Lake Cumberland Regional Hospital
Medication Administration Exam Information
&
Study Packet for Nursing Candidates

Thank you for your interest in employment at Lake Cumberland Regional Hospital. We look forward to having you as a member of the health care team. As part of the application process, all registered nurses and licensed practical nurses must successfully complete a written Medication Knowledge Assessment prior to employment. The exam will be scheduled by the Staff Development Office and upon successful completion you will be referred to Human Resource for additional processing; please be prepared to spend 3 to 4 hours at the facility.

Exam Details/ Frequently asked questions & answers:

Why is it required?
The exam emphasizes essential, basic knowledge used in daily nursing practice and is used in determining basic proficiency in medication administration.

What type of test is given?
The exam is from Center for Nursing Education and Testing (C-NET) which is comprised of 50 multiple choice questions and 10 calculations. The multiple choice questions consist of 35 questions over knowledge of drugs and their effects and 15 questions covering rules for safe medication administration. This is a paper and pencil exam and 1 hour is given for completion.

What is a passing score?
There are two scores associated with this exam: 80% required for the multiple choice section and 100% on the calculations.

What if a passing score is not achieved?
If a passing score is not obtained with the initial exam candidates will be allowed 5 business days for studying and an opportunity to retake a similar exam. If a passing score is not achieved with the second exam, the offer of employment will be rescinded.

What materials should be reviewed?
Attached you will find a study guide to help prepare for the exam. This is a general medication exam taken by all nurses regardless of specialty area or years of practice. Sample questions and calculation formulas are provided as well as drug classifications.

What do I need to bring with me?
You may use a calculator but may not bring a cell phone to the testing area.
Where do I go to take the test?
Location and directions will be provided when your test is scheduled.

The Human Resource and Staff Development team members look forward to assisting you throughout your endeavors with Lake Cumberland Regional Hospital.

Medications
Be prepared for any or all of the medications listed below to be incorporated into questions on the medication test.

Be prepared to recognize general drug classes along with indications for use and any nursing considerations, patient safety issues or patient education opportunities.

When looking at the medications, think about
- **Side effects and antidotes** (hypotension, bleeding; what reverses actions of some medications etc).
- **proper use of the medication** (why you are giving it and route you can give the medication- special consideration for the route, other diseases, conditions, or other medications that make the medication contraindicated, assessments that should occur in relation to the medication).
- **Absorption and elimination** (IV is faster than IM, are other elements required to absorb the medication, will certain factors prevent the medication from being excreted and what are the effects of that).
- **Time frames for the medication** (should it be in the morning or night, with or without food, when would you hold the medication, certain foods to avoid, can you only give it within a certain time frame, will they take it long term or short term, speed with which it can be given).
- **Insulin** (what are peak action times, when to give in relation to eating, treating hypoglycemia, why we give it).
- **Antibiotics**- Vancomycin
- **Anticholesterol/Antihyperlipidemics/Statins**- Zocor
- **Anti-Coagulant/ Anti-platelet/ Fibrinolytics**- Coumadin, Heparin, Lovenox, Plavix, alteplase
- **Antihypertensives**- Zestril
- **Antiparkansonian** – Sinemet
- **Antiretroviral therapy or HAART**
- **Antispasmotics**- (Uses in general)
- **Benzodiazepines**- Ativan, Xanax
- **Bisphosphonates**- Fosamax
- **Diuretic**- Aldactone
Hemostatics- Protamine Sulfate
Oral Diabetic medication- Glucophage
Pain management- Opioids- Morphine, Fentynal (Durgesic), Dilaudid
Phosphodiesterase inhibitors- Viagra
Proton Pump Inhibitor- Nexium
Stool Softner/ laxatives- Colace, Lactulose
Vitamins- Vitamin B1
Misc- Neupogen, Megace, BCG vaccine, Flu vaccine, Advair, Ventolin, Steriods (long term therapy issues), St. John’s wort (effects on other medications)

Medication Safety
Be aware of the following factors related to medication administration
  Tolerance issues (this is different than addiction)
  Noncompliance with treatment regimen (effects)
  Addressing questions about medication orders
  What is half-life of medication?
SCIP Protocols
Resources for medication questions
Medication Diversion

Calculations

<table>
<thead>
<tr>
<th></th>
<th>Equals</th>
<th>Equals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Kilogram (Kg)</td>
<td>1000 grams (g)</td>
<td>2.2 pounds (lbs)</td>
</tr>
<tr>
<td>1 gram</td>
<td>1000 milligrams (mg)</td>
<td>1,000,000 micrograms (mcg)</td>
</tr>
<tr>
<td>1 ml</td>
<td>1cc</td>
<td>15 drops (gtt)</td>
</tr>
<tr>
<td>1 hour</td>
<td>60 min</td>
<td></td>
</tr>
<tr>
<td>1 min</td>
<td>60 seconds</td>
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For calculations you will use formulas. The formula is designed to show the information we know and let us discover the amount for the missing information. Many of the formulas set up the information in what looks like a ratio or fraction. When we do this we can then multiply to discover our answers.

For example
We have an order for 250mg of drug A. Drug A comes in 25mg tablets. How many tablets do we need to give?
Equation:
\[25\text{mg} = 250\text{mg} \quad \text{To solve this question we have placed the information into an equation. Now we will cross multiply- take the bottom number of Each portion and multiple the other side by the number. After that you Will divide each side by the number accompanying the missing value (X)}\]

Cross multiply:

\[(25\text{mg}) \times (X \text{tabs}) \quad \& \quad (1 \text{tab}) \times (250\text{mg}) \quad \text{result} \quad 25X=250\]

Divide:

\[
\begin{align*}
\frac{25X}{25} &= \frac{250}{25} \\
X &= 10
\end{align*}
\]

So you will need 10 tablets to give a dose of 250mg

Here is another example using liquid

You have an order for a liquid medication to be given 300mg every 12 hours. The medication comes in 50mg/5ml. How many ml do you give at each dose?

Equation:
\[\frac{50\text{mg}}{5\text{ml}} = \frac{300\text{mg}}{X\text{ml}}\]

Cross Multiply:

\[50\text{mg} \times X\text{ml}= 300\text{mg} \times 5\text{ml} \quad \text{result} \quad 50X= 1500\]

Divide:

\[50X\div50 = X \quad ; \quad 1500\div50 = 30 \quad \text{so} \quad X = 30 \quad \text{therefore you need 30 ml to equal 300mg at each dose.}\]

Another way to look at liquid dosages is take the amount of the drug (mg) and divide by the amount of liquid (finding the concentration)

\[50\div5 = 10 \quad \text{this tells you that there are 10mg for every 1 ml}\]

We know we want 300mg so we can divide what we want by what we have

\[300\div10=30 \quad \text{so you need 30ml to get 300mg}\]
Converting pounds to kg
1 kg = 2.2 lbs
Pt weight = 50 lbs
50 ÷ 2.2 = 22.7 kg (23 kg)

Converting kg to pounds
Pt weight = 23 kg
23 x 2.2 = 50 lbs

Drip rates to find gtt's per min

<table>
<thead>
<tr>
<th>Volume (ml)</th>
<th>×</th>
<th>Drip factor (gtts/ml)</th>
<th>Time in minutes</th>
<th>1 ml</th>
</tr>
</thead>
</table>

Volume x drip factor; Time in minutes x 1

Example: you need to give 400 ml of IV fluid in 6 hours. The IV set delivers 60 drops per ml. How many drops per minute should you give?

Equation:
\[
\frac{400\text{ml}}{360\text{mins}} \times \frac{60\text{gtt}}{1\text{ml}}
\]

Multiple straight
\[
\frac{400 \times 60}{360 \times 1} = \frac{24000}{360} = 66.6 \text{ gtt per min}
\]

Another type of question: you have a drip rate of 30 drops per min. The set delivers 15 drops per ml. How many ml of fluid will the patient receive in 4 hours?
1. Change hours to minutes—4 hours = ? minutes 4 x 60 = 240

There are 60 minutes in 1 hour and we want to know how many are in 4 hours

2. Multiple the number of minutes by the drip rate –

\[
240 \text{ min} \times 30\text{gtt/min} = 7200 \text{ total gtt in 4 hours.}
\]

3. Now factor in the tubing and divide—7200gtts ÷ 15gtts/min = 480 ml in 4 hours
Another approach to this problem would be to determine the number of gtts delivered in 1 hour, divide the number of gtts in 1 hour by the number of drops per ml to find how many ml per hour and then multiply that by the number of hours desired.

1. Find number of gtt per hour- 30 x 60 = 1800gtt/hr
   (There are 30 gtts in 1 min and 60 min in 1 hour)

2. Divide gtt/hr by gtts/ml  
   1800 ÷ 15 = 120ml/hr

3. Multiply ml/hr by number of hours  
   120ml x 4 hours = 480ml given in 4 hours