>b</td>
</tr>
<tr>
<td>14</td>
<td>The purpose of antiseptic swab for injection procedure is.</td>
<td>a</td>
</tr>
<tr>
<td>15</td>
<td>The injection given below the outermost layer of skin is.</td>
<td>c</td>
</tr>
<tr>
<td>16</td>
<td>While giving subcutaneous injection, needle enters the skin at.</td>
<td>d</td>
</tr>
<tr>
<td>17</td>
<td>In Intramuscular injection, needle enters the skin at.</td>
<td>d</td>
</tr>
<tr>
<td>18</td>
<td>Needle is inserted in to skin at 5° to 15° angle to skin during.</td>
<td>b</td>
</tr>
<tr>
<td>19</td>
<td>In which method of injection ventrogluteal muscle is used.</td>
<td>d</td>
</tr>
<tr>
<td>20</td>
<td>The least preferred site for an intramuscular injection is.</td>
<td>d</td>
</tr>
<tr>
<td>21</td>
<td>Appropriate method of administering 2ml dose of oily injection is.</td>
<td>c</td>
</tr>
<tr>
<td>22</td>
<td>Which action is unnecessary for identifying the anatomical position for injection on deltoid.</td>
<td>b</td>
</tr>
<tr>
<td>23</td>
<td>Immediate sign of perfect intradermal medication administration is.</td>
<td>c</td>
</tr>
<tr>
<td>24</td>
<td>The purpose of intradermal injection is.</td>
<td>b</td>
</tr>
<tr>
<td>25</td>
<td>In intradermal medication administration the bevel of needle should be.</td>
<td>a</td>
</tr>
<tr>
<td>26</td>
<td>Vastus lateralis site for IM injection is desirable in infants, principally because.</td>
<td>b</td>
</tr>
<tr>
<td>27</td>
<td>While giving Intramuscular injection at dorsogluteal site, there is risk of injury to.</td>
<td>d</td>
</tr>
<tr>
<td>28</td>
<td>Z-track technique is preferred over routine technique for intramuscular injection to</td>
<td>b</td>
</tr>
<tr>
<td></td>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
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<tr>
<td>29</td>
<td>After intradermal medication administration the injection site is marked around with pen for</td>
<td>d</td>
</tr>
<tr>
<td>30</td>
<td>The primary reason to rotate sites in subcutaneous method of injection is.</td>
<td>a</td>
</tr>
<tr>
<td>31</td>
<td>Air is injected in the vial prior to withdrawing medication to.</td>
<td>c</td>
</tr>
<tr>
<td>32</td>
<td>The step that is performed in an intramuscular or subcutaneous injection, but is not necessary when administering an intradermal injection is.</td>
<td>a</td>
</tr>
<tr>
<td>33</td>
<td>For handling the syringe safely. Part of a syringe which should be touched is</td>
<td>b</td>
</tr>
<tr>
<td>34</td>
<td>On the hip, preferred site for intramuscular injection is.</td>
<td>b</td>
</tr>
<tr>
<td>35</td>
<td>The site often used in infant for intramuscular injection is.</td>
<td>c</td>
</tr>
<tr>
<td>36</td>
<td>The shaft of the needle indicates.</td>
<td>c</td>
</tr>
<tr>
<td>37</td>
<td>The size of the needle is selected on.</td>
<td>d</td>
</tr>
<tr>
<td>38</td>
<td>The safest site for an IM injection is.</td>
<td>a</td>
</tr>
<tr>
<td>39</td>
<td>Least preferred site for an IM injection is.</td>
<td>c</td>
</tr>
<tr>
<td>40</td>
<td>The only dosage, which can be injected in deltoid muscles is.</td>
<td>d</td>
</tr>
<tr>
<td>41</td>
<td>Minimum time required to clean the injection site is</td>
<td>b</td>
</tr>
<tr>
<td>42</td>
<td>The Z-track technique is used for</td>
<td>c</td>
</tr>
<tr>
<td>43</td>
<td>IM injections cannot be case for the following potential complications</td>
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<td>For an intradermal injection, it is not necessary to</td>
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<td>50</td>
<td>Removal of air bubble from filled insulin syringe are necessary to prevent</td>
<td>c</td>
</tr>
</tbody>
</table>
PERFORMANCE CHECKLIST

Name of student nurse:

Date of assessment:

Instructions:
1. Check the student performance for subcutaneous medication technique.
2. Use subcutaneous injection skill grading criteria to score the performance.
3. Put ( ) against 2,1 or 0.
4. Documentation by narrative is required on all steps awarded a "0" and on all skills failures.
5. Space is provided on the reverse for detail documentation on all steps awarded a "0" and on all skills failures.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Step in Intramuscular drug administration</th>
<th>2</th>
<th>1</th>
<th>0</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Confirms physician’s medication order (medication, dosage, and route)</td>
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<tr>
<td>3</td>
<td>Collects appropriate equipment. Selects correct medication from drug box as per prescription</td>
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<tr>
<td>4</td>
<td>Avoids contamination of equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Reassures the patient and explains the procedure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Checks medication for contamination and expiration date</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>Prepares correct amount of medication for administration</td>
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</tr>
<tr>
<td>8</td>
<td>Selects appropriate site and identifies it by pointing to (touch the site on self.</td>
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<td>9</td>
<td>Verbalizes recheck of the medication label</td>
<td></td>
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<tr>
<td>10</td>
<td>Prepares the injection site</td>
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<td></td>
</tr>
<tr>
<td>11</td>
<td>Holds swab or gauze and removes needle cap or sheath from</td>
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<td></td>
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<tr>
<td>12</td>
<td>Performs needle insertion</td>
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<tr>
<td>13</td>
<td>Aspirates for absence of blood return. If blood comes, withdraws needle.</td>
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<tr>
<td>14</td>
<td>Injects the medication</td>
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<td></td>
</tr>
<tr>
<td>15</td>
<td>Withdraws needle and applies pressure.</td>
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<td></td>
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<tr>
<td>16</td>
<td>Disposes of contaminated equipment as per as per universal precaution guide line.</td>
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<tr>
<td>17</td>
<td>Assists patient to a comfortable position.</td>
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<td></td>
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<tr>
<td>18</td>
<td>Washes hands after the procedure</td>
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<tr>
<td>19</td>
<td>Documents the procedure.</td>
<td></td>
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</tbody>
</table>

Signature of Evaluator: Total =
INTRAMUSCULAR DRUG ADMINISTRATION CHECK LIST GRADING CRITERIA

INSTRUCTIONS TO THE OBSERVER:

1. Give the situation sheet to student.
2. Demonstration will be on the training model.
3. Actual injections will be given on appropriate equipment.
4. Documentation in remark column (by narrative) is required on all steps awarded a "0" and on all skills failures.

1. **Confirms physician’s medication order (medication, dosage, and route)**
   2 = Performs step
   0 = Omits any portion of step

2. **Assess for factors that may contraindicate IM injections and inquires about allergies**
   2 = Performs step
   1 = Inquires about allergies but does not assess for factors that may contraindicate IM injection
   0 = Does not inquire about allergies

3. **Collects appropriate equipment. Selects correct medication from drug box as per prescription**
   2 = Performs step
   0 = Omits any portion of step

4. **Avoids contamination of equipment and washes hands and apply gloves if necessary**
   2 = Does not contaminate equipment
   0 = Contaminates equipment

5. **Reassure the patient and explain the procedure**
   2 = Performs step
   0 = Omits any portion of step

6. **Check of medication for contamination and expiration date**
   2 = Performs step
   0 = Omits any portion of step
7. Prepares correct amount of medication for administration
   2 = Performs step
   0 = Does not perform step

8. Gives appropriate position to patient. Selects appropriate site and identifies it by pointing to (touching) the site on self.
   2 = Performs step
   0 = Omits step or points out an inappropriate site

9. Ensures privacy of patient and Verbalizes recheck of the medication label
   2 = Performs step
   1 = Ensures privacy to patent
   0 = Omits step

10. Prepares the injection site
    a. Cleanses the injection site with antiseptic or alcohol swab
    b. Cleanses in a circular motion from the injection site outward for 30 second.
    2 = Performs above criteria
    1 = Cleanses skin in a manner other than that stated above
    0 = Does not clean the injection site

11. Holds swab or gauze between third and fourth fingers of non-dominant hand.
    Removes needle cap or sheath from needle by pulling it straight off.
    2 = Performs above criteria
    1 = Performs in a manner other than that stated above
    0 = Does not perform

12. Performs needle insertion.
    a. Stretches skin
    b. Inserts needle at 90 degree angle (needle to skin)
    2 = Performs above criteria
    1 = Does not stretch the skin over the injection site, but inserts the needle at a 90 degree angle
    0 = Inserts needle at angle other than 90 degrees

    a. If blood comes, withdraws needle.
    2 = Performs step
    0 = Omits step

14. Injects the medication
    2 = Injects the contents of the syringe.
    0 = Omits step.
15. **Withdraws needle and applies pressure**
   a. Removes the needle at the angle at which it was inserted.
   b. Applies direct pressure over the injection site with a sterile swab.

   2 = Performs above criteria  
   1 = Does not apply direct pressure over the injection site with a sterile wipe .  
   0 = Removes the needle at an angle other than the angle at which it was inserted.

16. **Disposes of contaminated equipment as per universal precaution guide line.**
   a. Disposes of contaminated equipment using sharps container  
   b. Does not recap needle after use

   2 = Performs above criteria  
   0 = Does not perform above criteria

17. **Assist patient to comfortable position.**
   2 = Performs above criteria  
   0 = Does not perform above criteria

18. **Washes hand after procedure.**
   2 = Performs above criteria  
   0 = Does not perform above criteria

19. **Documents the procedure.**
   a. Completes the medication administration record  
   b. Documents the patient response to procedure

   2= Performs above criteria  
   1 = Does not Documents the patient response to procedure  
   0= Does not perform above criteria
**PERFORMANCE CHECKLIST FOR SUBCUTANEOUS INJECTION**

Name of student nurse:

Date of assessment:

Instructions:
1. Check the student performance for subcutaneous medication technique.
2. Use subcutaneous injection skill grading criteria to score the performance.
3. Put ( ) against 2, 1 or 0.
4. Documentation by narrative is required on all steps awarded a "0" and on all skills failures.
5. Space is provided on the reverse for detail documentation on all steps awarded a "0" and on all skills failures.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Step in subcutaneous drug administration</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Confirms physician’s medication order (medication, dosage, and route)</td>
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<tr>
<td>4</td>
<td>Avoids contamination of equipment</td>
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<td></td>
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</tr>
<tr>
<td>5</td>
<td>Reassures the patient and explains the procedure</td>
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<td></td>
</tr>
<tr>
<td>6</td>
<td>Checks medication for contamination and expiration date</td>
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<tr>
<td>7</td>
<td>Prepares correct amount of medication for administration</td>
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<tr>
<td>8</td>
<td>Selects appropriate site and identifies it by pointing to (touch the site on self)</td>
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<tr>
<td>9</td>
<td>Verbalizes recheck of the medication label</td>
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</tr>
<tr>
<td>10</td>
<td>Prepares the injection site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Holds swab or gauze and removes needle cap or sheath from</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Performs needle insertion.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Releases the skin fold pinch. Does not aspirate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Injects the medication</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>15</td>
<td>Withdraws needle and applies pressure.</td>
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<td>Disposes of contaminated equipment as per universal precaution guide line.</td>
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<td>17</td>
<td>Assists patient to a comfortable position.</td>
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<tr>
<td>18</td>
<td>Washes hands after the procedure.</td>
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<tr>
<td>19</td>
<td>Documents the procedure</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signature of Evaluator: ____________________________

Total =
SUBCUTANEOUS DRUG ADMINISTRATION CHECKLIST GRADING CRITERIA

INSTRUCTIONS TO THE OBSERVER:

1. Give the situation sheet to student.
2. Demonstration will be on the training model.
3. Actual injections will be given on appropriate equipment.
4. Detailed remark need to be documented on all steps awarded “0” and on all skills failures.

1. Confirms physician’s medication order (medication, dosage, and route).
   2 = Performs step.
   0 = Omits any portion of step.

2. Assess for factors that may contraindicate IM injections and inquires about allergies.
   2 = Performs step.
   1 = Inquires about allergies but does not assess for factors that may contraindicate IM injection.
   0 = Does not inquire about allergies.

3. Collects appropriate equipment. Selects correct medication from drug box as per prescription.
   2 = Performs step.
   0 = Omits any portion of step.

4. Avoids contamination of equipment.
   a. Washes hands.
   b. Apply gloves if necessary.
   c. Follows sterile technique while preparing drug.

   2 = Does not contaminate equipment.
   0 = Contaminates equipment.

5. Reassures the patient and explain the procedure.
   2 = Performs step.
   0 = Omits any portion of step.
6. Check of medication for contamination and expiration date.
   2 = Performs step.
   0 = Omits any portion of step.

7. Prepares correct amount of medication for administration.
   2 = Performs step.
   0 = Does not perform step.

8. Selects appropriate site and identifies it by pointing to (touching) the site on self.
   a. Ensures privacy of patient.
   b. Gives appropriate position to patient.

   2 = Performs step.
   0 = Omits step or points out an inappropriate site.

9. Verbalizes recheck of the medication label.
   2 = Performs step.
   0 = Omits step.

10. Prepares the injection site.
    a. Cleanses the injection site with antiseptic or alcohol swab.
    b. Cleanses in a circular motion from the injection site outward for 30 second.

    2 = Performs above criteria.
    1 = Cleanses skin in a manner other than that stated above.
    0 = Does not clean the injection site.

11. Holds swab or gauze and Removes needle cap or sheath from needle.
    a. Removes needle cap or sheath from needle by pulling it straight off.
    b. Holds swab or gauze between third and fourth fingers of non-dominant hand.

    2 = Performs above criteria.
    1 = Performs in a manner other than that stated above.
    0 = Does not perform.

12. Performs needle insertion.
    a. Pinches the fold of the skin.
    b. Inserts needle at a 45 degree angle (needle to skin).

    2 = Performs above criteria.
    1 = Does not pinch the fold of the skin over the injection site, but inserts the needle at a 45 degree angle.
    0 = Inserts the needle at an angle other than 45 degrees.
13. **Releases the skin fold pinch. Does not aspirate.**
   2 = Performs step.
   0 = Does not perform step.

14. **Injects the medication.**
   2 = Injects the contents of the syringe.
   0 = Omits step.

15. **Withdraws needle and applies pressure.**
   a. Removes the needle at the angle at which it was inserted.
   b. Applies direct pressure over the injection site with a sterile swab.
   c. Does not massage.

   2 = Performs above criteria.
   1 = Does not apply direct pressure over the injection site with a sterile wipe.
   0 = Removes the needle at an angle other than the angle at which it was inserted and massages site.

16. **Disposes of contaminated equipment as per universal precaution guide line.**
   a. Disposes of contaminated equipment using sharps container.
   b. Does not recap needle after use.

   2 = Performs above criteria.
   0 = Does not perform above criteria.

17. **Assists patient to a comfortable position.**
   2 = Performs above criteria.
   0 = Does not perform above criteria.

18. **Washes hands after the procedure.**
   2 = Performs above criteria.
   0 = Does not perform above criteria.

19. **Documents the procedure.**
   a. Completes the medication administration record.
   b. Documents the patient’s response to procedure.

   2= Performs above criteria.
   1 = Does not Document the patient’s response to procedure.
   0= Does not perform above criteria.
**PERFORMANCE CHECKLIST\* LIST FOR INTRADERMAL INJECTION**

**Name of student nurse:**

**Date of assessment:**

**Instructions:**
1. Check the student performance for subcutaneous medication technique.
2. Use subcutaneous injection skill grading criteria to score the performance.
3. Put ( ) against 2,1 or 0.
4. Documentation by narrative is required on all steps awarded a "0" and on all skills failures.
5. Space is provided on the reverse for detail documentation on all steps awarded a "0" and on all skills failures.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Step in Intradermal drug administration</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Confirms physician’s medication order (medication, dosage, and route)</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>2</td>
<td>Assess for factors that may contraindicate ID injections and inquires about allergies</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>3</td>
<td>Collects appropriate equipment. Selects correct medication from drug box as per prescription</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>4</td>
<td>Avoids contamination of equipment</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>5</td>
<td>Reassures the patient and explains the procedure</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>6</td>
<td>Checks medication for contamination and expiration date</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>7</td>
<td>Prepares correct amount of medication for administration</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>8</td>
<td>Selects appropriate site and identifies it by pointing to (touch the site on self.</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>9</td>
<td>Verbalizes recheck of the medication label</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>10</td>
<td>Prepares the injection site</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>11</td>
<td>Holds swab or gauze and removes needle cap or sheath from</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>12</td>
<td>Performs needle insertion.</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>13</td>
<td>Injects the medication</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>14</td>
<td>Withdraws needle and applies gentle pressure.</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>15</td>
<td>Disposes of contaminated equipment as per as per universal precaution guide line.</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>16</td>
<td>Draws circle around perimeter of injection site.</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>17</td>
<td>Assists patient to a comfortable position.</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>18</td>
<td>Washes hands after the procedure.</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>19</td>
<td>Documents the procedure.</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
</tbody>
</table>

Signature of Evaluator: 

Total =
INTRADERMAL DRUG ADMINISTRATION CHECK LIST GRADING CRITERIA

INSTRUCTIONS TO THE OBSERVER:

1. Give the patient situation sheet to student.

2. Demonstration will be on the training model.

3. Actual injections will be given on appropriate equipment.

4. Detail remark need to be documented on all steps awarded “0” and all skills failures.

1. **Confirms physician’s medication order (medication, dosage, and route)**.
   - 2 = Performs step.
   - 0 = Omits any portion of step.

2. **Assess for factors that may contraindicate ID injections and inquires about allergies**.
   - 2 = Performs step.
   - 1 = Inquires about allergies but does not assess for factors that may contraindicate ID Injection
   - 0 = Does not inquire about allergies.

3. **Collects appropriate equipment. Selects correct medication from drug box as per prescription**.
   - 2 = Performs step.
   - 0 = Omits any portion of step.

4. **Avoids contamination of equipment and washes hands and apply gloves if necessary**.
   - 2 = Does not contaminate equipment.
   - 0 = Contaminates equipment.

5. **Reassure the patient and explain the procedure**.
   - 2 = Performs step.
   - 0 = Omits any portion of step.

6. **Check of medication for contamination and expiration date**.
   - 2 = Performs step.
   - 0 = Omits any portion of step.
7. Prepares correct amount of medication for administration. Ensures all air is expelled.
   2 = Performs step.
   0 = Does not perform step.

8. Gives appropriate position to patient. Selects appropriate site and identifies it by pointing to (touching) the site on self.
   2 = Performs step.
   0 = Omits step or points out an inappropriate site.

9. Ensures privacy of patient and verbalizes recheck of the medication label.
   2 = Performs step.
   1 = Ensures privacy to patient.
   0 = Omits step.

10. Prepares the injection site.
    a. Cleanses the injection site with antiseptic or alcohol swab.
    b. Cleanses in a circular motion from the injection site outward for 30 second.

    2 = Performs above criteria.
    1 = Cleanses skin in a manner other than that stated above.
    0 = Does not clean the injection site.

11. Holds swab or gauze between third and fourth fingers of non-dominant hand. Removes needle cap or sheath from needle by pulling it straight off.
    2 = Performs above criteria.
    1 = Performs in a manner other than that stated above.
    0 = Does not perform.

12. Performs needle insertion.
    a. Stretches skin.
    b. Holds bevel of needle pointing up.
    c. Inserts needle at an angle of 5 to 15 degree (needle to skin until resistance is felt).

    2 = Performs above criteria.
    1 = Does not stretch the skin over the injection site, but inserts the needle at an 5 to 15 degree angle.
    0 = Inserts the needle at an angle other than 5 to 15 degrees without bevel up.
13. **Injects the medication and does not aspirate.**
   - 2 = Injects the contents of the syringe.
   - 1 = Belb does not appear.
   - 0 = Omits step.

14. **Withdraws needle and applies sterile swab gently.**
   - a. Removes the needle at the angle at which it was inserted.
   - b. Applies direct gentle pressure over the injection site with a sterile swab.
   - 2 = Performs above criteria.
   - 1 = Does not apply direct pressure over the injection site with a sterile wipe.
   - 0 = Removes the needle at an angle other than the angle at which it was inserted and massages injection site.

15. **Disposes of contaminated equipment as per universal precaution guideline.**
   - a. Disposes of contaminated equipment using sharps container.
   - b. Does not recap needle after use.
   - 2 = Performs above criteria.
   - 0 = Does not perform above criteria.

16. **Draws circle around perimeter of injection site.**
   - 2 = Performs above criteria.
   - 0 = Does not perform above criteria.

17. **Assists a patient to a comfortable position.**
   - 2 = Performs above criteria.
   - 0 = Does not perform above criteria.

18. **Washes hands after the procedure.**
   - 2 = Performs above criteria.
   - 0 = Does not perform above criteria.

19. **Documents the procedure.**
   - a. Completes the medication administration record.
   - b. Documents the patient’s response to procedure and informs to senior nurse.
     (For allergies and adverse reactions).
   - 2 = Performs above criteria.
   - 1 = Does not Document the patient’s response to procedure.
   - 0 = Does not perform above criteria.
ANNEXURE 4
<table>
<thead>
<tr>
<th>A. Knowledge of terms</th>
<th>B. Knowledge of facts</th>
<th>C. Knowledge of rules and principles</th>
<th>D. Ability to make translations</th>
<th>E. Ability to make applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning of drug administration</td>
<td>Controlled Substances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacology</td>
<td>Factors that affect how clients respond to medications</td>
<td>6 patient rights in medication administration</td>
<td>The nurses' role and responsibilities in medication administration</td>
<td></td>
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<tr>
<td>Dosage</td>
<td>Common routes of administration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dose</td>
<td>Different forms of oral drug</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug actions and interactions</td>
<td>Common drugs classification according to their action</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abbreviations used in writing medication orders</td>
<td>Approximate measures, Fluid measures, Systems of Measurement, Metric System, Household Measurements, Apothecary</td>
<td>Converting Units Conversion within one system, Between systems</td>
<td>To convert from grams to milligrams, To convert milligrams to micrograms, To convert from milligrams to grams, To convert from micrograms to milligrams</td>
<td></td>
</tr>
<tr>
<td>Medication Orders</td>
<td>Calculating Dosage with using formula Tablet/capsule calculations Liquid Medication Calculations</td>
<td></td>
<td>Solving the given situation by using formula</td>
<td></td>
</tr>
</tbody>
</table>

*Doted connected lines show the interrelations among the elements. That is the element at one level is necessary for an element at more complex level.*
<table>
<thead>
<tr>
<th>A. Introduction to parenteral drug administration</th>
<th>B. Knowledge of facts</th>
<th>C. Knowledge of rules and principles</th>
<th>D. Ability to make translations</th>
<th>E. Ability to make applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning of parenteral drug administration</td>
<td></td>
<td>Applies knowledge of anatomy for selection of site for injecting drug by three modes IM, SQ, ID</td>
<td></td>
<td></td>
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<tr>
<td>Different modes of parenteral drug administration</td>
<td>Factors that affecting parenteral drug administration medications</td>
<td>Follows rights in medication administration</td>
<td>The nurses' role and responsibilities in medication administration</td>
<td>Selects the appropriate site and equipment</td>
</tr>
<tr>
<td>Equipments needed for parenteral drug administration</td>
<td>Different forms of parenteral drug and contains</td>
<td></td>
<td></td>
<td>To prepare and draw medication from different contains</td>
</tr>
<tr>
<td>Drug actions and interactions</td>
<td>Abbreviations used in writing medication orders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medication Orders</td>
<td>Approximate measures, Fluid measures, Systems of Measurement, Metric System,</td>
<td>Diluting drugs according to Physicians order</td>
<td>To convert the available form of drug in to required amount to administer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculating parenteral drug Dosage with using formula</td>
<td></td>
<td>Solving the given situation by using formula and prepares drug for parenteral drug administration</td>
<td></td>
</tr>
</tbody>
</table>

Doted connected lines show the interrelations among the elements. That is the element at one level is necessary for an element at more complex level.
SPECIFICATIONS (OBJECTIVES) FOR THE PREREQUISITE DRUG ADMINISTRATION:

At the entry level students will able to:

1. Recall terms related to medication administration.
2. Use Common abbreviations used in drug administration.
3. Apply 6 rights and basic principles in medication administration.
4. Explain the importance for application of principles.
5. Prepare the medication administration record card.
6. Perform simple arithmetical tasks.
7. Calculate accurate drug dosages using an accepted formula.
8. State the nurses' role and responsibilities in medication administration.
9. Apply universal precautions and proper biomedical waste management

SPECIFICATIONS (OBJECTIVES) FOR THE PARENTERAL DRUG ADMINISTRATION:

At the end of lecture students will able to:

1. Know definitions of Parenteral drug administration
2. Describe the methods of Parenteral drug administration
   a. Intra muscular drug administration
   b. Subcutaneous drug administration
   c. Intradermal drug administration
3. Identify the advantages and disadvantages of using the Parenteral drug administration
4. State purposes of using the :
   a. Intra muscular drug administration
   b. Subcutaneous drug administration
   c. Intradermal drug administration
5. List down the equipments needed for parenteral drug administration

6. Explain the use of equipments needed for parenteral drug administration.

7. Select appropriate equipment as per the procedure of drug preparation and parenteral drug administration.

8. Demonstrate the skill of preparation of medication and drawing medication for parenteral drug administration.

9. Identify the anatomical landmarks of:
   a. Intra muscular drug administration
   b. Subcutaneous drug administration
   c. Intradermal drug administration

10. Follow the steps to perform the skills of:
    a. Intra muscular drug administration
    b. Subcutaneous drug administration
    c. Intradermal drug administration

11. Demonstrate Intramuscular injection by Z track methods.

12. List down the tips to perform painless injection.

13. Provide post injection care to patient after:
    a. Intra muscular drug administration
    b. Subcutaneous drug administration
    c. Intradermal drug administration
ANNEXURE 6
## BLUE PRINT

**SUBJECT:** FUNDAMENTALS OF NURSING  
**CLASS:** 2nd year Basic BSc. Nursing  
**UNIT / PAPER:** MEDICATION ADMINISTRATION  
**MAXIMUM MARKS:** 50  
**TIME:** 1 and ½ hours

### PREREQUISITE TEST

<table>
<thead>
<tr>
<th>S. No.</th>
<th>OBJECTIVES</th>
<th>KNOWLEDGE</th>
<th>COMPREHENSION</th>
<th>APPLICATION</th>
<th>ANALYSIS</th>
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<td></td>
<td>Form of Question</td>
<td>Units</td>
<td>E/LA</td>
<td>SA</td>
<td>VSA</td>
<td>O</td>
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<tr>
<td>1</td>
<td>Terms used in drug administration</td>
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<td>---</td>
<td>---</td>
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<td>2</td>
<td>Abbreviations used in writing medication order</td>
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<td>(7)</td>
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<tr>
<td>3</td>
<td>General principles of drug administration including 6 Rights of Drug administration</td>
<td>(7Marks)</td>
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<td>4</td>
<td>Perform arithmetical task</td>
<td>(7Marks)</td>
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<td>Common drugs classification as per action</td>
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<td>Sub Total</td>
<td>9</td>
<td>27</td>
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</table>
DESIGN OF QUESTION PAPER

Weightages of Objectives:

Objectives: Knowledge Comprehension Application Analysis
Percentage of marks: 18% 54% 14% 14%

Weightage to Form of Questions: All questions are objective type of questions

<table>
<thead>
<tr>
<th>Form of Questions</th>
<th>Multiple choice</th>
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<td>Marks allotted</td>
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</table>

Scheme of Options: All questions are compulsory

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<tr>
<th>Question number:</th>
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<tr>
<td>Domain</td>
<td>Knowledge Comprehension Application Analysis</td>
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</table>
## BLUE PRINT

**SUBJECT:** FUNDAMENTALS OF NURSING  
**CLASS:** 2nd year Basic B.Sc. Nursing  
**UNIT / PAPER:** INTRODUCTION OF PARENTERAL DRUG ADMINISTRATION  
**MAXIMUM MARKS:** 15  
**TIME:** ½ hours

### FORMATIVE TEST

<table>
<thead>
<tr>
<th>S. No.</th>
<th>OBJECTIVES</th>
<th>KNOWLEDGE</th>
<th>COMPREHENSION</th>
<th>APPLICATION</th>
<th>ANALYSIS</th>
<th>TOTAL</th>
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<tr>
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<td>(8 Marks)</td>
<td>(4 Marks)</td>
<td>(1 Marks)</td>
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<td>SA</td>
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<td></td>
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</tr>
<tr>
<td>1</td>
<td>Equipment (Syringe)</td>
<td>----</td>
<td>----</td>
<td>(2)</td>
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<td>7</td>
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<tr>
<td>2</td>
<td>Equipment (Needle)</td>
<td>----</td>
<td>----</td>
<td>(7)</td>
<td>(1)</td>
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**Note:** Figures within brackets indicate the number of questions and figures outside the brackets indicate marks.

Long Answer (LA) or Essay (E), Short Answer (SA), Very Short Answer (VSA), Objective Type (O)
DESIGN OF QUESTION PAPER

Weightages of Objectives:

Objectives: Knowledge Comprehension Application Analysis
Percentage of marks: 13.33% 53.33% 26.66% 6.66%

Weightage to Form of Questions: All questions are objective type of questions

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Scheme of Options: All questions are compulsory

| Question number: | 1,9,10. | 4,5,6,8,11,13,14,15 | 2,3,7,12 | ------ |
| Domain           | Knowledge | Comprehension | Application | Analysis |
## BLUE PRINT

**SUBJECT:** FUNDAMENTALS OF NURSING  
**UNIT / PAPER:** IDENTIFICATION OF SITES FOR PARENTERAL DRUG ADMINISTRATION  
**CLASS:** 2nd year Basic B.Sc. Nursing  
**MAXIMUM MARKS:** 15  
**TIME:** ½ Hours

### FORMATIVE TEST

<table>
<thead>
<tr>
<th>S. No.</th>
<th>OBJECTIVES</th>
<th>KNOWLEDGE</th>
<th>COMPREHENSION</th>
<th>APPLICATION</th>
<th>ANALYSIS</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td></td>
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**Note:** Figures within brackets indicate the number of questions and figures outside the brackets indicate marks.

Long Answer (LA) or Essay (E), Short Answer (SA), Very Short Answer (VSA), Objective Type (O)
DESIGN OF QUESTION PAPER

Weightages of Objectives:

Objectives: Knowledge Comprehension Application Analysis
Percentage of marks: 6.66% 86% -------- 6.66%

Weightage to Form of Questions: All questions are objective type of questions

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# BLUE PRINT

**SUBJECT:** FUNDAMENTALS OF NURSING  
**CLASS:** 2nd year B.Sc. Nursing  
**UNIT / PAPER:** PARENTERAL DRUG ADMINISTRATION  
**MAXIMUM MARKS:** 50  
**TIME:** 1 hour 30 minutes

## OBJECTIVES

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Long Answer (LA) or Essay (E), Short Answer (SA), Very Short Answer (VSA), Objective Type (O)
DESIGN OF SUMMATIVE QUESTION PAPER

Weightages of Objectives:

Objectives:  
Knowledge  Comprehension  Application  Analysis
Percentage of marks:  14%  76%  10%  -----

Weightage to Form of Questions: All questions are objective type of questions

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Scheme of Options: All questions are compulsory

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ANNEXURE 7
To

The Principal / Professor
Tehmi Grant Institute of Nursing Education
Tadiwala Road, Pune.

Subject: Request for utilizing the II Year Basic B. sc. Nursing Students as a control group for the pilot and main research.

Respected Sir,

I, Shubhada Nandkumar Ponkshe the Ph. D. student of S.N.D.T Women’s University, Mumbai, conducting a study of “A Study of the Effect of Mastery Learning Model on the performance of the Nursing Students with Respect to Selected Drug Administration”

I, hereby request you to grant me a permission to use the group of II Year Basic B.Sc. Nursing students of your college as a control sample for my pilot study as well as for final study. As a part of my study it is needed to administer written Pre-requisite and post knowledge test to control sample. Kindly allow me to do so.

I assure you that the results of the test will be used only for my study purpose.

Thanking you in Anticipation

Shubhada Nandkumar Ponkshe
(Doctoral Student)
S.N.D.T. Women’s University
Mumbai
PERMISSION LETTER FROM TEHEMI GRANT INSTITUTE OF NURSING EDUCATION

To,
Mrs. Shubhada Ponkshe,
(Doctoral student)
SNDT Women’s University,
Mumbai.

Subject – Yours correspondence dated 3rd Aug 2010

In response to your letter mentioned above, I am permitting you to conduct a study for the second year Basic B.Sc Nursing students at Tehmi Grant Institute of Nursing Education, Pune.

Mrs. S. Dumbay,
Principal,
TGINE,
Pune-1.

PRINCIPAL
TEHMI GRANT I.N.E.
RUBY HALL CLINIC, PUNE-1.

R.H.C.
PUNE-1.

13, Tarakwala Road, Pune-411001. Tel +91-20-6645588/99. Fax +91-20-2616259
E-Mail - tehmgiant@hotmail.com Website :http://www.tGINE.com
Hospital : Ruby Hall Clinic, (NABH Accredited Hospital) 48, Sassoon Road, Pune 411001. Tel.+91-20-25163391 (B Lines)
To

The Principal / Professor

M.K.S.S.B.T. Institute of Nursing Education

Karvenagar, Pune.

Subject: Request for utilizing the II Year Basic B. sc. Nursing Students as a control group for the pilot and main research.

Respected Sir,

I, Shubhada Nandkumar Ponkshe the Ph. D. student of S.N.D.T Women’s University, Mumbai, conducting a study of “A Study of the Effect of Mastery Learning Model on the performance of the Nursing Students with Respect to Selected Drug Administration”

I, hereby request you to grant me a permission to use the group of II Year Basic B.Sc. Nursing students of your college as a control sample for my pilot study as well as for final study. As a part of my study it is needed to administer written Pre-requisite, teaching on parenteral drug administration, formative tests and post knowledge test to control sample. Kindly allow me to do so.

I assure you that the results of the test will be used only for my study purpose.

Thanking you in Anticipation

Shubhada Nandkumar Ponkshe
(Doctoral Student)
S.N.D.T. Women’s University
Mumbai
PERMISSION LETTER FROM MAHARSHI KARVE STREE SHIKSHAN
SAMSTHA’S SMT. BAKUL TAMBAT INSTITUTE OF NURSING EDUCATION

Date: 5th August, 2010

To,
Mrs. Shubhada Ponkshe
(Doctoral student)
S.N.D.T. Women’s University,
Mumbai.


In response to your letter mentioned above, you are permitted to conduct a study on “The Effect of Mastery Learning Model on the Performance of the Nursing Students with Respect to Selected Drug Administration” at Maharshi Karve Stree Shikshan Samstha’s Smt. Bakul Tambahat Institute of Nursing Education. The Second year Basic B.Sc. nursing students are hereby permitted to participate in the study provided their individual consent is taken from them.

Yours Sincerely

PRINCIPAL
M K S S S B T INSTITUTE
OF NURSING EDUCATION
Karvenagar, Pune - 411 052
CONSENT LETTER

I here by give my consent by signing the consent letter, to Shubhada N. Ponkshe, Ph. D. Nursing student from S.N.D.T. Woman's University, to be a part of her research study. The details of the research study have been explained to me, which I have understood.

I have been told that being the participant in this study is voluntary. It will not affect me even if I refuse to take part in this study.

Signature of respondent .....................

Name .................................................
To:

____________________
____________________
____________________

Subject: Request for your expert opinions and suggestions to validate the research tool.

Respected Madam/Sir

I, Mrs Shubhada Ponkshe have registered as Ph.D. student at S.N.D.T University, Churchgate, Mumbai.

The title of my study is “A Study of the Effect of Mastery Learning Model on the Performance of the Nursing Students With Respect to Selected Mode of Drug Administration.”

In this study I want to check the entry behavior of the students prior to the initiation of the treatment phase. This test will also help to find out the important prerequisite knowledge attained by the students that is essentially needed for new learning. As well as after experiment the summative test will be administered to the students to check the learnt knowledge and skills in parental drug administration.

I am enclosing here with:

• Brief about prerequisite knowledge learnt during first year.
• Blue print and Prerequisite test on drug administration.
• Answer key.
• Brief about contents taught about parenteral drug administration.
• Blue print & Summative test (Cognitive & psychomotor) on learnt topic of parenteral drug administration.
• Answer key for summative cognitive test.
• Grading criteria to evaluate skills of parenteral drug administration.

Kindly go through the items and give your valuable suggestions and opinions in the remark column provided in validation criteria check list.

Thanking you

Yours Sincerely

(Mrs. Shubhada Ponkshe)
A2, Flat no 25, Sarita Vaibhav, Sinhagad Road, Pune 411030
email: snponkshe@gmail.com
Mob: 9764761833
Purpose:

The administration of medication is often a chief responsibility of the nurse. The practice of administering medication involves providing the patient with a substance prescribed and intended for the diagnosis, treatment, or prevention of a medical illness or condition.

Terms used in drug administration:

Pharmacology : Study of drugs and their actions on the living body.

Dosage : Amount of drug prescribed for the client by the physician.

Dose : Single prescribed amount of drug given at one time.

• Minimal dose : The smallest amount of a drug that produces a therapeutic effect.

• Maximal dose : The largest amount of a drug that can be given safely.

• Toxic dose : The amount of drug that produces signs and symptoms of Poisoning.

• Lethal dose : The amount of drug that will cause death.

Drug actions and interactions :

• Local action : Action affects only the area where the drug is placed.

• Systemic action : Affects the entire body because the drug enters the systemic circulation.

• Potentiation (Synergism): One drug increases the action or the effect of another.

• Antagonist : Drug used to block the action of another drug.
• Idiosyncratic drugs: An unexpected response to a medication.

• Tolerance: Reduced response to medication after repeated exposure to it. A larger dose is required to achieve the same effect that a small dose once gave.

• Adverse drug reaction: A harmful, unintended reaction to a drug administered at a normal dose.

• Drug interaction: A modification of the effect of a drug when administered with another drug.

Many abbreviations are used in writing medication orders. Other common abbreviations include:

- P.O: by mouth
- Inj.: injection
- IM: intramuscular (with respect to injections)
- ID: intradermal
- SC: subcutaneous
- IV: intravenous
- PR: per rectum
- h.s.: at hour of sleep (bedtime)
- ac: before meals
- pc: after meals
- q: every
- q.d.: every day
- b.i.d.: twice/day
- t.i.d.: "3 times a day"
- q.i.d.: four times/day
- q.o.d.: every other day
- qiw.: every week
- NPO / npo: Nil per oral
- s.o.s.: if there is a need
- stat.: immediately
- p.r.n.: as occasion requires
- tab.: a tablet
Factors that affect how clients respond to medications:

Age:

- Very young and very old people react more acutely to drugs than others.
- Older persons tend to have a higher ratio of fat tissue to muscle tissue. The higher fat percentage may affect the distribution and accumulation of fat soluble drugs.
- Prolonged drug action can occur in the older adult because of decreased renal and hepatic functions.
- The very young do not have fully developed renal and hepatic functions, therefore, drugs are inefficiently metabolized and excreted

Weight:

- Body surface area, height and weight are important factors in determining drug dosages for children.
- Overweight and underweight adults may require different dosages than the average.

Physical health: Disease processes alter dosage requirements, particularly in clients with renal, hepatic, cardiovascular and GI dysfunctions

Psychological status:
• Stress, emotional conflict, anxiety and fear may alter response to drug therapy.
• If the client has faith in the medical personal and treatment, he/she is more likely to adhere to therapy.
• Nurse's attitudes, actions and skills affect client's response to drug therapy.
• Environmental temperatures: Heat may increase the metabolism of drugs while cold may decrease the metabolic rate.

Gender:

• Women tend to have a higher percentage of body fat where as men have a higher percentage of body fluid.
• Some drugs are fat soluble, thus women may accumulate more of these drugs in their body.
• Some drugs are passed through the placenta and through breast milk.
• Amount of food in the stomach:

• Drugs taken on an empty stomach reach the blood stream faster than those taken on a full stomach.
• Drugs that irritate the GI system are often given after or with meals.

Dosage form:

• Dosage form influences the onset, intensity and duration of a drug.

• Intravenous and intramuscular drugs react more quickly than drugs taken orally.

Medication supply forms:

Unit dosage:

(a) Pre-packed, pre-labeled, pre-measured dosage

(b) One dose per vial or package.
Stock supply:

(a) Multi-dose packaging.

(b) Large quantities kept on the unit; usually used for PRN orders.

Medication Orders

A physician's written order is necessary for the administration of all medications. The only exception to this rule is in an emergency situation. Verbal order in an emergency may be given to a RN, but must be written and/or countersigned by the physician as soon as possible following the emergency. Any order that is unclear must be questioned.

Medication orders must include the following:

a. Patient's name.
b. Date and time of the order.
c. Name of the drug.
d. Dosage of the drug.
e. Route of administration
f. Time or frequency drug is given
g. Signature of the physician
h. Any special instructions regarding the administration of the drug.

Different drug names:

- Trade name:
  
  Brand name given to the drug by the manufacturer. Usually short and easier to spell and pronounce.

- Generic name:
  
  Assigned by the manufacturer that first develops the drug.

Usually longer types of orders such as:
1. Recurring orders (Routine orders):
   - Medications that are administered on a routine schedule.
   - Used to maintain a desired level of medication in the bloodstream.
   - Given until canceled by another order or the physician writes for a specific stop time.

2. Single order: Only to be carried out once, at the time directed by the physician.

3. PRN orders:
   - Give as necessary. Used when the time of administration is not predictable.
   - The patient may request the medication or a nurse may offer it.
   - Should have a definite time interval within which the medication is given.

4. STAT order: Immediately carried out only once, but must be done without delay.

5. Discontinued orders: Cancellation of another order.
   - Write DC/date/time/initials on the line across remaining sign off blocks on the medication administration record for the medication.
   - Highlighting discontinued orders allows for visual recognition of stopped order.

Controlled Substances:

Drugs that have a high possibility for abuse or addiction. Drugs need to be double-locked with separate "narcotic keys" that require accountability (or a specialized computer entry code). Controlled substances are handled only by persons with a license.
patient rights in medication administration:

All medications should be handled to ensure that they do not come into contact with potentially contaminated objects or surfaces. Medications of any sort should not be left unattended, and patients should be observed taking the medication.

Right medication:

1. The nurse must make sure the drug to be given is the correct drug.

2. Check label three times: Before pouring (getting out of the container or drawer) the medication, while pouring the medication (prior to placing it in medication cup), just prior to administration of the medication (or when placing the stock bottle back on the shelf).

3. Check the physician order against the medication administration record to ensure the order is correct.

4. Never give a medication that has been prepared by another person.

5. Never prepare or administer a medication that is not labeled.

Right Dose:

1. The nurse should check the medication administration record and the physician's order to verify the correct dosage.

2. Check the label on the container for the concentration of the medication.

3. Calculations should be verified with another nurse prior to administration.

4. Assess the appropriateness of the dosage.

   Consistent with the age of the client
   Consistent with diagnosis of the client
   Consistent with gender of the client.
Right Time:

1. The nurse is responsible for placing the medication order on the right time schedule.
2. Medications should be given within 30 minutes of scheduled time.
   - Within 30 minutes prior to administration time and 30 minutes after administration time.
   - Antibiotics in particular should be given on time to maintain therapeutic blood levels.
3. Ensure the medication is given on the right day as well as the right time and only for the period of time specified.

Right Route:

1. Route of administration depends on several factors.
   - Properties of the medication.
   - Desired effect of the medication.
   - Client's physical and mental condition.
2. Medication can only be administered per the route indicated in the order.

Right Patient:

1. Three checks on the identification of the client to receive the medication must be performed.
   - Check room number, bed number and name.
   - Check Identification bracelet.
   - Ask the client to state their name.
2. Always assess for medication allergies prior to giving the medication.
Right Documentation:

1. Documentation of the medication given should be done as soon as possible after the medication is given.
2. Chart site of injections and any complaints made by the client at the time of administration.
3. Chart the following:
   - Medication given.
   - The dosage given.
   - The time the medication was actually given.
   - Client's response to medication
   - Any complaints or adverse effects experienced by the client related to the medication.

4. Never record the medication as given prior to administration.

**Common routes of administration:**

The most common route of administration is the oral route, or swallowing of medication. This is the easiest and safest route. The physical position and swallowing abilities of the patient should be evaluated to avoid choking. Patients may also receive medication by the buckle route (through the inner cheek or gum) or the sublingual route (under the tongue).

Administration involving a needle or syringe occurs with several drug routes. These routes are referred to as parenteral. Care must be taken to maintain asepsis with all injections and injection sites. Intramuscular medications are injected into the muscle. A special injection technique called Z-track can be used when administering intramuscular medications that can be damaging to the tissue. All intramuscular injections involve the practice of landmarking, or identifying anatomical markers that indicate the correct injection site and avoid damage to bone or nerves. Subcutaneous injections are administered under the skin. Insulin is a common medication that is usually given
subcutaneously. Intradermal medications are used much less frequently than subcutaneous or intramuscular injections. They are injected into the skin. Intravenous medications are given through an intravenous line into the vein. These medications may be mixed with a large amount of solution that is being infused, given in a small solution through a port in the intravenous tubing (bolus), or attached in smaller infusion containers to the larger infusion (piggyback). In all cases of administration with a needle or syringe, rotation of injection sites is required to prevent damage to tissue. It is also important that the size of the needle is selected based on the thickness of the medication to be given and the depth of the injection, while maximizing the patients level of comfort during insertion. Needle sticks with contaminated needles are a hazard to both health professional and patient. Care is taken to dispose of needles and syringes rapidly in impervious containers. Protective systems that sheath the needle after use are commonly used to prevent inadvertent needle sticks.

Medication can also be instilled via the mucous membranes. Asepsis must be used to avoid introduction of infection. Rectal or vaginal medications are most often given in suppository form and must be introduced gently to avoid tearing or bleeding of tissue. Nasal medications are often instilled via spray or drops and often involve closing one nostril and asking the patient to inhale gently. The head should be tilted back to avoid aspiration. Ear or otic medications are given in liquid form. The patient's head is tilted to the side. Instruments should never enter the ear. If the medication is not instilled correctly, the patient may experience nausea or vertigo. Eye or ophthalmic medications may be given via drops or ointment. The container for the medication should not touch the eye, and drops are introduced into the inner canthus or corner of the eye.

Inhalational medications are inhaled via the respiratory tract, most often to treat respiratory conditions. Metered dose inhalers (MDI) are often used. MDIs involve pressing a specially designed canister to release a mist.

Topical medications are applied to the surface of the skin. The skin needs to be cleansed and assessed for breaks before administering topical medications. Topical patches that gradually release medication need to be labeled with date and time in case a second patch is inadvertently applied without removal of the first. Ointments are applied evenly. The clinician should avoid touching the topical medication, as medications that are absorbed
into the system via the skin, such as nitroglycerin paste, may affect the clinician. As with all medication techniques, asepsis must be maintained to avoid introduction of microorganisms.

**Different forms of oral drug:**

- **Pills**: Antiquated single-dose unit; round, produced by mixing drug powder with syrup and rolling into shape.
- **Tablets**: Oblong or disk-like shape, produced through mechanical pressure; filler material provides mass; starch or carbonates facilitate disintegration
- **Matrix Tablets**: Drug is embedded in inert “carrier” meshwork extended or targeted (intestinal) release.
- **Capsules**: Oblong casing (Gelatin); contains drug in liquid, powder or granulated form.
- **Troches or Lozenges**: Flat, round dosage form containing drug, flavouring, sugar and mucilage, dissolves in mouth to release drug.
- **Sublingual Tablets**: Intended to be held in the mouth until dissolved
- **Aqueous Solutions (with Sugar=Syrup)**: Mostly for pediatric use
- **Alcoholic Solutions (=Tinctures)**: Often plant extracts.
- **Suspensions**: Insoluble drug particles in aqueous or lipophilic media

**Common drugs classification according to their action:**

- **Antimicrobial**: Antimicrobial agents are used for treating infectious diseases. Different groups of antimicrobial agents are used for treating different types of infections.
- **Antibiotics**: Antibiotics have no effect on viruses. Antibiotics kill bacteria. It is important to complete the full 10-14 days of treatment, even though the patient may feel well. E.g. Cephalexin, Amoxicillin.
- **Analgesics**: These drugs are used systematically to relieve pain without producing loss of consciousness and reflex activity.
- **Antipyretics**: These are substances used counteract the effect of poison. These may displace poison from tissue binding sites.
Antacids

These drugs reduce the acidity in the stomach and also pepsin activity. It temporarily relieves pain from peptic ulcers. Example: Magnesium hydroxide.

Antineoplastic

Antineoplastic agents do not directly kill tumor cells rather act by interfering with cell reproduction or replication at some point in the cell cycle. Example: Vincristin, Vinblastin, Daunorubicin.

Laxatives

These are drugs which simulate bowel movements, usually not accompanied by cramping.

Diuretics

They increase the flow of urine. Lasix.

Expectorants

They increase the bronchial secretions and aid in the expulsion of mucus.

Antidiarrheals

These drugs decrease the number, consistency and fluidity of the stool i.e. provide symptomatic therapy but do not alter the pathophysiology of diarrhea and do not provide electrolyte and fluid loss by prevention.

Due to the large number of medications available and the large body of information required for appropriate drug administration, it is important to have access to a current medication reference such as the Physician's Desk Reference or other reference handbooks about medication. The package insert that comes with every medication is also a good resource. Pharmacists are knowledgeable resources and can answer many questions regarding medication. It is important to be familiar with the medication ordered before attempting to administer it. Procedural manuals by the institution or medical reference publishers detail the step-by-step techniques for administering various types of medication.
Weights and Measures and drug calculation:

Approximate measures:

- 1 Minim = 1 Drop
- 1 Drachm = 1 teaspoon (5ml)
- 1 Ounce = 6 to 8 teaspoons

Fluid measures:

- 60 mgs = 1 grain
- 60 minim = 1 draches
- 8 drachm = 1 ounce
- 1 drachm = 4 to 5 ml
- 1 ounce = 30 ml
- 20 ounce = 1 pint
- 1 pint = 500ml
- 2 pint = 1 quart
- 1 quart = 1 liter
- 4 quart = 1 gallon
- 1 deciliter = 0.1 liter

Systems of Measurement

- Metric
- Apothecary (grains)
- Household

Metric System:

- 1 gram (gm) = 1000 milligram (mg)
- 1 milligrams (mg) = 1000 microgram
- 1 kilograms (kg) = 1000 grams (gm)
- 1 liter = 1000 milliliters (ml)
- 1 milliliter (ml) = 1000 microliters (ul)
• 1 kiloliter = 1000 liters
• 1 deciliter = 0.1 liter

Household Measurements:

• 1 tablespoons = 15 ml
• 1 teaspoons = 5 ml
• 1 glass = 250 ml

Converting Units:

Most drugs are prescribed in milligram or microgram quantities.

Occasionally, gram or nanogram quantities are also used.

It is frequently necessary to convert units (e.g. from micrograms to milligrams), in order to calculate the correct dose to administer.

• Conversion within one system e.g.: 1 gm = 1000 mg,
• Between systems e.g.: 1 tsf = 5 ml

To change from grams to milligrams, multiply by 1000

I.e. move the decimal point 3 places to the right

E.g. 1g = 1000mg
4.2g = 4200mg
0.07g = 70mg

To change milligrams to micrograms, multiply by 1000

i.e. move the decimal place 3 places to the right

E.g. 1 mg = 1000 micrograms
0.56 mg = 560 micrograms
0.008 mg = 8 micrograms
To change from milligrams to grams, divide by 1000

I.e. move the decimal point 3 places to the left

\[
\begin{align*}
100 \text{ mg} & = 0.1 \text{ g} \\
62000 \text{ mg} & = 62 \text{ g} \\
35 \text{ mg} & = 0.035 \text{ g}
\end{align*}
\]

To change from micrograms to milligrams, divide by 1000

i.e. move the decimal point 3 places to the left

\[
\begin{align*}
2000 \text{ micrograms} & = 2 \text{ mg} \\
375 \text{ micrograms} & = 0.375 \text{ mg} \\
62.5 \text{ micrograms} & = 0.0625 \text{ mg}
\end{align*}
\]

Where possible, large fractions should be simplified by cancelling,

i.e. dividing both top and bottom by the same number.

Calculating Dosage:

Tablet/capsule calculations:

The following formula can be used as an aid to work out the number of tablets required:

\[
\text{Number of tablets required} = \frac{\text{what you want}}{\text{What you’ve got}}
\]

When using this formula you must make sure the units are the same.
Liquid Medication Calculations:

The following formula can be used for calculating the volume needed of oral liquid medication or injectable drugs.

It is essential when using this formula that you use the same units for “what you want” and “what you’ve got”.

Sometimes the vial may contain more than the dose you need to give. You need then to work out how much of the solution to give in order to have the correct dose.

Formula for calculating liquid dosage is:

\[
\text{Dose you want to give} \quad \frac{\text{volume on hand}}{\text{Dose on hand}} = \text{amount (volume in ml) needed}
\]

When we convert fractions to decimals we may have a complex decimal answer, it is necessary to round numbers up or down to the nearest practical number, e.g. if a syringe has 0.1ml increments, we would round a volume of 4.69ml up to 4.7ml, or a volume of 4.62ml down to 4.6ml.

**The nurses' role and responsibilities in medication administration.**

1. A physician's written order is necessary for the administration of all drugs.

2. Any order that is unclear must be checked prior to administration.

3. The nurse must adhere to the six rights of medication administration.
   - Right patient: Perform a 3-way check on client identification.
   - Right medication: Perform a 3-way check on the medication.
   - Right time: Verify the physician's order. Medications should be administered within 30 minutes before scheduled time to 30 minutes after scheduled time.
   - Right route: Verify the physician's order.
• Right dose: Ensure the dosage is appropriate for the client.

• Right documentation: Chart the medication as soon as possible after administration.

4. The nurse must know the following for every drug prior to administration:

• Generic/trade name.

• Reason for use.

• Dosage range.

• Expected action.

• Possible side effects.

• Contraindications to administration.

• Any special precautions.

5. Never give any medication that you have not prepared yourself.

6. Tablets should not be crushed or opened without first checking with the pharmacist.

7. Wash your hands prior to and after administration of medication. Hands should never touch capsules or tablets.

8. Always assess client allergies prior to administration of any medications.

9. Ensure all indicated pre-administration data is collected and any special procedures are completed (i.e., Blood pressure, apical pulse, pain assessments).

10. Controlled substances drugs that have a high possibility for abuse or addiction are checked while starting with shift change and kept in lock, near to nurses’ station.

11. Use only medications that are clearly labeled containers

12. Return liquid that are cloudy or have changed in color to the pharmacy.

13. Do not leave the medications at the bedside.
14. If the client vomits after taking oral medication, report this to the nurse in charge and/or physician.

15. Pre-operative medications are usually discontinued during the post-operative period unless ordered to be continued.

16. When a medication is omitted for any reason, record the fact together with the reason.

17. When a medication error is made, report it immediately to the nurse in charge/or physician.

18. Never give a drug if its normal appearance has been altered in any way.

19. Do not allow someone else to give a medication that you have prepared.

20. Once you have prepared a medication for administration, do not leave it unattended.

21. Keep all drugs not being administered in a safe, locked storage place.
REFERENCES


LESSON PLAN-1

Topic: Parenteral drug administration

Unit: Introduction to parenteral drug administration.

Class: 2nd Year Basic B.Sc. Nursing

Previous knowledge of group: Group knows about basic principles of drug administration and has knowledge about other routes of drug administration

Objectives: At the end of lecture students will be able to:

1. Define parenteral drug administration
2. State advantages and disadvantages of parenteral drug administration
3. Describe the methods of drug administration
4. List down the equipments needed for parenteral drug administration
5. Explain the use of equipments needed for parenteral drug administration.
6. Describe the syringe and needle.

Materials/Resources: Anatomical chart of Skin, Different types of syringes, Different gauge needles, Black board and chalk, Work sheets.
<table>
<thead>
<tr>
<th>Specific objective</th>
<th>Teacher Activity</th>
<th>Student’s Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define parenteral drug administration</td>
<td>Teacher provides activity sheet with different definitions of parenteral drug administration. Teacher asks student to identify the correct definition of parenteral drug administration. Teacher checks the activity sheet of students and group them into two groups one who has identified correctly and other who has not identified correctly. Teacher holds discussion regarding, why the particular definition is correct and other definitions are wrong.</td>
<td>Students follow the instruction of the teacher and identify the correct definition of drug administration. Student submits the activity sheet to teacher. Students participate in discussion.</td>
</tr>
<tr>
<td>List down the advantages and disadvantages of parenteral drug administration.</td>
<td>Teacher asks student to write on black board, the preference of each student for the route of drug administration. Teacher asks student to answer verbally, why they prefer specific route of drug administration? Teacher comments verbally on the preference for drug administration and on the verbal answers for particular preference. Teacher writes list of advantages and disadvantages of parenteral drug administration on black board and give situational working examples.</td>
<td>Students follow the instruction of teacher and write the preference for drug administration and answer verbally the reason for particular preference. Student follows the instruction</td>
</tr>
<tr>
<td>Activity</td>
<td>Description</td>
<td>Student Response</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Describe the methods of drug administration</td>
<td>Teacher gives work sheet with anatomical diagram of skin and asks students to label the diagram. Teacher checks the activity sheet of students and display the anatomical diagram of the skin and comments on answers. Teacher displays the flash cards on methods of parenteral drug administration. Teacher ask student to identify method of parenteral drug administration by looking at flash card. Teacher will describe the method of parenteral drug administration.</td>
<td>Students answer the method of parenteral drug administration by looking at picture on flash card.</td>
</tr>
<tr>
<td>Enlist down the equipments needed for parenteral drug administration.</td>
<td>Teacher displays the list of equipment on pin board. Teacher ask one of the student to mark the equipment which they have used for any other nursing procedure. Teacher asks student to describe the purposes of the equipment in the procedure of parenteral drug administration.</td>
<td>One student representative comes forward and marks the equipment that he/she knows. Student describes the purposes of the equipment in the procedure of parenteral drug administration.</td>
</tr>
<tr>
<td>Describe the syringe as equipment for injection</td>
<td>Teacher gives syringes to student and asks to observe it. Teacher asks students have they used similar kind of object. Teacher tells student to operate the syringe. At same time teacher explain the part and their functions. Teacher shows different types of syringes and explains the purposes.</td>
<td>Student answers the question. Student operates the syringe. Student listen to description and interpret with own observation</td>
</tr>
</tbody>
</table>
Describe the needle as equipment for injection

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher gives needle packet and asks to read information written on it. Same time teacher describes the parts of needle.</td>
</tr>
<tr>
<td>Teacher display the poster of different size (Length &amp; gauge of needle) and explains uses of different needle.</td>
</tr>
<tr>
<td>Teacher gives different needles with different hub color and asks students to segregate as per color. After segregation make a chart of color code and needle number.</td>
</tr>
<tr>
<td>Teacher checks the chart made by students and gives feedback</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student reads information.</td>
</tr>
<tr>
<td>Students follow the instruction.</td>
</tr>
<tr>
<td>They segregate the needles as per the color. They prepare the chart of color code and needle number</td>
</tr>
</tbody>
</table>
WRAP-UP/REFLECTION:
Teacher asks students to view the activity sheets that they completed in a class.

Teacher asks learners to summarize, their learning within a particular lesson. And note important points on blackboard.

Teacher explains, How might student use [new knowledge, new skill] in the clinical setting.

Evidence of Learning (Assessment): Formative test Teacher administers this test next day of lecture and corrects the answer sheet and gives feedback to students.

Remedial teaching: Peer group teaching by student who master the lesson content in formative test (who scores > or = 80%) to the students who scores less than 80%.

Students reflect on their class work.
Student writes important points on blackboard
**Topic:** Parenteral drug administration

**Unit:** Introduction to Parenteral Drug administration

**Content:**

**Recall of prerequisite learnt:** Administration involving a needle or syringe occurs with several drug routes. These routes are referred to as parenteral drug administration. A number of principles for safe medication administration can be gleaned from a review of the literature. The 5 rights (5 R’s) of medication administration (right patient, right drug, right dose, right route, and right time) are principles that nurses are taught as part of their nursing education; however, nurses may not always adhere to the 5 R’s and may also lack knowledge about the medication, including the indication, usual dose, route, actions, adverse effects, contraindications, and drug–drug or food–drug interactions.

A physician's written order is necessary for the administration of all medications. The only exception to this rule is in an emergency situation.

Verbal order in an emergency may be given to a RN, but must be written and/or countersigned by the physician as soon as possible following the emergency. Any order that is unclear must be questioned.

Medication orders must include the Patient's name, Date and time of the order, Name of the drug, Dosage of the drug, Route of administration, Time or frequency drug is given, Signature of the physician, Any special instructions regarding the administration of the drug.
Principles associated with identifying the patient:

a. Identify the patient immediately prior to administering any medication.

b. Check his identification band or ask him to state his name. Patients have been known to answer to names other than their own.

c. Check patients name with his case paper and the name he says and the name recorded

Principles associated with administering medications:

a. Administer only the medication that you prepared or removed from the medicine cart.

b. Be familiar with the potential effects (good and bad) of any medication you administer. If in doubt, check with a nurse, physician, or pharmacist.

c. Administer medication only by the route specified on the doctor's orders. If the route is not specified or if you are in doubt about the correct route of administration of the medication, check with a senior nurse, physician, or superior in your department.

d. Administer the medication at the time specified on the doctor's orders.

e. If the patient refuses his medication, inform your supervisor and document the incident as per local SOP.

Principles associated with monitoring the patient:

a. Patient must be observed after the medication is administered.

b. The type and duration of the observation will vary with the patient and the type of medication.

c. The patient should be observed for any specific reaction or complication that is expected from a certain medication. If you are in doubt, ask the nurse, physician, or supervisor.
d. If the patient has an adverse reaction to a medication, immediately inform the nurse or physician on duty.

e. Observe for effectiveness of the medication.

**Principles associated with charting medications:**

a. Never chart a medication as having been given until it has been administered. Check the chart before giving the medication to avoid duplication.

b. Record all administrations of medications local SOP.

1. As a minimum, record the name of the drug, dosage, time and route of administration, patient's reaction or lack of reaction to the medication (if appropriate), and the name of the person who administered the medication.

2. Correct charting helps to prevent administering a medication twice.

**Preparation of medication card:**

Size of card: 4” × 4”

Paper to be used to prepare card: White card paper

Information needed on the card 1st page:

Column headings: S.no, Name of the drug to be administered (generic and trade name), Dosage available, Dosage ordered, Route of administration, Timing, Signature.

Back side of the card is used to write any special instruction, treatment or diet instruction

**Definition:** Parenteral drug administration involves giving a drug by a route through in to body tissues. Parenteral drug administration involves the four major types of injections, subcutaneous, intradermal, intramuscular, and intravenous. Some medications are administered into body cavities other than the four type listed above.
Advantages of Parenteral drug administration:

1. Rapid action
2. Produces a direct result
3. Drugs are absorbed directly into the bloodstream
4. Effective route for drug delivery when the patient’s physical or mental state would make other routes difficult
5. Do not irritate the digestive system
6. Can deliver a precise dose to a targeted area of the body

Disadvantages of Parenteral drug administration:

1. Patient may have allergic reaction
2. Introduction of microorganisms
3. Injections can cause injury to tissue, nerves, veins, and other vessels
4. Needle can strike a bone
5. Injections can traumatize a vein and cause a possible hematoma

Methods of drug administration:

Subcutaneous (Hypodermic) Injection. The drug is injected by syringe and needle into the tissues just beneath the skin. A preparation for subcutaneous use must be a sterile liquid capable of complete absorption or it will irritate the tissues. Although the subcutaneous injection may be given in almost any area of the body, the usual sites are the lateral (outer) aspect of the upper arms and the anterior (front) surface of the thighs.
**Intramuscular Injection.** The drug is injected into a muscle, usually in the buttocks, sometimes in the upper arm or the thigh. The needle is inserted at a 90 degree angle to the skin, through the skin and subcutaneous tissue into the underlying muscle.

**Intradermal Injection.** The drug is injected into the upper layers of the skin, rather than under the skin as in a subcutaneous injection. Minute amounts (0.1 ml) and less are given intradermal, usually to test for drug sensitivity before administering larger amounts by other methods. The medial (inner) surface of the forearm is the site most frequently used.

**Intravenous**: Intravenous (IV) medication administration refers to the process of giving medication directly into a patient's vein.

**Equipments needed for parenteral drug administration:**

Administering medicine by injection requires needles and syringes that are sterile, accurate in measuring dosages, and convenient to use. Using the correct equipment for injection will minimize discomfort or danger to the patient.

The needle is a tube with a cutting edge that punctures beneath the protective area of the skin. It is made of steel or other metal and is generally disposable. The parts of a needle consist of a lumen (cavity through which medication flows), bevel (slanted tip/cutting edge), hub, and cannula (shaft)

![Diagram of a needle showing hub, cannula (shaft), and bevel]

The needle comes in standard lengths from one-half inch to six inches.
The length is determined by measuring from the tip of the point to the junction of the shaft.

The choice of length depends on the route ordered for administration.

The choice of needle gauge depends upon the thickness (viscosity) of the medication.

The gauge is indicated by numbers 14 to 27. The higher the gauge (size) number, the smaller the diameter of the needle. A small gauge is needed for viscous medications; a large gauge is needed for "thin" or watery medications.

The syringe is the instrument used for injecting liquids. It consists of a barrel, plunger, and needle adapter that attaches to the needle. The plunger pushes the medication through the barrel into the needle. The barrel is marked in cubic centimeters/ milliliters (cc/ml). Syringes come in different sizes.

---

![Diagram of needle gauges and lengths](image-url)
a. Determine Type of Medication, Time of Administration, and Route of Injection. This step is to determine the type of needle needed.

b. Perform Patient Care Hand wash. Wash hands according to instructions provided in your previous training whether you are in the clinic or field environment.

c. Gather Required Equipment.

**Selection of appropriate instrument:** The length of the needle you choose will depend upon the type of injection. The gauge size you choose will depend upon the type of medication.

Subcutaneous (SQ) injection. Subcutaneous injection requires a short needle. The length should be one-half to seven-eighths inch. Gauge size should be 23 to 25.

Intradermal (ID) injection. The length of the needle should be one-fourth to one-half inch with the gauge size 26.
Intramuscular (IM) injection. The length of the needle should be one to one and one-half inches with the gauge size 20 to 22.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>MAXIMUM AMOUNT</th>
<th>USUAL SITE</th>
<th>ANGLE</th>
<th>SYRINGE</th>
<th>GAUGE</th>
<th>LENGTH</th>
<th>ASPIRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>0.1 cc</td>
<td>Forearm</td>
<td>15°-20°</td>
<td>TB (1 cc)</td>
<td>25 to 27</td>
<td>1/4&quot; to 1/2&quot;</td>
<td>NO</td>
</tr>
<tr>
<td>SQ</td>
<td>2 cc</td>
<td>Upper Arm</td>
<td>45°</td>
<td>2.5 to 3 cc</td>
<td>23 to 25</td>
<td>1/2&quot; to 7/8&quot;</td>
<td>YES</td>
</tr>
<tr>
<td>IM</td>
<td>1 cc</td>
<td>Deltoid</td>
<td>90°</td>
<td>2.5 to 5 cc</td>
<td>20 to 22</td>
<td>1&quot; to 1 1/2&quot;</td>
<td>YES</td>
</tr>
<tr>
<td>IM</td>
<td>5 cc</td>
<td>Gluteus Medius or Gluteus Maximus</td>
<td>90°</td>
<td>2.5 to 5 cc</td>
<td>20 to 22</td>
<td>1&quot; to 1 1/2&quot;</td>
<td>YES</td>
</tr>
<tr>
<td>IM</td>
<td>5 cc</td>
<td>Vastus Lateralis</td>
<td>90°</td>
<td>2.5 to 5 cc</td>
<td>20 to 22</td>
<td>1&quot; to 1 1/2&quot;</td>
<td>YES</td>
</tr>
</tbody>
</table>

The choice of syringe depends on the amount of solution and the type of solution administered.

When you select a syringe, check for the total capacity of the syringe. The syringe is usually calibrated in cubic centimeters (cc).

Be sure the syringe is large enough to contain enough medication to give the shot. The size of the syringe should only be large enough to accommodate the dosage being given.

Check the calibration of the syringe so you can place the exact amount of medication in the syringe.

Inspect Packaging for Defects. Check to determine if the package has been opened or if it has any holes. If you note any water or discoloration that may indicate water has damaged the syringe, or if you suspect that the package has been tampered with in any way, discard the package and obtain sterile equipment.

Remove the syringe from its packaging without contaminating any sterile parts.

The sterile parts of the syringe are the needle adapter and the shaft of the plunger, which goes into the barrel. Any contamination could cause infection to the patient.
**Unpacking the Syringe in flexible wrapper.**

Peel the sides of the wrapper apart to expose the rear end of the syringe.

Grasp the syringe by the barrel with the free hand.

Pull the syringe from the packaging.

Dispose of empty packaging in appropriate receptacle.

**Unpacking the Syringe in hard plastic tube (cartridge package).**

Press straight down on top of the tube with your thumb or use twisting motion.

Press until you hear a distinct click. The click indicates the seal has not previously been broken. If you don't hear the click, discard the syringe and get another tube.

Lift the top (cap) off the tube (cartridge) and put it down on your working surface.

Grasp the syringe by the barrel with a free hand.

Pull the syringe from the tube (cartridge) on your working surface. Be careful not to contaminate the needle adapter of the syringe.

Put the empty tube (cartridge) on your working surface.

Using the free hand, hold the syringe between the first two fingers with the needle adapter forward, pointing away from the back of the hand.

**Inspect Plunger of Syringe.**

Grasp syringe with the non-dominant hand and pull plunger back and forth checking for smooth and easy movement.
Visually check the rubber stopper (inside the syringe) to ensure that it is attached securely to the top end of the plunger, forming a seal. The rubber stopper may become stuck or detached from the top end of the plunger, breaking the seal.

Discard the syringe and select another if the plunger is stuck or does not move smoothly.

**Unpack Needle.** Remove the needle from its packaging without contaminating it. Any contamination of the needle may cause infection to develop in the patient.

Peel the sides of wrapper apart and expose the rear end of the needle.

Grasp the cover of the needle and remove from wrapper, taking care not to touch the hub.

Discard the empty wrapper in the appropriate place.

Remove the protective cover from the needle adapter on the syringe. Holding the syringe in the non-dominant hand and the needle by the protective cover in the dominant hand, insert the needle adapter into the needle hub.

Tighten the needle with a one-fourth turn to ensure that it is attached securely to the needle hub.

Do not touch the needle adapter or the hub to avoid contamination of the sterile surface.

**Inspect Needle.** Visually inspect the needle for the following flaws: Do not touch the tip of needle

a. Burrs. Rough edges on the needle that could tear the patient's skin during the injection.

b. Barbs. Hook-like edges that extend away from the needle edge and could cause injury to the patient.

c. Needle damage. Bent or broken needle.
d. Contamination. Rust or foreign particles on needles.

If the needle has any of these defects, discard and obtain a sterile needle.

Replace Cover. Place the protective cover back onto the needle.

Place Assembled Needle and Syringe on Work surface (Deep sterile tray)

When you assemble a needle and syringe, you are responsible for maintaining sterility of the equipment. So make sure that

a. Leave the protective cover on the needle.

b. Leave the plunger pushed fully into the barrel.

c. Put the assembled needle and syringe in a convenient place on the working surface.

d. Keep the assembled needle and syringe continually within range of vision.

**Principles of Parenteral drug administration:**

- **Principles associated with preparing or obtaining medications:**

  a. Concentrate fully on the task at hand.

  b. Make sure that the information on the medication card/slip is identical to the physician's written order and the label on the patient's medicine. If not, report it to your supervisor immediately.

  c. Never give a medication from an unlabeled container or one on which the label is illegible. The container should be returned to the pharmacy for relabeling in accordance with standing operating procedure (SOP).

  d. Whether preparing a dose of medication from a stock supply or obtaining medication from a unit dose package, read the label three times to ensure that the medication and dosage are correct. Read the label:
e. As the medication is taken from the shelf or medicine cart.

f. Before the medication is poured or taken from the package or compartment.

g. As the stock container or empty unit dose package is returned to the shelf or medicine cart.

h. Check your drug dose calculations with your supervisor, nurse, or physician if you are not completely sure of your calculations.

i. Use appropriate measurement equipment to measure quantities as ordered. For example, use a graduated container to measure liquids.

j. Do not alter the dosage ordered for other medication. Check the order with the nurse, physician, or supervisor.

k. Use special care to return medications to their correct location. In some instances, each patient's medication is kept in a designated place on a shelf or compartment in a central storage area. Never return an unused dose of medicine to a stock bottle. It should be disposed of as per local SOP.

l. Arrange stock supplies so that preparations for internal use are separated from those used externally.

m. Store medications according to manufacturer's specifications. For example, vitamin B12 requires refrigeration.

n. Store narcotic and abusable drugs (those dispensed under special legal regulations) and hypodermic supplies in a secure location in accordance with the local SOP.

o. Check the container label for the expiration date. Dispose of "expired" medications local SOP.
REFERENCES


WORK SHEET FOR LESSON 1

WORK SHEET -1

Name of the student: ___________________________________________

Activity: Mark (✔️) in the square by identifying the correct definition of parenteral drug administration.

- Parenteral Drug administration is an injection given directly into the central area of a specific muscle. ☑️

- Parenteral Drug administration is a basic understanding of the skills and knowledge required in order to administer injections. ☑️

- Parenteral Drug administration is storing, administering, or supervising the administration of any medication. ☑️

- Parenteral Drug administration is the administration of liquid medication, nutrient, or other fluid through gravity flow or often by infusion pumping. ☑️
WORK SHEET FOR LESSON 1
WORK SHEET- 2

Name of the student: ________________________________________________

Label the Skin Anatomy Diagram

Read the text below and label the skin anatomy diagram below.

Blood vessels - Tubes that carry blood as it circulates. Arteries bring oxygenated blood from the heart and lungs; veins return oxygen-depleted blood back to the heart and lungs.

Dermis - (also called the cutis) the layer of the skin just beneath the epidermis.

Epidermis - the outer layer of the skin.

Hair follicle - a tube-shaped sheath that surrounds the part of the hair that is under the skin. It is located in the epidermis and the dermis. The hair is nourished by the follicle at its base (this is also where the hair grows).

Hair shaft - The part of the hair that is above the skin.

Hair erector muscle - a muscle is connected to each hair follicle and the skin - it contracts (in response to cold, fear, etc.), resulting in an erect hair and a "goosebump."

Melanocyte - a cell in the epidermis that produces melanin (a dark-colored pigment that protects the skin from sunlight).

Pacinian corpuscle - nerve receptors that respond to pressure and vibration; they are oval capsules of sensory nerve fibers located in the subcutaneous fatty tissue
Sebaceous gland - a small, sack-shaped gland that releases oily (fatty) liquids onto the hair follicle (the oil lubricated and softens the skin). These glands are located in the dermis, usually next to hair follicles.

Sweat gland - (also called sudoriferous gland) a tube-shaped gland that produces perspiration (sweat). The gland is located in the epidermis; it releases sweat onto the skin.

Subcutaneous tissue - fatty tissue located under the dermis.
Lesson plan-2

**Topic:** Parenteral drug administration

**Unit:** Preparation of medication for parentral drug administration.

**Class:** 2\textsuperscript{nd} Year Basic B.Sc. Nursing \hspace{1cm} **Time** - 240 minutes

**Previous knowledge of group:** Group knows about advantages and disadvantages of parenteral drug administration, different methods of parenteral drug administration and equipment needed for parenteral drug administration

**Objectives:** At the end of lecture students will be able to:

1. Select and assembles needle and syringe.
2. Prepare and Draw Premixed Medication vial.
3. Prepare and Draw Powdered Medication from vial.
4. Prepare and Draw medication from Ampoule.
5. Mixing of two medication in to syringe.

**Materials/ Resources:** Syringes, Different gauge needles, Medicine container, Ampoule cutter (File cutter), Gloves, Safe disposable container, Gauze pieces, Cotton ball, alcohol(Spirit), Instruction sheet, PPT, Video camera.
<table>
<thead>
<tr>
<th><strong>Specific objective</strong></th>
<th><strong>Teacher Activity</strong></th>
<th><strong>Student’s Activity</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Describes the procedures of preparation and withdrawal of medication from constituted vial, non-constituted vial and ampule.</td>
<td>Teacher explains the articles required to prepare and draw the drug from variety of container and demonstrates the procedure of preparation and withdrawal of medication from constituted vial, non-constituted vial and ampule with help of students. Teacher asks student to outline the seen demonstrations of preparation and withdrawal of drug.</td>
<td>Students outline and describe the steps of procedure of preparation and withdrawal of drug.</td>
</tr>
<tr>
<td>Select and assembles the articles</td>
<td>Teacher divides the class students into small groups. Teacher keeps all articles required to prepare medication for parenteral drug administration and asks student to identify the correct articles required and collect them to prepare medication for parenteral drug administration. Teacher checks the groups have selected correct articles to prepare medication for parenteral drug administration and comments on right and wrong activity of student.</td>
<td>Students follow the instruction of the teacher and identify the correct articles required and collect them to prepare medication for parenteral drug administration.</td>
</tr>
<tr>
<td>Prepare and Draw Premixed Medication.</td>
<td>Teacher displays the activity instructions on PPT to prepare and draw medication from non-constituted (premixed) vial. Teacher asks students to demonstrate drawing of Premixed Medication by following instruction given in PPT. Teacher evaluates student performances and guides during performances.</td>
<td>Students listen, view and demonstrate the procedure for preparing and draw powdered medication from powder vial.</td>
</tr>
<tr>
<td>Prepare and draw powdered medication from vial</td>
<td>Teacher displays the activity instructions on PPT to prepare and draw medication from powdered vial. Teacher asks students to demonstrate drawing of drug from powdered vial by following instruction given in PPT. Teacher evaluates student performances and guides during performances.</td>
<td>Students listen, view and demonstrate the procedure for preparing and draw powdered medication from powder vial.</td>
</tr>
<tr>
<td>Prepare and Draw medication from Ampoule.</td>
<td>Teacher displays the activity instructions on PPT to prepare and draw medication from powdered vial. Teacher asks students to demonstrate drawing of drug from powdered vial by following instruction given in PPT. Teacher evaluates student performances and guides during performances.</td>
<td>Students listen, view and demonstrate the procedure for preparing and draw powdered medication from powder vial.</td>
</tr>
<tr>
<td>Recalls steps of procedure of preparation and withdraw the drug from constituted vial, non-constituted vial and ampule.</td>
<td>At the end of the procedure teacher asks students to verbalize the steps of procedure demonstration for preparing and drawing the drug from constituted vial, non-constituted vial and ampule.</td>
<td>Students follow the instruction and verbalize the steps of procedure demonstration for preparing and drawing the drug from constituted vial, non-constituted vial and ampule.</td>
</tr>
</tbody>
</table>
**WRAP-UP/REFLECTION:**
Teacher display the video clips and snap shots on the skills of preparation of drug that they completed in a class.

Teacher asks learners to comment on the video clips and snap shots about correct and incorrect actions during parenteral drug preparation

**Evidence of Learning (Assessment):** Formative test

On the next day teacher administers the practical test on skills of parenteral drug preparation and check their skills against observation check list and gives feed back to students.

**Remedial teaching:** Redemonstration of procedure by student who master (who scores $\geq 100\%$) the skill in preparing and drawing medication from premixed medicine vial, powdered medication, medication from two different medicine vials, and from ampoule, to the students who scores less than 100%.

Students follow the instruction.
Students reflect on their skills and speak about areas where they made mistake.
Lesson Note -2

Topic: Parenteral drug administration

Unit: Preparation and drawing of Drug in to syringe.

Content:
Teacher asks students to recall and practice assembling the syringe and needle

Steps in the procedure for preparing and drawing medications into a syringe:

1. Verify Medication.
2. Perform Patient Care Hand-wash.
3. Gather Equipment. The following should be placed on the medication tray.
4. Assemble Needle and Syringe.
5. Check Drug Container Label.
7. Check Medication for Defects

Equipment required preparing medication:

1. Square tray
2. Sterile deep tray
3. Sterile gloves
4. Syringe.
5. Needle
6. Cotton and gauze piece container
7. File cutter
8. Appropriate Drug container

9. Paper bag or kidney tray to collect waste

**Reason for Checking Drug Container Label:**

The nurse verifies medication against the doctors’ order for particular medicine.

Verification should be made at least three times to ensure accuracy. This verification should happen at the following times:

a. When the medical specialist obtains the container from the place of storage, usually a medicine cabinet.

b. Before the medical specialist withdraws medication from the container.

c. When the container is returned to the place of storage.

Follow directions on container regarding expiration date and follow local policy regarding use of multidose vials.

Check to determine if medication was stored properly (refrigerated).

**Demonstration of insertion of needle through rubber stopper:**

Examine Rubber Stopper, for Results of correctly and incorrectly inserting a needle in a stopper vial. There should not be any small cores or plugs torn from the stopper

![](image.png)

**Procedure of vial stopper piercing:**

a. If vial is new, remove metal protective cap.
b. Examine the rubber stopper for defects such as small cores or plugs torn in the stopper.

c. If a defective stopper is identified, hold the vial to the light to examine for any foreign particles and to detect any changes in the color and consistency of the medication. Check the date that the multi-dose vial was opened and the expiration date on the medication.

d. Follow the directions on the container regarding expiration date and follow local policy regarding use of multi-dose vials.

e. Check to determine if the medication was stored properly; e.g., refrigeration.

f. The dosage should be verified against the doctor's orders

**Check Medication for Defects:**

a. If there are any foreign particles in the solution or if there is any change in color of the solution, discard the container and obtain another container.

b. If the used container is dark colored glass, insert needle and draw some solution to examine its color; if defective, discard vial, syringe, and needle and obtain new solution. You may want to obtain guidance from your supervisor.

**The different types of container and medication preparation:**

1. Prepare and Draw Premixed Medication.

2. Prepare and Draw Powdered Medication.

3. Prepare and Draw medication from Ampoule.

**Prepare and Draw Premixed Medication:**

1. Prepare and draws medication from a coppered vial (a vial that has been opened) in the following manner:
2. Clean the stopper with an alcohol sponge. You should leave the sponge on the stopper at least 30 seconds.

3. If you are opening vial lead first time than no need for cleaning.

4. With the dominant hand, pick up the assembled needle and syringe and remove the needle cover. Pull the plunger out and fill the syringe with air equal to the amount of medication ordered.

5. With the free hand, pick up and invert the vial, and then insert the needle into the rubber stopper. Make certain the needle tip passes completely through the cap.

6. When inserting the needle, the bevel should face up with a slight pressure being exerted down and forward against the needle to prevent rubber from contaminating medication. To avoid contaminating the needle, the hub of the needle should not touch the rubber cap.

7. Slowly draw the plunger of the syringe until slightly more than (about 0.2 cc more) the amount of medication prescribed in the doctor's orders has been drawn into the syringe. This extra medication will be expelled when the syringe is cleared of air bubbles

**Prepare and Draw Powdered Medication:**

1. Remove the metal protective caps of the stoppered vial containing the powdered medication and the vial containing the sterile diluents. This diluent is used to dissolve the powdered medication.

2. Cleanse the stoppers of both vials. (Blot the top of the stopper with an alcohol sponge rather than move it around in a circular motion. You can rub off fibers of the sponge onto the top of the stopper.)

3. If the vial with the powdered medication contains air, the solution may be difficult to inject. Therefore, you must withdraw a sufficient amount of air to allow the solution to be injected.
4. Withdraw the required diluents (solution) using the procedure for the premixed stoppered vial or it may be from ampoule.

5. Holding the vial with the powdered medication horizontally, insert the needle through the stopper and inject solution.

6. Withdraw the needle. Hold the needle/syringe in nondominate hand, being careful not to contaminate the needle. Gently shake the vial until all of the powder is dissolved. Visually inspect the solution to ensure that the solution is well mixed. All powder should be thoroughly dissolved for maximum safety and effectiveness and to ensure that the required medication is delivered. Change the needle. Select a needle according to the type of injection.

7. Push the plunger fully into the barrel to inject air equal to the amount of medication to be withdrawn. With the vial inverted, pull the plunger back, withdrawing slightly more (about 0.2 cc) than the prescribed medication.

   a. The tip of the needle should be kept in the solution while withdrawing the solution in order to prevent air bubbles in the syringe.

   b. Pull the plunger back to the desired cc mark on the barrel.

   c. Withdraw the needle from the container. Care should be taken not to separate the needle and syringe while withdrawing the needle.

   d. Verify the correct dosage in the syringe by raising the syringe to eye level and ensuring the forward edge of the plunger is at the desired level (prescribed dosage plus about 0.2 cc). Verify the correct dosage with the written order.
e. Place the protective cover on the needle. Keep the prepared injection in to the sterile deep tray to maintain sterility.

**Prepare and Draw medication from Ampoule:**

1. Lightly tap the top of the upright ampule to force trapped medication back from the bottle neck

2. Cleanse the neck of the ampule with an alcohol sponge.

3. Wrap the neck of the ampule with the antiseptic swab and leave for 30 seconds.

4. Grasp the ampule with both hands. Snap the neck of the ampule by bending away from the breakline. Ampule should be snapped away from any person, including the patient, and the medication tray to prevent possible injury from flying glass. Incase of difficulty use ampule file cutter to break the ampule.

5. Inspect the ampule for minute glass particles. If any glass particles are observed, discard the ampule and obtain another or use a filter needle.

6. Pick up the assembled needle and syringe in dominant hand and remove the protective cover. Regardless of method used, care must be exercised not to contaminate the needle.

7. Insert the needle and withdraw the medication in either of the following ways
(a) Holding the ampule horizontally in the nondominant hand and the syringe in the dominant hand, insert the needle into the medication.

**OR**

(b) Placing the ampule upright on a flat surface and stabilizing it with the nondominant hand, insert the needle to withdraw the medication.

8. The prescribed amount of medication plus 0.2 cc is withdrawn while keeping the needle immersed in solution.

9. Withdraw the needle.

10. Verify the correct dosage. Refer to the doctor's orders

11. Clear Syringe of Air Bubbles. To clear the air bubble:

   a. Hold the syringe with the needle pointing up.

   b. Pull back on the plunger slightly to clear all medication from the shaft of the needle.
c. Flick the barrel lightly with your finger to force air bubbles to the top of the barrel.

d. Pull the plunger back slightly and push forward until the solution is in the needle hub, clearing it of bubbles.

e. Continue pushing plunger forward until the proper amount of medication remains in syringe (excess medication is expelled).

f. Verify the correct dosage.

12. Cover needle with plastic protective cover to maintain sterility until the injection is performed. Keep the filled syringe in sterile deep tray.
REFERENCES


LESSON PLAN-3

**Topic** Parenteral drug administration

**Unit:** Identification of sites for Injection

**Class:** 2nd Year Basic B.Sc. Nursing

**Time:** 180 Minutes

**Previous knowledge of group:** Group knows about parenteral drug administration, has knowledge about the methods of parenteral drug administration and equipments needed for parenteral drug administration

**Objectives:** At the end of lecture students will be able to:

1. Explain the general criteria for selection of sites for injection.

2. Identify sites and select appropriate site for intramuscular drug administration.

3. Identify sites and select appropriate site for subcutaneous drug administration.

4. Identify sites and for select appropriate site for intradermal drug administration.

5. Describe the benefits and cautions of IM, SC & ID sites.

**Materials/ Resources:** Mannequin, PPT.
<table>
<thead>
<tr>
<th>Specific objective</th>
<th>Teacher Activity</th>
<th>Student’s Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students recollects the meaning.</td>
<td>Teacher asks student the meaning of intra muscular drug administration.</td>
<td>Students follow the instruction of the teacher and explains the meaning of intra muscular drug administration.</td>
</tr>
<tr>
<td>Students describe general criteria for site selection.</td>
<td>Teacher describes the characteristics of ideal site for injection.</td>
<td>Students listen to the narration of teacher.</td>
</tr>
<tr>
<td>Students list down the sites for intramuscular drug administration.</td>
<td>Teacher gives activity sheet to students and asks to write the anatomical sites of intramuscular injection, which they have experienced and seen while working in hospital. Teacher discusses the four common sites of IM injection with details of anatomical land marks.</td>
<td>Students follow the instruction of teacher and do the activity which is given by teacher. Students participate in the discussion.</td>
</tr>
<tr>
<td>Students demonstrate the site identification for intramuscular drug administration.</td>
<td>Teacher displays an audiovisual demonstration for different sites of intramuscular injection. Teacher asks students to demonstrate for different sites of intramuscular injection on self and on simulator. Teacher observes the student demonstration and makes correction when there is a wrong action. Teacher discusses the benefits and cautions for each sites of IM injection.</td>
<td>Students follow the instruction of teacher and do the activity which is given by teacher. Students participate in the discussion.</td>
</tr>
<tr>
<td>Describe the sites for SC drug</td>
<td>Teacher gives work sheet with anatomical diagram of</td>
<td>Students follow the instruction.</td>
</tr>
</tbody>
</table>
Teacher asks students to label the sites for SC drug administration.

Teacher checks the activity sheet of students and display anatomical diagram of the sites of injection and comments on answers.

Teacher displays an audiovisual power point presentation on sites of SC drug administration.

Students follow the verbal instructions and pictures.

Describe the purpose of each site for SC injection.

Teacher asks students to demonstrate identification of sites of SC drug administration.

Teacher observes the student demonstration and corrects the wrong activity.

Teacher describes the each site of SC drug administration with respect to its specifications.

Students demonstrate anatomical site identification for the SC drug administration.

Students follow the description.

Describe the sites for ID drug administration.

Teacher describes the sites for ID drug administration with respect to its specifications.

Students follow the description.
<table>
<thead>
<tr>
<th>WRAP-UP/REFLECTION:</th>
<th>Students reflect on their class work.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher asks students to view the activity sheets that they completed in a class.</td>
<td></td>
</tr>
<tr>
<td>Teacher asks learners to summarize, their learning within a particular lesson.</td>
<td></td>
</tr>
<tr>
<td><strong>Evidence of Learning (Assessment):</strong> Formative test</td>
<td></td>
</tr>
<tr>
<td>Teacher administers this test next day of lecture and corrects the answer sheet and gives feedback to students.</td>
<td></td>
</tr>
<tr>
<td><strong>Remedial teaching:</strong> Work book to the students who scored &lt; 80%. The students who scored &gt; 80 % will correct the assignment of work book.</td>
<td></td>
</tr>
</tbody>
</table>
IDENTIFICATION OF SITES FOR PARENTRAL DRUG ADMINISTRATION

Topic: Parenteral drug administration

Unit: Identification of sites for injection

Duration of lesson: 360 minutes (6 Hours)

Content:
Teacher asks student to recall anatomy and physiology of skin

General criteria for selection of sites for injection:
The site should be free from bruising, rash or other lesions.

Intramuscular Injection Sites: IM injections are usually given in the buttock, thigh, upper arm, or hip.

CRITERIA FOR SELECTION OF SITE

BUTTOCK
Injections in the buttock area are also called gluteus medius or dorsogluteal injections. This site is commonly referred to as the outer upper quadrant and is contraindicated in children.
Find the trochanter. It is the knobbly top portion of the long bone in the upper leg (femur). It is the size of a golf ball. Find the posterior iliac crest. Many people have ‘dimples’ over this bone.

Draw an imaginary line between the two bones. After locating the centre of the imaginary line, find a point one inch toward the head. This is where ( ) to insert the needle. Stretch the skin tight. Hold the syringe like a pencil or dart. Insert the needle at a right angle to the skin. Up to 3ml of fluid can be given in this site. The presence of major nerves and blood vessels, the relatively slow uptake of medication from this site compared with others, and the thick layer of adipose tissue commonly associated with it, makes this site problematic. The presence of major nerves and blood vessels, the relatively slow uptake of medication from this site compared with others, and the thick layer of adipose tissue commonly associated with it, makes this site problematic. The sciatic nerve and superior gluteal artery lie only a few centimetres distal to the injection site, thus great care needs to be taken to identify landmarks accurately. Palpating the ileum and the trochanter is important; using visual calculations alone can result in injection being placed too low and injuries to other structures. Risks associated with an IM injection to the dorsogluteal site.

- Contact with sciatic nerve
- Contact with the superior gluteal artery
- Too much fatty tissue – poor absorption rates.
Hip

Injections in the hip are also called a ventrogluteal injection. The Ventrogluteal site provides the greatest thickness of gluteal muscle (consisting of both the gluteus medius and gluteus minimus), is free of penetrating nerves and blood vessels, and has a narrower layer of fat of consistent thinness than is present in the dorsogluteal. The ventrogluteal site has come to attract significant attention in the nursing literature and there is wide agreement that this site is the preferable site for intramuscular injection.

Find the trochanter. It is the knobbly top portion of the long bone in the upper leg (femur). It is about the size of a golf ball. Find the anterior iliac crest. Place the palm of your hand over the trochanter. Point the first or index finger toward the anterior iliac crest. Spread the second or middle finger toward the back, making a ‘V’. The thumb should always be pointed toward the front of the leg. Always use the index finger and middle finger to make the ‘V’. Give the injection between the knuckles on your index and middle fingers. Give the injection between the knuckles on your index and middle fingers. Hold the syringe like a pencil or dart. Insert the needle at a right angle to the skin (90°). Up to 3ml of fluid may be given in this site.

SITES OF THE THIGH (RECTUS FEMORIS AND VASTUS LATERALIS)

The uptake of drugs from the thigh region is slower than from the arm but faster than from the buttock, thus facilitating better drug serum concentrations than is possible with the gluteal muscles. To find the thigh injection site, make an imaginary box on the upper leg. Find the groin. One hand’s width below the groin becomes the upper border of the
box. Find the top of knee. One hand’s width above the top of the knee becomes the lower border of the box. Stretch the skin to make it tight. Insert the needle at a right angle to the skin (90°) straight in.

Up to 2ml of fluid may be given into this site. The thigh may be utilised when other sites are contraindicated or by clients who administer their own medication, as it is readily available in the sitting or lying back position. However, the main disadvantage is that injections in the Rectus femoris site may cause considerable discomfort; this site can be used for infants, children and adults. Needle length used is usually 2.5cm or less.

**THE DELTOID SITE**

The ease of access, especially in an outpatient setting, possibly adds to the frequency with which the deltoid site is used for IM injections. This site is used for immunizations /non-irritating medications, hence vaccines which are usually small in volume tend to be administered into the deltoid site. This is a relatively small area and muscle mass, especially in atrophied patients compounded by the close proximity of the radial nerve, brachial artery and bony processes to this site means that more substantial injuries can occur.
Find the knobbly top of the arm (acromion process). The top border of an inverted triangle is two finger widths down from the acromion process. Stretch the skin and then bunch up the muscle. Insert the needle at a right angle to the skin in the centre of the inverted triangle. Caution: This is a small site – give only 1-2ml or less of fluid in this site.

**IDENTIFICATION SITES FOR SUBCUTANEOUS INJECTION**

These injections are given because there is little blood flow to fatty tissue, and the injected medication is generally absorbed more slowly, sometimes over 24 hours. Subcutaneous injections are given at either a 45° or 90° angle into the pinched tissue. Volume of drug limited up to 1ml.

**Common Sites of injection are:** Arms, Thighes, Abdomen, and Bottocks.
IDENTIFICATION SITES FOR INTRADERMAL INJECTION

Common site of intradermal injections are inner forearm dorsal forearm, upper back or upper chest. The tuberculin syringe is used for this mode of injection and needle is 25-27 gauge, 3/8 - 5/8 inch needle. Amount to be injected is usually 0.01 - 0.1 cc. The preferred site for intradermal injections is the anterior (palm side) forearm halfway between the wrist and elbow.
REFERENCES


WORK SHEET FOR LESSON 3

WORK SHEET- 1

Name of the student __________________________________

1. List some general areas of the body used for subcutaneous injections?
   ------------------------------------------------------------------------------------
   ------------------------------------------------------------------------------------

2. What is the maximum amount of solution that can be given subcutaneously?
   ------------------------------------------------------------------------------------

3. Why the dorsogluteal site is not recommended?
   ------------------------------------------------------------------------------------
   ------------------------------------------------------------------------------------

4. Describe how to locate the deltoid muscle site. (use anatomical landmarks)
   ------------------------------------------------------------------------------------
   ------------------------------------------------------------------------------------

5. List 2 general criteria for selecting injection sites.
   ------------------------------------------------------------------------------------
   ------------------------------------------------------------------------------------

6. Describe how to locate the ventrogluteal site (use anatomical landmarks)
   ------------------------------------------------------------------------------------
   ------------------------------------------------------------------------------------

7. Describe how to locate the vastuslateralis site (use anatomical landmarks)
   ------------------------------------------------------------------------------------
   ------------------------------------------------------------------------------------
LESSON PLAN-4

**Topic:** Parenteral drug administration

**Unit:** Intramuscular drug administration.

**Class:** 2nd Year Basic B.Sc. Nursing  
**Time:** 120 minutes

**Previous knowledge of group:** Group knows about parenteral drug administration, has knowledge about the methods of parenteral drug administration and equipments needed for parenteral drug administration and Sites of intramuscular drug administration

**Objectives:** At the end of lecture students will be able to:

1. Explain the meaning Intramuscular drug administration.
2. Describe the advantages of Intramuscular drug administration.
3. Describe the complications of Intramuscular drug administration.
4. Select appropriate site for intramuscular injection
5. Assembles the articles for intramuscular injection
6. Demonstrate the skill of intramuscular injection drug administration.

**Materials/ Resources:** Sterile syringes, Different gauge sterile needles, Clean Square Tray, Sterile deep tray, Gloves, Ampoule cutter, medications container., Alcohol swabs , Injection Simulator, PPT.
<table>
<thead>
<tr>
<th>Specific objective</th>
<th>Teacher Activity</th>
<th>Student’s Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to describe the meaning of intra muscular drug administration.</td>
<td>Teacher asks student the meaning of intra muscular drug administration.</td>
<td>Students follow the instruction of the teacher and verbalize the meaning of intra muscular drug administration.</td>
</tr>
<tr>
<td>Describe the advantages of IM drug administration.</td>
<td>Teacher displays list of advantages of intramuscular drug administration and gives situational working examples.</td>
<td>Students participate in the discussion.</td>
</tr>
<tr>
<td>Describe the complications of IM drug administration.</td>
<td>Teacher displays list of complications of intramuscular drug administration.</td>
<td></td>
</tr>
<tr>
<td>Recalls the sites of intramuscular medication administration.</td>
<td>Teacher presents audio visual on the sites of intramuscular drug administration.</td>
<td>Students follow the instruction.</td>
</tr>
<tr>
<td></td>
<td>Teacher asks students to verbalize specification of each site for IM injection.</td>
<td></td>
</tr>
<tr>
<td>Assembles the articles for intramuscular injection</td>
<td>Teacher asks student to prepare tray to give intramuscular injection.</td>
<td>Students follow the verbal instructions and assemble the articles for the intramuscular drug administration.</td>
</tr>
<tr>
<td>Demonstrate the technique of intramuscular injection</td>
<td>Teacher demonstrates technique of intramuscular drug administration. Teacher divides the students in small groups and asks them to re-demonstrate the procedure of intramuscular injection in rotation on manikin.</td>
<td>Students watch the movie on intramuscular drug administration. Students follow the instruction. They demonstrate the intramuscular injection on manikin.</td>
</tr>
<tr>
<td><strong>WRAP-UP/REFLECTION:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>Teacher displays the video clips of the intramuscular injection technique demonstrated by students. Ask student to evaluate task.</td>
<td>Students evaluate the technique demonstrated by them and discuss and reflect on their work.</td>
<td></td>
</tr>
<tr>
<td>Teacher asks learners to summarize, their learning within a particular lesson.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Evidence of Learning (Assessment):**

Evaluative IM drug administration skill.

**Remedial teaching:**

Teacher gives repeat demonstration to the students who have not mastered (who score < 100 %).

Ask them to re-demonstrate the same. Ask students who master the topic to evaluate the procedure of non masters and give feedback.
LESSON NOTE - 4

**Topic:** Parenteral drug administration

**Unit:** Intra muscular Drug administration.

**Contents:**
Teacher asks students to recall anatomy and physiology of muscle layer of skin and adjacent structures.

**Definition of intramuscular injection:**
An intramuscular injection is an injection given directly into the central area of a specific muscle.

**Purposes of Intramuscular drug administration:**

1. The intramuscular route offers a faster rate of absorption than the subcutaneous route. (IM) injection is the preferred route of administering medication when fairly rapid-acting and long-lasting dosage of medication is required.
2. In contrast, medication injected into muscle tissues is absorbed less rapidly and takes effect more slowly than medication that is injected intravenously.
3. Medications that are irritating to the subcutaneous tissue may be given into the deep muscle tissue.
4. An intramuscular injection is the safest, easiest, and best tolerated of the injection routes.
5. Muscle tissue can often hold a larger volume of fluid without discomfort. Up to a maximum volume of medication of five milliliters per injection can be administered at one site to an adult.

**Anatomical land marks for intramuscular injections:**

1. Deltoid
2. Vastus Lateralis
3. Ventrogluteal
4. Dorsogluteal

**Steps of procedure of intramuscular injections:**

1. Check Doctor's Orders and Obtain Medication
2. Gather Equipment
3. Wash Hands.
4. Assemble Needle and Syringe.
5. Check Expiration Date of Medication
6. Draw Medication into Syringe
7. Identify Patient.
8. Prepare the Patient.
10. Prepare Injection Site.
11. Remove Needle Guard or Cover.
12. Stabilize Injection Site.
13. Insert Needle Into Patient at Site Selected for Injection.
15. Inject Medication.
17. Massage Injection Site
18. Cover Injection Site.
20. Dispose Expended Needle and Syringe.
21. Record Administration of Intramuscular Injection.

**Check Doctor's Orders and Obtain Medication:** no injection is given without the doctor's orders. The orders are checked to ensure correct medication is obtained and administered. Prepare and obtain the correct dosage

**Gather Equipment:** You will need a needle and syringe, Drug to be administered, Deep tray, Sterile container with antiseptic pads, Deep sterile tray, gloves, Kidney tray adhesive bandages (such as Band-Aid), and an emergency cart. Medication card (filled information about particular patient) and counter checked with senior nurse.
Wash Hands: Use the patient care hand wash procedures.

Assemble Needle and Syringe: Use the procedures discussed in the previous lesson. Remember to adhere to strict aseptic techniques.

Check Expiration Date of Medication: Do not use a medication whose expiration date has passed. Discard or return the medication as per SOP.

Draw Medication into Syringe: Do not combine immunizations or other medications into one syringe unless specifically ordered by the physician.

Identify Patient: Refer to the patient's wrist-name tag for the patient's name or ask the patient, "What is your name?" and compare to the doctor's orders.

Prepare the Patient.

Ask the patient about any known allergies before you administer any medication. You should ask about specific allergic reactions such as penicillin, eggs, or horse serum to refresh his memory. You should refer to his chart to see if any allergies are listed. If the patient is a young child or an older person, they may not be able to tell you. If there is a known allergy, consult the senior medical person in the area for guidance. Do not administer the injection if you are not sure there are no allergies. Allergic reactions can make the patient very sick or even cause death.

Ask females about the possibility of current pregnancy. Some medications can cause severe birth defects if given to the mother during pregnancy. If there is a possibility of pregnancy, do not administer the injection. Refer the patient to the physician or senior medical person.

Provide privacy for the patient if injecting in the buttocks or lateral thigh. Be sure to abide by a local SOP.

Tell the patient about the injection procedure. Be sure to wake up a patient if he has been sleeping. If a patient is unconscious and you think he cannot understand what you are telling him, tell the patient anyway. A patient may be frightened and/or violent. If this is the case, you must seek assistance.
Establish rapport with the patient

Let the patients ask questions

Ask the patient to relax the area that is to be used for the injection

Inform the patient that he/she will feel a slight stick

**Select Injection Site and Position Patient.** An intramuscular injection is usually given in the buttocks, thigh, or the upper arm area. If the medication is more than 1 cc, give the injection in the buttocks. The amount of medication determines the selection of the site.

Expose the buttocks to make sure you do not make an error in determining the location of the injection.

Position client in side-lying or supine position, with knee flexed on injection side, or The patient will lie face down (Prone) with toes together and heels apart. This position relaxes the muscles of the buttocks by rotating femur.

**Prepare Injection Site:**

1. Clean the skin at the injection site thoroughly with an antiseptic pad (sponge with alcohol or Betadine).
2. Use a circular motion from the center of the injection site outward. Place the antiseptic pad between the last two fingers for use later when you complete the injection.
Remove Needle Guard or Cover:

1. Pull the cover straight off, rather than using a twisting motion or a sideward motion because you may bend the needle.
2. Remove the sterile medicine field syringe and needle from deep tray.
3. Avoid bending or touching the needle.
4. Place the needle cover on a clean, flat surface.

Stabilize Injection Site:

- Firm the tissue at the injection site with the hand that is free by pinching the skin with the thumb and forefinger so that it is taut.
- The cushion of tissue formed by grasping the skin makes it easier to inject the needle in exactly the right place.
- The needle enters more easily into taut or firm skin than into loose skin.
- Help the patient relax his muscles by distracting his attention by asking a question or having the patient do something like blow a breath out or look at an object on the wall.
- Insert Needle Into Patient at Site Selected for Injection:
- When inserting the needle, following guidelines need to be followed:
- Hold the barrel of syringe firmly between the thumb and index finger of the dominant hand.

- Move the needle tip to about one-half inch from the injection site, with the bevel up, and position the needle at a 90-degree angle to the skin surface. (All intramuscular injections are inserted at a 90-degree angle into the muscular layer below the skin.)
• Plunge the needle firmly and quickly into the muscle to the depth of the needle with a steady straightforward motion. A quick insertion of the needle will minimize the pain for the patient.

Aspirate Syringe:

Aspirate the syringe as follows:

- Release the hold on the skin.
- Move the free hand to the plunger of the syringe.
- Pull back the plunger until slight resistance is felt.
- Check for blood entering the syringe. If blood appears in the syringe, do not administer the medication. Withdraw the needle from the skin at a 90-degree angle. Dispose of the needle and syringe as per sharp instrument disposal protocol. Explain your actions to the patient.
- Failure to aspirate for blood before injecting could result in administering medication into a blood vessel, which would endanger the life of the patient. This is because the entire amount is instantly available for the body to use.
- Obtain another (sterile) needle and syringe.
- Select another injection site.
- Start the injection procedure

Inject Medication:

- To inject the medication stabilize the syringe with the nondominant hand.
- Place the thumb of the dominant hand on the plunger and the index and middle fingers under the hook of the syringe barrel.
• Push the plunger into the syringe barrel with a slow, continuous downward movement as far as the plunger will go.
• Make sure that all the medication is injected. Any medication that is left in the needle at the end of the injection may dribble into the subcutaneous tissue as it is withdrawn. Tissue injury may result.

Withdraw Needle: Place the alcohol pad you are holding just above the injection site with the non-dominant hand. Remove the needle straight out in same direction as the injection with a quick, outward motion.

Massage Injection Site:

Rub the injection site with the alcohol pad with a firm, circular motion for about five seconds. Massaging helps to disperse the medicine so that it can be absorbed more quickly. You should not massage some intramuscular injections like Iron preparation which causes irritation to tissues and leads to staining. Cover Injection Site:

Place an adhesive bandage over the injection site to protect clothes from possible bloodstains and protect the injection site from possible infection. This is not done in all the setting you need to follow the SOP.

Perform Post injection Patient Care:

1. Observe the patient for unusual reactions. Any medication can cause anaphylactic reactions.
2. Give appropriate information regarding the medication and required waiting time to the patient in accordance with local guidelines.
3. In case of admitted patients, Position the patient for comfort. Observe patient for any reaction may be good or bad.
4. Ask the patient if there is anything else you can do.
5. Tell the patient when you expect to return to check on any reaction and to notify you if he experiences any problems.
Dispose Expended Needle and Syringe.

1. Place the needle and syringe in a non-permeable container in accordance with local policy.
2. Proper disposal of equipment prevents cross contamination, drug abuse, and injury by needles.
3. After use do not recap needles, they are cut and discarded in to sodium hypochlorite 1% solution.

Record Administration of Intramuscular Injection:

1. Record the information in the patient's medical record (inpatient or outpatient) or filled medical card local policy.
2. Prompt recording prevents other personnel from administering the same medication.
3. After recording the information, follow local procedure for returning the patient's medical record, or filled medical card, to the records holding area.

Definition

Z-track injection is a method of injecting medication into a large muscle using a needle and syringe. This method seals the medication deeply within the muscle and allows no exit path back into the subcutaneous tissue and skin. This is accomplished by displacing the skin and subcutaneous tissue 1–1.5 inches (2.5–3.75 cm), laterally, prior to injection and releasing the tissue immediately after the injection.

In this technique a technique in which the skin and subcutaneous tissue are displaced laterally before inserting the needle intramuscularly; used to prevent leakage along the track of the needle and consequent tissue irritation.

Z-track is used to prevent backflow of medication into subcutaneous tissue.

The Z-track method of intra-muscular (I.M.) injection is used primarily when giving dark-colored medication solutions, such as iron solutions, that can stain the subcutaneous tissue or skin. It is also the method of choice when giving I.M. medications that are very irritating to the tissue, such as haloperidol or vistaril.
Certain precautions need to be taken while giving Z-track injection. These precautions includes:

- Do not give a Z-track injection into skin that is lumpy, reddened, irritated, bruised, stained, or hardened.
- Add 0.3–0.5 ml of air into the syringe after drawing up the correct dosage of medication.
- Change the needle after drawing the medication into the syringe.
- Select a long needle (2–3 inches; 5–7.5 cm), depending upon the size of the patient, with a 21- or 22-gauge needle to place the medication deeply within the muscle.
- Give Z-track injections into a large muscle in the buttock (the gluteus medius or gluteus minimus).
- Aspirate on the syringe before injecting the medication to be sure not to hit a blood vessel. If blood appears in the syringe, a vein may have been hit. Remove and discard the syringe and medication. Start over with a new syringe, fresh medication, and a new site.
- Caution the patient not to wear restrictive clothing that could put constant pressure on the injection site.
- Rotate the injection sites from one buttock to the other and from site to site.
- Do not place injections into a disabled limb. If there is decreased circulation, the medication absorption will be affected and abscess formation can occur.
- Never inject more than 5ml of medication at a time when using the Z-track method. If a larger dose is ordered, divide it and inject it into two separate sites.

**Z track Technique for intramuscular injection:**

- All steps are similar to intramuscular injection. Only technique differs a little on following points.
• After withdrawing medication change the needle draw back 0.2 of air (gives you an air lock)
• Use the non-dominant hand to move and hold the skin and subcutaneous tissue about 1–1.5 in (2.5–3.75 cm) laterally from the injection site.
• Alert patients when the medication is about to be injected.
• Ask them to breathe through their mouth and to try to relax the muscle to avoid muscle resistance.
• Continue holding the displaced skin and tissue until after the needle is removed.
• Dart the syringe rapidly into the site at a 90° angle.
• Aspirate on the syringe to be sure that a blood vessel has not been penetrated.
• Inject the medication slowly into the muscle. Be sure that the syringe is completely empty, including the air, before withdrawing the syringe.
• Withdraw the syringe and immediately release the skin and subcutaneous tissue.

**Post injection Patient Care:**

Apply gentle pressure to the site, using a dry gauze pad, if necessary. Do not rub the site. Continue pressure if bleeding occurs, and apply a bandage, if necessary. Replace the patient’s clothing and allow the patient a 5-minute rest period. Then encourage the patient to walk about to enhance absorption of the medication.
REFERENCES


LESSON PLAN-5

Topic: Parenteral drug administration

Unit: Subcutaneous drug administration. (SC)

Class: 2nd Year Basic B.Sc. Nursing               Time: 120 minutes

Previous knowledge of group: Group knows about parenteral drug administration, has knowledge about the methods of parenteral drug administration and equipments needed for parenteral drug administration and Sites of intramuscular drug administration

Objectives: At the end of lecture students will be able to:

1. Explain the meaning of subcutaneous drug administration.
2. Describe the purposes of subcutaneous drug administration.
3. Describe the complications of subcutaneous drug administration.
4. Select appropriate site for subcutaneous drug administration.
5. Identify the differences between IM, SC, techniques of drug administration.
6. Demonstrate the skill of subcutaneous drug administration.

Materials/ Resources: Sterile syringes, Different gauge sterile needles, Clean Square Tray, Sterile deep tray, Gloves, Ampoule cutter, medications container., Alcohol swabs , Medication prescription order , medication card ,Injection Simulator, PPT.
<table>
<thead>
<tr>
<th><strong>Specific objective</strong></th>
<th><strong>Teacher Activity</strong></th>
<th><strong>Student’s Activity</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to describe the meaning of subcutaneous drug administration.</td>
<td>Teacher asks student the meaning of subcutaneous drug administration.</td>
<td>Students follow the instruction of the teacher and verbalize the meaning of subcutaneous drug administration.</td>
</tr>
<tr>
<td>Describe the advantages of subcutaneous drug administration.</td>
<td>Teacher displays list the purposes of subcutaneous drug administration and gives situational working examples.</td>
<td></td>
</tr>
<tr>
<td>Describe the complications of subcutaneous drug administration.</td>
<td>Teacher explains of complications of subcutaneous drug administration and gives situational working examples.</td>
<td>Students participate in the discussion.</td>
</tr>
<tr>
<td>Recalls the sites of subcutaneous drug administration.</td>
<td>Teacher presents PPT on the sites of subcutaneous drug administration.</td>
<td>Students follow the instruction.</td>
</tr>
<tr>
<td></td>
<td>Teacher asks students to verbalize characteristics of each site for subcutaneous drug administration.</td>
<td></td>
</tr>
<tr>
<td>Differentiate between IM and SC drug administration</td>
<td>Teacher asks student to differentiate between IM and SC in terms of purposes and articles. She further asks students to present the differences.</td>
<td>Students follow the instructions and present the differences.</td>
</tr>
<tr>
<td>Demonstrate the technique of subcutaneous injection</td>
<td>Teacher demonstrates technique of intradermal drug administration.</td>
<td>Students observe the demonstration on subcutaneous drug administration.</td>
</tr>
<tr>
<td></td>
<td>Teacher divides the students into small groups and asks them to re-demonstrate the procedure of subcutaneous injection in rotation on manikin.</td>
<td>Students follow the instruction. They demonstrate the subcutaneous injection on manikin.</td>
</tr>
</tbody>
</table>
**WRAP-UP/REFLECTION:**
Teacher displays the video clips of the subcutaneous injection technique demonstrated by students. Ask student to evaluate task.

Teacher asks learners to summarize, their learning within a particular lesson.

**Evidence of Learning (Assessment):**
Evaluative subcutaneous drug administration skill.

**Remedial teaching:**
Teacher gives repeat demonstration to the students who have not mastered (who score < 100 %). Ask them to re-demonstrate the same. Ask students who master the topic to evaluate the procedure of non masters and give feedback.

Students evaluate the technique demonstrated by them and discuss and reflect on their work.
Unit: Parenteral drug administration

Topic: Subcutaneous drug administration.

Duration of lesson: 120 minutes (2 Hours).

Content:

Teacher asks students to recall prerequisite about Subcutaneous layer of skin.

Definition of Subcutaneous Medication administration:

The drug is injected by syringe and needle into the tissues just beneath the skin. A preparation for subcutaneous use must be a sterile liquid capable of complete absorption or it will irritate the tissues. The subcutaneous (SQ) method of injection is commonly ordered for medication that requires a slower absorption rate than IM injections provide.

The needle must pass through the epidermis and dermis to reach the subcutaneous fatty (adipose) tissue. Small volumes of medication are administered by this method.

Site for subcutaneous injection:

Selecting the proper site for injection is key to your success and minimizing discomfort associated with the injection. Do not use the same site for injections each time. Rotate site. Common site of subcutaneous injections are:
Steps of Sub- cutaneous Medication administration procedure:

All the steps from hand washing to disposal of articles are similar to I/M Injection. The variations and important points are as below :

Review medication orders
Wash hands, and put on gloves.
Identify client by checking armband.

Select injection site and position patient:

Outer aspect of upper arm (deltoid area of the shoulder). The injection site is one hand's width down from the top of the shoulder and a third of the way around to the arm's outer aspect.

The patient may be seated or standing with the upper arm you have chosen exposed.

The needle length used for all subcutaneous injections is 1/2 inch to 7/8 inch (23 to 25 gauge) needle. And 2to 3 c.c syringe

A volume of medication between 0.5 and 1.0 milliliter or less is usually administered to an adult in the deltoid area.

Outer aspect of upper leg (vastus lateralis area). The injection site is one hand's width down from the groin on the outer area of the upper leg. The patient may be seated or standing. The upper leg you have chosen should be completely exposed. A maximum volume of medication of 3.0 milliliters can be administered to an adult in the vastus lateralis area.

Prepare the Injection Site: Clean the site with an antiseptic pad using a circular motion from the center point outward about two inches.

Remove Needle Guard: The needle cover should be pulled straight off. Any twisting motion or a sideward motion may bend the needle. Do not touch the needle. Lay the needle cover on a clean, flat surface.

Stabilize Injection Site: Pinch up tissue on the upper arm or upper thigh, whichever you have chosen.
(1) Pinch the skin gently between the thumb and index finger to form a fold of skin without touching the injection site.

(2) The fold of tissue helps determine the exact size of needle needed. Measure from the fold's base to its crest and select a needle close to the length of the fold.

**Insert Needle.**

1. Hold the barrel of the syringe between the thumb and the index finger with bevel up.

2. Insert the needle at a 45-degree angle to the skin. All subcutaneous injections are inserted at a 45-degree angle into the fatty tissue below the skin.

3. Insert the needle only to three-fourths of the length of the needle using a firm, quick, forward thrust to minimize discomfort.

4. Release the skin. Release the pinched skin while stabilizing the syringe barrel.

**Aspirate the Syringe:**

**Inject the Medicine:** Press the plunger into the barrel with the thumb slowly and steadily until all medication is expelled. Medication should be injected slowly. Rapid injection will put pressure on the tissue and cause pain.

**Cover Injection Site:** Cover injection site with SOP use, give gentle pressure applied to the injection site will help seal punctured tissue and disperse the medication so that it is absorbed readily.

You may use the same antiseptic pad that was used to prepare the site before the injection.

**Post injection Patient Care:**

Apply gentle pressure to the site, using a dry gauze pad, if necessary. Do not rub the site. Continue pressure if bleeding occurs, and apply a bandage, if necessary. Replace the patient's clothing and allow the patient a 5-minute rest period. Then encourage the patient to walk about to enhance absorption of the medication.
REFERENCES


LESSON PLAN-6

**Topic:** Parenteral drug administration

**Unit:** Intradermal drug administration. (ID)

**Class:** 2nd Year Basic B.Sc. Nursing  
**Time:** 120 minutes

**Previous knowledge of group:** Group knows about parenteral drug administration, has knowledge about the methods of parenteral drug administration and equipments needed for parenteral drug administration and Sites of intramuscular drug administration

**Objectives:** At the end of lecture students will be able to:

1. Explain the meaning Intradermal drug administration.
2. Describe the purposes of intradermal drug administration.
3. Describe the complications of intradermal drug administration.
4. Select appropriate site for intradermal drug administration.
5. Identify the similarities between IM, SC, techniques of drug administration & intradermal drug administration.
6. Demonstrate the skill of intradermal drug administration.

**Materials/ Resources:** Sterile syringes, Different gauge sterile needles, Clean Square Tray, Sterile deep tray, Gloves, Ampoule cutter, medications container., Alcohol swabs , Medication prescription order , medication card , Injection Simulator, PPT
<table>
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<th>Teacher Activity</th>
<th>Student’s Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to describe the meaning of intradermal drug administration.</td>
<td>Teacher asks student the meaning of intradermal drug administration.</td>
<td>Students follow the instruction of the teacher and verbalizes the meaning of intradermal drug administration.</td>
</tr>
<tr>
<td>Describe the advantages of ID drug administration.</td>
<td>Teacher displays list the purposes of intradermal drug administration and gives situational working examples.</td>
<td></td>
</tr>
<tr>
<td>Describe the complications of ID drug administration.</td>
<td>Teacher explains of complications of intradermal drug administration and gives situational working examples.</td>
<td>Students participate in the discussion.</td>
</tr>
<tr>
<td>Recalls the sites of intramuscular medication administration.</td>
<td>Teacher present audio visual on the sites of intradermal drug administration.</td>
<td>Students follow the instruction.</td>
</tr>
<tr>
<td></td>
<td>Teacher asks students to verbalize specification of each site for intradermal drug administration.</td>
<td></td>
</tr>
<tr>
<td>Differentiate between IM, SC and intradermal drug administration.</td>
<td>Teacher asks student to differentiate between IM, SC and ID in terms of purposes and articles. She further asks students to present the differences.</td>
<td>Students follow the instructions and presents the differences.</td>
</tr>
<tr>
<td>Demonstrate the technique of intradermal injection.</td>
<td>Teacher demonstrates technique of intradermal drug administration. Teacher divides the students in small groups and asks them to re-demonstrate the procedure of intradermal injection in rotation on manikin.</td>
<td>Students watch the movie on intradermal drug administration. Students follow the instruction. They demonstrate the intradermal injection on manikin.</td>
</tr>
</tbody>
</table>
**WRAP-UP/REFLECTION:**

Teacher displays the video clips of the intradermal injection technique demonstrated by students. Ask student to evaluate task.

Teacher asks learners to summarize, their learning within a particular lesson.

**Evidence of Learning (Assessment):**

Evaluative intradermal drug administration skill.

**Remedial teaching:**

Teacher gives repeat demonstration to the students who have not mastered (who score < 100%).

Ask them to re-demonstrate the same. Ask students who master the topic to evaluate the procedure of non masters and give feedback.

Students evaluate the technique demonstrated by them and discuss and reflect on their work.
LESSON NOTE- 6

**Topic:** Parenteral drug administration

**Unit:** Intra Dermal Drug administration.

**Duration:** 90 minutes (1 and ½ Hours)

**Contents:**

Teacher asks students to recall about dermal layer of skin.

**Definition of Intradermal (ID) injection:**

Intradermal (ID) - under the epidermis (into the dermis). Intradermal injections are more challenging to administer than subcutaneous or intramuscular injections because you want to avoid injecting substances too deep into the skin.

Intradermal injections are a method of introducing a substance (allergen, vaccine or other) under the top layer of the skin.

**Purpose of Intradermal drug administration:**

This route is mainly used for most often in tuberculosis screenings known as purified protein derivative or PPD testing.

This site is also used for allergy testing, where a small amount of suspected allergen is injected.

Both PPD and allergen testing requires monitoring for a reaction.
Sites for intra-dermal injection:

Common site of intradermal injections are inner forearm, dorsal forearm, upper back or upper chest. Choose your site carefully. The site should be free from bruising, rash or other lesions.

Steps of Intra-dermal injection procedure:

All the steps from hand washing to disposal of articles are similar to I/M Injection. The variations and important points are as:

1. Review medication orders, and check for drug allergies.
2. Wash hands, and put on gloves.
3. Identify client by checking armband.
4. Use a tuberculin or 1 cc syringe and 25-27 gauge, 3/8 - 5/8 inch needle.
5. Amount to be injected is usually 0.01 - 0.1 cc
6. Wipe site with alcohol in a circular motion to cleanse. Allow the alcohol to dry before performing the injection.
7. The preferred site for intra-dermal injections is the anterior (palm side) forearm halfway between the wrist and elbow. Do not touch the injection site once it has been cleaned.
8. Pull the skin taught from about one inch under the injection site. Insert needle, with bevel facing upward, at angle of 10 - 15°. You should feel some resistance and the needle should be easily visible under the skin. If not, the needle is likely too deep and should be pulled back.
9. Advance needle until entire bevel is under skin.
10. It is possible to tear the skin during an intra-dermal injection. Keep the needle as steady as possible and caution the patient to remain still during administration.

11. Slowly inject medication to form small bleb or wheal.

12. Remove the needle at the same angle in which it was inserted.

13. Use a cotton ball or pad, to cover the area until any wound weeping stops but do not press or rub.

14. Caution the patient to avoid rubbing the area.

**Post injection Patient Care:**

Apply gentle pressure to the site, using a dry gauze pad, if necessary. Do not rub the site. Continue pressure if bleeding occurs, and apply a bandage, if necessary. Replace the patient's clothing and allow the patient a 5-minute rest period. Then encourage the patient to walk about to enhance absorption of the medication.

The other important points are:

1. In an allergen test, the marking around the bleb to identify any difference in indurations size is essential. It is essential to mark the name of drug, quantity injected, and date and time of testing.

2. If this is an allergen test, the patient should remain close by and the site will need monitoring for reaction.

3. Tuberculin tests are generally examined in 24 to 48 hours after administration.

4. Be prepared to treat anaphylaxis immediately. Report any potential signs and symptoms for anaphylaxis such as any rash, difficulty breathing, dizziness or swelling of the face or hands.
REFERENCES


Definition of parenteral drug administration: Parenteral administration involves giving drug by a route through injection into body tissues.

Injection methods:

a. Intramuscular Injection.

b. Subcutaneous (Hypodermic) Injection.

c. Intradermal Injection. The drug is injected into the upper layers of the skin, rather than under the skin as in a subcutaneous injection. Minute amounts (0.1ml) and less are given intradermally.

Intramuscular injection (IM): The drug is injected into a muscle, usually in the buttocks, sometimes in the upper arm or the thigh. The needle is inserted at a 90 degree angle to the skin, through the skin and subcutaneous tissue into the underlying muscle.
Subcutaneous (hypodermic) injection (SQ): The drug is injected by syringe and needle into the tissues just beneath the skin. The needle is inserted at a 45 degree angle to the skin.

Intradermal injection (ID): The drug is injected into the upper layers of the skin, rather than under the skin as in a subcutaneous injection. Minute amounts (0.1 ml) and less are given intradermally.

INSTRUMENTS (EQUIPMENT) USED TO ADMINISTER PARENTAL INJECTION:

Administering medicine by injection requires needles and syringes that are sterile, accurate in measuring dosages, and convenient to use. Using the correct equipment for injection will minimize discomfort or danger to the patient.

The needle:
The needle is a tube with a cutting edge that punctures beneath the protective area of the skin. It is made of steel or other metal and is generally disposable. The parts of a needle consist of a lumen (cavity through which medication flows), bevel (slanted tip/cutting edge), hub, and cannula (shaft) (see figure -2). The needle come packaged in individual or some needles are preattached to standard size syringes.

![FIG -2 PARTS OF A NEEDLE](image)
The needle comes in standard lengths from 1/4 inch to 5 inches. The length is determined by measuring from the tip of the point to the junction of the shaft. The choice of length depends on the route ordered for administration and client size and weight. The choice of needle gauge depends upon the thickness (viscosity) of the medication. The gauge (G) is indicated by numbers 14 to 27. The higher the gauge (size) number, the smaller the diameter of the needle. A small gauge is needed for viscous medications; a large gauge is needed for "thin" or watery medications. IM (Intramuscular) injection requires 19 G to 23 G 1 to 1 ½ inch long needle, SQ (Subcutaneous) injection requires smaller diameter needle 25 G. ID (Intradermal) injection requires 26 to 27 G needle. The hub of the needle has international color coding as per their gauge and length. (See figure -3) for easy identification of needle size.

27 G= Grey; 26 G= Cream; 25 G= Orange; 24 G= White; 23 G= Deep blue; 22 G= Black
21 G= Deep green; 20 G= Yellow; 19 G= Brown; 18 G= Pink.

FIG -3 DIFFERENT SIZE NEEDLES WITH COLOR CODING

The syringe:

The syringe is the instrument used for injecting liquids. It consists of a barrel, plunger, and Tip (needle adapter) that attaches to the needle (see figure 4). The plunger pushes the medication through the barrel into the needle. The barrel is marked in cubic centimeters/ milliliters (cc/ml).
Classification of syringes:

Syringes are classified as Luer-lock and nonLuer–lock. NonLuer–lock is also called as slip tip. This classification is based on the design of tip of the syringe.

A. **Luer–lock Syringe:** Requires special needle, which are twisted on to the tip and lock themselves in place. This design prevents accidental removal of needle and leakage.

B. **Non Luer –lock Syringe (Sleep tip syringe):** Require needle that slip on to the tip.

C. **Insulin syringe:** Insulin syringes available with calibration in U-100s, U-80s and U-40 / 1ml. Nurse chooses the syringe as per the dose of insulin ordered to client.

D. **Tuberculin syringe:** Has long thin barrel with preattached thin needle. The syringe has a capacity of 1millimeter. The syringe is calibrated in hundredth of millimeter. The syringe is used to prepare and administer small amount of
potent drugs. It is also useful in preparing and administering small precise doses for infants or young children. (see figure- 5)

**FIG-5** A= LUER-LOCK SYRINGE, B= TUBERCULIN SYRINGE, C= INSULIN SYRINGE 100 UNITS, D= INSULIN SYRINGE 50 UNITS

**Steps for assembling needle and syringe:**

**Determine Type of Medication and Route of Injection.** This step is to determine the type of needle and syringe needed.

**Perform Patient Care Hand wash:** Wash hands according to instructions provided by institutional policy.

**Gather Required Equipment:** As per the requirement gather the appropriate equipment.

**Inspect Packaging for Defects.** Check the package if it has any holes or opened. Discard the package and obtain sterile equipment.
Unpack the Syringe: Remove the syringe from its packaging without contaminating any sterile parts. The sterile parts of the syringe are the needle adapter and the shaft of the plunger, which goes into the barrel. Hold the syringe with plunger seal. Contamination could cause infection to the patient.

Syringe in flexible wrapper:
(a) Peel the sides of the wrapper apart to expose the rear end of the syringe.
(b) Grasp the syringe by the barrel with the free hand.
(c) Remove the syringe from the packaging.
(d) Dispose of empty packaging in appropriate receptacle.

Inspect Plunger of Syringe:
(1) Grasp syringe with the non-dominant hand and pull plunger back and forth checking for smooth and easy movement.
(2) Visually check the rubber stopper (inside the syringe) to ensure that it is attached securely to the top end of the plunger, forming a seal. The rubber stopper may become stuck or detached from the top end of the plunger. Damage stopper may leak the medicine from syringe.
(3) Discard the syringe and select another if the plunger is stuck or does not move smoothly. Repeat steps through above.

Unpack Needle: Remove the needle from its packaging without contaminating it. Any contamination of the needle may cause infection to develop in the patient.
(1) Peel the sides of wrapper apart and expose the rear end of the needle.
(2) Grasp the cover of the needle and remove from wrapper, taking care not to touch the hub.
(3) Discard the empty wrapper in the appropriate place.
**Assemble Needle and Syringe:**

(1) Remove the protective cover from the needle adapter on the syringe. Holding the syringe in the non-dominant hand and the needle by the protective cover in the dominant hand, insert the needle adapter into the needle hub.

(2) Tighten the needle with a one-fourth turn to ensure that it is attached securely to the needle hub.

(3) Do not touch the needle adapter or the hub to avoid contamination of the sterile surface.

**Remove Protective Cover from Needle:**

(1) Hold the needle and syringe in an upright position.

(2) Grasp the protective cover with the non-dominant hand.

(3) Pull the protective cover from the needle straight off with an upward motion. Do not use a twisting motion as this may cause the needle to come off the needle hub.

**Inspect Needle:**

(1) Visually inspect the needle for the following flaws:

   (a) Burrs: Rough edges on the needle that could tear the patient’s skin during the injection.

   (b) Barbs. Hook-like edges that extend away from the needle edge and could cause injury to the patient.

   (c) Needle damage: Bent or broken needle.

   (d) Contamination: Rust or foreign particles on needles.

(2) If the needle has any of these defects, discard and obtain a sterile needle.

**Replace Cover:** Place the protective cover back onto the needle.
Place Assembled Needle and Syringe on Work Surface:

(1) Leave the protective cover on the needle.

(2) Leave the plunger pushed fully into the barrel.

(3) Put the assembled needle and syringe in a convenient place on the working surface.

(4) Keep the assembled needle and syringe continually within range of vision.

**NOTE:** When you assemble a needle and syringe, you are responsible for maintaining sterility of the equipment.

Solve the exercise given.
SELF-TEST

UNIT - 1

Exercise:

1. Parenteral drug administration is defined as:

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

2. What are the three methods of administering injections?

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

3. The gauge of needles goes from _________ to ________ with the highest number being the ______________ needle.

4. A small gauge needle is needed for ______________ medications and a large gauge needle is needed for ______________ medications.

5. Hub color of 23 gauge needle is: ______________.

6. The function of syringe barrel is: ______________.
7. The Insulin syringe is calibrated in ______ per millimeter.

8. The Tuberculin syringe is calibrated ______ of millimeter.

9. The size of the syringe used depends upon:

__________________________________________________________________.

10. What length needle should you use for a subcutaneous injection?

__________________________________________________________________

11. What length needle should you use for an intradermal injection?

__________________________________________________________________

12. What length needle should you use for an intramuscular injection?

__________________________________________________________________

13. What should you do first to assemble the needle and syringe?

__________________________________________________________________

14. If a needle has burrs, what should you do with it?

__________________________________________________________________

15. While holding the syringe, which part of the syringe you can touch?

__________________________________________________________________
WORK BOOK

UNIT-3

IDENTIFICATION OF SITES FOR INJECTIONS

General criteria for selection of site for any mode of parenteral drug administration.

How to Choose an Intramuscular Injection Site:

Introduction:

Four sites can be used to give an intramuscular injection. Choosing the proper site is necessary for proper absorption of the medicine and avoidance of injury. Use a site on your body that has a large, easily markable muscle and has little fatty tissue covering it.

Make sure to palpate the muscle before doing the injection to make sure that the muscle can support the medication to be delivered. As always, healthcare provider recommends a particular muscle or site, use that site.

Consideration in deciding which injectable site is to be used for the prescribed medication:

Determining which site is most appropriate will depend upon the patient's muscle density at each site, the type and nature of medication you wish to administer, and of course the patient's preferred site for injections.
SITES FOR INTRA-MUSCULAR INJECTIONS:

DELTOID MUSCLE

The deltoid muscle located laterally on the upper arm can be used for intramuscular injections. Originating from the Acromion process of the scapula and inserting approximately one-third of the way down the humerus, the deltoid muscle can be used readily for IM injections if there is sufficient muscle mass to justify use of this site. The deltoid's close proximity to the radial nerve and radial artery means that careful consideration and palpation of the muscle is required to find a safe site for penetration of the needle. There are various methods for defining the boundaries of this muscle.

Technique of locating deltoid site:

1. Locate the lower edge of the acromial process.
2. Insert the needle 1" to 2" below the acromial process at a 90-degree angle.

OR

Another method to Locate: One - two finger breadths below the Acromion process

Adult: Up to 1ml volume can be injected

Child 3-15: Up to 0.5 ml volume can be injected, Birth to
3 years not recommended. The figure below demonstrates deltoid site of injection.

FIGURE 2  LOCATION OF INJECTION SITE ON DELTOID

FIGURE 3  ADJACENT STRUCTURE TO DELTOID SITE
- **Vastus Lateralis: Adult**
  - **To Locate:** One-hand width below the proximal end of the greater trochanter and one-hand width above the top of the patella (knee cap)
  - **Volume:** Up to 2.5ml per injection
  - ~May give multiple injections – 1 inch apart
    (limit to 2 injections/site)

**VASTUS LATERALIS MUSCLE**

The vastus lateralis muscle forms part of the quadriceps muscle group of the upper leg and can be found on the anteriolateral aspect of the thigh. This muscle is more commonly used as the site for IM injections as it is generally thick and well formed in individuals of all ages and is not located close to any major arteries or nerves. It is also readily accessed. The middle third of the muscle is used to define the injection site. This third can be determined by visually dividing the length of the muscle that originates on the greater trochanter of the femur and inserts on the upper border of the patella and tibial tuberosity through the patella ligament into thirds. Palpation of the muscle is required to determine if sufficient body and mass is present to undertake the procedure.

**Vastus lateralis site:** The vastus lateralis site used for deep IM and Z-track injections. Up to 5ml can be administered. The muscle forms part of the quadriceps femoris group of muscles and is located on the outer side of the femur. It is found by measuring a hand’s breath from the greater trochanter and the knee joint, which identifies the middle third of the quadriceps muscle. There are no major blood vessels or structures which could cause an injury in this area.
To Locate Vastus Lateralis in adult: Keep one-hand width below the proximal end of the greater trochanter and one-hand width above the top of the patella (knee cap).

- Volume: Up to 2.5ml per injection
- Multiple injections may be administer – 1 inch apart (limit to 2 injections/site)

FIGURE 4 VASTUS LATERALIS SITE FOR INJECTION

FIGURE 5 DEMONSTRATE THE INJECTION SITE
• In Infant/Toddler Vastus Lateralis is located by gently pinching the side of thigh, between hips and knee. Volume of injection is: 1ml to 2 ml per injection. May give multiple injections – 1 inch apart (limit to 2 injections/site).

![Figure 6: Demonstrate the Injection Site in Infant](image)

**FIGURE 6** DEMONSTRATE THE INJECTION SITE IN INFANT

**Rectus femoris site:**

This site is used for deep IM and Z-track injections. Between 1-5ml can be injected, although for infants this would be 1-3 ml. The rectus femoris is a large and well-defined muscle and is the anterior muscle of the quadriceps. It is located halfway between the superior iliac crest and the patella.

![Figure 7: The Landmarks and Adjacent Structure of Vastus Lateralis and Rectus Femoris](image)

**FIGURE 7** THE LANDMARKS AND ADJACENT STRUCTURE OF VASTUS LATERALIS AND RECTUS FEMORIS
Technique of locating Vastus lateralis and rectus femoris sites:

- Find the lateral quadriceps muscle for the vastus lateralis, or the anterior thigh for the rectus femoris.
- Insert the needle at a 90-degree angle into the middle third of the muscle, parallel to the skin surface.

THE GLUTEUS MEDIUS MUSCLE (Technique of locating Ventrogluteal site)

The gluteus medius muscle, which is also known as the ventrogluteal site, is the third commonly used site for IM injections. The correct area for injection can be determined in the following manner. Place the heel of the hand of the greater trochanter of the femur with fingers pointing towards the patient's head. The left hand is used for the right hip and vice versa. While keeping the palm of the hand over the greater trochanter and placing the index finger on the anterior superior iliac spine, stretch the middle finger dorsally palpating for the iliac crest and then press lightly below this point. The triangle or “V” is formed by the iliac crest, the third finger and index finger this forms the area suitable for intramuscular injection. The injection is then given into the gluteus medius muscle, which is the centre of the “V”. See the figure below:
THE GLUTEUS MAXIMUS MUSCLE (Technique of locating Dorsogluteal site)

The upper outer quadrant of this area must be used to avoid any damage to the sciatic nerve.

This area is used for deep IM and Z-track injections. Up to 4ml can be injected into this muscle. Commonly referred to as the outer upper quadrant, it is located by using imaginary lines to divide the buttocks into four quarters. To identify the gluteus maximums, picture a line that extends from the iliac spine to the greater trochanter of the femur. Draw a vertical line from the midpoint of the first line to identify the upper aspect of the upper outer quadrant. High risk of hitting sciatic nerve, blood vessel or bone, not recommended. Needle: 1 – 1.5in, Volume of injection -4ml, Prone position toes pointed inward.
Palpate posterior iliac spine & draw imaginary line to the greater trochanter of femur-
This line is lateral & parallel to the sciatic nerve, the injection site is lateral & superior to
this line. Do not do visual calculation*Visual calculation alone can result in an injection
placed too low!

FIGURE 9 THE IMPORTANT LANDMARKS FOR DORSOGLUTEAL SITE OF
INJECTION
IDENTIFICATION OF SITES FOR SUBCUTANEOUS INJECTION (SQ)

Common sites for SQ injections are Back of upper arm, Hips, Buttocks, Thighs, Abdomen.

FIGURE 10 SITES FOR SUBCUTANEOUS INJECTION
IDENTIFICATION OF SITES FOR INTRADERMAL INJECTION (ID)

Location site for ID injection is: Anterior portion of the lower arm

(common)

FIGURES 11 THE INTRADERMAL INJECTION SITES.

Solve the exercise given.
SELF-TEST

UNIT - 3

Exercise:

1) Identify and write down the most common sites for SQ injection.

_____________________________________________________________________

2) Identify and label the site of injection and adjacent land marks in the following given picture

3) Why is the above said site is not recommended ?

_____________________________________________________________________

374
4) Name the common site for Intradermal injection.

_________________________________________________________________

5) Identify and label the site of injection and adjacent land marks in the following given picture

6) Identify and label the site of injection and adjacent land marks in the following given picture.

7) The volume of medicine that can be injected in the injection site given above
8) Why the above site is considered as safe site for injection

9) Name the site of injection and adjacent landmarks in the following given picture.

10) The volume of medicine that can be injected in the site given above

11) Why this site has lowest absorption rate

12) Why to give prone position to the patient while giving Dorsogluteal injection?
ANNEXURE 10
**EXPERIMENTAL GROUP BASELINE DATA**

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**PRE** Pre-requisite knowledge test  
**SDRC** Short Duration Retention cognitive  
**LDRC** Long Duration Retention Cognitive  
**SC** Summative cognitive  
**SDRIM** Short Duration Retention Intramuscular  
**LDRIM** Long Duration Retention Intramuscular  
**SIM** Summative Intramuscular  
**SDRSC** Short Duration Retention Subcutaneous  
**LDRSC** Long Duration Retention Subcutaneous  
**SSC** Summative Subcutaneous  
**SDRID** Short Duration Retention Intradermal  
**LDRID** Long Duration Retention Intradermal  
**SID** Summative Intradermal
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**Legend:**
- **PRE**: Pre-requisite knowledge test
- **SC**: Summative cognitive
- **SIM**: Summative Intramuscular
- **SSC**: Summative Subcutaneous
- **SID**: Summative Intradermal
- **SDRC**: Short Duration Retention cognitive
- **SDRIM**: Short Duration Retention Intramuscular
- **SDRSC**: Short Duration Retention Subcutaneous
- **SDRID**: Short Duration Retention Intradermal
- **LDRC**: Long Duration Retention Cognitive
- **LDRIM**: Long Duration Retention Intramuscular
- **LDRSC**: Long Duration Retention Subcutaneous
- **LDRID**: Long Duration Retention Intradermal