

American College of Clinical Pharmacy  
Updates in Therapeutics®: Pharmacotherapy Preparatory Review and Recertification Course,  
2014 Edition

**ERRATA**

**Volume I, pg. 1-319**    **Updates and Additions to Workbook Chapter**  
**Chapter:**  
**Ambulatory Care**

New FDA Approvals:

1. Apixiban is now FDA approved for a new indication:  
March 14, 2014  
Now indicated for DVT prophylaxis after hip (35 days of therapy) or knee (12 days of therapy) replacement surgery.  
Dose: 2.5 mg BID
  
2. Dabigatran is now FDA approved for a new indication:  
April 7, 2014  
Now indicated for:
  - a) DVT/PE treatment after treatment with parenteral anticoagulant for 5-10 days
  - b) Reduction in risk of recurrence of DVT/PEDose: 150 mg BID (if CrCl > 30mL/min)  
If CrCl is ≤ 30 mL/min, “dosing recommendation cannot be provided”

**Volume I**  
**Chapter:**  
**Ambulatory Care**  
Section III:  
Anticoagulation  
pg. 1-348, E., 1., d.

**Addition to Anticoagulation Section**

Other assessments for bleeding risk:

- i. HEMORR2HAGES, OBRI, ATRIA
- ii. Bleeding risk scores are mostly validated in atrial fibrillation patients, may not always be reliable for every specific patient and those with different anticoagulation indications

**Volume I**  
**Chapter:**  
**Ambulatory Care**  
Section II: Chronic  
Obstructive  
Pulmonary Disease  
pg. 1-342, F., 6.

**Changes to COPD section** (See the bolded text for the changes):

Systemic corticosteroids are effective, and they shorten recovery time, improve FEV<sub>1</sub>, and improve hypoxemia (Evidence A). They may also lower the risk of treatment failure, early relapse rate, and length of hospital stay. Systemic corticosteroids should be used in most exacerbations; GOLD guidelines no longer provide criteria for use. **OCS dose for outpatient treatment: 40 mg of oral prednisone once daily for 5 days is recommended in to the GOLD guidelines (Evidence B), but insufficient data are available to provide strong conclusions concerning the optional duration.**

- a. However, higher daily doses or oral prednisone/prednisolone may be used (e.g., 50–60 mg daily).
- b. **A recent study showed** that in patients with a COPD exacerbation presenting to the hospital, a shorter course of systemic corticosteroids (5 days) was noninferior to a longer (14 days) course with respect to reexacerbation within 6 months (Leuppi 2013).

**Volume I, pg. 1-343**  
**Chapter:**  
**Ambulatory Care**  
Patient Case 9 and  
Answer explanation  
(pg. 1-375)

**Change to Patient Case and Answer Explanation.** (See the bolded text for the changes):

9. A 64-year-old woman with COPD in GOLD patient group A presents for a clinic visit. In the past few days, she has had a worsening in shortness of breath and a productive cough with more “cloudy” and more copious sputum than usual. Pulse oximetry is 95% on room air. She has a nebulizer at home. In addition to regular use of albuterol plus ipratropium by nebulizer every 1–4 hours, which is the best course of action?
- A. No additional therapy is necessary.
  - B. Add oral prednisone 40 mg once daily for **5 days**.
  - C. Add trimethoprim/sulfamethoxazole double strength 1 tablet twice daily for 7 days.
  - D. Add oral prednisone 40 mg once daily for **5 days** and trimethoprim/sulfamethoxazole double strength 1 tablet twice daily for 7 days.

Answer explanation:

9. Answer: D

According to the latest GOLD guidelines, OCSs are indicated in most exacerbations. The **recommended dose is oral prednisone 40 mg daily for 5 days**. Antibiotic treatment is also indicated because the patient has all three cardinal symptoms of airway infection: (1) increased sputum purulence, (2) increased sputum volume, and (3) increased dyspnea. Trimethoprim/sulfamethoxazole is one of the recommended antibiotics.

**Volume II, pg. 2-253**  
**Chapter:**  
**Cardiology II**

**Changes to Atrial Fibrillation**

Highlights of changes:

- For nonvalvular AF, the CHA<sub>2</sub>DS<sub>2</sub>-VASc score is the recommended stroke risk assessment tool
- For patients with nonvalvular AF with prior stroke, TIA, or CHA<sub>2</sub>DS<sub>2</sub>-VASc score of 2 or greater anticoagulation is recommended.
- For patients with nonvalvular AF unable to maintain a therapeutic INR, use of an NOAC is recommended
- Re-evaluation of the need and choice of anticoagulation should be conducted at periodic intervals to evaluate for stroke and bleeding risk
- Patients renal function should be evaluated prior to initiation of a NOAC and re-evaluated at least annually and more frequently if clinically indicated
- For patients undergoing PCI who have AF and a CHA<sub>2</sub>DS<sub>2</sub>-VASc score of 2, it may be reasonable to use clopidogrel with the oral anticoagulant but without aspirin
- **For patients with nonvalvular AF and a CHA<sub>2</sub>DS<sub>2</sub>-VASc score of 1, no anticoagulant therapy or treatment with an oral anticoagulant or aspirin may be considered**

January CT, Wann LS, Alpert JS, Calkins H, Cleveland Jr JC, Cigarroa JE, Conti JB, Ellinor PT, Ezekowitz MD, Field ME, Murray KT, Sacco RL, Stevenson WG, Tchou PJ, Tracy CM, Yancy CW, 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation, *Journal of the American College of Cardiology* (2014), doi: 10.1016/j.jacc.2014.03.022.

**Volume I, pg 1-288; 4.b.**  
**Chapter: Men’s and Women’s Health**

**Correction of oral presentation statement**

The generic product of Lybrel (ethinyl estradiol 20 mcg/levonorgestrel 90 mcg) is sold as 28 active tablets per month. The patient may take continuously or may have a hormone free week once a year, "one period a year," but many continue without a break in hormones resulting in no menstrual periods.

**Volume I, pg 1-285; F.1.g.  
Chapter: Men's and Women's Health**

**Chapter addition**

**Other recommendations for missed combined oral contraceptives:** [per Selected Practice Recommendations for Contraceptive Use, 2013: Adapted from the World Health Organization Selected Practice Recommendations for Contraceptive Use, 2nd Edition. *MMWR* June 21, 2013; 62(RR05);1-46]]

**Combined oral contraceptives**

1. Missed dose = more than 24 hours since scheduled administration time
  - a. Take missed dose as soon as possible
  - b. Continue taking the remaining doses at the usual time even if it means taking 2 tablets in one day
  - c. No BUM needed
  - d. Generally, emergency contraception is not required but may be considered if the patient missed doses earlier in the cycle or in the last week of the previous pack.
2. If two or more doses are missed, more than 48 hours since scheduled administration time may recommend the following:
  - a. Take most recent doses as soon as possible
  - b. Continue taking remaining doses at the usual time even if it means taking 2 tablets in one day
  - c. Use a back-up method or avoid intercourse until 7 active tablets have been taken for 7 consecutive days
    - i. \*\*If doses missed were during days 15-21 of a 28-day cycle (e.g. 3 weeks active hormone, 1 week placebo), then continue taking any active hormone tablets in the pack, skip the hormone free week and start a new pack of tablets
    - ii. If unable to start a new pack immediately, use a back-up method or avoid intercourse until 7 consecutive days of active hormone tablet have been taken.
  - d. Use emergency contraception if active hormonal tablets were missed in the first week of the cycle or unprotected intercourse occurred in the previous 5 days.

**Volume I, pg 1-287; 3.d.ii  
Chapter: Men's and Women's Health**

**Chapter addition**

Addition to 3.d.ii.

(c) If doses missed were during week 3 of a 4 week cycle (e.g. 3 weeks active hormone, 1 week placebo), then omit the ring-free week and insert a new vaginal ring.

**Alternate recommendations for missed vaginal ring insertion:** [per Selected Practice Recommendations for Contraceptive Use, 2013: Adapted from the World Health Organization Selected Practice Recommendations for Contraceptive Use, 2nd Edition. *MMWR* June 21, 2013; 62(RR05);1-46]]

**Vaginal Ring**

1. Missed dose = delayed insertion of less than 48 hours or recommended time for insertion
  - a. Insert new vaginal ring as soon as possible (if less than 24 hours, may insert same ring)
  - b. Keep ring in until scheduled ring removal day
  - c. No BUM needed
  - d. Generally, emergency contraception is not required but may be considered if the patient missed doses earlier in the cycle or in the last week of the cycle
2. If delayed insertion is more than 48 hours from scheduled administration time may recommend the following:
  - a. Insert ring as soon as possible
  - b. Keep ring in until scheduled ring removal day
  - c. Use a back-up method or avoid intercourse until vaginal ring has been in place for 7 consecutive days
    - i. \*\*If doses missed were during days 15-21 of a 28-day cycle (e.g. 3 weeks

- active hormone, 1 week placebo), then omit the ring-free week and insert a new vaginal ring.
- ii. If unable to insert a new ring immediately, use a back-up method or avoid intercourse until new ring has been inserted for 7 consecutive days..
- d. Use emergency contraception if active hormone was missed in the first week of the cycle or unprotected intercourse occurred in the previous 5 days.

Volume I, pg 1-287; 2.d.iv.  
Chapter -Men's and Women's Health

#### Chapter addition

**Alternate Recommendations for Missed Contraceptive Patch Application:** [per Selected Practice Recommendations for Contraceptive Use, 2013: Adapted from the World Health Organization Selected Practice Recommendations for Contraceptive Use, 2nd Edition. *MMWR* June 21, 2013; 62(RR05);1-46]

#### Contraceptive Patch

3. Missed dose = delayed patch application of less than 48 hours or recommended time for application
  - e. Apply new contraceptive patch as soon as possible (if less than 24 hours, may insert same ring)
  - f. Keep contraceptive patch on until scheduled patch change day
  - g. No BUM needed
  - h. Generally, emergency contraception is not required but may be considered if the patient missed doses earlier in the cycle or in the last week of the cycle
4. If delayed application is more than 48 hours from scheduled administration time may recommend the following:
  - a. Apply new patch as soon as possible
  - b. Keep patch on until scheduled patch change day
  - c. Use a back-up method or avoid intercourse until contraceptive patch has been in place for 7 consecutive days
    - i. \*\*If doses missed were during days 15-21 of a 28-day cycle (e.g. 3 weeks active hormone, 1 week placebo), then omit the ring-free week and apply a new contraceptive patch..
    - ii. If unable to apply a new patch immediately, use a back-up method or avoid intercourse until new patch has been applied for 7 consecutive days..
  - d. Use emergency contraception if active hormone was missed in the first week of the cycle or unprotected intercourse occurred in the previous 5 days.

Volume I, pg 1-293; X.B  
Chapter: Men's and Women's Health

#### Chapter addition

Implanon (etonorgestrel) has been discontinued, however providers may still have some in stock if pre-ordered, and women may still have them as part of their 3 year duration; therefore, it is included in the chapter. Clarification that only Nexplanon (etonorgestrel) is being manufactured and distributed currently.

Volume I, pg 1-295; F. 5  
Chapter: Men's and Women's Health

#### Chapter addition

Progestin-only emergency contraceptive pills are not as effective for those with a BMI of 26 or greater. Either ella (ulipristal acetate) or the copper IUD is recommended for those patients and the copper IUD is recommended for those with BMI greater than 35.

Volume II,  
Pg 2-143; C. 2. a.  
Chapter: Critical Care

#### Typo Correction

Must appear as follows:

2. Central venous oxygen saturation (ScvO<sub>2</sub>) and mixed venous oxygen saturation (SvO<sub>2</sub>)
  - a. These values are similar, but ScvO<sub>2</sub> is slightly higher than SvO<sub>2</sub> because it has not mixed with venous blood from the coronary sinus. ScvO<sub>2</sub> is measured in the superior vena cava, and SvO<sub>2</sub> is measured from the pulmonary artery (thus, SvO<sub>2</sub> is about 5% lower than ScvO<sub>2</sub>).

**Volume I, pg 1-394-395; Table 4**  
**Chapter:**  
**Neurology**

**Table Correction**

The first two rows of table 4 are mislabeled. See the next page for the correct table headings.

**Volume I, pg 1-407; B. 3. c. i. (g)**  
**Chapter:**  
**Neurology**

**Typo correction.**

Point (g) should read as follows:

The capsule should not be opened because it **increases** bioavailability by 75%

**Volume I, pg 1-185; Patient Case 5**  
**Chapter: Oncology Supportive Care**

**Patient Case Correction**

Patient case should read:

A 50-year-old woman is receiving adjuvant chemotherapy for stage II breast cancer. She received her third cycle of AC 10 days ago. Her CBC today includes WBC **600 cells/mm<sup>3</sup>**, segmented neutrophils 60%, band neutrophils 10%, monocytes 12%, basophils 8%, and eosinophils 10%. She is afebrile. Which best represents this patient's ANC?

**Volume I, pg 1-77; Answer 6**  
**Explanation to Self-Assessment Questions**  
**Chapter: Geriatrics**  
**Volume II, pg 2-232, Answer 1**  
**Chapter:**  
**Cardiology I**

**Typo Correction to Self-Assessment Question 6 Answer Explanation**

"The rivastigmine patch 9 mg is the appropriate initial starting dose" should be corrected to "The rivastigmine patch **4.6 mg/ 24 hours** is the appropriate initial starting dose"

**Mislabeled Answer**

Question 1 Answer is C, not A as printed

**Volume II, pg 2-234, Answer Explanations**  
**Chapter: Policy, Practice and Regulatory Issues**

**Mis-numbered answer explanations**

Answer Explanation for Question 7 is:

**Answer: A**

An adverse drug reaction is a non-preventable adverse drug event that is not the result of a medication error. Answer B is the definition of an adverse drug event, Answer C is the definition of a preventable adverse drug event, and Answer D is the definition of a potential adverse drug event.

Answer Explanation for Question 8 is:

**Answer: D**

Compounded sterile products, independent of risk level, can be stored for a maximum of 45 days in the freezer. The beyond-use dating differs according to risk level (low, medium, or high) if stored at room temperature or in a freezer. If a CSP has undergone sterility testing, however, it can be assigned a beyond-use date according to the maximum chemical stability permitted by valid references.

Table 4. Pharmacokinetic Parameters of Seizure Medications When Used as Monotherapy

Drug	Therapeutic Serum Concentration (mcg/mL)	Bioavailability (%)	Plasma Protein Binding (%)	Vd (L/kg)	Eliminated Unchanged (%)	Clinically Active Metabolite(s)	Half-life (hours)
Acetazolamide	10–14	100	> 90	0.23	100	None	48–96 10–15 (children)
Carbamazepine	4–12	> 70	40–90	0.8–1.9 1.5 (neonates) 1.9 (children)	Little, if any	10,11-epoxide	12–17 8–14 (children)
Clobazam	Not established	100	80–90	100 L	3	N-desmethylobazam	36–2 71–82 (N-desmethylobazam)
Clonazepam	20–80 ng/mL	100	47–80	3.2	Low percentage	7-amino, low activity	19–50 22–33 (children)
Ethosuximide	40–100	100	0	0.6–0.7	10–20	None	52–60 24–36 (children)
Ezogabine	Not established	60	80	2–3	36	NAMR	7–11
Felbamate	30–60 <sup>a</sup>	> 90	22–36	0.74–0.85	40–50	None	11–20 13–23 (children)
Gabapentin	2–20 <sup>a</sup>	Dose-dependent	< 3	0.65–1.04	75–80	None	5–7
Lacosamide	Not established	100	< 15	0.6	40	None	13
Lamotrigine	1–13	98	55	0.9–1.2	10	None	12–55 24–30 (children)
Levetiracetam	12–46 <sup>a</sup>	100	< 10	0.5–0.7	66	None	7 5 (children)
Oxcarbazepine	3–35 <sup>a</sup>	100g	67	0.7 <sup>b</sup>	< 1	10-monohydroxy	9 <sup>b,e</sup>
Perampanel	Not established	100	95–96	-	20–36	None	105
Phenobarbital	15–40	80–100	40–60	0.7–1	25	None	80–100 45–173 (neonates) 37–73 (children)

**Table 4.** Pharmacokinetic Parameters of Seizure Medications When Used as Monotherapy (continued)

Drug	Therapeutic Serum Concentration (mcg/mL)	Bioavailability (%)	Plasma Protein Binding (%)	Vd	Eliminated Unchanged (%)	Clinically Active Metabolite(s)	Half-life (hours)
Phenytoin	10–20	85–95	> 90	0.6–0.8	< 5	None	~20 <sup>e</sup> 10–140 (neonates) <sup>e</sup> 5–18 (children) <sup>e</sup>
Pregabalin	Not established	≥ 90	0	0.5	90	None	6
Primidone	4–12 (20) <sup>d</sup>	90–100	80	0.6	20–40	Phenobarbital	10–15; 17 (PEMA) 4.5–18 (children) 10–36 (PEMA; children)
Rufinamide	Not established	85	34	50 L <sup>e</sup>	2	None	6–10
Tiagabine	0.02–0.2 <sup>a</sup>	90–95	96	1.2	–	None	3.2–5.7
Topiramate	5–20a	80	13–17	0.6–0.8	70	None	12–21
Valproic acid	40–100 (150) <sup>d</sup>	100	> 90 <sup>f</sup>	0.2	< 5	Unknown	8–17 4–14 (children)
Vigabatrin	Not established	100	0	1.1	80	None	7.5 5.7 (infants)
Zonisamide	10–40	50	40	1.45	35	None	63

<sup>a</sup>Therapeutic serum concentrations not well established.<sup>b</sup>NAMR = N-acetyl metabolite of ezogabine; PEMA = phenylethylmalonamide; Vd = volume of (drug) distribution.<sup>c</sup>Michaelis-Menten pharmacokinetics; half-life varies with serum concentration; therefore, it might be better to express phenytoin elimination in the length of time it takes to clear 50% of the drug from the body, for example.<sup>d</sup>Upper end of the serum concentration range is not definitely established.<sup>e</sup>Depends on dose.<sup>f</sup>May vary with serum concentration.<sup>g</sup>Bioavailability decreased in children younger than 8 years and in the elderly; clearance is increased 80% in children 2–4 years and increased 40% in children 4–12 years compared with adults.