

# Essentials of Medication Administration

VNSG 1227

# Calculations of Drug Dosages

Calculations Used in Patient  
Assessments

# Learning Objectives

1. State the equivalent metric and household approximate equivalents
2. Convert a unit of measure to its equivalent within the same system
3. Convert a unit from one system of measurement to its equivalent in another system of measurement
4. Convert between units of weight: pounds and kilograms, pounds and ounces to kilograms
5. Convert between traditional and international time
6. Dimensional Analysis is the only calculation method taught and used in the course



# Medical Math

# Converting

- Changing from one form to another
  - Within same system (e.g., mg to mcg)
  - Between systems (e.g., oz to mL)
- Converting is a necessary skill used to administer the ordered amount of medication

**TABLE 8-1**    **Approximate Equivalents to Remember**

1t = 5 mL
1 T = 3 t = 15 mL
1 oz = 30 mL (2 T)
1 pt = 16 oz (500 mL)
1 qt = 32 oz (2 pt), (1,000 mL)
1 cup (measuring) = 8 oz
16 oz = 1 lb
2.2 lb = 1 kg (1,000 g)
1 in = 2.5 cm

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*Note:* Equivalents in the table are those used most often. The preferred and accurate unit for liquid measurements is milliliter (mL).

**MEMORIZE!**

# Tablespoon

*Is Abbreviated*

**T**

**TB**

**tbsp**

**tbl**

**tbs.**

[CapitalizeMyTitle.com](https://www.CapitalizeMyTitle.com)

# Teaspoon

*Is Abbreviated*

**tsp.**

**t**

**CapitalizeMyTitle.com**

# Review the Help Sheets

- VNSG 1227 EMA Quia Page
  - Conversion Equivalents to Memorize
  - Rules for Dosage Calculations
  - Dimensional Analysis: Oral and Parenteral Calculations
  - Decimals

# Equivalents Among Metric and Household Systems


- Equivalents are not exact
- Amounts are set by government agencies
- Memorization of equivalents is essential for:
  - Proficiency in medication administration
  - Ensuring that clients can safely self-administer medications
- Learn equivalents before using conversion

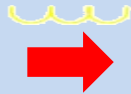
# Converting

1. Memorization is essential
2. Think of equivalents as ratios
  - $1 \text{ g} = 1,000 \text{ mg}$  is a conversion factor
3. Follow basic math rules for all systems
4. Express answers using rules related to the system to which you are converting (e.g., decimals for metric)
5. **THINK CRITICALLY**—use appropriate equivalents
6. Does the answer make sense?

# Converting: Moving Decimals

Only use with metric conversions

- Bigger to smaller
  - L to mL
  - Point arrow to the right (Big  Small)
  - Move decimal to right
  - 0.850 L = 850 mL



# Converting: Moving Decimals




Only use with metric conversions

- Smaller to bigger

- mg to g

- Point arrow to the left (Small  Big)

- Move decimal to left

- 350 mg = 0.350 g  
  
  


Remember to always place a zero (0) in front of the decimal point to indicate a value that is less than 1.

Essentials of Medication Administration  
**Dimensional Analysis - ORAL & PARENTERAL CALCULATIONS**  
**STUDENT HELP SHEET**

**A. CONVERTING** (See Chapter 8 & 9)

$$\text{unit X} = \frac{\text{Convert to}}{\text{Given}} \times \text{X}$$

**Example:** Convert 38 lb to kg

$$\begin{aligned} 38 \text{ lb} &= \text{_____ kg} \\ \text{kg}(x) &= \frac{1 \text{ kg}}{2.2 \text{ lb}} \times \frac{38 \text{ lb}}{1} \\ x &= 17.3 \text{ kg} \end{aligned}$$

**B. DOSAGE CALCULATIONS** (See Chapter 16)

**1. No conversion needed:**

$$\text{unit x} = \frac{\text{Available}}{\text{Order}} \times \text{X}$$

**Example:**

Order: Vistaril 15 mg IM q4h  
 Available: Vistaril 30 mg/2mL

$$\begin{aligned} \text{mL}(x) &= \frac{2 \text{ mL}}{30 \text{ mg}} \times \frac{15 \text{ mg}}{1} \\ x &= 1 \text{ mL} \end{aligned}$$

**2. Conversion needed:**

$$\text{unit x} = \frac{\text{Available}}{\text{Conversion}} \times \text{X} \times \text{Order}$$

**Example:**

Order: Ampicillin 0.5 g IM q6h  
 Available: Ampicillin 250 mg per mL

$$\begin{aligned} \text{mL}(x) &= \frac{1 \text{ mL}}{250 \text{ mg}} \times \frac{1,000 \text{ mg}}{1 \text{ g}} \times \frac{0.5 \text{ g}}{1} \\ x &= 2 \text{ mL} \end{aligned}$$

**C. CALCULATE SAFE DOSAGES BY WEIGHT** (See Chapter 25)

**First – Check** - Are the units the same in the Medication ORDER and Medication AVAILABLE?  
 (If they are the same start at Step #2. – If they are not the same, conversion is needed - start at Step #1)

**Step #1:** (convert lb to kg) (use format A above & see example)

**Step #2:** Calculate to see if the ordered dose is safe:  
 (If the recommend is a range, the calculation below must be performed twice to get the safe range)

$$\text{mg}(x) = \frac{\text{Recommend}}{\text{Weight (in kg)}} \times \text{X}$$

**Example:** Order: Vistaril 15 mg IM q4h  
 Recommend: 0.5 to 1 mg/kg/dose q 4 h  
 Available: 30 mg/2mL

Weight: ~~38 lb~~ 17.3 kg (see conversion example in format A above)

$$\begin{aligned} \text{mg}(x) &= \frac{0.5 \text{ mg}}{\text{kg/dose}} \times \frac{17.3 \text{ kg}}{1} \\ x &= 8.65 \text{ mg/dose} \end{aligned}$$

$$\begin{aligned} \text{mg}(x) &= \frac{1 \text{ mg}}{\text{kg/dose}} \times \frac{17.3 \text{ kg}}{1} \\ x &= 17.3 \text{ mg/dose} \end{aligned}$$

**Safe dose range = 8.65 – 17.3 mg/dose**

**Step #3:** Compare answer in Step #2 to the Order to see if the order is Safe.  
 If it is not safe – STOP - and call the MD.

**Step #4:** If it is safe, perform the dosage calculation (use format B above) and administer the medication.  
 (See dosage calculation in B1 example)

A. **CONVERTING** (See Chapter 8 & 9)

$$\text{unit X} = \frac{\text{Convert to}}{\text{Given}} \times$$

**Example:** Convert 38 lb to kg

$$\begin{aligned} 38 \text{ lb} &= \text{ \_\_\_\_\_\_ } \text{ kg} \\ \text{kg}(x) &= \frac{1 \text{ kg}}{2.2 \text{ lb}} \times \frac{38 \text{ lb}}{1} \\ x &= 17.3 \text{ kg} \end{aligned}$$

# Converting: Dimensional Analysis

## Steps:

1. Identify the unit to which you are converting
2. Write the conversion factor in fraction format, so that the desired unit is in the numerator of the fraction. This is written first in the equation, followed by a multiplication sign.
3. Write the unit in the successive numerator to match the unit of measure in the previous denominator.
4. Cancel the alternate denominator/numerator units to leave the desired unit (being calculated)
5. Perform the mathematics

# Converting: Dimensional Analysis (Cont.)

0.12 kg to g (both metric)

$$x \text{ g} = \frac{1,000 \text{ g}}{1 \text{ kg}} \times 0.12 \text{ kg}$$

Cancel the units:  $x \text{ g} = \frac{1,000 \text{ g}}{1 \cancel{\text{ kg}}} \times 0.12 \cancel{\text{ kg}}$

$$1,000 \times 0.12 = 120 \text{ g}$$

$$x = 120 \text{ g}$$

# Converting: Dimensional Analysis

- Pounds to kilograms

How many kilograms are equal to 110 lb?

➤ 110 lb = x kg

$$x \text{ kg} = \frac{1 \text{ kg}}{2.2 \text{ lb}} \times \frac{110 \text{ lb}}{1}$$

$$x \text{ kg} = \frac{110}{2.2}$$

$$x = 50 \text{ kg}$$

# Case Study

Mr. Hain is complaining of 7 out of 10 abdominal pain. The following order is in Mr. Hain's Chart:

Dilaudid 1,000 mcg IV q 3 hr prn severe pain.

You decide to administer Dilaudid since it has been 4 hr since he last received it. Dilaudid is available in 2 mg/mL. How many milliliters will you give?

## B. DOSAGE CALCULATIONS (See Chapter 16)

### 1. No conversion needed:

$$\text{unit } x = \frac{\text{Available}}{\text{}} \times \frac{\text{Order}}{\text{}}$$

### 2. Conversion needed:

$$\text{unit } x = \frac{\text{Available}}{\text{}} \times \frac{\text{Conversion}}{\text{}} \times \frac{\text{Order}}{\text{}}$$

#### Example:

Order: Vistaril 15 mg IM q4h

Available: Vistaril 30 mg/2mL

$$\begin{aligned} \text{mL}(x) &= \frac{2 \text{ mL}}{30 \text{ mg}} \times \frac{15 \text{ mg}}{1} \\ x &= 1 \text{ mL} \end{aligned}$$

#### Example:

Order: Ampicillin 0.5 g IM q6h

Available: Ampicillin 250 mg per mL

$$\begin{aligned} \text{mL}(x) &= \frac{1 \text{ mL}}{250 \text{ mg}} \times \frac{1,000 \text{ mg}}{1 \text{ g}} \times \frac{0.5 \text{ g}}{1} \\ x &= 2 \text{ mL} \end{aligned}$$

# Dose Calculation: Dimensional Analysis

$$x \text{ mL} = \begin{array}{c} \text{Available} \\ \downarrow \\ \frac{1 \text{ mL}}{2 \text{ mg}} \end{array} \times \begin{array}{c} \text{Conversion} \\ \downarrow \\ \frac{1 \text{ mg}}{1000 \text{ mcg}} \end{array} \times \begin{array}{c} \text{Order} \\ \downarrow \\ \frac{1000 \text{ mcg}}{1} \end{array}$$

$$x \text{ mL} = \frac{1000 \text{ mL}}{2000}$$

$$x \text{ mL} = 0.5$$

$$x = 0.5 \text{ mL}$$

# Calculating Intake and Output

- Abbreviated as I&O
- Used to monitor fluids consumed, injected, and excreted
- Includes intake of “pseudo” solids that become liquid at body temperature—gelatin, popsicles
- Includes liquids that exit the body—diarrhea, urine, vomitus, chest tube drainage

# Calculating I&O (Cont.)

- Preferred method is milliliters (mL)
- May require conversion—household to metric
- Each time a client takes oral liquids, the amount and time are recorded on the appropriate form.
- Totaled every 24 hours

# Calculating I&O (Cont.)

- I&O record usually has key for conversions (e.g., 6 oz coffee cup = 180 mL)
- After conversions, items are added for totals

1/3 glass apple juice	(1 glass = 6 oz)	=	60 mL
1/2 cup coffee	(1 cup = 8 oz)	=	120 mL
1/2 pint milk	(1 pint = 500 mL)	=	<u>250 mL</u>
			430 mL

Juice glass - 180 mL      Jello cup - 150 mL  
 Water glass - 210 mL      Ice cream - 120 mL  
 Coffee cup - 240 mL      Creamer - 30 mL  
 Soup bowl - 180 mL  
 Small water cup - 120 mL


Addressograph with Client Information

Date October 30, 2017

INTAKE						OUTPUT				
ORAL			IV			TIME	URINE	STOOL	OTHER	
TIME	TYPE	AMT	TIME	TYPE	AMOUNT ABSORBED					
8A	Juice	60 mL								
	Coffee	120 mL								
	Milk	250 mL								

Figure 8-1 Sample I&O flow sheet.

# Calculating I&O (Cont.)

- Record intravenous (IV) fluid intake
- Method of recording varies with institutions
- Urine is sometimes recorded hourly
  - **Adult hourly output should be 30 mL or more** 
  - To find average, add up total urine and divide by number of hours being recorded
- Check institution policies to comply with charting requirements on I&O record

# Case Study

Mr. Hain's nausea and abdominal pain are well controlled with prn medication, and he is in stable condition. Before you give a report to the oncoming nurse you must calculate Mr. Hain's total I&Os during your 8 hour shift and enter the data in milliliters.

## Intake

1.5 L of IV D5 NS

4 oz ice chips

100 mL IV Flagyl

## Output

1 L urine

200 mL emesis

JP Drain 30 mL

# Case Study (Cont.)

ANS:

Intake: 1,720 mL

Output: 1,230 mL

# Average Hourly Urine Output

1. 740 mL urine in 8 hours
2. 280 mL urine in 4 hours
3. 610 mL urine in 24 hours

What is the hourly urine output for each example and which is insufficient to maintain proper renal function?

# Convert the Following

1. 6 oz = ? cups

2. 0.125 mcg = ? mg

3. 42 lb = ? kg

4. 3 c = ? mL

# Converting: Dimensional Analysis

## #1 Ounces to cups

How many cups are equal to 6oz?

➤ 6 oz = x cup

$$x \text{ cup} = \frac{1 \text{ cup}}{8 \text{ oz}} \times \frac{6 \text{ oz}}{1}$$

$$x \text{ cup} = \frac{6}{8} \text{ cup}$$

$$x = \frac{3}{4} \text{ cup}$$

# Convert the Following

1. **6 oz =  $\frac{3}{4}$  cups**

2. 0.125 mcg = ? mg



3. 42 lb = ? kg

4. 3 c = ? mL

# Converting: Moving Decimals

#2 0.125 mcg = ? mg

Move decimal method – use only with metric conversions

- Smaller to bigger 
  - mcg to mg
  - Point arrow to the left (Small  Big)
  - Move decimal to left
  - 0.125 mcg = 0.000125 mg



Remember to always place a zero (0) in front of the decimal point to indicate a value that is less than 1.

# Converting: Dimensional Analysis

Conversion Factor



$$x \text{ mg} = \frac{1 \text{ mg}}{1000 \cancel{\text{ mcg}}} \times \frac{0.125 \cancel{\text{ mcg}}}{1}$$

$$x \text{ mg} = \frac{0.125 \text{ mg}}{1000}$$

$$x \text{ mg} = 0.000125 \text{ mcg}$$



Remember to always place a zero (0) in front of the decimal point to indicate a value that is less than 1.

# Convert the Following

1. **6 oz =  $\frac{3}{4}$  cups**

2. **0.125 mcg = 0.000125 mg**

3. 42 lb = ? kg

4. 3 c = ? mL

# Converting: Dimensional Analysis

## #3 Pounds to kilograms

How many kilograms are equal to 42 lb?

➤  $42 \text{ lb} = x \text{ kg}$

$$x \text{ kg} = \frac{1 \text{ kg}}{2.2 \text{ lb}} \times \frac{42 \text{ lb}}{1}$$

$$x \text{ kg} = \frac{42}{2.2} \text{ kg}$$

$$x = 19.09 \text{ kg}$$

$$x = 19.1 \text{ kg}$$

# Convert the Following

1.  $6 \text{ oz} = \frac{3}{4} \text{ cups}$

2.  $0.125 \text{ mcg} = 0.000125 \text{ mg}$

3.  $42 \text{ lb} = 19.1 \text{ kg}$

4.  $3 \text{ c} = ? \text{ mL}$

# Dose Calculation: Dimensional Analysis

#4 3 cups = ? mL

$$x \text{ mL} = \frac{30 \text{ mL}}{1 \cancel{\text{ oz}}} \times \frac{8 \cancel{\text{ oz}}}{1 \cancel{\text{ cup}}} \times \frac{3 \cancel{\text{ cup}}}{1}$$

$$x \text{ mL} = \frac{720}{1} \text{ mL}$$

$$x \text{ mL} = 720 \text{ mL}$$

# Convert the Following

1. **6 oz =  $\frac{3}{4}$  cups**

2. **0.125 mcg = 0.000125 mg**

3. **42 lb = 19.1 kg**

4. **3 c = 720 mL**

# Additional Conversions Useful in the Health Care Setting

# Conversions: Metrics and Length

- Metric measures are used for:
  - Pupil size expressed in mm
  - Baby's head circumference expressed in cm
  - Wounds and incisions  
(length × width × depth in cm)

# Conversions: Metrics and Length

- Conversion factor:  $1 \text{ cm} = 10 \text{ mm}$

If incision is 25 cm, how many mm is it?

# Converting: Dimensional Analysis

- cm to mm

How many millimeters are equal to 25 cm?

➤ 25 cm = x mm

$$x \text{ mm} = \frac{10 \text{ mm}}{1 \text{ cm}} \frac{x \cancel{25 \text{ cm}}}{1}$$

$$x \text{ mm} = \frac{250}{1}$$

$$x = 250 \text{ mm}$$

# Metric System

- A mnemonic to help remember the important metric prefixes order from largest measurement to smallest:

<b>Kitty</b>	<b>Hawk</b>	<b>Doesn't</b>	<b>Drink</b>	<b>Canned</b>	<b>Milk</b>	<b>Much</b>
kilo	hecto	deka	deci	centi	milli	micro

“King Henry died drinking chocolate milk Monday”

Each metric unit gets 10 times bigger.



x10

x10

x10

x10

x10

x10



Kilometer	Hectometer	Decameter	Meter	Decimeter	Centimeter	Millimeter
1km = 1000 m	1hm = 100 m	1 dam = 10 m	1 m	1 dm = 1/10 m = 0.1m	1cm = 1/100 m = 0.01m	1mm = 1/1000m = 0.001m

÷10

÷10

÷10

÷10

÷10

÷10



Each metric unit gets 10 times smaller.

# Conversions: Metrics and Length

Conversion factor:  $1 \text{ cm} = 10 \text{ mm}$

If incision is 25 cm, how many mm is it?

- Think: cm is larger and mm is smaller
- Larger (bigger) to smaller move the decimal to the right

Answer:  $25 \text{ cm} = 25.0 \text{ cm} = 250. \text{ mm} = 250 \text{ mm}$

# Conversions: Metrics and Length (Cont.)

- Conversion factor: 1 inch = 2.5 cm

Convert 30 cm to inches (in.)

# Conversions: Metrics and Length (Cont.)

- Convert 30 cm to inches (in.)
  - How many inches are equal to 30 cm?
  - Answer in whole number
  - $30 \text{ cm} = x \text{ inches}$

# Converting: Dimensional Analysis

- Centimeters to inches

How many inches are equal to 30 cm?

➤ 30 cm = x inches

$$x \text{ inch} = \frac{1 \text{ in}}{2.5 \text{ cm}} \times \frac{30 \text{ cm}}{1}$$

$$x \text{ inch} = \frac{30 \text{ in}}{2.5}$$

$$x \text{ inch} = 11.81 \text{ in}$$

$$x \text{ inch} = 12 \text{ in}$$

# Conversions Relating to Weight

- Body weight is important in calculating doses for certain medications delivered in mg or mcg per kilogram
- Nurse needs to determine and administer medication dosages accurately and safely.
- May need to convert pounds and ounces in pediatric calculations

# Converting: Dimensional Analysis

## Pounds to kilograms

How many kilograms are equal to 110 lb?

- Equivalence: 1 kg = 2.2 lb
- 110 lb = x kg

$$x \text{ kg} = \frac{1 \text{ kg}}{2.2 \text{ lb}} \times \frac{110 \text{ lb}}{1}$$

$$x \text{ kg} = \frac{110}{2.2}$$

$$x = 50 \text{ kg}$$

# Conversions Relating to Weight (Cont.)

## Pounds to kilograms


- Conversion factor: 2.2 lb = 1 kg
- Smaller to larger (divide lb value by 2.2)
- Round answers to nearest tenth

Example: Convert 65 lb to kilograms

$$\text{kg} = 65 \div 2.2 = 29.54 \text{ rounds to } 29.5 \text{ kg}$$

# Conversions Relating to Weight (Cont.)

## **Pounds *and* ounces to kilograms**

- Equivalent: 16 oz = 1 lb
  - Convert oz to nearest tenth of lb and add to pounds
  - Convert total lb to kg, then round to nearest tenth
- 

# Conversions Relating to Weight (Cont.)

## **Pounds and ounces to kilograms (cont.)**

➤ A child weighs 10 lb 2 oz

➤ Think smaller to larger

$$2 \text{ oz} \div 16 = 0.12 \text{ rounds to } 0.1 \text{ lb}$$

$$10 \text{ lb} + 0.1 \text{ lb} = 10.1 \text{ lb}$$

# Converting: Dimensional Analysis

## Pounds and ounces to kilograms

How many kilograms are equal to 10.1 lb?

- Equivalence: 1 kg = 2.2 lb
- 10.1 lb = x kg

$$x \text{ kg} = \frac{1 \text{ kg}}{2.2 \cancel{\text{lb}}} \times \frac{10.1 \cancel{\text{lb}}}{1}$$

$$x \text{ kg} = \frac{10.1}{2.2}$$

$$x = 4.59 \text{ kg}$$

$$X = 4.6 \text{ kg}$$

\* Round to the nearest 10th

# Conversions Relating to Weight (Cont.)

## **Kilograms to pounds**

- Equivalent:  $1 \text{ kg} = 2.2 \text{ lb}$
- A child weighs  $24.7 \text{ kg}$ ; convert to pounds

# Converting: Dimensional Analysis

## Kilograms to pounds

How many pounds are equal to 24.7 kg?

- Equivalence: 1 kg = 2.2 lb
- $x \text{ lb} = 24.7 \text{ kg}$

$$x \text{ lb} = \frac{2.2 \text{ lb}}{1 \text{ kg}} \times \frac{24.7 \text{ kg}}{1}$$

$$x \text{ lb} = \frac{54.34}{1}$$

$$x = 54.3 \text{ lb}$$

\* Round to nearest 10th

# Conversions Relating to Weight (Cont.)

## Kilograms to pounds

- Multiply by 2.2 (think larger to smaller)
- Equivalent: 1 kg = 2.2 lb
- A child weighs 24.7 kg; convert to pounds

$$\text{lb} = 24.7 \times 2.2 = 54.34 \text{ rounds to } 54.3 \text{ lb}$$

(weight in kg)  $\times$  (equivalent)

# Case Study

Mr. Hain's fever has subsided and he tells you that he feels like he lost weight. He reports that his usual weight is 200 lb. On admission, he weighed 88 kg. How many pounds and ounces will you tell him he lost?

# Case Study (Cont.)

ANSWER:

# Converting: Dimensional Analysis

## Kilograms to pounds

How many pounds are equal to 88 kg?

- Equivalence: 1 kg = 2.2 lb
- $x$  lb = 88 kg

$$x \text{ lb} = \frac{2.2 \text{ lb}}{1 \text{ kg}} \times \frac{88 \text{ kg}}{1}$$

$$x \text{ lb} = \frac{193.6}{1}$$

\* Round to nearest 10th

$$x = 194 \text{ lb}$$

# Converting: Dimensional Analysis

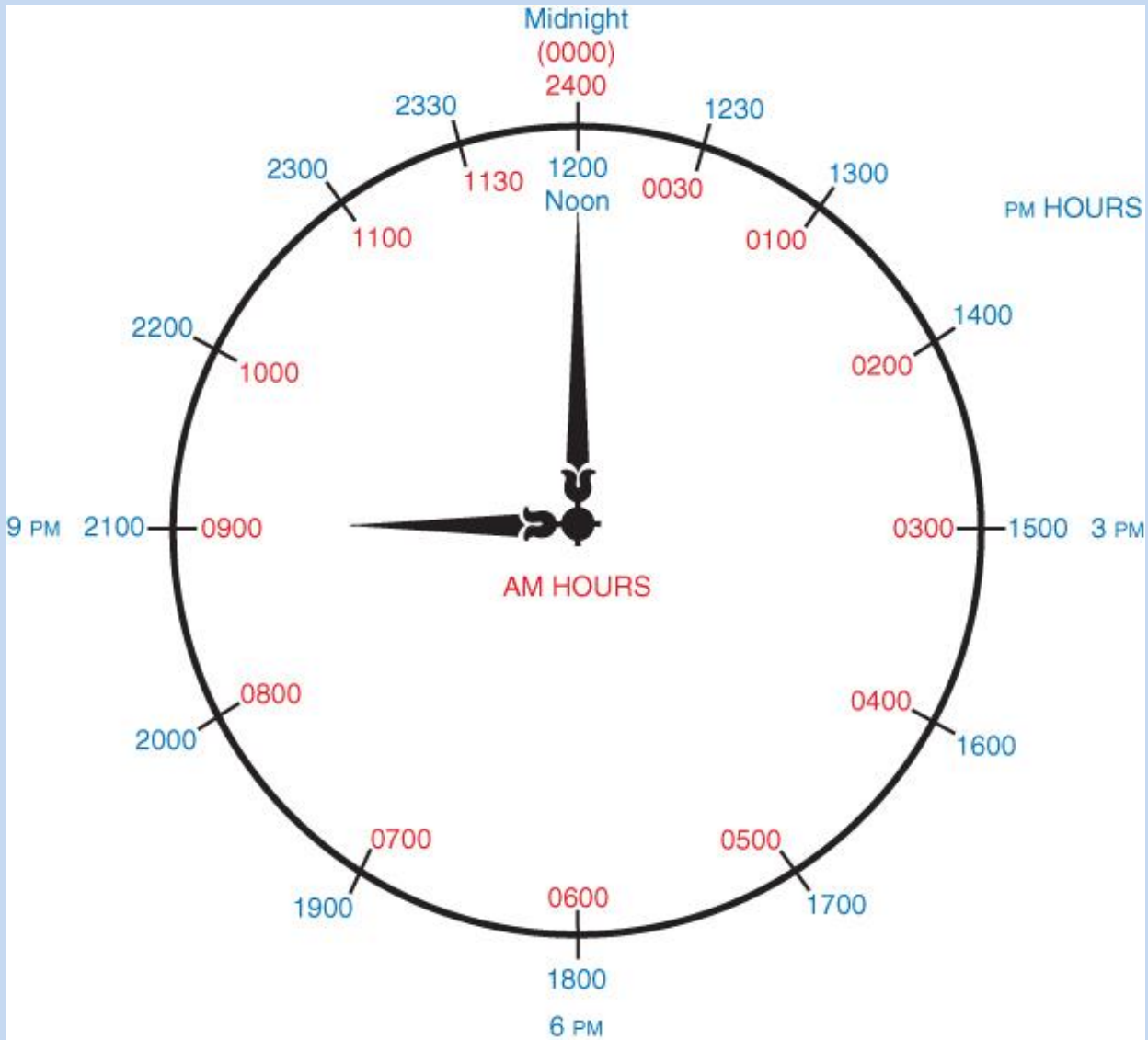
## Kilograms to pounds

$$\begin{array}{r} 200 \text{ lb} \\ - 194 \text{ lb} \\ \hline 6 \text{ lb} \end{array}$$

ANSWER: The patient lost 6 lb

# Military Time

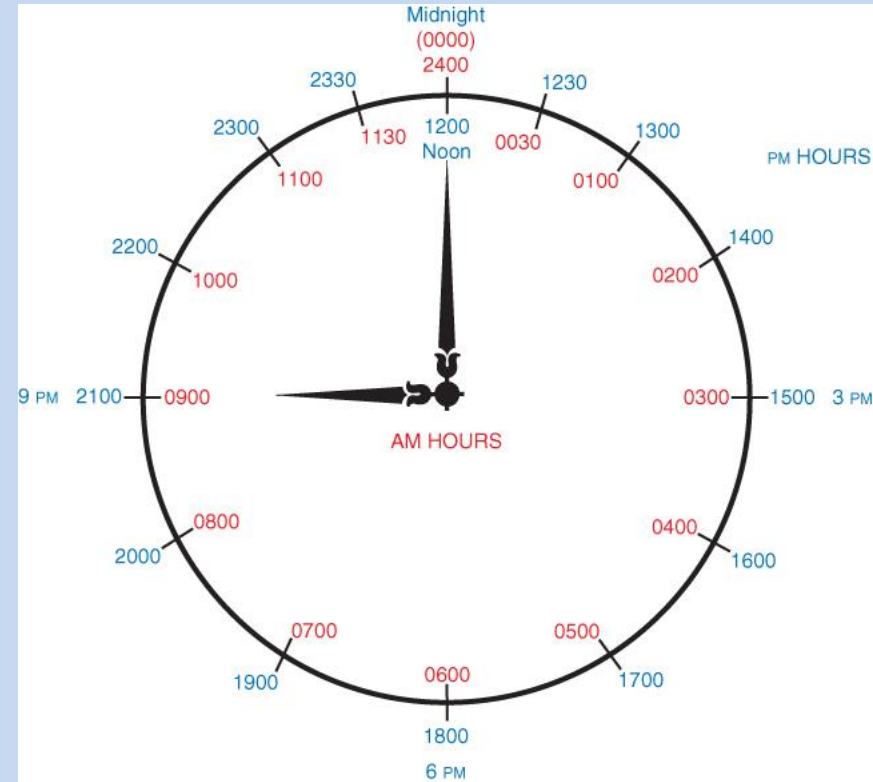
- International time
- Uses a 24-hr clock
- Helps prevent errors by eliminating repetition of numbers



24-Hour clock.

# Military Time

- NO colon (:)
- NO AM/PM designations
- Noon = 1200
- 7:00 AM is written as 0700
- 7:00 PM is written as 1900

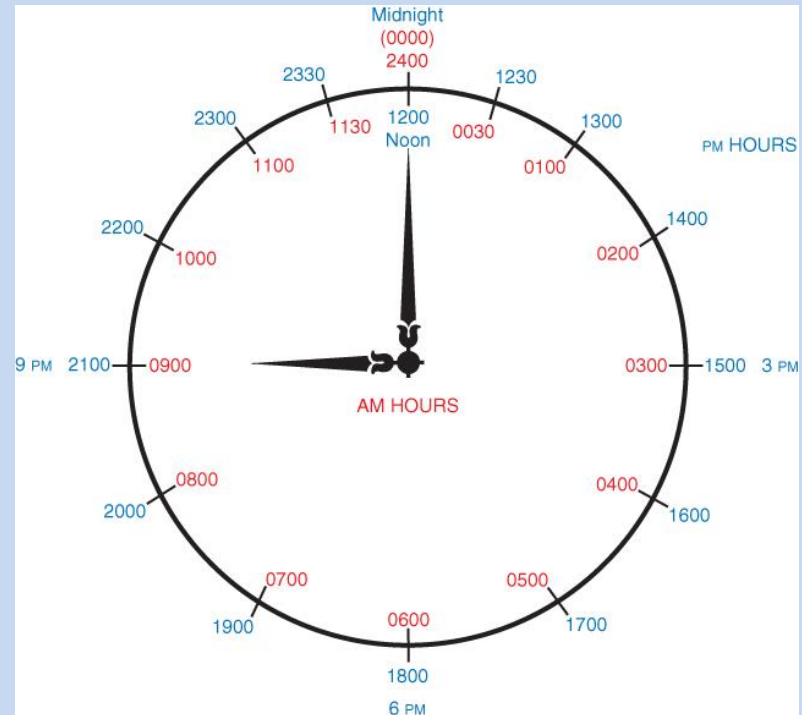


# Time: Traditional to Military

- To convert AM time, omit the colon and “AM,” then add a zero to the beginning to make a four-digit number
  - Example: 8:45 AM = 0845
- To convert PM time, omit the colon and “PM,” then add 1200 to the time
  - Example: 7:50 PM = 1950

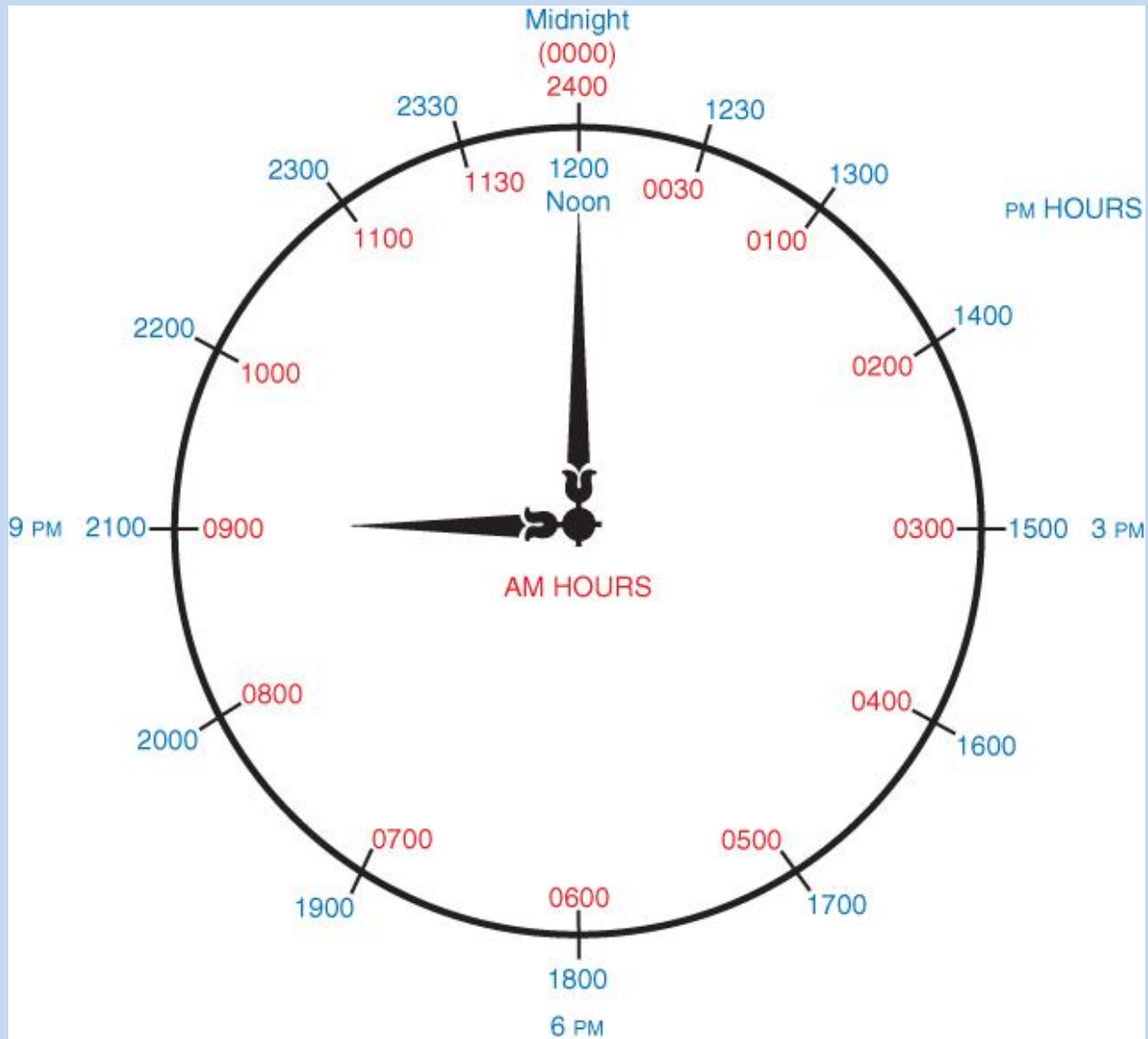
# Military Time

- Midnight
- 12:00 AM is referred to as both **0000** and **2400**
- Clocks which can display **Military Time** always display this **time** of day as **0000** (and not as **2400**).



# Time: Military to Traditional

- To convert times between 0000 and 1200, delete any zero at the beginning, insert colon, and add “AM”
  - Example: 0845 = 8:45 AM
- To convert times between 1200 and 2400, subtract 1200, insert colon, and add “PM”
  - Example: 1950 = 7:50 PM



24-Hour clock.

# Case Study

After a 3-day hospital stay, Mr. Hain is now tolerating a full liquid diet without pain or discomfort. He is afebrile and his labs are within normal limits. A 1 L bag of NS with 20 mEq of potassium was started at 0430 and will take 8 hours to infuse. Mr. Hain is to be discharged at 1000. Will the IV fluid be complete by then?

# Case Study (Cont.)

ANSWER:

# Case Study (Cont.)

ANSWER:

IV was started at 0430.

It will take 8 hours to infuse.

Add 0800 to 0430.

Completion time is 1230.

The IV fluid will not be finished by 1000.

# ADMINISTRATION TIME ABBREVIATIONS

bid	= two times a day
tid	= three times a day
qid	= four times a day
am/qam	= morning/ each morning
pm	= afternoon or evening
hs.	= at bedtime
prn	= as needed
ac	= before meals, before a meal
pc	= after meals, after a meal
stat, STAT	= immediately, now
q __ h	= every __ hour(s)



# DOSAGE FORM ABBREVIATIONS

tab	= tablet
cap	= capsule
SR, XR, XL	= slow/extended release
sol	= solution
susp	= suspension
syr	= syrup
liq	= liquid
supp	= suppository
crm,cm	= cream
ung, oint	= ointment

# Latin abbreviations frequently used in prescription writing

<i>Abbreviation</i>	<i>Latin</i>	<i>English</i>
ad lib.	<i>ad libitum</i>	at pleasure
a.c.	<i>ante cibum</i>	before meals
aq.	<i>aqua</i>	water
b.i.d.	<i>bis in die</i>	twice a day
caps.	<i>capsula</i>	capsule
̄	<i>cum</i>	with
d.	<i>dies</i>	a day, daily
disp.	<i>dispensa</i>	dispense
gtt.	<i>guttae</i>	drops
h.	<i>hora</i>	hour
h.s.	<i>hora somni</i>	at bedtime
non rep.	<i>non repetatur</i>	do not repeat (or refill)
no.	<i>numerus</i>	number, amount
p.c.	<i>post cibum</i>	after meals
p.r.n.	<i>pro re nata</i>	as needed
q.h.	<i>quaque hora</i>	every hour
q. 4 h.	<i>quaque quarta hora</i>	every 4 hours
q.i.d.	<i>quater in die</i>	four times a day
Sig.	<i>signa</i>	let it be labeled, label
stat.	<i>statim</i>	immediately
tab.	<i>tabella</i>	tablet
t.i.d.	<i>ter in die</i>	three times a day