trc | hospital pharmacy technician's letter™

Hone Your Liquid-Measuring Skills

You'll see more focus on **minimizing inaccuracies when measuring liquids in the pharmacy**.

It's partly because small volumes are needed for mRNA COVID-19 vaccine doses...and exact measurement may help maximize the number of doses that can be drawn up from the vials.

Use these strategies to hone your liquid-measuring skills.

When drawing up a liquid into a syringe, generally choose the smallest size that'll hold the volume you need. For instance, measure 4 mL using a 5 mL syringe instead of a 10 mL syringe.

But for hazardous meds, don't fill a syringe to over 75% of its capacity...to reduce the risk of leaks or spills.

For example, measure 9 mL of cyclosporine injectable solution using a 20 mL syringe instead of a 10 mL syringe...since 9 mL is more than 75% of 10 mL.

If a volume is too small to measure in available syringes sizes, follow policies and procedures to make a dilution.

For instance, 0.16 mg of oral morphine is 0.08 mL of 2 mg/mL solution...which can't be measured using a 1 mL oral syringe. Prepping a 0.2 mg/mL dilution means you can dispense 0.8 mL instead.

Remove any air bubbles before reading the volume in a syringe. Tap the syringe to move the bubbles to the tip...then gently push the plunger to expel the air.

Read the volume by ensuring the top edge of the plunger piston...the widest part...aligns with the desired marking.

When measuring a liquid with a graduated cylinder, use the cylinder closest to the volume you need...and measure a volume that's no less than 20% of its capacity.

For example, measure 130 mL using a 250 mL graduated cylinder instead of a 500 mL one.

To read the volume, place the cylinder on a flat surface and view it at eye level. Line up the bottom of the "meniscus"...or the dip at the surface of the liquid...with the desired marking.

Consider using a syringe instead of a graduated cylinder for very viscous liquids (glycerin, mineral oil, etc)...to avoid loss due to adherence of the liquid to the cylinder.

Get our *Non-Sterile Compounding Basics and* Sterile Compounding: Keeping It Clean tech tutorials to dive deeper into med prep.

Key References:

-Am J Hosp Pharm 1994;51(11):1441-8
-https://peernetwork.criticalpoint.info/posts/pearls/accuracy-of-compounding (4-1-21)
-https://pharmlabs.unc.edu/labs/measurements/graduates.htm (4-1-21)
-https://medlineplus.gov/ency/patientinstructions/000530.htm (4-1-21)

Hospital Pharmacy Technician's Letter. April 2021, No. 370430

Cite this document as follows: Article, Hone Your Liquid-Measuring Skills, Hospital Pharmacy Technician's Letter, April 2021