Sonya Hudson

Mrs. Chunchu

College Algebra

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How Math Is Used Daily by Nurses

As a registered nurse, an interesting fact to me is that algebra is used pretty much on a daily basis without even realizing it. I have been a hospice nurse for five years and math is used to convert medications for end-of-life care. I worked as a medical-surgical nurse for two years and during that time, I routinely used addition, fractions, and some algebraic equations to deliver the right amount of medication to my patients. Floor nurses are also required to take a medication exam on drug calculations yearly to continue to give out medications. “Nurses need a solid understanding of basic math concepts in order to safely calculate medication dosages before administering to their patients.” Nurses administer medication and each dosage must be calculated for each patient (Keefer, "How Is Algebra Used in Nursing?”). Math formulas are used to determine how much to administer by intravenous drip, injection or by mouth. Nurses use math to make sure the medication amount is appropriate and that patients receive the correct dosage (Keefer, Amber. "How Is Algebra Used in Nursing?" Career Trend, http://careertrend.com/how-does-4675164-how-algebra-used-nursing.html. 05 July 2017).

There are different ways that nurses use math during their work day. The first way is by calculating doses. If the pharmacy sends a medication with a different strength than what the doctor has ordered, the nurse must calculate the correct dose; for example, if 650 mg of Tylenol is needed for a fever and the strength is 325mg, the dose must be calculated to know how many tablets to give to equal the 650mg dose. Also, nurses use algebra for drawing up intravenous mediations in liquid form. For example, if the doctor’s order is for 2mg of Morphine and the vial is a 4mg vial the nurse would then have to be able to calculate the right dose. Another way that math is used is by converting between systems. Most measurements in medication are based on the metric system. To give the medications needed a nurse has to be able to convert a weight from kilograms to pounds. Some medications are based on variables such as a patient’s weight and the dosing is very important (Boyd, Lucy. “How Do Nurses Use Math in Their Jobs?” *Chron.com*, work.chron.com/nurses-use-math-jobs-10475.html.).

Floor or Intensive Care Unit nurses often have to calculate intravenous drips. Nurses need to know the amount of medication the patient is to receive, the overall time period for administering it, and how much medication will be given each hour. Fluids come in 1000ml and 500ml bags. When the doctor gives the order for the Fluids to run in over a certain amount of time, for example 500mg over 30 minutes, the nurse must calculate the correct number of drops per minute to administer. Also there are drips that patients are being weaned off that require titration, such as blood pressure drips or drips that are sedating a patient due to the patient being on a ventilator. Insulin drips have to be titrated depending on the patient’s glucose reading. Drug titrations require full concentration on mathematical skills (Mahuron, Sara. “How Do Nurses Use Math in Their Jobs?” *Woman*, woman.thenest.com/nurses-use-math-jobs-10693.html.).

Nurses are called upon to use math for reasons other than medication administration. They must calculate intake and output of their patients, which means adding up every ounce of fluid taken in by any route and the amount voided or otherwise released from the body.  A doctor may need you to keep a caloric count of everything the patient consumed in a 12- or 24-hour period. A maternity nurse may have to calculate a due date in pregnancy. In the Operating Room math is very critical in helping anesthesiologists concoct safe solutions and the right levels of oxygen for surgical patients. They have to take into consideration variables such as a patient’s weight, the solutions dosages and the desired drug so that they can calculate the accurate amount of dilution needed for each individual patient (http://work.chron.com/use-math-health-care-careers-26310.html).

Some medications must be prepared by a nurse before being administered. An example is medication that requires being reconstituted. Medication is stored in one strength or consistency and then has to be reconstituted. The medicine is called the solute, which is then mixed with a solvent. Nurses must be able to calculate how much to mix of each in order to make the correct strength medication.

 Throughout our work day we do not realize we are using these skills. To a nurse this is just part of our jobs and it just comes naturally. Although math is not one of my favorite subjects, I have to realize that it is a very important part of my job. I do take math very seriously and know that one mistake can mean a life. “Safety concerns, including a nurse’s proven competency in administering the proper dosages of medication, remain a key issue in preventing medication errors.” (Keefer, Amber. "How Is Algebra Used in Nursing?" Career Trend, http://careertrend.com/how-does-4675164-how-algebra-used-nursing.html. 05 July 2017).