FastTrack Advanced Placement Handbook

Tarrant County College | Trinity River East Campus |Office: TRHA 5111D
245 E. Belknap Street | Fort Worth, Texas 76102

CONTENTS

Introduction

Purpose

The purpose of this handbook is to give the potential candidate as much information as possible as early as possible in the application process in order to make informed decisions, and arrange a schedule conducive to study, practice, testing, and orientation.

Tarrant County College
Department of Nursing
Trinity River East Campus

245 East Belknap Street • Fort Worth, Texas 76102 • 817-515-2453 • Fax 817-515-0654

Dear Prospective Fast Track AAS-Nursing Program Candidates,

On behalf of the Tarrant County College School of Nursing, it is my pleasure to extend a warm welcome to you as you embark on the exciting journey of exploring our esteemed Fast Track AAS-Nursing Program. I am delighted that you are considering joining our academic community, renowned for its commitment to academic excellence, innovative learning experiences, and a steadfast dedication to shaping the next generation of nursing professionals.

We pride ourselves on fostering an environment that values inclusivity, diversity, and the pursuit of knowledge. Our Fast Track AAS-Nursing Program is designed to provide a comprehensive and accelerated pathway for individuals seeking to expand their horizons in the field of nursing. Our curriculum is crafted to equip you with the necessary tools, skills, and knowledge essential for a successful career in nursing.

At Tarrant County College School of Nursing, our faculty members, renowned for their expertise and dedication, are committed to guiding and supporting you every step of the way. We believe in a holistic approach to education, emphasizing not only academic rigor but also the cultivation of critical thinking, compassionate care, and effective communication skills.

As Divisional Dean, I am personally committed to ensuring an enriching and rewarding academic journey for each student. My door is always open, and I encourage you to take full advantage of the resources available, engage with our vibrant community, and embrace the opportunities that await you here.

We are here to assist you in making an informed decision about your educational aspirations. Please do not hesitate to reach out to our admissions team should you have any questions or require further information about the program.

Your determination to pursue nursing as a career is commendable. I am confident that Tarrant County College School of Nursing will provide the ideal platform for your success.

I extend my best wishes to you as you embark on this exciting chapter of your academic and professional life. Thank you for considering Tarrant County College School of Nursing. We enthusiastically anticipate the possibility of welcoming you to our community.

Sincerely,

Dr. Nikolaos Moraros, EdD, MSHSA, MSN, RN, PHN

Dr. Nikolaos Moraros, EdD, MSHSA, MSN, RN, PHN
Divisional Dean of Nursing
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Timeline

• Application period opens.
  ○ Application packet includes this packet containing important information such as:
  • Medication Administration Competency aka Dosage Calculation aids
  • ATI RN Content Mastery Series: Fundamentals (ATI) topics and resources
  • Clinical Skills Rubrics
• Application period closes.

• Students receive “conditional” acceptance based on rank.
• Open lab available for practice M-F 8:00AM – 5:00PM based on availability.
• Obtain Laerdal Modular Skills Trainers from FastTrack Coordinator
• TCC Student Handbook and TCC Nursing Student Guidelines emailed to candidates and acknowledgement thereof submitted.
• Students begin satisfying BON requirements.
  ° Background Check
  ° Blue cards

• Optional Two (2) day Dosage Calculation Enrichment experience • Optional IV and NGT Skills Review enrichment experience

• Students take the ATI Dosage Calculation Exam in the TCC Testing Center. Passing 90% required.
  ° If unsuccessful on DCE, students will be considered for the traditional ADN program based on original ranking.
  ° Students who score greater than 90% on the Dosage Calculation Exam will sit for the Foundations Comprehensive Exam.
• Students take the ATI Foundations Comprehensive Exam in the TCC Testing Center. Level II passing required.
  ° If unsuccessful on ATI, students will be considered for the traditional ADN program based on original ranking.
  ° Students who score Proficiency Level II or greater on the ATI will move forward to Skills Competency Validation.
• Open lab available for practice based on availability.

• Students attempt Clinical Competency Testing.   • If successful on ATI and DCE but unsuccessful on clinical competency, students will be considered for the traditional ADN program based on original ranking
• Orientation (Required) w incoming traditional students
• Students notified of full acceptance

If students successfully complete the DCE, the ATI RN Content Mastery Series: Fundamentals, and the Clinical Competency Testing, PLA credits will be awarded for RNSG1413 (4 hours), RNSG1360 (3 hours), and RNSG1105 (1 hour) - a credit of 8 semester hours and will be eligible to start the spring semester by taking:

- RNSG1441 Common Concepts of Adult Health
- RNSG1461 Clinical - Registered Nursing / Registered Nurse
- RNSG1201 Pharmacology

Section One: Medication Administration Competency Testing

DOSAGE CALCULATION 3.1 PROCTORED ASSESSMENTS

Test Descriptions

Dosage Calculation: Fundamentals – This 35-item assessment addresses drug calculations and conversions used when providing basic care for clients with subacute or chronic disorders. Items reflect a client focus based on supporting basic physiological needs including oxygenation; circulation; fluid, electrolyte and acid-base balance; elimination; nutrition; sleep; and comfort. Each assessment may not represent all of these basic needs.

Tarrant County College
Division of Nursing

Dosage Calculation Rules & Conversions

Students must adhere to the following rules:

- **Show** all calculations.
- **Apply** the accepted equivalents of measure provided in the table.
- **Place** a "0" **preceding** all decimal doses (ex: 0.5). No trailing zeros (5.0 - this is incorrect).
- IV problems expressed as drops per minute will be rounded to the whole number. Example: 12.4 gtts / min is expressed 12 gtts / min & 12.8 gtts / min is expressed 13 gtts / min. (Not applicable to Pediatrics)
- Dosage Problems on the Exam will state to carry to the 1st or 2nd decimal place and to round to the 1st or 2nd decimal place. No rounding until the final answer.
- Answers may be expressed as decimals or fractions.

In administering medications in the clinical setting the student learns to "think like a nurse" based on:

- The mathematical answer to the problem.
- The medication to be administered.
- *The equipment to be used.*

These variables may change in different clinical settings. (Example: 1.8 tablets, the nurse administers 2 tablets).

ACCEPTED MEASUREMENTS AND CONVERSIONS

METRIC	**Abbreviations**: Liter- L Milliliter - mL Gram - g Milligram - mg Microgram - mcg Kilogram - kg Ounce – oz Pound - lb Grain – gr Drops- gtts Teaspoon – tsp Tablespoon - Tbsp	**Equivalencies**: 1 L = 1000 mL 1 g = 1000 mg 1 mg = 1000 mcg 1 kg = 1000 g 1 kg = 2.2 lbs 1 lb = 16 oz 1 oz = 30 mL 1 gr = 60 mg 5 mL = 1 tsp 15mL = 1 Tbsp 1 inch = 2.54 cm micro gtts/mL =60 gtts	
METRIC	**Volume**: Liter Milliliter	**Weight**: gram milligram microgram kilogram	**Length**: centimeter
NUMBERS	**ROMAN** I V X C	**ARABIC** 1 5 10 100	
APOTHECARY	**Volume**: Ounce	**Weight**: grain pound	

Revised by Curriculum 11/2016

Tarrant County College
Associate Degree Nursing

Dosage Calculation Blueprint Example

ATI Exam = 35 Questions

One Factor Calculations **Unit conversions & equivalencies & labels**		
tablets; capsules; mL; oz; kg; lb; mg; mcg; tsp; tbs; grams		
Two Factor Calculations **Solving for 2 factors or 2 units**		
mcg / mL mg / mL mg / tab	mg / day mg / dose mg / kg	mg / caps mL / kg
Three Factor Calculations **Solving for 3 factors or 3 units**		
mg / kg / min mg / kg / day	mg / kg / hr mg / kg / dose	mL / kg / day mL / kg / hr
Reconstitution		
Process of diluting a concentrate		
IV Flow Rates		
gtts / min	units / mL	mL / hr
Therapeutic / Safe Dose Range		
Minimum & maximum safe medication doses		
IV Titration		
mcg / kg / min		
Daily Fluid Volume		
Intake and Output		

Revised 11/20/20

Additional Dosage Calculation Resources

- dosagehelp.com
- nurseslabs.com
- learningnurse.org
- registerednursern.com

Dosage Calculation Tutorial

DOSAGE CALCULATION: BASED ON CD (VERSION 1) BY T. LUONG & T. UMEBAYASHI, SPRING 2014

Calculating Dosages for Reconstituted Drugs

Sample Question 1

Vancomycin (Antibiotics) 1000 mg has been ordered. Vancomycin is supplied as a powder in a vial. The directions on the vial label state "reconstitute with 3.3 mL of normal saline. Each mL will contain 250 mg of Vancomycin after reconstitution."

How many mL will you give?

Focus on a key sentence in this question. Label states each mL will contain 250 mg of Vancomycin.

- If 250 mg dosage ordered, how many mL will you give?

mL	250 mg	**1 mL**
250 mg	1 pt dose	**dose**

- If 500 mg dosage ordered, how many mL will you give?

mL	500 mg	**2 mL**
250 mg	dose	**dose**

- If 1000 mg dosage ordered, how many mL will you give?

mL	1000 mg	**4 mL**
250 mg	dose	**dose**

Key Point

- Do not confuse with the amount of diluent added into the vial.
- Even though you have added diluent into the vial, the reconstituted volumes **do not** always exactly equal the amount of diluent because of the volume of the medication.
- **Medication (Powder) + Diluent = Diluent**

Sample Question 2

Clindamycin 750 mg is ordered. Clindamycin is supplied as a powder in a vial. Directions on the vial state "add 10 mL of sterile water for injection for a concentration of 100 mg/mL." How many mL will you give?

- What is the unit of measure being calculated in this question? **[mL]**
- Which ratio contains mL in this question? **[100 mg/mL]**
- Which ratio contains mg to cancel mg in 100 mg/mL (Numerator)? **[750 mg/dose]**

Key Point

- Even though information of how much diluent you need to add is provided in this question, you do not need to use the volume of the diluent to find the answer.
- Pay attention to the concentration of the medication after the reconstitution.

Sample Question 3

Protonix 40 mg is ordered. Protonix is supplied as a powder in a vial. Directions states "add 10 mL of 0.9% NaCl for injection for a concentration of 4 mg/mL". How many mL will you give?

- What is the unit of measure being calculated in this question? **[mL]**
- Which ratio contains mL in this question? **[4 mg/mL]**
- Which ratio contains mg to cancel mg in 4 mg/mL (Numerator)? **[40 mg/dose]**

Practice Questions

1. Unasyn 1 g IM is ordered. The label states: add 3.8 mL of sterile water for injection to yield 250 mg/mL. How many mL will you give?

mL	1000 mg	1 g	**4 mL**
250 mg	g	1 dose	**dose**

2. Rocephine 500 mg IM has been ordered. The package states: add 1.7 mL of diluent for a concentration of 250 mg/mL. How many mL will you give?

mL	500 mg	**2 mL**
250 mg	1 dose	**dose**

3. MD ordered Ampicillin 1 g IM. Label states: Add 3.4 mL of sterile water for injection to yield 250 mg in 1 mL. How many mL will you give?

mL	1000 mg	1 g	**4 mL**
250 mg	g	1 dose	**Dose**

4. Levothyroxine 0.25 mg IV has been ordered. Label states: Reconstitute with 5 mL of 0.9% sodium chloride for a concentration of 40 mcg/mL. How many mL will you give?

mL	1000 mcg	.25 mg	**6.3 mL**
40 mcg	mg	1	

Calculating IV Flow Rate (gtt/min)

Tetsuya Umebayashi, MSN, RN

Gtt/min

To calculate the gtt/min rate, the following information will be necessary.

a) the tubing drop factor (macro drip or micro drip) or the number of gtt/mL (this number should be provided in each question)
b) the prescribed infusion rate in mL/hr

- Tubing drop factor (macro drip or micro drip)
- Macro drip (Size of each drop is larger than micro drip)
  - 10 gtt/mL
  - 15 gtt/mL (*most common*)
  - 20 gtt/mL
- Micro drip
  - 60 gtt/mL

Sample Question

1000 mL of lactated Ringer's is to infuse over 8 hrs. The set calibration is 15 gtt/mL. How many gtt/min?

- You may already notice a difference from the previous dimensional analysis questions.
- This question has 2 different units of measure being calculated: They are *gtt* and *min* [drops per minute]

Units of Measure Being Calculated:

$$\frac{\text{gtt}}{\text{min}}$$

(Even though there are 2 values, the steps of calculation will be exactly the same as previous dimensional analysis calculations)

Step 1

- Begin with the ratio that contains gtt and place it as the numerator (as the calculated measure wants/calls for).

$$\frac{15\text{ gtt}}{\text{mL}}$$

Step 2

- The denominator in the first ratio written in step one contains *mL*. To cancel it, the next numerator must contain *mL*. The problem tells us that 1000 mL fluid will be delivered over 8 hours, so use those values as the next ratio.

15 gtt	1000 mL
mL	8 hr

Step 3

Since the denominator in the new ratio is hours, and we want minutes in order to answer the question, the next ratio needs to have hours on top. If the problem doesn't provide another ratio with hours, then use a conversion factor or an equivalency. (*1 hour is equivalent to 60 minutes*)

15 gtt	1000 mL	1 hr
mL	8 hr	60 min

Step 4

Now that the only non-cancelled numerator is gtt (as we want) and the only non-cancelled denominator is minutes (also as we want), no more ratios need to be added. It is time for math. Multiply all numerators, then all denominators. Then divide the numerator by the denominator.

15 gtt	1000 mL	1 hr	**15 gtt * 1000 * 1**
mL	8 hr	60 min	**1 * 8 * 60 min**

15000 gtt / 480 min = 31.25 gtt/min (*not done*)

Step 5

NO PARTIAL MACRO DROPS! Round to the whole number. (Ex: 12.*4* gtts/min is 12 gtts/min & 12.*8* gtts/min is 13 gtts/min).

ANSWER: **31 gtt/min**

IV Drop Rate Practice Questions

1. A volume of 1500 mL is to infuse in 10 hours using a Micro drip. How many gtt/min will you set?

60 gtt / mL	1500 mL / 10 hr	1 hr / 60 min	**150 gtt / min**

2. An IV of 500 mL is ordered to be infused in 12 hours using 15 gtt/mL set. How many gtt/min will you set?

15 gtt / mL	500 mL / 12 hr	1 hr / 60 min	**10 gtt / min**

3. An IV of 1000 mL is ordered to be infused at 150 mL/hr using 10 gtt/mL set. How many gtt/min will you set?

10 gtt / mL	150 mL / hr	1 hr / 60 min	**25 gtt / min**

4. A 50 mL IVPB need to be infused over 15 minutes using 60 gtt/ml set. How many gtt/min will you set?

60 gtt / mL	50 mL / 15 min	**200 gtt / min**

5. An IV of 1000 mL was scheduled to run over 10 hours. After 5 hr, only 350 mL have infused. The set calibration is 15 gtt/mL. Recalculate the rate for the remaining solution.

15 gtt / mL	(1000-350) mL / (10-5) hr	1 hr / 60 min	**33 gtt / min**

Calculating Dosages Based on Body Weight

Body weight is one of the factors to influence the dose of medications that nurses are going to give to specific individuals. It is the nurse's responsibility to calculate the medications correctly as well as make sure that the dose is safe to give.

Medication Based on Body Weight

"*Gentamycin 60mg/kg is ordered*"

(Note: The / slash actually means per; this is not a division problem, it is a multiplication problem; this means that we are to give 60 mg of a drug per every 1 kg of body weight)

Example: *Vancomycin 10 mg/kg is ordered. If the patient weighs 10 kg, how many mg will you give?*

The question asks for mg. So, begin with mg as the numerator. Look for a ratio in the problem with mg. If none, use an equivalency. 10mg/kg can be used. To cancel kg, use the equivalency of one patient equals 10 kg.

10 mg / kg	10 kg / patient	**20 mg / Patient**

Read as: 20 milligrams per patient.

Converting lb to kg:

If body weight is provided in lb in a question, but the medication literature lists dosage/kg, a conversion from lb to kg will be mandatory in the calculation.

How many lb in 1 kg? 2.2 lb

Let's use Dimensional Analysis to convert lb to kg

Convert the weight of a 160 lb client to kg.

1 kg / 2.2 lbs	160 lbs / Patient	**76.7 kg / patient**

Convert the weight of 78 lb client to kg.

1 kg / 2.2 lbs	78 lbs / Patient	**35.5 kg / patient**

Key Point: kg weights are always smaller than lb weights = lb weights are always larger than kg weights.

Extra Practice Questions Part 1

1. Convert the weight of a 245 lb client to kg

Kg	245 lb	**111.4 kg**
2.2 lb	Pt	

2. Convert the weight of a 132 lb client to kg

Kg	132 lbs	**60 kg**
2.2 lbs	Pt	**pt**

3. Convert the weight of a 34 lb client to kg

Kg	34 lb	**15.5 kg**
2.2 lbs	pt	**pt**

4. Convert the weight of a 100 lb client to kg

Kg	100 lb	**45.5 kg**
2.2 lbs	Pt	**pt**

5. Convert the weight of a 177 lb client to kg

Kg	177 lb	**80.5 kg**
2.2 lbs	Pt	**pt**

6. Convert the weight of a 71 lb client to kg

Kg	71 lb	**32.3 kg**
2.2 lbs	pt	**Pt**

Calculate Medication Based on Weight

MD orders Ancef (Antibiotics) 15 mg/kg IV x 1. The patient weights 150 lbs. How many mg should the patient receive?

Use dimensional analysis to find the answer:

15 mg	1 kg	150 lbs	**1022.7 mg**
kg	2.2 lbs	patient	**patient**

Extra Practice Questions Part 2

1. Zithromax 15 mg/kg is ordered. The patient weighs 45 lb. The available dose is 200 mg per 5 mL. How many mL will you give?

5 mL	15 mg	Kg	45 lbs	**7.7 mL**
200 mg	kg	2.2 lbs	patient	**patient**

2. Zantac 3 mg/kg is ordered. The patient weighs 55 lb. How many mg will you give?

3 mg	Kg	55 lbs	**75 mg**
kg	2.2 lbs	patient	**patient**

3. Digoxin 30 mcg/kg is ordered. The patient weighs 7 lb. The label reads 0.1 mg/mL. How many mL will you give?

mL	mg	30 mcg	Kg	7 lbs	**1 mL**
0.1 mg	1000 mcg	kg	2.2 lbs	pt	**pt**

4. A doctor ordered Lovenox 1 mg/kg SQ bid. The patient weighs 258 lb. How many mg will you give per day?

1 mg	Kg	258 lbs	2 patient doses	**234.5 mg**
kg	2.2 lbs	Patient dose	day	**day**

5. The order for regular insulin is 0.1 unit/kg. The patient weighs 68 kg. How many units will you give?

0.1 units	68 kg	**6.8 units**
Kg	patient	**patient**

6. Ethambutol HCL 15 mg/kg is ordered. The patient weighs 85 lb. How many mg will you give?

15 mg	Kg	85 lbs	**579.5 mg**
kg	2.2 lbs	patient	**patient**

7. Biaxin 7.5 mg/kg PO every 12 hours has been ordered. The child weighs 40 lb. The available dose is 125 mg in 5 mL. How many mL will you give per day?

5 mL	7.5 mg	Kg	40 lbs	2 pt doses	**10.9 mL**
125 mg	kg	2.2 lbs	Pt dose	day	**day**

8. MD ordered Vistaril 0.5 mg/kg IM every 6 hours as needed. If the patient weighs 50 lb, how many mg per dose will you give?

0.5 mg	Kg	50 lbs	**11.4 mg**
kg	2.2 lbs	Patient dose	**pt dose**

Calculating Dosages and Flow Rate for titrated Drugs

Titration – It is adjusting the dose of a medication based on recommended dose range (for example, Tylenol 325 mg to 650 mg) and frequency (every 4 hours to 6 hours) until the desired therapeutic effect (decreased pain level) is achieved. [Nurses should administer the lowest dose of medication initially, and then gradually increase the dose and frequency]

Titrating Intravenous Medication

IV medication may be ordered by dosage (mcg/min) or based on body weight (mcg/kg/min). The medication may be ordered to administer within a specific dosage range [min to max] (for example: 3 to 20 mcg/kg/min)

Calculating Flow Rate for Dosage Ordered

MD ordered Neosynephrine 40 mcg/min. Label on IVPB states: Neosynephrine 4 mg in NS 250 mL. How many mL per hour will you infuse? [You may see medications you have never heard of in this section; ignore the medication name and focus on the dosage]

1. Want = mL/hr (milliliter per hour)
2. Start with mL on top and add ratios until Hr is on bottom.

250 mL	mg	40 mcg	60 min
4 mg	1000 mcg	min	hr

$$\frac{250 \text{ mL} * 40 * 60}{4 * 1000 * \text{hr}}$$

600000 mL	**150 mL**
4000 hr	**hr**

Calculating Flow Rate for Dosage Based on Body Weight

Dobutamine 5 mcg/kg/min is ordered for a client weighing 85 kg. The solution strength is 500 mg in D5W 250 mL. How many mL per Hr will you infuse?

250 mL	mg	5 mcg	85 kg	60 min
500 mg	1000 mcg	kg/min	Pt	hr

$$\frac{250 \text{ mL} * 5 * 85 * 60}{500 * 1000 * \text{pt} * \text{hr}}$$

6375000 mL	**12.8 mL**
500000 hr	**Pt per hr**

Practice Question 1

Dopamine 5 mcg/kg/min is ordered for a client weighing 250 lb. The solution strength is 400 mg in D5W 250 mL. How many mL per Hr will you infuse?

250 mL	mg	5 mcg	kg	250 lbs	60 min
400 mg	1000 mcg	kg/min	2.2 lbs	pt	hr

18750000 mL	**21.3 mL**
880000 hr	**Pt per hr**

Practice Question 2

Integrilin 2mcg/kg/min has been ordered. The client weighs 75 kg. If the solution available is 0.75mg/mL, how many mL per hour will you infuse?

mL	mg	2 mcg	75 kg	60 min
0.75 mg	1000 mcg	kg/min	pt	hr

9000 mL	**12 mL**
750 hr	**Pt per hr**

Calculating Dosages within a Range

Fentanyl 0.5 – 1.5 mcg/kg/hr has been ordered to maintain sedation. The client weighs 132 lb. The available dose is 1000 mcg in 100 mL. Calculate the Flow Rate of medication for the 0.5 – 1.5 mcg range. (Flow rate = mL/hr)

Key Point

Whenever a question asks you to calculate dosages within a range, you must calculate the minimum dosage and the maximum dosage.

What are the minimum and maximum dosages in the question?

Minimum: 0.5 mcg/kg/hr

Maximum: 1.5 mcg/kg/hr

STEP 1: Calculate the flow rate for the minimum dosage first:

100 mL	0.5 mcg	kg	132 lbs
1000 mcg	kg / hr	2.2 lbs	patient

100mL*0.5*132 = 6600 mL	**3 mL**
1000*hr*2.2*pt= 2200 pt/hr	**Patient per hour**

STEP 2: Calculate the flow rate for the maximum dosage second:

100 mL	1.5 mcg	kg	132 lbs
1000 mcg	kg / hr	2.2 lbs	patient

100mL*1.5*132 = 19800 mL	**9 mL**
1000*hr*2.2*pt= 2200 pt/hr	**Patient per hour**

The Flow Rate of medication for the 0.5 – 1.5 mcg/kg/hr is *3 – 9 mL/hr*

Practice Question

Nipride 0.5 – 8 mcg/kg/min has been ordered to keep SBP less than 150. The client weighs 220 lb. The available dose is 50 mg in D5W 250 mL. Calculate the flow rate for Nipride 0.5 to 8 mcg/kg/min.

250 mL	Mg	0.5 mcg	Kg	220 lbs	60 min
50 mg	1000 mcg	Kg/min	2.2 lbs	Patient	hr

250mL*0.5*220*60 = 1650000 mL	**15 mL**
50*1000*2.2*pt/hr = 110000 pt/hr	**Pt per hr**

250 mL	mg	8 mcg	Kg	220 lbs	60 min
50 mg	1000 mcg	Kg/min	2.2 lbs	Patient	hr

250mL*8*220*60 = 26400000 mL	**240 mL**
50*1000*2.2*pt/hr = 110000 pt/hr	**Pt per hr**

The flow rate for 0.5 – 8 mcg/kg/min administered to a patient who weighs 220 lbs is 15 – 240 mL/hr.

Calculating IV Infusion Rate and Time (mL/hr)

Calculating the Infusion Time

MD ordered a dose of NS 1000 mL to be administered at a flow rate of 80 mL/hr. How long does it take to complete? (Want: hr)

Hr	1000 mL	**12.5 hrs**
80 mL	dose	**dose**

Practice Questions

How long does it take to complete?

1. A volume of 1000 mL ordered at 75 mL/hr

Hr	1000 mL	**13.33 hrs**
75 mL	dose	**dose**

[13 hrs 20 min]

2. Albumin 250 mL ordered at 500 mL/hr

Hr	250 mL	**0.5 hrs**
500 mL	dose	**dose**

[30 min]

3. 50 mL IV fluid to run at 125 mL/hr

Hr	50 mL	**0.4 hrs**
125 mL	dose	**dose**

[24 min]

Calculating the Completion Time

Amiodarone IV will be infused in 6 hours. What is the completion time if it was started at 11:45 PM?

1. Change 11:45 PM to military time first
2. 11:45 PM is 2345
3. Add the running time (6 hours) to the time: 2345 + 0600 = 2945
4. Deduct 2400 from 2945 = 0545

1. Integrilin started at 5:32 AM. MD ordered to infuse for 16 hours. What time are you going to stop the infusion?
   0532 + 1600 = 2132 = stop at 9:32 pm

2. An infusion of NS 1000 mL started at 5:10 PM. The infusion rate is 75 mL/hr. What time the infusion will be completed?

Hr	1000 mL	**13.3 hrs**
75 mL	dose	**dose**

   13 hrs and 18 minutes = 1318 infusion duration

   5:10 pm = 1710 + 1318 = 30:28 – 2400 = 0628 = 6:28 am

Calculating Dosages for Pediatric Drugs

Pediatric Intravenous Medication

- Infants and children are incompletely developed physically. Due to this reason, pediatric medication dosages are usually smaller than adult dosages and there is a particular safe range for each medication.
- Nurses must be able to determine whether the amount of a prescribed dosage is within the safe range.

Calculating Safe Range Dosage

- MD ordered Gentamicin 50 mg every 8 hours for a child who weighs 50 lb. The recommended dose is 6-7.5 mg/kg/day divided in 3 equal dosages. Is this ordered dose within safe range?

METHOD 1: Find safe minimum and maximum dosages for the patient:

Step 1: Calculate the minimum recommended daily dosage for this child.

6 mg	Kg	50 lbs	**136.4 mg**
kg/day	2.2 lbs	patient	**Day/pt**

Step 2: Calculate the maximum recommended daily dosage for this child.

7.5 mg	Kg	50 lbs	**170.5 mg**
kg/day	2.2 lbs	patient	**Day/pt**

Step 3: Multiply the prescribed dose to be given every 8 hours by the number of doses ordered in a day (24 hours = 3 doses).

50 mg x 3 times/day = **150 mg/day**

The prescribed amount of 150 mg/day is within the safe range of (136.4 – 170.5 mg/day) for a child weighing 50 lbs.

Key Point

- Every 24 hours = daily = 1 time a day
- Every 12 hours = BID = 2 times a day
- Every 8 hours = TID = 3 times a day
- Every 6 hours = QID = 4 times a day
- Every 4 hours = 6 times a day
- Every 2 hours = 12 times a day

METHOD 2: Determine the mg/kg/day for the patient based upon the ordered dosage and compare it to the safe range:

50 mg	24 hrs	2.2 lbs	patient	**6.6 mg**
8 hrs	day	Kg	50 lbs	**kg/day**

Practice Question 1

- MD ordered Vistaril 40 mg IM every 4 hours prn. The recommended dose is 0.5 - 1 mg/kg/dose every 4-6 hours. Is the ordered dose safe to administer for 45 lb child?

METHOD 1: Recommended for child:

MINIMUM DOSE:

0.5 mg	Kg	45 lbs	**10.2 mg**
Kg/dose	2.2 lbs	patient	**Pt dose**

MAXIMUM DOSE:

1 mg	Kg	45 lbs	**20.5 mg**
Kg/dose	2.2 lbs	patient	**Pt dose**

The ordered dose of 40 mg/4 hrs is not within the recommended safe range of 10.2-20.5 mg/ 4-6 hrs

METHOD 2:

40 mg	2.2 lbs	patient	**2 mg**
dose	kg	45 lbs	**kg/dose**

2 mg/kg/dose is above the safe range limit.

Practice Question 2

- Epivir 150 mg PO BID has been ordered. The recommended dose is 6-10 mg/kg/day. Is this a safe dose for a 38 lb child?

METHOD 1:

6 mg	Kg	38 lbs	**103.6 mg**
Kg/day	2.2 lbs	patient	**day**

10 mg	Kg	38 lbs	**172.7 mg**
Kg/day	2.2 lbs	patient	**day**

Ordered dose is 150 mg BID = total is 300 mg/day

- 300 mg/day is not within 103.6 – 172.7 mg/day range. The ordered dose is not safe.

METHOD 2:

150 mg	2 doses	2.2 lbs	patient	**17.4 mg**
dose	day	kg	38 lbs	**kg/day**

17.4 mg/kg/day is above the safe range.

Practice Problems with Answers

Calculating Medication Dosages - Practice Problems Answers
Using Dimensional Analysis

Problem	Dimensional Analysis
1. Order = gr 3/4 Available = 30 mg tablets Give_____	$x tablets = \frac{1 tab}{30 mg} \times \frac{60 mg}{gr 1} x \frac{gr 0.75}{1} = \frac{45}{30} = 1.5 tablets$ **Give 1.5 tablets**
2. Order = 100 mg Available = 125 mg/5 mL Give_____	$x mL = \frac{5 mL}{125 mg} x \frac{100 mg}{1} = \frac{500}{125} = 4 mL$ **Give 4 mL**
3. Order = 50 mg Available = 80 mg/2 mL Give_____	$x mL = \frac{2 mL}{80 mg} x \frac{50 mg}{1} = \frac{100}{80} = 1.25 = 1.3 mL$ **Give 1.3 mL**
4. Order = 0.5 g Available = 250 mg capsules Give_____	$x capsules = \frac{1 cap}{250 mg} \times \frac{1000 mg}{1 g} x \frac{0.5 g}{1} = \frac{500}{250} = 2 capsules$ **Give 2 capsules**
5. Order = 0.24 g Available = 80 mg per 7.5 mL Give_____	$x mL = \frac{7.5 mL}{80 mg} \times \frac{1000 mg}{1 g} x \frac{0.24 g}{1} = \frac{1800}{80} = 22.5 mL$ **Give 22.5 mL**
6. Order = 20 mg Available = 10 mg per 15 mL Give_____	$x mL = \frac{15 mL}{10 mg} x \frac{20 mg}{1} = \frac{300}{10} = 30 mL$ **Give 30 mL**
7. Order = 35 mg Available = 40 mg/2.5 mL Give_____	$x mL = \frac{2.5 mL}{40 mg} \times \frac{35 mg}{1} = \frac{87.5}{40} = 2.18 = 2.2 mL$ **Give 2.2 mL**
8. Order = 200 mg Available = 0.5 g per mL Give_____	$x mL = \frac{1 mL}{0.5 g} \times \frac{1 g}{1000 mg} x \frac{200 mg}{1} = \frac{200}{500} = 0.4 mL$ **Give 0.4 mL**

Problem	Dimensional Analysis
9. Order = 0.05 mg Available = 50 mcg tablets Give_____	$x tablets = \frac{1 tab}{50 mcg} \times \frac{1000 mcg}{1 mg} x \frac{0.05 mg}{1} = \frac{50}{50} = 1 tablet$ **Give 1 tablet**
10. Order = 100 mg Available = 50 mg capsules Give_____	$x capsules = \frac{1 cap}{50 mg} \times \frac{100 mg}{1} = \frac{100}{50} = 2 capsules$ **Give 2 capsules**
11. Order = 250 mcg Available = 2.5 mg per 2 mL Give_____	$x mL = \frac{2 mL}{2.5 mg} \times \frac{1 mg}{1000 mcg} x \frac{250 mcg}{1} = \frac{500}{2500} = 0.2 mL$ **Give 0.2 mL**
12. Order = 120 mg Available = 0.12g tablets Give_____	$x tablets = \frac{1 tab}{0.12 g} \times \frac{1 g}{1000 mg} x \frac{120 mg}{1} = \frac{120}{120} = 1 tablet$ **Give 1 tablet**
13. Order = 1 g Available = 1000 mg tablets Give_____	$x tablets = \frac{1 tab}{1000 mg} \times \frac{1000 mg}{1 g} x \frac{1 g}{1} = \frac{1000}{1000} = 1 tablet$ **Give 1 tablets**
14. Order = Lanoxin 0.25 mg Available = Lanoxin 0.125 mg/tablet Give_____	$x tablets = \frac{1 tab}{0.125 mg} \times \frac{0.25 mg}{1} = \frac{0.25}{0.125} = 2 tablets$ **Give 2 tablets**
15. Order = Morphine gr 1/200 Available = Morphine 2 mg/mL Give_____	$x mL = \frac{1 mL}{2 mg} \times \frac{60 mg}{gr 1} x \frac{gr 0.005}{1} = \frac{0.3}{2} = 0.15 = 0.2 mL$ **Give 0.2 mL**
16. Order = Digitoxin 0.2 mg Available = Digitoxin 0.1 mg tablets Give_____	$x tablets = \frac{1 tab}{0.1 mg} \times \frac{0.2 mg}{1} = \frac{0.2}{0.1} = 2 tablets$ **Give 2 tablets**

Problem	Dimensional Analysis
17. Order = KCL 20 mEq Available = KCL 8 mEq per 5 mL Give_____	$xmL = \frac{5mL}{8mEq} \times \frac{20mEq}{1} = \frac{100}{8} = 12.5mL$ **Give 12.5 mL**
18. Order = Synthroid 0.02 mg Available = Synthroid 0.01 mg/ 2 mL Give_____	$xmL = \frac{2mL}{0.01mg} \times \frac{0.02mg}{1} = \frac{0.04}{0.01} = 4mL$ **Give 4 mL**
19. Order = Augmentin 250 mg Available = Augmentin 500 mg/5 mL Give_____	$xmL = \frac{5mL}{500mg} \times \frac{250mg}{1} = \frac{1250}{500} = 2.5mL$ **Give 2.5 mL**
20. Order = Codeine Sulfate gr 1/2 Available = Codeine Sulfate 30 mg tablets Give_____	$xtablets = \frac{1tab}{30mg} \times \frac{60mg}{gr1} x \frac{gr0.5}{1} = \frac{30}{30} = 1tablet$ **Give 1 tablet**
21. Order = Diazepam 5 mg Available = Diazepam 10 mg tablets Give_____	$xtablets = \frac{1tab}{10mg} \times \frac{5mg}{1} = \frac{5}{10} = 0.5tablet$ **Give 0.5 tablet**
22. Order = Clinoril 800 mg Available = Dlinoril 400 mg tablets Give_____	$xtablets = \frac{1tab}{400mg} \times \frac{800mg}{1} = \frac{800}{400} = 2tablets$ **Give 2 tablets**
23. Order = Voltaren 450 mg Available = Voltaren 150 mg tablets Give_____	$xtablets = \frac{1tab}{150mg} \times \frac{450mg}{1} = \frac{450}{150} = 3tablets$ **Give 3 tablets**
24. Order = Coumadin 7.5 mg Available = Coumadin 5 mg tablets Give_____	$xtablets = \frac{1tab}{5mg} \times \frac{7.5mg}{1} = \frac{7.5}{5} = 1.5tablets$ **Give 1.5 tablets**

Problem	Dimensional Analysis
25. Order = Phenobarbital 30 mg Available = Phenobarbital 15 mg/tablet Give_____	$xtablets = \frac{1tab}{15mg} \times \frac{30mg}{1} = \frac{30}{15} = 2tablets$ **Give 2 tablets**
26. Order = Tylenol gr X Available = Tylenol 300 mg tablets Give_____	$xtablets = \frac{1tab}{300mg} \times \frac{60mg}{gr1} x \frac{gr10}{1} = \frac{600}{300} = 2tablets$ **Give 2 tablets**
27. Order = Heparin 7500 units Available = Heparin 10,000 units/mL Give_____	$xmL = \frac{1mL}{10000units} \times \frac{7500units}{1} = \frac{7500}{10000} = 0.75 = 0.8mL$ **Give 0.8 mL**
28. Order = Capoten 12.5 mg Available = Capoten 25 mg tablets Give_____	$xtablets = \frac{1tab}{25mg} \times \frac{12.5mg}{1} = \frac{12.5}{25} = 0.5tablet$ **Give 0.5 tablet**
29. Order = Codeine gr 1 Available = Codeine 30 mg/tablet Give_____	$xtablets = \frac{1tab}{30mg} \times \frac{60mg}{gr1} x \frac{gr1}{1} = \frac{60}{30} = 2tablets$ **Give 2 tablets**
30. Order = Ciprofloxacin hydrochloride 375 mg Available = Ciprofloxacin hydrochloride 750 mg tab Give_____	$xtablets = \frac{1tab}{750mg} \times \frac{375mg}{1} = \frac{375}{750} = 0.5tablet$ **Give 0.5 tablet**

Dosage Calculation Problems

Assorted Dosage Calculation Questions

1. What volume is required for an injection if 500 mg are ordered, and stock vials contain 250 mg/mL?

2. What volume is required for an injection if 600 mg are ordered, and stock vials contain 350 mg/mL?

3. What volume is required for an injection if 750 mg are ordered, and stock vials contain 200 mg/mL?

4. A dose of 2g of medication has been ordered for a client. The medication comes in 4g/0.4mL. What volume will the nurse administer to the client?

5. A dose of 4500 mg of medication has been ordered for a client. The medication comes in 5g/0.3mL. What volume will the nurse administer to the client?

6. A dose of 3500 mg of medication has been ordered for a client. The medication comes in 5g/2mL. What volume will the nurse administer to the client?

7. A bag of 1.5L of 0.9% saline is required over 8hrs with a drip factor of 20. How many drops per minute is this?

8. A bag of 1L of 4% dextrose in saline is required over 6hrs with a drip factor of 15. How many drops per minute is the nurse administering?

9. A bag of 850 mL of 0.9% saline is required over 12 hrs with a drip factor of 60. How many drops per minute is the nurse administering?

10. A child weighs 13.5kg and is prescribed a medication for 0.8 mg/kg/dose. The stock strength is 10 mg/2 mL. What volume will the nurse administer to the client?

11. A client weighs 45kg and is prescribed a medication for 3 mg/kg/dose. The stock strength is 2 mg/0.5 mL. What volume will the nurse administer to the client?

12. A client weighs 16.5kg and is prescribed a medication for 0.4 mg/kg/dose. The stock strength is 20 mg/5 mL. What volume will the nurse administer to the client?

13. A child who weighs 3.4kg is ordered a medication. The order states to give 5 mg/kg/day in 4 divided doses per day. How many mg would the nurse administer per dose?

14. A 3800g infant is ordered a medication for 0.6 mg/kg/day in 6 divided doses per day. How much will the nurse administer to the client per day?

15. A client needs 1 mg of a medication. *The Drug Handbook* states that this medication is to be mixed with 10 mL of sterile water and administered over 3-5 minutes via IV bolus. After preparing the medication, how many mL per minute will the nurse administer if the medication is given over 3 minutes?

16. A client needs 2 mg of a medication. *The Drug Handbook* states that this medication is to be mixed with 10 mL of water and administered over 3-5 minutes via IV bolus. After preparing the medication, how many mL per minute will the nurse administer is given over 3 minutes?

17. A client needs 4 mg of a medication. *The Drug Handbook* states that this medication is to be mixed with 10 mL of water over 3-5 minutes via IV bolus. After preparing the medication, how many mL per minute will the nurse administer is done over 5 minutes?

18. A child who weighs 15kg is prescribed a medication with a dose of 2 mg/kg/day in equal doses every 4 hours. How many mg will the nurse administer per dose?

19. A client who weighs 3kg is prescribed a medication with a dose of 0.1 mg/kg/day in equal doses every 8 hours. How many mg will the nurse administer per dose?

20. A client who weighs 6.5kg is prescribed a medication with a dose of 0.5 mg/kg/day in equal doses every 12 hours. How many mg will the nurse administer per dose?

21. How many mg per mL will be infused for a solution of 350 mg of a medication in 100 mL of saline?

22. How many mg per mL will be infused for a solution of 400 mg of a medication in 300 mL of saline?

23. How many mg per mL will be infused for a solution of 550 mg of a medication in 200 mL of saline?

24. A client needs 2g total of a medication. It comes in 250 mg doses.
    a. How many doses need to be administered?
    b. How many hours will it take if the client can have one dose every 6 hours?

25. An IV drip is set to a flow rate of 55 mL/hour. The doctor changes the flow rate to 47,500 µL/hour.
    c. How much less is the client now getting per hour?
    d. How much will the client now get in the next 12 hours?

26. How much dextrose is in 4L of 20% solution?

27. A client is prescribed 375 mg of a medication. Tablets come in 50 mg and 100 mg strengths. How many tablets will the nurse administer to the client?

28. A client needs 0.075g of a medicine that comes in 30 mg tablets. How many tablets will be administered?

29. A client needs 3g of a medication that comes in 15 mg/mL. How much of the solution will be administered?

30. A client needs 2.5g of a medication that comes in 20 mg/5 mL. How much solution will be administered?

31. An IV drip is set to 1,500 mL over 6 hours, how many milliliters per minute will the client receive?

32. The total volume to be administered from an IV drip is 1,250 mL over 10 hours. How many milliliters per minute will be administered?

33. An IV drip has a drop factor of 60. The volume to be administered is 180 mL over 5 hours. How many drops per minute will it be?

34. The volume of an IV drip to be administered is 0.25L over 8 hours. The drip factor is 60. How many drops per minute will it be?

35. A child is prescribed 4.5 mg/kg of medication. He weighs 56kg. How much of the medication will the nurse administer?

36. A child weighs 14.4kg is prescribed 300µg/kg of a medication. How much medication should be administered?

37. The total volume ordered is 225 mL N/Saline 0.9% IV. The time over which it is to be administered is 40 minutes. The drop factor is 15. How many drops per minute will be delivered?

38. The total volume ordered is 550 mL N/Saline 0.9% IV. The time over which it is to be administered is 4 hours. The drop factor is 20. How many drops per minute will be delivered?

39. The total volume ordered is 1200 mL N/Saline 0.9% IV. The time over which it is to be administered is 2 hours. How many mL per hour would be delivered?

40. The total volume ordered is 1.5L N/Saline 0.9% IV. The time over which it is to be administered is 3 hours. How many mL per hour would be delivered?

41. The dose to be administered of a medication is 1.2g. The stock strength is 2g/10mL. Calculate the mL needed to deliver the medication.

42. The dose of a medication to be administered is 5 mg. The stock strength is 1 mg/4mL. Calculate the mL needed to deliver the medication.

43. The client is receiving 350 micrograms of a medication in 750 mL of normal saline. How many micrograms per mL is the client receiving?

44. The client is receiving 875g of a medication in 1L of normal saline. How many g per mL is the client receiving?

45. 1L N/Saline 0.9% has been running for 45 minutes at a 6 hourly rate. How many mL have been administered already?

46. 1200 mL N/Saline 0.9% has been running for 20 minutes at a 2 hourly rate. How many mL have been administered already?

47. 1300 mL N/Saline 0.9% is running at a 6 hourly rate, which commenced at 1500hrs. At 1630hrs the doctor requests for the remaining volume to be run over 3 hours. Calculate the mL per hour for the remaining volume.

48. 1.5 L N/Saline 0.9% is running at a 12 hourly rate, which commenced at 0800 AM. At 1200 PM, the doctor orders the remaining volume to be run over 4 hours. Calculate the mL per hour for the remaining volume.

49. A child who weighs 14kg is ordered 55 microg/kg IV, 2 hours before surgery. The solution strength is 2 mg/mL. How many mL do the nurse administer?

50. A child who weighs 5kg is ordered 0.5g/kg IV, 4 hours before surgery. The solution strength is 1 mg/mL. How many mL will the nurse administer?

51. Order: Heparin 7500 units SQ.
Label: Heparin 10,000 units/mL.
How many mLs will the nurse administer?
_____ mLs

52. Order: Augmentin (oral suspension) 500 mg PO.
Label: 125mg/5mL.
How many mLs will the nurse administer?
_____ mLs

53. Order: Meperidine 50mg.
Label: 100mg/mL.
How many mLs will the nurse administer?
_____ mLs

54. Order: Naloxone HCL 200 mcg.
Label: 0.4mg/mL.
How many mLs will the nurse administer?
_____ mLs

55. Order: Unasyn 750 mg.
Label: 1.5 gm vial which must be reconstituted with 4 mL of sterile water.
How many mLs will the nurse administer?
_____ mLs

56. Order: Heparin 700 units/ hr.
Label: 25,000 units/250 mL of NS.
How many mLs/hr will the nurse set the pump?
_____ mLs/hr

57. Order: 1000 mL D5W/0.9% NS to infuse over 8 hours.
Tubing: 20 gtt/mL.
Calculate the number of drops per minute.
_____ gtts/min

58. Order: Tylenol Elixir 10 mg/kg.
Label: Tylenol Elixir 160 mg /5 mL.
Weight: 8 kg.
How many mLs will the nurse administer?
_____ mLs

59. Order: Gentamicin 0.575 mL/dose every 8 hours.
Label: Gentamicin 40 mg/mL.
Weight: 45 lb.
How many milligrams per kilogram per day is the client receiving?
_____ mgs/kg/day

60. Order: dopamine 5 mcg/kg/min.
Label: 400 mg/250 mL NS.
Weight: 110 lb.
Calculate the milliliters per hour to set the pump.
_____ mLs/hr

61. Order: Nipride 0.8 mcg/kg/min.
Label: 50 mg/500 mL NS.
Weight: 143 pounds.
Calculate the milliliters per hour to set the pump.
_____ mLs/hr

62. Order: Dopamine 400 mg in 250 mL D5W infusing at 28 mL/hr.
Weight: 15 kg.
How many micrograms per kilogram per minute is the client receiving?
_____ mcg/kg/min

63. Order: Ampicillin 2 mg/kg PO every 8 hours.
Label: Ampicillin 500 mg/5 mL.
Weight: 100 pounds.
How many milliliters will the nurse administer to?
_____ mLs

64. Order:1000 mL NS to infuse at 50 gtts/min.
Tubing: 15 gtts/mL.
Calculate the hours to infuse.
_____ hrs

65. Order: Benadryl 0.125 mL/dose every 8 hours.
Label: Benadryl 50 mg/mL.
Weight: 20 pounds.
How many milligrams per kilogram per day is the child receiving?
_____ mg/kg/day

66. Order: Ritodrine 75mcg/min.
Label: 150mg/500 mL D5W.
How many mL/min will the nurse administer to?
_____ mL/min

67. Order: IV fluids to run at 5mL/hr.
Infant weight: 2 kg.
How many mL/kg/day is the infant receiving?
_____ mL/kg/day

68. Order: ampicillin 100mg/kg/day in divided doses q 12 hours apart.
Infant weight: 3000g.
How many mg will the nurse administer to at each dose?
_____ mg/dose

69. Order: 20 mL of formula at the next feeding.
Label: 30 calories/oz.
How many calories will be administered during the feeding?
_____ cal

70. Order: Pitocin IVPB at 3 milliunits/minute for a labor induction.
Label: 30 units of Pitocin in 500mL LR.
Calculate the mL/hr to set the IV pump.
_____ mL/hr

70. Order: ***Ecitalopram*** 15 mg PO daily for anxiety.
Available dose: 10 mg per tablet
How many tablets will the nurse administer to?
_____ Tabs

71. Order: ***Ibuprofen*** 400 mg PO daily for pain.
Available dose: 200 mg per tablet
How many tablets will the nurse administer to?
_____ Tabs

72. Order: ***Demerol*** 25 mg IM every 6 hours for pain.
Available dose: 50 mg/mL
Calculate mL to give.
_____ mL

73. Order: ***Robaxin*** 30 mL PO PRN every 4 hours for cough.
Calculate: tsp to give.
_____ Tsp

74. Order: ***Linezolid*** 10 mg/kg by mouth every 8 hours for infection.
Weight: 94 lb.
How many mg per day will the client receive?
_____ mg/day

75. Order: 20 mEq ***Potassium chloride*** PO two times a day.
Calculate: mEq/day
_____ mEq/day

76. Order: ***Venlafaxine*** 375 mg PO divided into 3 doses/day for depression.
Calculate: mg/dose
_____ mg/dose

77. Order: Infuse ***Dobutamine*** 10 mcg/kg/min
Weight: 200 lb.
Available 500 mcg/mL in 100 mL D5%
Calculate: mg/hr
_____ mg/hr

78. Order: Infuse ***dopamine*** 20 mcg/kg/min.
Weight: 88 lbs.
Available: dopamine 100mg/50 mL
Calculate: mL/hr
_____ mL/hr

79. Order: ***Esmolol*** IVPB at 15 mL/hr for beta-adrenergic blockade.
Weight: 65 kg.
IV bag contains 2500 mg ***esmolol*** in 250 mL NS.
Calculate: mcg/kg/min
_____ mcg/kg/min

80. Order: ***Albumin 5 %*** 500 mL over 4 hours via IV pump.
Tubing: 10 gtts per mL
Calculate: gtts per minute
_____ gtts/min

81. The order 60 mg of Garamycin (gentamicin) IM every 8hr. The vial is labeled 80 mg/2 mL. How many mL will the nurse administer?

82. The client is to receive 65 Units of a drug. The vial is labeled 50 Units per 2 mL. How many mL will the nurse administer?

83. Order: ***Methylphenidate*** 2.5 mg PO three times a day for ADHD.
Weight: 45 lbs.
Therapeutic dose: 0.3 mg/kg/dose.
a. Calculate: mg/kg/dose _____ mg/kg/dose
b. Is the dose ordered safe? Safe/Not Safe: _____

84. Order: ***Clarithromycin*** oral suspension 150 mg PO for otitis media.
Available: 125 mg per 5 mL
Safe dose range: 15 mg/day in 2 divided doses
Weight: 44 lbs.
a. Calculate: mL/dose _____ mL/dose
b. Give dose or hold? Give/Hold: _____

85. ***Intake for 12 hours:***
24 ounces coffee
36 ounces water
125 ml/hr NS
a. Calculate: mL _____ mL of Intake

Output for 12 hours:
Urine = 1,230 mL
Emesis = 640 mL
b. Calculate: mL _____ mL of Output
c. Is intake and output balanced? Yes/No: _____

86.

Order: ***Rifampin*** 450 mg IVPB daily for infection.
Reconstitute: Read label.
Calculate mL/dose
_____ mL/dose

87.

Order: Cefazolin 850 mg IVPB every 6 hours for infection.
Reconstitute: Reconstitute a 1 g vial with 10 mL of sterile water for injection
Calculate: mL/dose
_____ mL/dose

88. The client is to receive 0.6 g of a drug. How many mg will the nurse administer?

89. The client received 400 mL of fluid. How many L did she receive?

90. The client weighs 160 pounds. Calculate the weight in kilograms.

91. The physician has ordered 300 mg of a drug. The vial is labeled 150 mg / 2 mL. How many mL will the nurse administer?

92. The nurse has an order to give 120 Units of Vitamin D. If the vitamin comes in capsules containing 60 Units, how many capsules will the nurse administer?

93. The client is to receive 450 mg of an antibiotic. The vial contains a powder to be reconstituted. The label of the vial reads: Kefzol (cefazolin) 1 g. To reconstitute: Add 2.5 mL sterile water for injection to provide a volume of 3mL. How many mL of solution are needed to provide the client with the prescribed dose?

94. The nurse has an order of 5 mg / kg dose of medication for a client weighing 22 pounds. How many mg will the nurse administer?

95. The doctor orders 5 mg of Valium (diazepam) for the client. The vial reads: 20 mg per 2 mL How many mL will the nurse administer?

96. The client is to receive 500 mL of D5W over 6 hours. What is the drip rate per minute if the tubing provides 12 gtts per mL?

97. The client is to be given 20 units of a drug. The vial is labeled 50 units/ 2 mL. How many mL will the nurse administer?

98. The client has an order for 1.2 g of a drug. How many mg will the nurse administer?

99. The client is to receive 40 mg of a drug in 50 mL of NS (Sodium Chloride) over one half hour. What is the drip rate per minute if the tubing provides 15 gtts per ml?

100. The client has Demerol 75 mg ordered for complaint of pain. The drug is available as 50 mg per 1 mL. How many mL will the nurse administer?

101. A drug comes packaged as 10,000 Units/2 mL. The order for the client is 6,500 Units. How many mL will the nurse administer?

102. The order is 5% Dextrose in Water (D5W) 250 mL to infuse over 4 hours. How much per hour should be infused?

103. A drug comes packaged as 5,000 Units per mL and the nurse must give 4,000 Units. How many mL will the nurse administer?

104. A drug is ordered at 500 mg IV every 6 hr. When 2 mL of diluent is added to the 500 mg vial, each mL equals 200 mg. How many mL will the nurse administer?

105. The nurse is to give 350 mg po of a drug. The stock supply is 0.5 g/tablet. How many tablets will the nurse administer?

106. The doctor has ordered 0.6g of a drug. Pharmacy has supplied 300 mg tablets. How many tablets will the nurse administer?

107. The nurse has an order of 3mg/kg per dose of medication for a client weighing 11 pounds. How many mg will the nurse administer per dose?

108. The doctor orders Valium (diazepam) 4mg IV every 6 hrs prn restlessness. The vial is labeled 10 mg /2 mL. How many mL will the nurse administer?

109. The doctor orders 4 mg/kg per dose of a drug for a 24 pound child. How many mg will the nurse administer?

110. The client is to receive Ampicillin, 50 mg, in 100 mL of NS (Sodium Chloride) over one half hour. What is the drip rate per minute if the tubing provides 12 gtts per mL?

111. The client is to receive 500 mL of D5W over 8 hours . What is the drip rate per minute if the tubing provides 12 gtts per mL?

112. The nurse is to give 90 Units of a vitamin every day. The vitamin comes in capsules containing 30 Units each. How many capsules will the nurse administer?\

113. If the dose for a medication is 13 mg/kg, what is the dose for a client that weighs 56 pounds?

114. The client received 90 mL of a drug. How many ounces did he receive?

115. The client weights 280 pounds. How many kg does the client weigh?

116. If the dose for a medication is 0.3 mg/kg, what is the dose for a child that weighs 26 pounds?

117. The physician orders 25 Units of a drug. The vial is labeled 100 Units/ 2 mL. How many mL will the nurse administer?

118. A child weighing 42 pounds has an order for Morphine 0.05 mg/kg SQ. How many mg will the nurse administer?

119. A client received two 250 mg tablets. How many g did the client receive?

120. The doctor has ordered 0.4 g of a drug. How many mg of the drug will the nurse administer?

121. The client is to receive 1.8 g of a drug. This is how many mg?

122. A 15 pound child has an order for an antibiotic for 55 mg/kg/every 6 hours. The antibiotic comes as 1 g/25 mL. What is the amount of a single dose?

123. A client who weighs 196 pounds has an order for a medication dose to be given at 25 mg/kg/day. How many g per day will the nurse administer?

124. A 175 pound client has an order for an analgesic of 12 mg/kg every 4 hours. How many mg is in each dose?

125. An antibiotic is ordered for a child weighing 12.4 kg. The drug label reads 1 g/2.5 mL and the dose range is 100 mg/kg/day. What is the dose of medication for this client per day?

126. A client who weighs 76 kg has an order for an antibiotic for 100 mg/kg/day every 6 hours. The antibiotic comes as 1 g/25 mL. What is the amount of a single dose?

127. A medication has been ordered for a client who weighs 23.4 kg. The therapeutic range is 250mg/kg/day. The drug comes as 3.5g/100mL. How many mL is the therapeutic daily dosage for this client?

128. The recommended maximum dosage of a drug is 2 mg/kg/day. What is the maximum dosage per day for a child who weighs 35 pounds?

129. The safe dosage of a drug is 7.5 mg/kg/day IV given q8h. What is the safe daily dosage for a child weighing 40 pounds?

130. The recommended safe maximum dosage of a drug is 7 mg/kg/day. What is the safe maximum dosage per day for a child who weighs 25 pounds?

131. An antibiotic is ordered for a child weighing 42.4kg. The drug label reads 1g/2.5 mL and the therapeutic dose range is 125mg/kg/day. How many mL will this client receive per day?

132. The order is to give Geocillin (carbenicillin) IM 800 mg q6h. The vial states that the concentration of the medication is 1 g/2.5 mL. How many mL will the nurse administer?

133. The recommended dose for an antibiotic is 80 mg/kg/day. If the client weighs 38 kg how many mg/day should the client receive?

134. The nurse has an order of 7.5 mg/kg dose of medication for a client weighing 129 pounds. How many mg will the nurse administer?

135. Ordered is Vancomycin, 2mg/kg IV every 24 hours. It is available as 500mg/10mL. The client weighs 30 kg. How many mL will the nurse administer?

136. An oral liquid medication is available as 0.25 mg/10 mL and the nurse must give a dose of 0.125 mg. How many mL will the nurse administer?

137. A drug comes as 0.5 g in 1 mL and the nurse must give 1.25 g. How many mL will the nurse administer?

138. A drug comes 250 mg/mL and the nurse must give 2.25 g. How many mL will the nurse administer?

139. The nurse is to give 0.75 mg of a drug which comes as 1,000 mcg/mL. How many mL will the nurse administer?

140. Give Unipen (nafcillin) 500 mg IM q6h. When 3.4 mL of diluent is added to the 1 g vial, 250 mg equals 1 mL. How many mL will the nurse administer?

141. The order is for Prostaphlin (oxacillin) IM 500 mg q6h. When 2.8 mL of diluent is added to the 500 mg vial each 250 mg equals 1.5 mL. How many mL will the nurse administer?

142. The client is to receive 250 mL of 5% Dextrose in Water (D5W) every 6 hours.

143. What is the drip rate per minute if the tubing provides 15 gtts per mL?

144. The client is to receive 25mg of a drug in 100 mL of Sodium Chloride (NS) over one and one-half hours. What is the drip rate per minute if the tubing provides 15 gtts per mL?

145. The client is to receive 1000 mL Lactated Ringers (RL) IV in 6 hours. What is the drip rate per minute if the tubing provides 10 gtts per mL?

146. The client is to receive 250 cc Packed Red Blood Cells (RBCs) IV in 3 hours. What is the drip rate per minute if the tubing provides 6 gtts per mL?

147. The physician has ordered 225 mg of a drug. The vial is labeled 150mg/2 mL. How many mL will the nurse administer?

148. The client is to receive 650 mg of an antibiotic. The vial contains a powder to be reconstituted. The label of the vial reads: Kefzol (cefazolin) 1 g. To reconstitute add 2.5 mL sterile water for injection to provides a volume of 3.0 mL. How many mL of reconstituted solution are needed to provide the client with the prescribed dose?

149. The doctor orders 7.5 mg of Valium (diazepam) for the client. The Tubex vial reads: 20mg/ 2 mL. How many mL will the nurse administer?

150. The client has Demerol (meperidine) 35 mg ordered. The drug is available as 50 mg/1 mL. How many mL will the nurse administer?

151. A drug is ordered at 500 mg IV q6h (over 6 hours). When 2.0 mL of dilutent is added to the 500 mg vial, each mL equals 150 mg. How many mL will the nurse administer?

152. The client is to receive an antibiotic of 350 mg q6h. The label reads Ancef 1 g. Reconstitute with 3 ml of dilutent to yield 250 mg/mL. How many mL will the nurse administer?

153. The client is to receive an antibiotic of 65 mg IM q8h. The label reads 120 mg/2 mL. How many mL will the nurse administer?

154. The client is to receive 20 mg IM of an antiemetic. The label reads 100 mg/ 2 mL. How many mL will the nurse administer?

155. Give 500 ml IV over 6 hours. The tubing delivers 20gtts per mL. What is the rate drip rate per minute?

156. If the maximum safe dose for a medication is 6 mg/kg/day. What is the maximum safe dose for a child who weighs 17 kg?

157. Give 200 ml IV over 3 hours. The tubing drop factor is 15. What is the drop rate per minute?

158. A client with pneumonia weighs 26.9 kg. If the recommended dose for a specific antibiotic is 75 mg/kg/day, what is the recommended daily dose for this client?

159. Order: Cefizox 0.203 grams IM q 12 hours
Available: Cefizox 1gram
Directions for mixing: Add 3 mL of sterile water to yield 250 mg/mL
How many mL will per dose?
_____mL

160. Order: piperacillin 2000 mg IM q 12 hours
Available: piperacillin 4 grams
Directions for mixing: Add 7.8 mL of sterile water to yield 1 gram/2.5 mL
How many mL will the nurse administer per dose?
_____mL

161. Order: ampicillin 500 mg IM q 6 hours
Available: ampicillin 250 mg
Directions for mixing: Add 0.9 mL of sterile water to yield 125 mg/0.5 mL
How many mL will the nurse administer per dose?
_____mL

162. Order: ranitidine 300 mg/day PO in 2 divided doses
Weight: 220 lbs
How many mg/kg/dose is the client receiving?
_____mg/kg/dose

163. Order: cefazolin sodium 250 mg IV q 6 hours
Weight: 35 lb
How many mg/kg/day is the client receiving?
_____mg/kg/day

164. Order: Medication 500 mg in 1000 mL of LR at 20 mL/hr
Weight: 155 lbs
How many mcg/kg/min is the client receiving?
_____mcg/kg/min

165. Order: Benedryl 0.125 mL/dose IV q 8 hours
Available: Benedryl 50 mg/mL
Weight: 20 lbs
How many mg/kg/day is the client receiving?
_____mg/kg/day

166. Order: gentamicin 0.575 mL/dose IV q 8 hours
Available: gentamicin 40 mg/mL
Weight: 45 lbs
How many mg/kg/day is the client receiving?
_____mg/kg/day

170. Meperidine 100 mg.

Label: 25 mg/ml.
How many mls will the nurse give?
_____ mls

167. Order: Heparin 1250 units/hr.
Label: 50,000 units/500 ml D5W.
Calculate ml/hr to set the IV pump for the continuous dose of heparin.
_____ ml/hr

168. Order: Betamethasone 12 mg IM.
Label: 5mg/ml.
How many mls will the nurse administer?
_____ mls

169. Order: Ephedrine 30 mg
Label: Administer at l0 mg/min.
How many minutes will it take to administer?
_____ min

170. Order: Hemabate 100mcg/min
Label: 250mcg/1ml.
How many ml will the nurse administer?
_____ ml

171. Order: Intropin 5 mcg/kg/min
Label: 200mg/500 ml NS.
Weight: 80 kg.
Calculate the milliliters per minute
_____ ml/min

172. Inocor 3 mcg/kg/min.
Label: 100mg/100ml of 0.9% NS.
Weight: 160 pounds.
Calculate the milliliters per hour to set the pump.
_____ ml/hr

173. Order: Dopamine 3 mcg/kg/min.
Label: 400mg/500ml.
Weight: 165 lbs.
Calculate the ml/hr to set the IV pump.
_____ ml/hr

174. Order: Zidovudine infusion 2 mg/kg/hr for one hour, then decrease to 1 mg/kg/hr
Label: 400mg in 500ml D5W.
Weight: 200 lbs.
Calculate the ml/hr for the 1st hour.
_____ ml/hr

175. Order: Zidovudine infusion 2 mg/kg/hr for one hour, then decrease to 1 mg/kg/hr
Label: 4OO mg in 500ml D5W.
Weight: 200 lbs.
Calculate the ml/hr for the 2nd hour
_____ ml/hr

176. Order: Aminophylline 0.5 mg/kg/hr
Label: 250mg/250ml of D5W.
Weight: 120 lbs.
Calculate the ml per hour.
_____ ml/hr

177. Order: Magnesium Sulfate 40 gram in 1000ml RL to infuse at 3 gm/hr.
Label: 40 grams in lOOO ml RL.
Calculate the ml/hr to set the IV pump.
_____ ml/hr

178. Order: Heparin 25,000 units in 500 ml D5@ infusing at 50 ml/hr.
Calculate how many units per hour the client is receiving.
_____ units/hr

179. Order: Ampicillin 30mg/kg/day ordered in divided doses q 12 hours.
The infant weighs 3200g.
How many mg will the nurse give at each dose?
_____ mg/dose

180. Order: IV fluids to run at 15 ml/hr.
The infant weighs 1.9 kg.
How many ml/kg/day is the infant receiving?
_____ ml/kg/day

181. Order: 35 ml of formula per feeding.
Label: 20 cal/oz.
How many calories will the infant be fed at this feeding?
_____ Cal

182. Order: Ampicillin 200 mg.
Label: 250 mg in 2.5 ml of solution.
How many ml of solution will the nurse administer?
_____ ml

183. Order: Dopamine 4 mcg/kg/min.
Label: 100 mcg/ml. The infant weighs 1.9 kg.
Calculate how many ml/hr the nurse will give.
_____ ml/hr

184. Order: acyclovir (Zovirax) 5 mg/kg PO every 8 hours
Weight: 75 lbs
How many mg should the nurse administer per dose?
_____ mg/dose

185. Order: KCL 1 mEq/kg/dose PO.
Weight: 64 lbs
Available: KCL 40 mEq/15 mL
How many mL should the nurse administer per dose?
_____ mL/dose

186. Order: phenytoin (Dilantin) 15 mg/kg PO.
Weight: 120 lbs
Available: phenytoin suspension 125 mg/5 mL.
How many mL should the nurse administer?
_____ mL

187. Order: sulfasalazine oral suspension 500 mg every 6 hours.
Directions for mixing: add 125 mL of water and shake well.
Available: Each tablespoon will yield 1.5 g of sulfasalazine.
How many mL will the nurse administer?
_____ mL

188. Order: furosemide 1 mg/kg IV every 12 hours
Available: furosemide 40 mg/4 mL
Weight: 45 lbs
How many mg/dose will the nurse administer?
_____ mg/dose

189. Order: furosemide 1 mg/kg IV every 12 hours
Available: furosemide 40 mg/4 mL
Weight: 45 lbs
How many mL/day will the nurse administer?
_____ mL/day

190. The client weighs 97.4 kg.
How many lbs does the client weigh?
_____ lbs

191. Order: mezlocillin 50 mg/kg every 4 hours IV
Weight: 60 lb
Available: 1 g of medication reconstituted with 10 mL of 0.9%NS yields 1 g/10 mL
How many milliliters/dose will the nurse draw up?
_____ mL/dose

192. Order: methylprednisolone sodium succinate 40 mg IV every 4 hours.
Available: 1 vial reconstituted with 2 mL sterile water yields 125 mg/2 mL.
How many milliliters will the nurse draw from the vial for one dose?
_____ mL

193. Order: some drug 20 mg/kg every 12 hours
Weight: 70 lbs
The **maximum recommended** dose: 300 mg/dose
Is the dose safe or unsafe
_____

194. Order: some drug 150 mg every 6 hours PO
Weight: 95 lbs
Recommended range: 25-50 mg/kg/day.
Is the dose ordered safe/therapeutic?
_____

195. Order: aminophylline 44 mg/hr IV
Available: aminophylline 1 g/ 250 mL NS
Calculate the milliliters per hour to set the IV pump.
_____ mL/hr

196. Order: isoproterenol 2 mg in 500 mL D5W to infuse at 15 mL/hr
Weight: 20 kg
How many mcg/kg/min is the client receiving?
_____ mcg/kg/min

197. Order: some drug 200 mg/dose PO every 6 hours
Available dose: 100 mg/ 5 mL
Weight: 40 lb
Recommended safe range: 5 to 10 mg/kg/dose every 6 to 8 hours
Is this dose safe?
_____

198. Order: glyburide 1.25 mg PO daily.
Available: 2.5mg/ 1 tablet
How many tablets will the nurse administer?
_____ tablet(s)

199. Order: levothyroxine 75 mcg PO daily
Available: levothyroxine 0.15 mg/ tablet
How many tablet(s) would the nurse administer?
_____ tablet(s)

200. Calculate the 24 hour fluid balance for this client. Make sure to record as either a positive (+) or negative (-) balance.

INTAKE			**OUTPUT**		
Shift	**Oral**	**I.V. Fluids**	**Urine**	**Emesis**	**Other**
0700-1500	Coffee=240mLs	D5W = 480 mLs	500 mLs	0 mL	0 mL
	H2O = 320 mLs		200 mLs		
	Tea = 200 mLs		350 mLs		
	H2O = 300 mLs				
Shift Total					
1500-2300	Soda = 480 mLs	D5W = 480 mLs	400 mLs	0 mL	0 mL
	H2O = 250 mLs	IVPB = 50mLs			
	Juice = 180 mLs		400 mLs		
	H20 = 600mLs		400 mLs		
Shift Total					
2300-0700	H2O = 240 mLs	D5W = 480 mLs	500 mLs		
Shift Total					
24hr Totals					

_____ 24-hr balance

(Email this page to Dr. Crider to have work graded, if desired)

1.		51.		78.		126.		178.	
2.		52.		79.		127.		179.	
3.		53.		80.		128.		180.	
4.		54.		81.		129.		181.	
5.		55.		82.		130.		182.	
6.		56.		83. A		131.		183.	
7.		57.		B		132.		184.	
8.		58.		84. A		133.		185.	
9.		59.		B		134.		186.	
10.		60.		85. A		135.		187.	
11.		61.		B		136.		188.	
12.		62.		C		137.		189.	
13.		63.		86.		138.		190.	
14.		39.		87.		139.		191.	
15.		40.		88.		140.		192.	
16.		41.		89.		141.		193.	
17.		42.		90.		142.		194.	
18.		43.		91.		143.		195.	
19.		44.		92.		144.		196.	
20.		45.		93.		145.		197.	
21.		46.		94.		146.		198.	
22.		47.		95.		147.		199.	
23. A		48.		96.		148.		200.	
B		49.		97.		149.		Questions	
24. A		50.		98.		150.			
B		51.		99.		151.			
25.		52.		100.		152.			
26.		53.		101.		153.			
27.		54.		102.		154.			
28.		55.		103.		155.			
29.		56.		104.		156.			
30.		57.		105.		157.			
31.		58.		106.		158.			
32.		59.		107.		159.			
33.		60.		108.		160.			
34.		61.		109.		161.			
35.		62.		110.		162.			
36.		63.		111.		163.			
37.		64.		112.		164.			
38.		65.		113.		165.			
39.		66.		114.		166.			
40.		67.		115.		167.			
41.		68.		116.		168.			
42.		69.		117.		169.			
43.		70.		118.		170.			
44.		71.		119.		171.			
45.		72.		120.		172.			
46.		73.		121.		173.			
47.		74.		122.		174.			
48.		75.		123.		175.			
49.		76.		124.		176.			
50.		77.		125.		177.			

Section Two: ATI RN Content Mastery Series Fundamentals

ATI RN Mastery Series: Fundamentals Content

Advanced Placement Exam:

Successful completion of the placement exam will ensure that entering FastTrack students will be able to:

1. Identify standards of practice in nursing care to beginning pharmacodynamics and client safety.
2. Identify key characteristics of the illness/wellness continuum, health promotion, and disease prevention within the health care delivery system.
3. Identify the nursing process and its relationship to clinical reasoning and clinical judgement in the planning and provision of nursing care across the lifespan.

Foundations of Practice

- health care delivery
- thinking strategies for nursing practice
- communication
- professional standards
- legal and ethical responsibilities
- nursing through the lifespan

Basic Nursing Care

- admission, transfer and discharge processes
- medication administration and error prevention
- safety
- ergonomic principles
- asepsis and infection control
- comfort
- basic needs
- wound care

Support of Psychosocial Needs

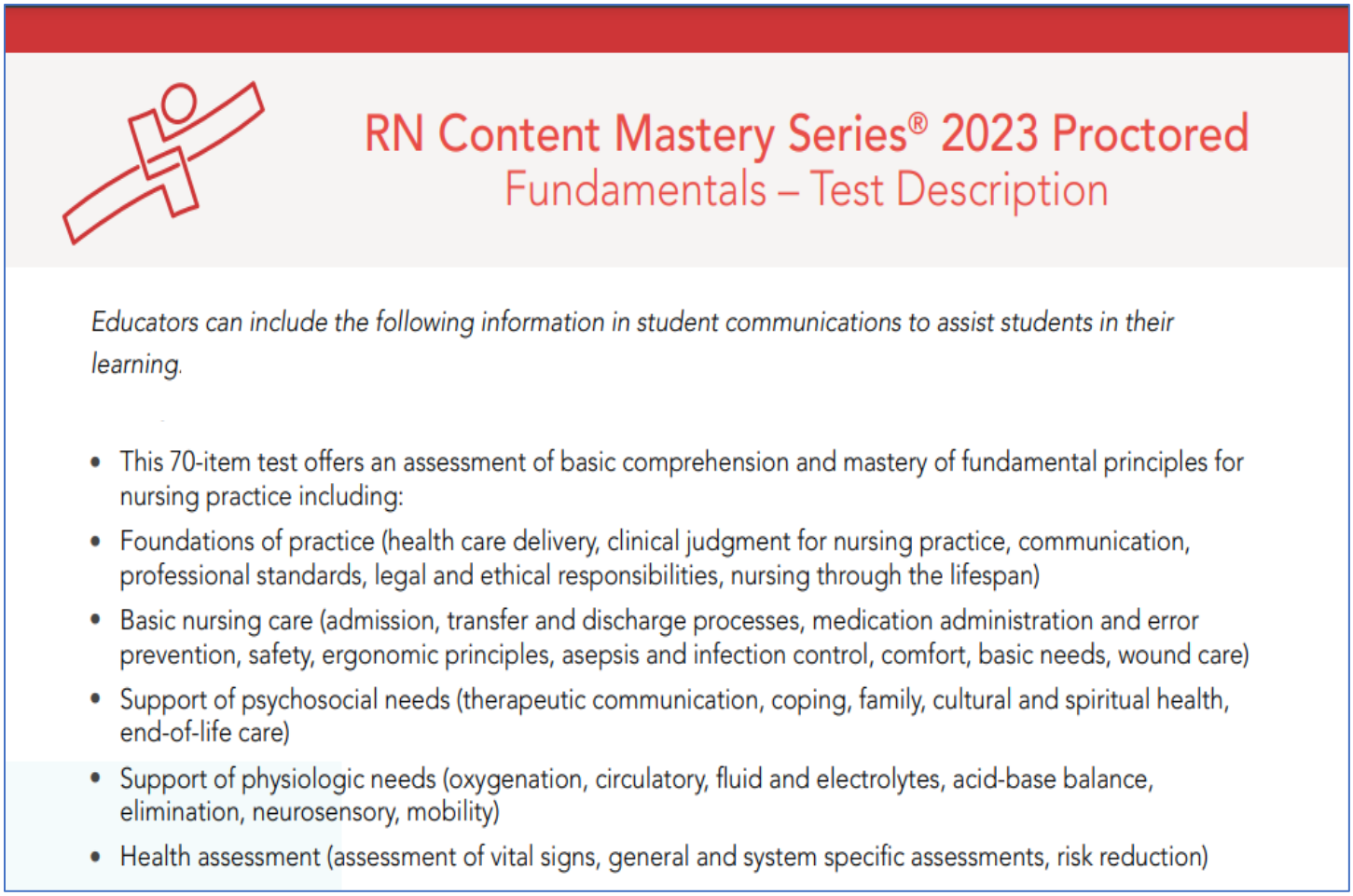
- therapeutic communication
- coping
- family
- cultural and spiritual health
- end-of-life care

Support of Physiologic Needs

- Oxygenation
- Circulatory
- fluid and electrolytes
- acid-base balance
- elimination
- neurosensory
- mobility

Health Assessment

- assessment of vital signs
- general and system specific assessments
- risk reduction



Suggested Resources:

- Lilley, L. L., Rainforth Collins, S. & & Snyder, J. S. (2022). Pharmacology and the nursing process. (10th ed.). Elsevier. ISBN 9780323827973
- Nugent, P. A. & Vitale, B. A. (2019). Fundamentals success. (5th ed.). F.A. Davis. ISBN 9780803677456
- Nugent, P. A. & Vitale, B. A. (2020). Test success: Test-taking techniques for beginning nursing students. (9th ed.). F.A. Davis. ISBN 9781719640022
- Potter, P. A., Perry, A. G., Stockert, P. A., & Hall, A. M. (2022). Fundamentals of nursing. (11th ed.). Elsevier. ISBN 9780323810340
- ATI Learning Systems 3.0 (approx. $45.00; contact coordinator for code)

TCC Supplied Resources

- Laerdal Modular Skills Trainers
- ATI RN Content Mastery Series Review Book available for checkout
- ATI Fundamentals Practice Exams A & B

Section Three: Skills Validation

Physical Assessment

NEUROLOGICAL

- **LOC (Level of Consciousness)**

    - **Alert -** Awake or readily aroused, oriented, fully aware of external & internal stimuli and responds appropriately, conducts meaningful interpersonal interactions.
    - **Lethargic (or Somnolent) -** Not fully alert, drifts off to sleep when not stimulate, can be aroused to name when called in normal voice but looks drowsy, responds appropriately to questions or commands but thinking seems slow and fuzzy, inattentive. Loses train of thought, spontaneous movements are decreased.
    - **Obtunded -** (Transitional state between lethargy & stupor; some sources omit this level) Sleeps most of time, difficult to arouse (needs loud shout or vigorous shake), acts confused when aroused, converses in monosyllables, speech may be mumbled & incoherent, requires constant stimulation for even marginal cooperation.
    - **Stupor or Semi-Coma -** Spontaneously unconscious responds only to vigorous shake or pain, has appropriate motor responses (withdraws to pain), otherwise can only groan, mumble or move restlessly, but retains reflex activity.
    - **Coma -** Completely unconscious makes no response to pain or to any external or internal stimuli. Light coma has some reflex activity but not purposeful movement; deep coma has no motor response.
    - **Acute Confusional State (Delirium) -** Has clouding of consciousness (dulled cognition, impaired alertness), inattentive, makes incoherent conversation, has impaired recent memory & is confabulatory for recent events, often agitated & ahs visual hallucinations, disoriented, with confusion worse at night when environmental stimuli are decreased.

- A person is fully alert when his or her eyes open at your approach or spontaneously; when he/she is oriented to person, place, and time; and when he/she is able to follow verbal commands appropriately.

- If a person is not fully alert, increase the amount of stimulus used in this order: (1) Name called (2) Light touch on person's arm (3) Vigorous shake of shoulder (4) Pain applied (pinch nail bed, pinch trapezius muscle, rub knuckles on the person's sternum).

MUSCULOSKELETAL

- **Muscle Strength:** Check the voluntary movement of each extremity by giving the person specific commands.
- **Upper Arm Strength:** Ask the person to squeeze your fingers. Offer your two fingers, one on top of the other, so that a strong handgrip does not hurt your knuckles.
- **Lower Extremities Strength:** Ask the person to do straight leg raises. Lift one leg at a time straight off the bed. Full strength allows the leg to be lifted 90 degrees. Another way is to ask pt to push one put at a time against your hand's resistance, "like putting your foot on the gas pedal of your car."

Grading Muscle Strength (Bilaterally UE's & LE's)

Grade	Description	% Normal	Assessment
5	Active movement against gravity with full resistance; indicates full strength	100	Normal
4	Active movement against gravity with some resistance; indicates the patient can provide some resistance against the examiner, but is not full strength	75	Good
3	Active movement against gravity only without resistance; indicates that the muscle can move the joint against gravity, but not against resistance. Pt can move muscle on own, but not against the examiner.	50	Fair
2	Active movement with gravity eliminated (passive motion); indicates the muscle can move the joint, but only when gravity is eliminated	25	Poor
1	Slight contraction and no muscle contraction that can be felt by the examiner, but not sufficient to move the joint	10	Trace
0	No contraction; indicates no apparent muscle movement	0	Zero

Will see charted as muscle strength good 4/5 and equal bilaterally.
(The **4** is your assessment and the **5** is the max grade a person can receive.)

ROM (Range of Motion)

- Ask for active ROM of all the joints. Familiarize yourself with the type of each joint & its normal ROM so you can recognize limitations. For daily shift assessment you will do what I call a "down & dirty" assessment of the joint ROM. If you see a limitation, gently attempt passive motion. Anchor the joint with one hand while your other hand slowly moves it to its limit.

INTEGUMENTARY

- **Moisture:** (1) Perspiration appears normally on the face, hands, axilla, & skin folds in response to activity, warm environment, or anxiety. (2) Diaphoresis-profuse perspiration accompanies an increased metabolic rate, such as occurs in heavy activity or fever.
- **Temperature:** Use the back of your hands & palpate bilaterally. The skin should be warm with equal temperature bilaterally. Hands & feet may be slightly cooler in a cool environment.

CARDIOVASCULAR

- **Auscultation Hint:**
- Begin with the diaphragm endpiece & clean it using alcohol swab. Use the following routine: (1) Note the Rate & Rhythm; (2) identify S1 & S2; (3) assess S1 & S2 separately; (4) listen for extra heart sounds; and (5) listen for murmurs.

- **Peripheral Pulses**
- Palpate both peripheral pulses bilaterally, noting rate, rhythm, elasticity of wall, and equal force. Grade the force (amplitude) on a four-point scale.

Peripheral Pulse Four-Point Grading Scale

Grade	Description
4+	Bounding = Easy to palpate; forceful; not easily obliterated by finger pressure.
3+	Increased = Easy to palpate; slightly increased from normal; obliterated only by strong finger pressure.
2+	Normal = Easy to palpate; obliterated only by strong finger pressure.
1+	Weak = Difficult to palpate; easily obliterated by slight finger pressure.
0	Absent = Not discernable.

Edema

- Firmly depress the skin over the tibia or the medial malleolus for 5 seconds & release. Your finger should normally leave no indentation, although a pit is commonly seen if the person has been standing all day or during pregnancy. If edema is present, grade it on this scale:

Grade	Description
1+	Mild pitting (roughly 2 mm in depth), disappears rapidly, no perceptible swelling of the leg
2+	Moderate pitting (4 mm), indentation subsides rapidly within 15 seconds
3+	Deep pitting (6 mm), indentation can last longer than a minute; the extremity looks grossly swollen
4+	Very deep pitting (8 mm or greater), indentation may last more than 2 minutes; leg is very swollen

- If patient is a cardiac patient → **ALWAYS ASK IF THERE IS A PRESENCE OR ABSENCE OF CHEST PAIN AND THIS MUST BE NOTED!!!**

RESPIRATORY

Sound	Description	Mechanism	Clinical Example
Crackles – fine (rales)	Discontinuous, high-pitched, short, crackling, popping sounds heard during inspiration & that are not cleared by coughing.	Inhaled air collides w/previously deflated airways: airways suddenly pop open, creating crackling sound.	Late inspiratory crackles occur w/restrictive disease: pneumonia, CHF, interstitial fibrosis. Early inspiration crackles occur w/obstructive disease: chronic bronchitis, asthma, and emphysema.
Crackles – coarse rales	Loud, low-pitched, bubbling, and gurgling sounds that start in early inspiration & may be present in expiration.	Inhaled air collides w/secretions in the trachea & large bronchi.	Pulmonary edema, pneumonia, pulmonary fibrosis, and in the terminally ill who have a depressed cough reflex.
Pleural Friction Rub	A very superficial sound that is coarse & low pitched; it has a grating quality as if two pieces of leather are being rubbed together. Sounds just like crackles, but close to the ear.	Caused when pleurae become inflamed & lose their normal lubricating fluid. Their opposing, roughened pleural surfaces rub together during respiration.	Pleuritis accompanied by pain with breathing. (Rub disappears after a few days if pleural fluid accumulates & separates pleurae.
Wheeze-high pitched	High-pitched, musical, squeaking sounds that predominate in expiration but may occur in both expiration & inspiration.	Air squeezed or compressed through passageways narrowed almost to closure by collapsing, swelling, secretions, or tumors.	Obstructive lung disease such as asthma or emphysema.

Wheeze-low pitched	Low-pitched, musical, snoring, moaning, sounds. They are heard throughout the cycle, although they are more prominent on expiration. May clear somewhat by coughing.	Airflow obstruction. The pitch of the wheeze cannot be correlated to the size of the passageway that generates it.	Bronchitis.
Stridor	High-pitched, monophonic, inspiratory crowing sound, louder in the neck than over chest wall.	Originating in larynx or upper airway obstruction from swollen, inflamed tissues or lodged foreign body.	Croup, and acute epiglottitis in children, and foreign body inhalation. Obstructed airway may be life threatening.

GASTROINTESTIONAL

- **Bowel Sounds:** Note character & frequency. They occur anywhere from 5 to 30 times per minute. Do not bother to count them. Judge if they are Expected, Hypoactive, Hyperactive, or absent. **ALWAYS AUSCULATATE BOWEL SOUNDS BEFORE PALPATION!**

Description	Number
Expected	Every 5-30 seconds
Hypoactive	< Every 30 seconds
Hyperactive	> Every 5 seconds
Absent	No sound for 5 minutes

Light & Deep Palpation

- **Light palpation:** Start in right lower quadrant. Use first 4 fingers close together, depress skin about 1 cm. Make a gentle rotary motion, lift the fingers (do not drag them), and move clockwise. Now perform deep palpation.
- **Deep palpation:** Pushing down about 5 to 8 cm (2-3 inches) with two hands. Moving clockwise, explore the entire abdomen.

SAFETY

- Side Rails up x1 or x2
- Bed in Low Position Y/N
- Call Light within Reach Y/N
- Bedside Table within Reach Y/N
- Phone within Reach Y/N
- PT ID Armband on? Y/N
- Allergy band on? Y/N
- Fall Risk Band on? NA Y/N

Revised Fall 2021

Tarrant County College
Associate Degree Nursing

Head To Toe Physical Assessment Rubric

Preparing for Exam
Gathers appropriate equipment
★Perform hand hygiene/don gloves
Introduce self/provide privacy/ Explanation of what you intend to do (complete Head to Toe assessment)
Confirm client ID with 2 identifiers
★ Assesses for allergies, including latex & tape allergies; Inquire regarding client reaction to allergen.
General Survey
Assess for general appearance (clean, groomed, unkempt, disheveled)
Assess LOC/orientation
Pain-what pain scale on a scale of 1-10. Assess for pain. If client is in pain, complete full pain assessment (rating, location, description).
Note speech (Clear & appropriate? Difficulty articulating? Aphasic? Language barrier)
Observes mood/affect
Head/Neck
Inspects for symmetry of features
Assesses eyes for PERRLA Most nurses only do PERRL.
Assess sclera & conjunctiva (color, discharge, edema)
Assess for sight deficits; wears corrective lenses or contacts?
Assess nares for symmetry, septal deviation, drainage, mucosa
Inspects oral mucosa for moisture and color, teeth gums, and lesions; assess use of dentures?
Assesses ability to swallow and chew
Inspects for drainage, abnormalities of ears
Assess for hearing loss; Wears hearing aid?
Assesses for range of motion of neck, ability to shrug shoulders
Thorax and Lungs
Inquiries about history of lung problems, smoking history
Assess for cyanosis around lips and mouth
Inspects thoracic cage for symmetry, appearance, and effort of breathing (use of accessory muscles)
Inspect respirations if regular or irregular? Unlabored or labored? Shallow or deep? Rate?
Inquire about any SOB; Difficulty breathing; Observes for use of accessory muscles and nasal flaring with breathing
Auscultates anterior, posterior, and lateral breath sounds (6 sites zig-zag pattern)
Inquire about cough. If yes, is it cough productive or nonproductive, if sputum present what is the color
Use of oxygen? Yes, route and liters per minute
Heart and Neck Vessels
Inquires regarding chest pain and history of heart problems
Auscultates heart sounds appropriately, assessing S1 and S2 sounds. (5 sites; aortic, pulmonic, ERB's, tricuspid, mitral) Note rate & rhythm
Assesses for jugular vein distention
If abnormal heart rate, determine apical pulse rate for one full minute (Need to verbalize and demonstrate where it is assessed)
Palpates radial pulses bilaterally and compare for equality; regular rate and rhythm; note strength of pulse
Abdomen
Inspect abdomen for color, contour, and lesions; Assess for pain prior to exam, and if present, assess characteristics of the pain.
Auscultate bowel sounds x4 quadrants, note frequency of bowel sounds. Assess last bowel movement; bowel movement pattern/habits at home, bowel incontinence
Palpate abdomen for tenderness/pain, masses, enlarged organs
Inquire about changes in appetite/diet patterns (Good, fair, poor; any change)
Inquire if having nausea or vomiting (note color, amount, frequency)

Musculoskeletal and Peripheral Vascular
Inquires regarding presence of musculoskeletal problems/pain
Assesses muscle strength of upper extremities: hand grips and arms movement against resistance, ability to move upper extremities, comparison of strength bilaterally
Assesses capillary refill of fingers/nails; Assess for cyanosis?
Assess color of nail bed and any nail abnormalities in the hands; Clubbing of nails
Tests ROM on major joints upper and lower extremities and observes for abnormalities
Inspects lower extremities for changes in skin color, condition, and edema
Checks capillary refill in toes; assess cyanosis
Palpates dorsalis pedis and posterior tibialis pulses bilaterally and compare equality; note strength of pulse
Assess muscle strength of lower extremities: leg pushes against resistance, ability to move lower extremities; comparison of strength bilaterally
Assesses gait, if applicable; Assisted or independent; assess use of assistive devices
Integumentary
Assesses all skin color, temperature, moisture, and alterations (rashes/lesions/bruising).
Assesses skin turgor
Assesses skin integrity: wounds, incision, pressure injury, redness over boney prominences
Assesses for presence of external lines/tubes/drains (i.e., PIV, CVC, surgical drain, chest tube etc.)
Genitourinary / Intake and Output
Inquires regarding presence of difficulty in urination (dysuria, frequency, hesitancy, leakage, incontinence)
Inquires regarding color, clarity, and odor of urine and amounts of intake and output
Performs assessment of genitalia if urinary catheter or symptoms are present (verbalize)
IV/Vascular
Assesses IV site access? If yes, what type? Location? Dressing CDI? Dressing Date? Assesses patency, signs of infection, infiltration, phlebitis?
Safety
Ensures safety by placing bed in low position/wheels locked/side rails x2 up/call light & bedside table within reach/area clear/clutter free
Hand hygiene
Professionalism
Proper dress, eye contact, distracting speech.

Tarrant County College
Associate Degree Nursing

Sterile Gloving

Practice the skill according to CDC guidelines.

IM/Sub-Q Landmarks

Practice the skill according to CDC guidelines.

Site	Needle Gauge and Length	Angle	Maximum Medication	Position	Landmarks
Intradermal	25-27 G 3/8-5/8 inch	5-15 degrees Bevel up	0.1 ml or less	Sitting or lying	• 3-4 finger breadths below antecubital space and 1 had width above the wrist
Subcutaneous	25-27 G ½-5/8 Inch	45 or 90 degrees	Less than 2 mL	Sitting or lying	• Upper arm, outer aspect • Abdomen: Avoiding 2 inch radius around the umbilicus • Anterior aspect of thigh
Deltoid	20-25 G 1-1.5 inch	90 degree	2 mL or less	Lying, sitting, standing support forearm with elbow flexed	• Lower edge of acromion process • Two-three finger breadths below • Draw imaginary line from across axilla (armpit) • Form upside down triangle with base on the top. • Inject into the center of the triangle
Vastus Lateralis	20-25 G Viscous: 18-21 G 5/8-1 inch	90 degrees	3 mL	Lying Supine or sitting. Leg straight	• Place one hand above the lateral femoral condyle • Place the other hand below the greater trochanter of the femur • Thumbs should point to each other • Inject in the middle third, anterior lateral aspect of the thigh
Ventral Gluteal	20-25 G Viscous: 18-21 G 1.5 inches	90 degree	3 mL	Lying on side with knee bent and upper leg ahead of the lower leg	• Using right hand for left hip and left hand for right hip, place the heel or palm over the greater trochanter • Point the thumb toward the groin • Point the index finger toward the anterior superior iliac spine • Middle finger point towards the ilia crest • Forms a v-shape • Inject between the -V • Make sure your fingers are never above the iliac crest

Tarrant County College
Associate Degree Nursing

IM/SQ Medication Administration

Shaded items are critical behaviors. While no points are awarded, they MUST be done. Each non-gray area is valued at 10 points . ● Dots indicate what is assessed for points.				Met	Partially Met	Not Met
Confirmation: Nurse's Station						
PREPARATION 60 Points		***** Identify client chart, review the two client identifiers and allergies** ***** Verify client identifiers on both provider's order and MAR** ***** Review client diagnosis and medical history** ***** Compare provider's medication orders with MAR**				
	2.5 pts each 10 pts	• Review lab values if indicated: **Med:** _____ **Lab:** _____ • Select correct medication from medication drawer • Verify name of medication with MAR • Verify right dosage of the medication with MAR				
	Medication Room: Med Pyxis and Supply Pyxis					
		***** Check medication administration rights #1 (with dosage calculation if necessary)** ***** Compare to MAR** ***** If allergic, verify client response to allergen**	**Client** **Medication** **Dose** **Route** **Time**			
	5 pts each 10 pts	• Gather correct supplies • Check package integrity	Syringe / Needle Clean / Dry / Intact Expiration Dates			
		***** Check medication administration rights #2 (with dosage calculation if necessary)**	**Client** **Medication** **Dose** **Route** **Time**			
	Client Room					
	2 pts each 10 pts	• Enter room, provide professional ID to client • Provide privacy • Perform hand hygiene • Don gloves and cleanse bedside table • Raise bedside table to working height	Name, Title, School			
		***** Identify client using two client identifiers** ***** Compare by visualizing client band and compare to MAR** ***** Check allergy band and verify match to MAR** ***** If allergic, have client verbalize responses to medications**				
	2.5 pts each 10 pts	Communicate specifics regarding medication	• What • When • Why • How			
	5 pts each 10 pts	• Communicate therapeutic / side effects • Additional client teaching (ex: w or w/o food)				
	5 pts each 10 pts	• Assess last injection site • Assess new site	Skin integrity Bleeding / bruising S&S infection/ muscle or SQ mass			

Shaded items are critical behaviors. While no points are awarded, they MUST be done. Each non-gray area is valued at 10 points . ● Dots indicate what is assessed for points.				Met	Partially Met	Not Met
		***** Check medication administration rights #3 (with dosage calculation if necessary)**	**Client** **Medication** **Dose** **Route** **Time**			
	10 pts	• Request 2nd nurse if appropriate				
	5 pts each 10 pts	• Clean medication vial • Open/store supplies aseptically				
	5 pts each 10 pts	• Pull correct amount of air into the syringe • Instill correct amount of air into the vial				
	5 pts each 10 pts	• Aspirate correct amount of medication • Remove medication from blunt tip needle				
	5 pts each 10 pts	• Replace blunt tip needle with correct needle • Prime new needle				
		Second Nurse / Instructor Check				
		***** Medication amount is correct** ***** Appropriate syringe is used** ***** Appropriate needle is used**				
	5 pts each 10 pts	• Raise bed if needed, side rail down if needed • Position client as necessary				
		***** Don gloves**				
	5 pts each 10 pts	• Identify landmarks • Cleanse site				
	5 pts each 10 pts	• Use appropriate injection technique for SQ or IM (Z-track if appropriate) • Use appropriate angle injection angle				
	2 pts each 10 pts	• Stabilize needle • Administer medication at proper rate (1ml/10 sec) • Withdraw needle • Apply pressure for appropriate amount of time • Assesses client's procedural pain level				
	5 pts each 10 pts	• Secure safety on needle • Discard sharps				
CONCLUSION 30 Points	2.5 pts each 10 pts	• Remove gloves • Ensure safety and comfort of client • Rails up, bed low, call light/table within reach • Hand hygiene upon exiting				
	10 pts	Document appropriately on MAR before leaving the room.				
	5 pts each 10 pts	Evaluate effectiveness of intervention (verbalize)	• Assess client response to med (therapeutic effects, side-effects, adverse reaction) • Injection site (bleeding, bruising, S&S of infection)			
PROFESSIONALISM	3.75 pts each 30 pts	Demonstrate professionalism by	• Always showing respect to client and instructor • Providing safe client care • Following established protocol(s) • Displaying organization skills • Bringing supplies to class & performance evaluation • Punctual • Adhering to the dress code • Using appropriate terminology			

- **A missed dosage calculation not corrected after the 3rd TRAMP or Recapping a "contaminated" needle. = Automatic failure**

Tarrant County College
Associate Degree Nursing

Nasogastric Tube Intubation

Shaded items are critical behaviors. While no points are awarded, they MUST be done. Each non-gray area is valued at 10 points . ● Dots indicate what is assessed for points.				Met	Partially Met	Not Met
PREPARATION 50 Points	**Confirmation: Nurse's Station**					
		***** Identify client chart, review the two client identifiers and allergies** ***** Verify client identifiers on provider's order** ***** Review client diagnosis and medical history**				
	Supply Room					
	5 pts each 10 pts	• Gather correct supplies • Check package integrity	Correct size tubing Clean / Dry / Intact Expiration Date			
	Client Room					
	2 pts each 10 pts	• Enter room, provide professional ID to pt • Provide privacy • Perform hand hygiene • Don gloves and cleanse bedside table • Raise bedside table to working height	Name, Title, School			
		***** Identify client using two client identifiers** ***** Verify by visualizing client band and comparing to provider's orders**				
		***** Check allergy band and verify with provider's order** ***** Inquire regarding allergies** ***** If allergic, note client allergic responses**	Tape Adhesive Latex Lubricant			
	2.5 pts each 10 pts	Communicate specifics regarding NGT	• What • How • When • Why			
	2.5 pts each 10 pts	Provide Client Teaching	• Distress signal • Do not manipulate or dislodge NGT • Call for help when getting out of bed • Keep head of bed elevated at least 30º			
	2 pts each 10 pts	Assess	• Nasal and GI history • Patency of nares, ROM of neck, **lung sounds** • Ability to sip and swallow • Abdomen via auscultation/palpation • Client able to participate w/ procedure			
PROCEDURE 80 Points	2.5 pts each 10 pts	Prepare workspace	• Elevate bed to working level • Lower side rail • Position client in sitting position (45-90º) • Prepare tape			
	2.5 pts each 10 pts	Prepare client	• Place drape over client's chest • Place drape over client's lap • Have client blow their nose • Provide client with cup of water			
		***** Correctly measure NGT** ***** Mark NGT with tape**				

	(This section continued from previous page)					
	5 pts	• Don PPE in correct order				
	5 pts each 10 pts	• Connect syringe to NGT • Curl NGT around fingers and lubricate NGT				
	2 pts each 10 pts	• Tilt client's head back to start insertion process • When resistance is met, tilt client's head forward • Continue insertion process • Have client sip throughout process • Secure NGT to nose				
		***** Check placement of NGT via aspiration of gastric contents** ***** Order X-ray to confirm placement (Gold Standard) prior to use**				
	5 pts each 10 pts	• Connect NGT to suction tubing • Secure to the gown				
	5 pts	• Doff PPE in correct order				
	5 pts each 10 pts	• Start suction at ordered parameters • Note amount of gastric output and color				
	10 pts	• Lower HOB to 30 degrees				
CONCLUSION 30 Points	2.5 pts each 10 pts	• Don clean gloves, clean stethoscope and penlight • Ensure client comfort, Ask client to rate pain 0-10. • Ensure client safety: Rails up, bed low, call light/table within reach • Hand hygiene upon exiting				
	10 pts	• Document appropriately in narrative notes				
	2 pts each 10 pts	Return to room to assess client response and evaluate effectiveness of intervention.	• Verify the measured tape mark is at nare • Check suction setting and observe gastric output • Turn off suction to auscultate bowel sounds, **lung sounds** • Palpate abdomen • Resume suction at ordered setting			
PROFESSIONALISM 30 Points	3.75 pts each 30 pts	Demonstrate professionalism by	• Always showing respect to client and instructor • Providing safe client care • Following established protocol(s) • Displaying organization skills • Bringing supplies to class & performance evaluation • Punctual • Adhering to the dress code • Using appropriate terminology			

***** The following actions will result in an automatic failure *****

- **Performing procedure without gloves**
- **Connecting suction tubing to blue vent port**

Tarrant County College
Associate Degree Nursing

Foley Catheter Insertion

Shaded items are critical behaviors. While no points are awarded, they MUST be done. Each non-gray area is valued at 10 points . ● Dots indicate what is assessed for points.				Met	Partially Met	Not Met
PREPARATION 50 Points		***** Review provider's orders** ***** Identify client using two client identifiers (Verify with provider's orders)**				
	5 pts each 10 pts	• Gather correct supplies • Check package integrity	Correct size catheter Clean / Dry / Intact / Expiration Date			
	2 pts each 10 pts	• Enter room, provide professional ID to pt • Provide privacy • Perform hand hygiene • Don gloves, cleanse bedside table, and allow to dry • Raise bedside table to working height	Name, Title, School			
		***** Identify client using two client identifiers** ***** Verify by visualizing client band and comparing to provider's orders**				
		***** Check allergy band and verify with provider's orders** ***** Inquire regarding allergies** ***** If allergic, note client allergic responses** **Allergy: _____ ; Response: _____**	Tape (Adhesive) Antiseptic (Betadine) Latex Lubricant			
	2.5 pts each 10 pts	Communicate specifics regarding urinary catheter	• What • When • Why • How			
	2 pts each 10 pts	Assess the following:	• Don gloves (verbalize) to palpate bladder • Inspect perineum • Conditions which may impair catheter passage • Client can independently clean perineum • Client can independently position client's leg			
	2 pts each 10 pts	Provide Client Teaching	• Catheter bag/tubing must remain below bladder • Do not pull on the catheter tubing • Do not let the catheter bag/tubing touch the floor • Increase water intake to decrease chance of UTI • Call for assistance to get out of bed			
Shaded items are critical behaviors. While no points are awarded, they MUST be completed. Each non-shaded area is valued at 10 points . ● Dots indicate what is assessed for points.				**Met**	**Partially Met**	**Not Met**
PROCEDURE 140	2.5 pts each 10 pts	Prepare workspace	• Elevate bed to hip/waist level • Lower side rail • Open outer package of catheter kit • Set plastic covering aside for trash			
	5 pts each 10 pts	Prepare client	• Position client and expose perineum • Repeat hand hygiene			
	5 pts each 110 pts	• Open catheter tray on bed using sterile technique • Place under-buttocks drape without compromising the sterility of the drape • Correctly don sterile gloves • Place sterile fenestrated drape over perineum *(optional)*				
	(This section is continued on the next page)					

		Prepare and position supplies on top tray:				
		• Separate and position catheter trays on sterile field				
		• Remove plastic sheath from catheter tubing				
		• Open lubrication pack				
		• Squirt lubrication into tray and lubricate the catheter tip				
		• Open sterile swabs and place in bottom tray				
		• Remove top tray from sterile field				
		• Expose urinary meatus				
		• Clean urinary meatus aseptically with sterile swabs x3 and discard				
		• Instruct the client to bear down				
		• Insert catheter using sterile technique				
		• Advance catheter until urine is seen then advance 1-2 inches further				
		• Release genitalia and hold catheter in place				
		• Attach prefilled syringe to catheter				
		• Inflate the balloon				
		• Instruct client to report any discomfort while inflating the balloon				
		• Disconnect syringe and remove fenestrated drape (if applicable)				
		• Tug gently on catheter to seat balloon at neck of bladder				
		• Correctly remove sterile gloves				
	2 pts each 10 pts	• Don clean gloves				
		• Secure catheter to client's upper thigh				
		• Place catheter tubing and bag over the client's leg				
		• Hang bag on bed frame				
CONCLUSION 30 Points	2 pts each 10 pts	• Discard supplies				
		• Ensure client comfort, Ask client to rate pain 0-10.				
		• Reinforce client teaching				
		• Ensure client safety: Rails up, bed low, call light/table within reach				
		• Hand hygiene upon exiting				
	10 pts	• Document appropriately in narrative notes				
	2 pts each 10 pts	Return to room to assess client response and evaluate effectiveness of intervention (verbalize).	• Pain on 0-10 scale			
			• Don clean gloves			
			• Catheter insertion site			
			• Urine output			
			• Catheter patency			
PROFESSIONALISM 30 Points	3.75 pts each 30 pts	Demonstrate professionalism by	• Always showing respect to client and instructor			
			• Providing safe client care			
			• Following established protocol(s)			
			• Displaying organization skills			
			• Bringing supplies to class & performance evaluation			
			• Punctual			
			• Adhering to the dress code			
			• Using appropriate terminology			

***** The following actions will result in an automatic failure *****

- **Performing procedure without gloves**
- **A third break in sterile technique, recognized or unrecognized is an automatic failure.**

Tarrant County College
Associate Degree Nursing

IV Venipuncture

Shaded items are critical behaviors. While no points are awarded, they MUST be done.				Met	Partially Met	Not Met
PREPARATION		*** Review provider's orders** *** Identify client using two client identifiers & verify with provider's orders**				
	0	Gather correct supplies Check package integrity	Correct size IV catheter Clean / Dry / Intact Expiration Date			
	0	• Enter room, provide professional ID • Provide privacy • Perform hand hygiene • Raise bed to working height • Raise bedside table to working height • Cleanse bedside table and allow to dry • Put side rail down	Name, Title, School			
		***** Identify client using two client identifiers** ***** Verify by visualizing client band and comparing to provider's orders**				
		***** Check allergy band** ***** Compare with provider's orders** ***** Inquire regarding allergies** ***** If allergic, note client allergic response**	Tape Adhesive Latex Antiseptic / Chloraprep			
	0	Communicate specifics re: IV start	What How When Why			
	0	Provide Client Teaching	• Procedure may be uncomfortable • Signs/symptoms of infection, phlebitis, infiltration, pain • Report if the dressing becomes loose, come off or starts leaking			
	0	Assess	• Open IV kit and remove tourniquet • Place tourniquet • Palpate radial pulse • Assess for appropriate site for IV • Previous IV location • Release tourniquet			
	0	Prepare Client	• Place disposable pad underneath extremity • Position the selected extremity • Cleanse site with antiseptic • Allow site to dry			
	0	Prepare Rest of Supplies • Prepares supplies • maintain sterility	• Prepare pieces of tape • Open the extension set tubing (saline lock) • Prime the 0.9% NS flush/syringe • Connect the flush/syringe to extension tubing • Prime the extension tubing over the trash • Place the extension tubing back into package • Peel the cover back on the IV start kit			

PROCEDURE 30 POINTS	**2 points each** **30 points**	Insertion of IV	• Reapply the tourniquet and assess radial pulse			
			• Don clean gloves			
			• Remove protective cap from IV catheter			
			• Stabilize vein			
			• Penetrate the skin at appropriate level with bevel up			
			• Observe for flashback			
			• When flashback seen lower catheter flush to skin			
			• Glide catheter off stylet			
			• Once fully inserted secure the safety guard			
			• Release tourniquet			
			• Remove stylet and connect extension tubing			
			• Aspirate for blood return; flush with 2-3 mL 0.9% NS			
			• Place transparent dressing on			
			• Tape/Secure extension tubing to extremity			
			• Label with date/time/initials			
CONCLUSION	0	• Discard catheter needle in sharps • Discard the rest of supplies • Ensure client comfort, Ask client to rate pain 0-10. • Ensure client safety: Rails up, bed low, call light/table within reach • Hand hygiene upon exiting				
	0	Document appropriately in narrative notes				
	0	Return to room to assess client response and evaluate effectiveness of intervention	• Pain on 0-10 scale • Catheter insertion site • Dressing clean / dry / intact • Continued patency • S&S of infection, infiltration, phlebitis			
PROFESSIONALISM	0	Demonstrate professionalism by	• Always showing respect to client and instructor			
			• Providing safe client care			
			• Following established protocol(s)			
			• Displaying organization skills			
			• Bringing supplies to class & performance evaluation			
			• Punctual			
			• Adhering to the dress code			
			• Using appropriate terminology			

If any one of the following behaviors is missed, it will automatically result in **REQUIRED REMEDIATION**.

1. **Failure to review provider's orders for prescribed procedure.**
2. **Failure to identify client by comparing armband to provider's orders.**
3. **Performing the procedure without gloves.**
4. **Disposing of sharps in trash can.**

Performance Evaluation

Putting it All Together

Tarrant County College
Associate Degree Program

SuperSim

Successful completion of the SuperSim will ensure that entering FastTrack students will be able to:

- Organize and complete assigned tasks in appropriate time.
- Perform Head to Toe assessment using a systematic approach.
- Demonstrate the ability to calculate medication dosage problems with 90% accuracy.
- Apply standard protocols for nursing interventions and universal precautions.
- Demonstrate the principles of non-parenteral (oral), parenteral (IM/SQ), and intravenous medication administration.
- Perform peripheral intravenous venipuncture (PIV).
- Perform nasogastric tube management.
- Apply the principles of sterile technique while performing urinary catheterization.
- Demonstrate verbal and nonverbal communication skills that are relevant, accurate, clear, complete, timely, understandable, and therapeutic.
- Demonstrate written communication skills that are legible, relevant, accurate, complete, and meaningful.

Students' clinical competency will be evaluated using the rubrics above as our guide. Testing is set in a realistic clinical scenario. Evaluators are looking for competence, so be organized and diligent in your intentions.

Review the rubrics of all clinical skills - nasogastric tube insertion, foley catheter insertion, IM/SQ injections, and IV starts. Be prepared to safely and accurately perform these skills in a limited amount of time.

  - perform a Head-to-Toe assessment,
  - identify an appropriate site for an IM or SQ injection and administer medication appropriately,
  - insert a nasogastric tube to intermittent low suction
  - don sterile gloves and maintain a sterile field while inserting a foley catheter,

Review the chart prior to the start of testing. The SBAR is the change of shift report from night shift to day shift.

A short pre-conference will be held to familiarize students with the setup. It is suggested that students write down questions so that the time may be used efficiently.

Students will have 1 hour to perform the skills of this activity.

Students must perform at an Independent or Supervised level. One may request assistance from the "preceptor" (faculty) if needed with no loss of points. However, any major correction needed (think patient safety, sterile field, etc) at any point in the skill performance will result in point deductions from the overall grade.

When performing the interventions, remember the concept of performing the least invasive interventions first and gradually moving to most invasive.

Tarrant County College
Associate Degree Nursing

Pre-Operative Priorities:
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Supplies / Medications needed:	
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Tarrant County College
Associate Degree Nursing

Evaluation

Student _____ **Faculty** _____

Clinical Skills SuperSim Performance Evaluation Standards				
Independent	**Supervised**	**Assisted**	**Provisional**	**Unsatisfactory**
• Performs each task (Assessment / IV / IM NGT / Foley) safely and accurately without directive cues from instructor. • Demonstrates manual dexterity. ▪ Spends minimal time on task. • Appears relaxed and confident during performance of tasks. • Applies theoretical knowledge accurately each time.	• Performs each task (Assessment / IV / IM NGT / Foley) safely and accurately but requires occasional supportive or directive cue from "preceptor." • Demonstrates coordination but uses some unnecessary energy to complete behavior/activity. • Spends reasonable time on task. • Appears generally relaxed and confident; occasional anxiety may be noticeable. • Applies theoretical knowledge accurately with occasional cues.	• Performs each task (Assessment / IV / IM NGT / Foley) safely and accurately but requires frequent supportive directive cues from instructor. • Demonstrates partial lack of skill and/or dexterity in part of activity; awkward. • Takes longer time to complete task. • Appears to waste energy due to poor planning or anxiety. • Identifies principles but needs direction to identify application.	• Performs one or two tasks (Assessment / IV / IM / NGT / Foley) safely under supervision, not always accurate and requires continuous supportive and directive cues from instructor. • Demonstrates lack of skill, uncoordinated in majority of tasks. • Performs task with considerable delay; activities are disrupted or omitted. • Wastes energy due to incompetence. • Identifies fragments of principles; applies principles inappropriately.	• Performs in an unsafe manner; unable to demonstrate behavior and requires continuous supportive and directive cues from instructor. • Performs in an unskilled manner; lacks organization. • Appears frozen, unable to move, non-productive. • Unable to identify principles or apply them. • Attempts activity or behavior, yet is unable to complete tasks.

Preparation	Comments
• Review orders and patient diagnosis. (Pre-sim) • Review patient assessment. (Pre-sim)	
Assessment	**Comments**
Independent ☐ Supervised ☐ Assisted ☐ Provisional ☐ Unsatisfactory ☐	
• Enter room, introduce self appropriately. • Compare client identifiers and allergies on provider's order, MAR, and ID band. • Systematic • Comprehensive • Explain purpose of interventions to follow	
IV Start	**Comments**
Independent ☐ Supervised ☐ Assisted ☐ Provisional ☐ Unsatisfactory ☐	
• Select appropriate IV equipment. Check integrity of supplies: clean / dry / intact / not expired. • Place tourniquet, assess for appropriate site, release tourniquet. • Prepare additional supplies. • Perform hand hygiene, don clean gloves, place tourniquet. • Stabilize vein, start IV using clean technique, connect extension tubing, place transparent dressing, secure tubing.	
IM / SQ	**Comments**
Independent ☐ Supervised ☐ Assisted ☐ Provisional ☐ Unsatisfactory ☐	
• Select appropriate medication and equipment. Check integrity of supplies: clean / dry / intact / not expired. • Check medication administration rights. Perform dosage calculation. • Draw medication correctly / Verify with colleague or instructor that medication amount is correct. • Perform hand hygiene, don clean gloves, and administer medication as appropriate.	
NGT	**Comments**
Independent ☐ Supervised ☐ Assisted ☐ Provisional ☐ Unsatisfactory ☐	
• Select appropriate equipment. Check integrity of supplies: clean / dry / intact / not expired. • Elevate bed to working level. Lower side rail. Position client in sitting position (45-90^{o}) and prepare needed. • Correctly measure NGT and mark NGT with tape. Verbalize correct order to don PPE. • Place NGT. Order X-ray to confirm placement prior to use. • Start suction at ordered parameters. Lower HOB to no less than 30^{o}. Verbalize correct order to doff PPE.	
Foley	**Comments**
Independent ☐ Supervised ☐ Assisted ☐ Provisional ☐ Unsatisfactory ☐	
• Select appropriate equipment. Check integrity of supplies: clean / dry / intact / not expired. • Elevate bed to hip/waist level. open outer package of catheter kit. Position client and expose perineum. • Perform hand hygiene, open catheter tray on bed using sterile technique, place blue under-buttocks drape correctly • Correctly don sterile gloves. Prepare contents of tray. • Place foley catheter without compromising sterile technique. Secure catheter to upper thigh. Hang bag on bedrail.	

Patricia Green Chart

Tarrant County College District Associate Degree Nursing FastTrack					
Name: Green, Patricia	DOB: 02/09/54	Age: 69	Gender: F	**Medical Record #**	
Provider: Lake	Code Status: **FULL**		DNR	**1234567890**	
Isolation Precautions: None	Height: 69" 175.26cm		Weight: 223lb 102.05 kg		
Service: Med-Surg; Oncology			**Allergies: Penicillin**		

SBAR Hand-off Communication
Today @ 0645

S **Situation**	**Current problem / change in condition** • **critical labs,** • unstable VS • pain • **change in LOC** • difficulty breathing • **bleeding** • Recent Nursing interventions • Medical interventions	• Pain constant aching; 9/10 without meds • Nausea/Vomiting, Smells like stool. Hematemesis x2; 100 mL then 250 mL this morning (2am); Physician notified. • H&H decreased (12/38) • **0430** Morphine 4mg / Phenergan 12.5mg IM LVL; pain decreased to 6/10 • **0600** – Toradol 30 mg IV; Pain 5/10 at 0630 • IV infiltrated after Toradol admin; dc'd
B **Background**	**Summary of PMH** • Diagnosis • Isolation • Physician / Consults **Clinical / diagnostic / labs / tests** • tests results **Plan of Care** • I/O • IVs • Medications • Diet • Activity • Equipment • Treatments / O_2 • Teaching	• Client underwent surgery 3 weeks ago for an uncomplicated removal of cancerous tumor. Recovery was progressing uneventfully. • Client was re-admitted 3 days ago for intractable abdominal pain. R/O Bowel Obstruction. • NPO, NGT, IV • Client is to undergo an exploratory laparoscopy for suspected bowel obstruction; may progress to open incision; was to be "worked-in" around other previously scheduled surgeries. • Provider rounded at 0400 and decided urgent intervention needed. • Provider pulled NGT, wants fresh NGT placed prior to surgery • Now first or second surgery of the day • Possible open abdominal surgery • **K+ 3.2**; asymptomatic; plan is to treat post-op
A **Assessment**	• VS / Pain Scale • Neuro • Respiratory • Cardio (rhythm, rate) • Metabolic • GI • GU • Skin/Incisions • Mobility • Psychosocial	• VSS; afebrile • Pain throughout shift. Now 5/10. • 8 inch N/S abdominal incision healing well. • Abdomen distended, firm, tender around previous incision site, esp at top of site, area of transverse colon. • Irritable and anxious d/t pain but esp regarding pending surgery.
R **Recommendation**	• Recommendations & interventions for treatment, level of care • Requests	• Hold AM dose of heparin per orders • BSG 132; no insulin needed. • Needs IV, no less than 20 gauge (Possible blood administration during/after sgy) • Needs Versed • Needs new NGT • Needs foley catheter.

Tarrant County College District Associate Degree Nursing FastTrack					
Name: Green, Patricia	DOB: 02/09/54	Age: 69	Gender: F	**Medical Record #**	
Provider: Lake	Code Status: **FULL**		DNR	**1234567890**	
Isolation Precautions: None	Height: 69" 175.26cm		Weight: 223lb 102.05 kg		
Service: Med-Surg; Oncology			**Allergies: Penicillin**		

Tarrant County College District
Associate Degree Nursing

Nursing | Flow Sheets | **Provider** | Labs & Diagnostics | MAR | Collaborative Care | Other

HEALTH CARE PROVIDER ORDERS

Date/Time	Description	Provider
Yesterday 1730	• Admit to 5 South Medical PCU ○ Admitting Diagnosis: Abdominal Pain, Nausea/Vomiting, R/O Bowel Obstruction • Start IV (saline well only) • Out of bed with assistance • Vital signs every 4 hours • Finger stick blood glucose ac & hs • Labs: CBC, CMP, PTT • Nasogastric tube to low intermittent suction	Dr. Lake

HEALTH CARE PROVIDER PRESCRIPTIONS

Date/Time	Description	Provider
Yesterday 1730	Regular Insulin subcutaneous four times daily ** Check bedside glucose results prior to administration **	Dr. Lake

Sliding Scale Coverage	
Over 360	45 units
331 - 360	40 units
301 - 330	35 units
271 - 300	30 units
241 - 270	25 units
211 - 240	20 units
181 - 210	15 units
150 - 180	10 units
149 or less	None

Heparin 6500 units subcutaneous twice daily
** Check PTT result prior to administration **

Morphine 4 mg and promethazine 12.5 mg IM every 4 hours PRN pain 6 - 10/10

Toradol 30 mg IV every 6 hours for pain 6-10/10
Do not exceed 120 mg/day

HEALTH CARE PROVIDER Pre-Operative ORDERS AND PRESCRIPTIONS

Today 0430	• **Hold AM heparin.** • **Midazolam 5 mg IM x1** • **Place IV; no less than 18 g** • **Replace nasogastric tube, low intermittent suction.** • **Place foley catheter**	

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Tarrant County College District
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Nursing | **Flow Sheets** | **Provider** | **Labs & Diagnostics** | **MAR** | **Collaborative Care** | **Other**

Assessment

Today @ 0700

General

Vital Signs BP 105 / 55 T 99.2 P 116 R 24 O_2 Sat: 98% Pain: 7 / 10; uncomfortable

Pain

Location, Character / Associated Signs and Symptoms / Interventions And Effectiveness

Pt c/o generalized abdominal discomfort, 7/10

Appearance / Affect, Facial Expression / Posture, Gait / Speech

Pt irritated pain, pending surgery

Neurological **WNL**

LOC / Fall Risk Assessment

Alert and oriented; Fall Risk Assessment 6 (high) per Hendrick assessment.

Head, Eyes, Ears, Nose, Throat (HEENT) **WNL**

Respiratory **WNL**

Rate, Rhythm, Depth, Effort / Accessory Muscle Use / Chest Expansion / Breath Sounds

Oxygen Room Air NC FM	Respirations deep, even and unlabored; Lungs clear bilaterally.

Cardiovascular **WNL**

Apical Pulse Characteristics: S1S2, No murmur	Rhythm: Reg	Apical Rate: 116	Capillary Refill: < 3 secs
Peripheral/Sacral Edema: none	Radial Pulse: Right 2+	Left 2+	Pedal Pulse: Right 2+ Left 2+

Tachycardic secondary to elevated temp.

Gastrointestinal **WNL**

Abdominal Shape / Appearance / Bowel Sounds / Tenderness / Last BM, Usual Pattern

Bowel Sounds absent all four quadrants; Abdomen firm, distended and tender to palpation; No flatus per pt report. No BM x 6 days

Renal / Urinary **WNL**

Voiding: Pattern Amount, Color, Clarity, Urgency, Frequency / Pain On Voiding / Bladder Distention

Musculoskeletal **WNL**

Skin / Hair / Nails / Wounds **WNL**

Color, Texture, Hygiene, Moisture / Intactness, Lesions, Breakdown, Braden Pressure Ulcer Assessment

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Medication Administration Record

Date	Medication	Dose	Frequency	Route	Time Due	Date Given	Time Given	Lab Results or Other Parameters	Site	Init
XX/XX 1730	Regular Insulin Sliding Scale ***HIGH ALERT DRUG***		Four times daily	SQ	0730					
	Over 360	45 units			1130					
	331 - 360	40 units								
	301 - 330	35 units								
	271 - 300	30 units			1630					
	241 - 270	25 units								
	211 - 240	20 units								
	181 - 210	15 units			2100					
	150 - 180	10 units								
	149 or less	None								
	Confirm bedside glucose result prior to administration									
XX/XX 1730	Heparin ***HIGH ALERT DRUG*** ***Confirm PTT result prior to administration***	6500 units	Twice daily	SQ	0900 2100					
XX/XX 1730	Morphine	4 mg	Every 4 hours	IM	PRN pain 6-10					
	Promethazine	12.5 mg								
XX/XX 1730	Toradol ***Do not exceed 120mg/day***	30 mg	Every 6 hours	IV	PRN Pain 6-10					
ZZ/XX 0530	Lactated Ringers	125 mL	Continuous	IV						
ZZ/XX 0530	Midazolam	5 mg		IM	One time					

Injection Site Codes

RLQ or LLQ: right or left lower abdomen
RUQ or LUQ: right or left upper abdomen
RVL or LVL: right or left vastus lateralis
RD or LD: right or left deltoid
RVG or LVG: right or left ventrogluteal
RUE or LUE: right or left upper arm

Date	Initials	Signature and Credentials
XX/XX		
XX/XX		

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Hematology

		Date Today Time 0400	Date Time	Date Time	Range
Complete Blood Count					
White Blood Cells	**WBC**	17,500			> 2 yrs old 5000 – 10000
Red Blood Cells	**RBC**	4.4			M: 4.7 - 6.1 F: 4.2 - 5.4
Hemoglobin	**HGB**	12			M: 14 – 18 F: 12 – 16
Hematocrit	**HCT**	38			M: 42 – 52 F: 37 – 47
Platelet Count	**PLT**	320			150 – 400 (thousand)
Differential Count					
Neutrophils					55 – 70
Lymphocytes					20 – 40
Monocytes					2 – 8
Eosinophils					1 – 4
Basophils					0.5 - 1.0
Cardiac Profile					
Ck					M: 55 – 170 F: 30 – 135
Ck MB					-0-
Cardiac Specific Troponins:					< 0.2 < 0.03
B-Natriuretic Peptide	**BNP**				< 100
Clotting Studies					
Prothrombin Time	**PT**				11 – 12.5
International Normalized Ratio	**INR**				0.8 – 1.1
Partial Thromboplastin Time	**PTT**	60 sec			60 – 70
Activated Clotting Time					70 – 120
Lipid Profile					
Cholesterol					< 200
High Density Lipoprotein					M: > 45 F: > 55
Low Density Lipoprotein					< 130
Triglycerides					M: 40 – 60 F: 35 – 135

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Chemistry

Complete Metabolic Profile *Basic Metabolic Profile	**Date Today**	**Date**	**Date**	**Date**	**Range**
	Time 0400	**Time**	**Time**	**Time**	
*Sodium	142				136 – 145
*Potassium	3.2				3.5 – 5.0
*Chloride	104				98 – 106
*Co_2	26				23 – 30
*Glucose	103				70 – 110
*Calcium	9.9				9.0 –1 0.5
Magnesium	2.3				1.6 - 2.6
Albumin	4				3.5 – 5
Total Protein	7				6.4 – 8.3
*Blood Urea Nitrogen	17				10 – 20
*Creatinine	1.3				M: 0.6 – 1.2 F: 0.5 – 1.1
Alkaline Phosphatase					30 – 120
Alanine Aminotransferase					4 – 36
Aspartate Aminotransferase					0 – 35
Ammonia					9 – 33
Bilirubin					0.3 – 1.0
Amylase					Adult 25 - 125 Elderly 21 - 160
Lipase					Adult 10 - 140 Elderly 18 - 180
GFR					> 60
BC ratio					

Tarrant County College District Associate Degree Nursing

Nursing | **Flow Sheets** | **Provider** | **Labs & Diagnostics** | **MAR** | **Collaborative Care** | **Other**

Bedside Glucose

Date	**Time**	**Result**	**Normal**	**Insulin Required**	**Dose Given**
XX/XX/XX	**0700**	132	65-110 mg/dl		
XX/XX/XX	**1100**		65-110 mg/dl		
XX/XX/XX	**1600**		65-110 mg/dl		
XX/XX/XX	**2030**		65-110 mg/dl		

Tarrant County College District
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FastTrack

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DATE/TIME	Narrative Notes

Revised 2023_12_01