Patient Assessment Calculations Worksheet

Topics:
- Calculate intake and output of fluids, weights and lengths with unit conversions.
- Perform calculations related to fluid balance (intake and output).
- Convert between temperatures in °C and °F using decimals.

Study Summary:

1. **Conversions factors for measurements of fluids, weight and length:**

Memorize these!

<table>
<thead>
<tr>
<th>Fluids</th>
<th>Weight</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 fl oz = 30 mL</td>
<td>2.2 lb = 1 kg = 1000 g</td>
<td>1 inch = 2.5 cm</td>
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<tr>
<td>1 cup = 8 fl oz = 240 mL</td>
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</tbody>
</table>

Unit conversions can be done using the proportion or dimensional analysis methods.

2. **Calculating Intake and Output (I&O):**

- Calculations are typically done in **milliliters**! Convert all other units to mL.
- **Intake**: oral (i.e. eating or drinking), IV fluids, blood infusion.
- **Output**: urine, drains (e.g. Foley catheter, surgical drain), emesis.

3. **Temperature Conversions (using decimals):**

\[(°C \times 1.8) + 32 = °F\]
\[(°F - 32) \div 1.8 = °C\]

**Example 1:**

A patient weighs 122 pounds and is 165 cm tall. What is the patient’s weight in kilograms (rounded to the nearest one) and height in inches?

**Weight conversion:**

We know that 2.2 lb = 1 kg. Let’s first use the proportion method to do the conversion.

Step 1: Set up the proportion using the weight given in the question and the conversion factor. We’ll use “w” to represent the unknown weight in kilograms. Remember to match up the units!

\[
\frac{120 \text{ lb}}{w} \times \frac{2.2 \text{ lb}}{1 \text{ kg}}
\]
Step 2: Solve the proportion by cross multiplying and then isolating $w$.

\[
\frac{120 \text{ lb}}{w} = \frac{2.2 \text{ lb}}{1 \text{ kg}}
\]

$2.2w = 120 \times 1$

$w = 120 \div 2.2$

$w = 54.54545454…$

Now we round to the nearest one. First we identify the digit in the ones place value, then we look to the digit immediately to the right of this one. Since there is a 5 in the tenths place value, we round the 4 in the ones place value up to 5.

$w = 54.54545454…$

$w = 55 \text{ kg}$

Now let’s try the same conversion but using the dimensional analysis method. Same as before, we start with our known weight in pounds and use the conversion factor. However, this time we want our units to cancel out! So we put the 1 kilogram on top, and 2.2 pounds on the bottom of the conversion factor.

$w = 122 \text{ lb} \times \frac{1 \text{ kg}}{2.2 \text{ lb}}$

$w = \frac{122 \times 1}{2.2}$

$w = \frac{122}{2.2}$ [Use long division here to calculate $122 \div 2.2$]

$w = 54.54545454…$

$w = 55 \text{ kg}$

**Height conversion:**

Now we are going to convert 165 cm into inches. Again, both the proportion and the dimensional analysis methods can be used here. We will use “$h$” to represent the unknown height in inches. Let’s use dimensional analysis:

$h = 165 \text{ cm} \times \frac{1 \text{ inch}}{2.5 \text{ cm}}$

$h = \frac{165}{2.5}$

$h = 66 \text{ inches}$

Therefore, the height of the patient is 66 inches tall.
PATIENT ASSESSMENT CALCULATIONS

WORKSHEET

Example 2:

A patient receives 10 oz of Pulmocare plus 4 oz of water every 6 hours on an 8-2-8-2 schedule. The patient also consumes 1 oz of ice pop around 12 pm and 4 pm. The patient’s Foley catheter is emptied of 800 mL of urine at 1800. Calculate and record the I&O during your 6 am to 6 pm shift.

Step 1: Let's identify the patient’s intake of fluids paying special attention to how much and when the fluids are taken during the 6 am to 6 pm time period.

8 am: 10 oz Pulmocare + 4 oz water
12 pm: 1 oz ice pop
2 pm: 10 oz Pulmocare + 4 oz water
4 pm: 1 oz ice pop

Note: the 8 pm and 2 am intake of Pulmocare and water is outside your shift hours so you do not include it.

Step 2: Let's identify the patient’s output of fluids during the 6 am to 6 pm time period.

6 pm: 800 mL urine

Step 3: Convert all quantities that are not in milliliters to milliliters. Remember that 1 oz = 30 mL.

10 oz Pulmocare = 300 mL Pulmocare
4 oz water = 120 mL water
1 oz ice pop = 30 mL ice pop

Step 4: Sum up the patient’s total intake and total output during your shift.

Total intake = 300 mL + 120 mL + 30 mL + 300 mL + 120 mL + 30 mL
           = 900 mL

Total output = 800 mL

Note: the intake and output would be recorded on an I&O sheet.

Example 3:

A new patient is admitted to your ward. The patient’s temperature is 38.4°C. Since the patient is American, he would like to know what his temperature is in °F. Calculate the temperature in °F (rounded to the nearest tenth) so that you can let him know.
Practice Exercises:

1. Convert the given units to the units indicated in brackets. Round to the nearest one, if necessary.
   
   a) 300 mL (to fl oz)  
   b) 2 1/2 cups (to fl oz)  
   c) 53.2 kg (to lb)  
   d) 1.5 fl oz (to mL)  
   e) 52 inches (to cm)  
   f) 184 lb (to kg)  
   g) 19.2 lb (to g)  
   h) 20 fl oz (to cups)  
   i) 200 cm (to inches)  
   j) 1.85 m (to inches)  
   k) 5000 g (to lb)  
   l) 13 oz (to mL)  
   m) 36.6°C (to °F)  
   n) 92.2 °F (to °C)

2. You are working in an obstetrics clinic. Mrs. LePage is 37 weeks pregnant and gained 3.2 lb in the last week. How many kilograms (rounded to the nearest hundredth) is that? If Mrs. LePage's temperature is 98.6°F, what is it in °C?

3. When doing an infant exam, you measure the infant's length from head to toe to be 53 cm. The infant weighs 4570 g. What are the infant's measurements in inches and pounds? (State your answers rounded to the nearest tenth.)

4. Over the course of the day, you consume 4 oz of coffee, 16 oz of water, 24 oz of tea and 1 cup of broth. What is your total intake for the day in milliliters?

5. A patient is NPO and receiving D5 ½ NS with 20 mEq KCl at 125 mL/h. The patient's urine output is 300 mL, 250 mL and 280 mL during your 6 pm – 6 am shift. What is the patient's I&O during your shift?

6. A patient receives 8 oz of Glucerna every 4 hours followed by 4 oz of water per gastrostomy tube on an 8-12-4-8-12-4 schedule. The patient consumes 3 oz of ice pop every 5 hours with the first one consumed at 9 am. The patient’s Foley catheter is emptied of 0.8 L of urine at 6 pm. Calculate the I&O from 8 am to 8 pm.

7. A patient has IV fluids at 0.9% normal saline infusing at 120 mL/h at 6 AM. After morning labs are reviewed, the IV fluids are decreased to 60 mL/h at 10 AM. The IV fluids are held for 2 hours while 1 unit of packed red blood cells (250 mL) is infused from 1 PM to 3 PM. The patient consumes 5 oz of orange juice at breakfast (at 8:30 AM), 250 mL of water at lunch (at 12:30 PM) and 125 mL of milk after dinner (at 5:30 PM). At 6 PM, the patient’s Foley catheter is emptied of 1100 mL and the surgical drain is emptied of 70 mL. Construct an I&O sheet and record the I&O from 6 AM to 6 PM.
### PATIENT ASSESSMENT CALCULATIONS WORKSHEET

**Answers:**

1. a) 10 fl oz  
   b) 20 fl oz  
   c) 117 lb  
   d) 45 mL  
   e) 130 cm  
   f) 84 kg  
   g) 8727 g  
   h) 2 1/2 cups  
   i) 80 inches  
   j) 74 inches  
   k) 11 lb  
   l) 390 mL  
   m) 98°F  
   n) 33°C  

2. 1.45 kg, 37°C  
3. 21.2 inches, 10.1 lb  
4. 1560 mL  
5. Input = 1500 mL, output = 830 mL  
6. Input = 1710 mL, output = 800 mL  
7.  

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