

CASE IN POINT 7.1 A physician asks a pharmacist to calculate the dose of a cough syrup so that it may be safely administered dropwise to a child. The cough syrup contains the active ingredient dextromethorphan HBr, 30 mg/15 mL, in a 120-mL bottle.

Based on the child's weight and literature references, the pharmacist determines the dose of dextromethorphan HBr to be 1.5 mg for the child.

The medicine dropper to be dispensed with the medication is calibrated by the pharmacist and shown to deliver 20 drops of the cough syrup per 1 mL.

Calculate the dose, in drops, for the child.

Doses: Solid Dosage Forms

1. How many capsules, each containing a 150-mcg dose of a drug may be prepared from 0.12 g of the drug?
2. The following regimen for oral prednisone is prescribed for a patient: 50 mg/day \times 10 days; 25 mg/day \times 10 days; 12.5 mg/day \times 10 days; 5 mg/day \times 10 weeks. How many scored 25-mg tablets and how many 5-mg tablets should be dispensed to meet the dosing requirements?
3. A physician reduces a patient's once-daily dose of conjugated estrogen (PREMARIN) from tablets containing 0.625 mg to tablets containing 0.45 mg. What is the total reduction in conjugated estrogens taken, in milligrams, during a 30-day month?
4. A fixed-dose combination product contains amlodipine besylate and atorvastatin calcium (CADUET) for the treatment of both hypertension and hypercholesterolemia. If a physician starts a patient on a 5-mg/10-mg dose for 14 days and then raises the dose to 10 mg /20 mg, how many milligrams of each drug will the patient take during the first 30 days?
5. A patient cuts 100-mg scored tablets to take his 50-mg prescribed daily dose. A prescription for thirty 100-mg tablets costs \$45, and a prescription for thirty 50-mg tablets costs \$40. The patient asked the pharmacist to weigh an uncut tablet on an electronic balance into two "halves." The uncut tablet was found to weigh 240 mg, and the cut "halves" weighed 125 mg and 115 mg, respectively. (a) How much money did the patient save on a monthly basis by dosing with half tablets? (b) What was the percentage error in the weight of the cut tablets compared with "exact halves"?
6. The recommended dose of memantine HCl (NAMENDA) is:
 - Week 1, 5 mg/day
 - Week 2, 10 mg/day (5 mg, b.i.d.)
 - Week 3, 15 mg/day (10 mg a.m., 5 mg p.m.)
 - Week 4, 20 mg/day (10 mg b.i.d.)How many 5-mg tablets must be dispensed for a 4-week supply of the medication?
7. Prior to a colonoscopy, a patient is instructed to take OSMOPREP tablets each of which contains 1.102 g sodium phosphate monobasic monohydrate

and 0.398 g sodium phosphate dibasic anhydrous. The dose is:

- *The evening before the procedure:* 4 tablets with 8 ounces of clear liquids every 15 minutes for 5 cycles, and
- *Starting 3 hours before the procedure:* 4 tablets with 8 ounces of clear liquids every 15 minutes for 3 cycles.

How many tablets, how much liquid, and how much total sodium phosphates are taken?

- (a) 8 tablets, 16 ounces liquid, 2 g sodium phosphates
 - (b) 16 tablets, 1000 mL liquid, 32 g sodium phosphates
 - (c) 32 tablets, 1 quart liquid, 40 g sodium phosphates
 - (d) 32 tablets, 0.5 gallon liquid, 48 g sodium phosphates
8. CHANTIX (varenicline tartrate), for smoking cessation, is available in two strengths, 0.5-mg and 1-mg tablets. The dose is:
- *Days 1 to 3:* 0.5 mg once daily;
 - *Days 4 to 7:* 0.5 mg twice daily (A.M. and P.M.); and
 - *Days 8 to end of treatment:* 1 mg twice daily (A.M. and P.M.).
- The treatment period is 12 weeks. How many 0.5-mg tablets and 1-mg tablets should be dispensed?
- (a) 7 0.5-mg tablets and 11 1-mg tablets
 - (b) 8 0.5-mg tablets and 84 1-mg tablets
 - (c) 10 0.5-mg tablets and 84 1-mg tablets
 - (d) 11 0.5-mg tablets and 154 1-mg tablets

Doses: Drops

9. A ciprofloxacin otic solution contains 0.5 mg of ciprofloxacin in a 0.25 mL single-dose package. Based on 20 drops/mL: (a) how many drops would be administered and (b) how

many micrograms of ciprofloxacin would be in each drop?

10. \mathcal{R} Acetaminophen Oral Drops
Disp. 15 mL
Sig. 0.5 mL t.i.d.

- (a) If acetaminophen oral drops contain 1.5 g of acetaminophen per 15-mL container, how many milligrams are there in each prescribed dose?
- (b) If the dropper is calibrated to deliver 22 drops/mL, how many drops should be administered per dose?

11. RESTASIS Ophthalmic Emulsion contains 0.05% w/v cyclosporin. If a dose of one drop measures 28 μ L, how many micrograms of cyclosporin are present?

- 12.²⁰ The oral dose of a drug is 2.5 mg. If a solution contains 0.5% w/v of the drug in a dropper bottle that delivers 12 drops/mL, how many drops would supply the dose?

13. Infants' MYLICON anti-gas drops contain 2 g of simethicone in a 30-mL container. (a) How many milligrams of simethicone are contained in each 0.3-mL dose and if 12 doses per day are not to be exceeded, calculate the corresponding 12-dose (b) volume and (c) simethicone content.

Doses: Oral Liquids

14. Rimantadine HCl syrup contains 2.4 g of rimantadine HCl in each 240 mL of syrup. How many milligrams of rimantadine HCl would there be in 2.5 mL delivered by oral dispenser?

15. If a liquid medicine is to be taken three times daily, and if 180 mL are to be taken in 4 days, how many tablespoonfuls should be prescribed for each dose?

16. If a cough syrup contains 0.18 g of dextromethorphan HBr in 120 mL, how many milligrams of the drug are contained in each teaspoonful dose?
17. A cough syrup contains 0.09 g of dextromethorphan HBr in each fluidounce. How many milligrams of this agent would be present in each teaspoonful dose?
18. A physician prescribes tetracycline HCl syrup for a patient who is to take 2 teaspoonfuls four times per day for 4 days, and then 1 teaspoonful four times per day for 2 days. How many milliliters of the syrup should be dispensed to provide the quantity for the prescribed dosage regimen?
19. Ipecac oral solution has the following formula:
- | | |
|-----------------|---------|
| Powdered Ipecac | 70 g |
| Glycerin | 100 mL |
| Syrup ad | 1000 mL |
- Powdered ipecac contains 2 grams of the combined alkaloids emetine and cephaeline in each 100 grams of powder. Calculate the quantity of these alkaloids, in milligrams, in each 5-mL dose of ipecac oral solution.
20. A dose of digoxin for rapid digitalization is a total of 1 mg, divided into two or more portions at intervals of 6 to 8 hours. How many milliliters of digoxin elixir containing 50 $\mu\text{g}/\text{mL}$ would provide the 1 mg dose?
21. Ciprofloxacin (CIPRO) oral suspension contains 250 mg of ciprofloxacin per 5 mL. A physician prescribed 125 mg of ciprofloxacin q.i.d. \times 10 days. (a) How many doses are needed? (b) How many milliliters should be given per dose? (c) How many milliliters of ciprofloxacin oral suspension containing 250 mg per 5 mL should be dispensed?
22. A patient has been instructed to take 15 mL of alumina and magnesium oral suspension every other hour for four doses daily. How many days will two 12-fl. oz. bottles of the suspension last?
23. Dextromethorphan HBr 50 mg/tsp.
Guaifenesin Syrup ad 120 mL
Sig. 3i q.i.d. a.c. & h.s.
- How many grams of dextromethorphan HBr would be needed to fill the prescription?
24. The dose of AUGMENTIN oral suspension for a patient is 5-mL b.i.d. Each 5 mL of suspension contains 400 mg of amoxicillin and 57 mg of clavulanic acid. If the suspension is to be taken for 10 days and is available in 50-mL, 75-mL, and 100-mL containers, calculate (a) the least wasteful package size to dispense and (b) total quantity of amoxicillin taken during the treatment period.

Doses: Injections

25. A physician ordered 20 mg of MEPERGAN and 0.3 mg of atropine sulfate to be administered preoperatively to a patient. MEPERGAN is available in a syringe containing 25 mg/mL, and atropine sulfate is in an ampul containing 0.4 mg per 0.5 mL. How many milliliters of each should be used in filling the medication order?
26. How many milliliters of an injection containing 250 mg of aminophylline in each 10 mL should be used in filling a medication order calling for 15 mg of aminophylline?
- 27.²¹ Pediatric LANOXIN injection contains digoxin, 100 mcg/mL. What volume must be administered to provide a dose of 0.04 mg?

Doses: Other Dosage Forms

28. The recommended maintenance dose of BECLOVENT (beclomethasone dipropionate), an aerosolized inhalant, is 100 mcg administered twice daily. The commercial inhaler delivers 50 mcg per metered inhalation and contains 200 inhalations. How many inhalers should be dispensed to a patient if a 60-day supply is prescribed?
29. A 16-week regimen for a brand of a nicotine patch calls for a patient to wear a 21-mg patch each day for the first 6 weeks, followed by a 14-mg patch each day for the next 2 weeks, and then a 7-mg patch for the next 2 weeks to conclude the treatment regimen. In all, how many milligrams of nicotine are administered?
30. A transdermal patch contains 5 mg of fentanyl and has a drug-release rate of 50 mcg/hour. The patch is worn for 72 hours. Calculate (a) the milligrams of fentanyl delivered daily, (b) the milligrams of fentanyl remaining in the patch when it is removed, and (c) the percentage of drug remaining in the patch when it is removed.
31. If a VENTOLIN inhaler contains 20 mg of albuterol, how many inhalation-doses can be delivered if each inhalation-dose contains 90 mcg?
32. FLONASE Nasal Spray contains 50 mcg of fluticasone propionate per actuation spray in each 100 mg of formulation. Each container provides 120 metered sprays. How many milligrams of fluticasone propionate are contained in each container?
33. The dose of VOLTAREN (diclofenac sodium) GEL, when applied to the hands in the treatment of arthritic pain, is 2 g four times a day. The gel contains diclofenac sodium 1% and is available in 100-g tubes. How many grams of the drug diclofenac sodium would be administered per day and how many days of treatment would be available per tube of gel?
- (a) 8 g diclofenac sodium per day for 8 days
- (b) 8 g diclofenac sodium per day for 12.5 days
- (c) 80 mg diclofenac sodium per day for 8 days
- (d) 0.08 g diclofenac sodium per day for 12.5 days
34. SYMBICORT 80/4.5 is an oral inhalation product containing 80 mcg of budesonide and 4.5 mcg of formoterol fumarate per inhalation. The dose is stated as "two inhalations twice daily." How much of *each drug* would be administered daily?
- (a) 160 mcg budesonide and 9 mcg formoterol fumarate
- (b) 0.32 mg budesonide and 0.18 mg formoterol fumarate
- (c) 320 mcg budesonide and 0.18 mg formoterol fumarate
- (d) 0.32 mg budesonide and 0.018 mg formoterol fumarate