



The Transition

4th Year Pharmacy Students Entering the Real World of Pharmacy

The Transition, Volume IV, Issue II

December 2016

Inside This Issue:

Region Spotlight	1
HAP/VAP Guidelines	2
Holiday Recipe	3
Test Your Knowledge	3
Rotation Spotlight	4
Bezlotoxumab (Zinplava®)	5
Anticoagulation for CRRT	5, 6
Sofosbuvir/velpatasvir (Epclusa®)	7
Cookie Delights	7
Answers	8

Region Spotlight: Pharmacy in the Big Peach

Welcome to Atlanta where there is a wide variety of rotations, but you will likely spend more time in traffic on an average day. The impressively congested interstate highways are not the only notable landmarks in a city that boasts the Fabulous Fox Theater, the World of Coca-Cola, and Centennial Olympic Park, but the practice of pharmacy deserves its own unique nod. From hospitals of emerging national prominence to independent pharmacies in business for decades, Atlanta offers opportunities in the study and practice of pharmacy as diverse as the patient population served.



<http://thesource.com/2015/12/06/heres-why-millennials-should-be-calling-atlanta-home/>

Practice sites in the Atlanta region are not exclusively in the city proper. While Grady, Emory, Piedmont, Northside, and Children's Healthcare exist within the confines of the city of Atlanta, rotations are also available within the WellStar system in Marietta and Griffin, and noninstitutional sites populate areas from Fayetteville to Stockbridge. The variety of locations translates to discrete patient populations, challenging students to address stereotypes and prejudices that may impede patient care and fostering adaptable counseling skills.

Although no university campus exists to centralize the Atlanta region, the proximity of Mercer University's College of Pharmacy as well as Philadelphia College of Osteopathic Medicine's College of Pharmacy (PCOM) and even South University's campuses helps maintain the educational backdrop for students on rotation. Additionally, students from these other pharmacy schools are often present at the same sites as UGA students, providing ample opportunities to collaborate and to network with other learners within the small world of pharmacy. In the unfamiliar environment of a new rotation, the presence of a fellow student can help ease the transition and resolve problems by drawing from someone with a different background.

Practicing pharmacy in Atlanta may lack the hometown Southern charm displayed by some of the other regions, but the scope of experiences available is by no means untouched by the manners of the Peach State. From observing coronary artery bypass grafting surgeries to compounding patient-specific medications, students on rotation in Atlanta are shown the individuality and priority of each patient by both preceptors and fellow interns every day, a valuable lesson appreciated best through experience. Atlanta is populated with rotations as diverse as its residents, providing a uniquely solid foundation to support its students in their professional endeavors.

Written by: Abigail Shell
(Atlanta, GA)

Clinical Update: Hospital-Acquired Pneumonia and Ventilator-Associated Pneumonia

The Infectious Diseases Society of America (IDSA) pneumonia guidelines had not been updated since 2005, but this past July, the IDSA and the American Thoracic Society (ATS) released the new hospital-acquired (HAP) and ventilator-associated (VAP) pneumonia guidelines. Three major revisions were included: the implementation of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology for the evaluation of all available evidence, the removal of the concept of healthcare-associated pneumonia (HCAP), and the emphasis on use of local antibiograms to guide healthcare professionals with respect to the optimal choice of antibiotics.

The rationale for the HCAP designation in the 2005 guidelines was that these patients were thought to be at high risk for multidrug resistant (MDR) organisms. It was unanimously agreed upon to remove the concept of HCAP from the guidelines due to increasing evidence that many patients defined as having HCAP are not at high risk for MDR pathogens. Although interaction with the healthcare system is potentially a risk for MDR pathogens, underlying patient characteristics are also important independent determinants. Even if upon further deliberation HCAP were to remain a separate entity, it was thought that this topic could be included in the upcoming community-acquired pneumonia (CAP) guidelines because patients with HCAP frequently present from the community and initially are cared for in emergency departments, similar to patients with CAP.

“The panel unanimously decided that HCAP should not be included in the HAP/VAP guidelines.”
- IDSA Guideline

In the treatment of VAP, the guidelines recommend prescribing two antipseudomonal agents from different classes if the patient has risk factors for MDR pathogens or if more than 10% of the isolates in the unit are resistant to the choice of antipseudomonal antibiotic based on the antibiogram. They recommend avoiding aminoglycosides if possible due to poor lung penetration, association with poorer clinical response, and risk of nephrotoxicity and ototoxicity. Methicillin-resistant *Staphylococcus aureus* (MRSA) coverage is suggested in VAP patients with a risk factor for antibiotic resistance or if the medical unit the patient is being treated on has more than a 10-20% prevalence of MRSA among all *S. aureus* isolates. However, the guidelines do not give preference to the use of vancomycin or linezolid for MRSA coverage in VAP. The choice should instead be guided by patient-specific factors such as blood cell counts, concurrent prescriptions for serotonin-reuptake inhibitors, renal function, and cost.

Whether or not the patient is at high risk of mortality is an additional decision point for empiric antibiotic treatment for patients with HAP. The guidelines consider patients with ventilator support or septic shock due to HAP at high risk of mortality. Patients with no MRSA risk factors and who are not at high risk of mortality need coverage for MSSA and one antipseudomonal agent. Those with MRSA risk factors but without high risk of mortality need coverage for MRSA and one antipseudomonal agent. Lastly, patients with both MRSA risk factors and high risk of mortality need coverage for MRSA and two antipseudomonal agents.

Other updates include the recommendation to refrain from using biomarkers (procalcitonin, C-reactive protein, or Clinical Pulmonary Infection Score) to make the decision to initiate antibiotic therapy and instead to rely on clinical criteria alone. The authors give a weak recommendation that for patients with HAP/VAP, antibiotic dosing should be determined using pharmacokinetic and pharmacodynamic data (antibiotic blood concentrations, extended and continuous infusions, and weight-based dosing for certain antibiotics) rather than the manufacturer's prescribing information. The duration of therapy for both HAP and VAP is strongly recommended to be seven days, even for *Pseudomonas aeruginosa* infections which is a change from the previous two week recommendation for these isolates. With these new updates the authors hope to minimize exposure to unnecessary antibiotics and to reduce the development of antibiotic resistance while adequately treating patients.

Written by: Laura Hill Bannister (Albany, GA)

Reviewed by: Christopher Bland, Pharm.D., FCCP, FIDSA, BCPS

Eat, Drink, and Be Merry!

Grilled, Honey Glazed Carrots with Goat Cheese (Serves 4 to 6)

This recipe is certainly for the more experienced chef but is so worth it! Coming from a non-carrot eater, trust me when I say this recipe is a life changer. I have officially been converted and love these carrots. Not to mention, they can be eaten relatively guilt free by all, including diabetics and warfarin patients. It is the perfect addition to any holiday meal!

Ingredients:

2 tbsp pumpkin seeds	1½ cups goat cheese at room temperature	Kosher salt
2 tbsp sunflower seeds	2 dried pasilla chiles, finely chopped (can be found at Whole Foods or Fresh Market)	½ cup olive oil
2 tbsp sesame seeds	¼ cup thinly sliced garlic scallions	Black pepper
2 tbsp sherry vinegar	1½ lbs. medium carrots, trimmed and quartered	1 lime, halved
¼ cup honey	Cilantro leaves, left whole for garnish	Mint leaves, torn for garnish



Instructions:

1. Preheat grill to 450°F
2. In a 10-inch cast iron skillet over medium heat, toast all of the seeds for about 3 minutes. Place toasted seeds to the side, then toast the pasilla chiles for about a minute and remove from heat. In a separate bowl, whisk together the vinegar, honey, and ¼ tsp. salt. Add the seeds back to the skillet along with the honey mixture and stir over low heat until combined for about 30 seconds. Cover and keep warm.
3. Combine the garlic, goat cheese, ¼ cup of olive oil, ¼ tsp salt and ⅛ tsp black pepper into a bowl and mix until well blended. Spread onto serving platter, cover loosely with plastic wrap and set aside.
4. Toss the carrots with remaining ¼ cup olive oil and season with salt and pepper. Transfer to grill and cook until tender and slightly charred, flipping periodically.
5. Place carrots on top of the goat cheese mixture. Squeeze lime halves over the carrots and goat cheese. Drizzle with seed-honey mixture and apply garnish. Enjoy!

Submitted by: Paige Hughes
(Columbus, GA)

Test Your Knowledge

Body Surface Area

Calculate the body surface area (BSA) in m² of a 5 foot 6 inch woman weighing 185 lbs.



Compounding Lingo

Interpret the following prescription and determine the required amount of each ingredient.

Atropine sulfate 0.4 mg
Lactose ad 200 mg
DTD #40 capsules

Pediatric Emergency Medicine and the Importance of Triage



Studies show that having a dedicated emergency department (ED) pharmacist reduces medication errors in the emergency department by up to 66%, which represents significant cost savings and improves patient outcomes¹. However, I can say from personal experience that the worth of an ED pharmacist goes far beyond the studied benefits. During my five weeks in the Emergency Department at the Scottish Rite campus of Children's Healthcare of Atlanta (CHOA), I witnessed an ED pharmacist, Matthew Post, PharmD, BCPPS, have a meaningful impact on nearly every patient that came into the trauma room. I participated in traumas of all kinds including cardiac arrest, traumatic brain injury, amputation, near-drowning, septic shock, and everything in

between. Everything that I saw and learned in the trauma room during this rotation is seared into my memory, but more than anything else, what I will always remember is the importance of triage.

On a particularly busy Friday night, we received pages for two trauma patients who would be arriving at the same time: a cardiac arrest patient arriving via helicopter undergoing CPR and a pediatric patient arriving via ambulance who had been hit head-on by a truck. Two very different life-threatening emergencies required unique pharmaceutical interventions at the same time, and we had to quickly assess and decide which patient we were going to see. With the limited information provided, my assumption was that we would be assisting with the cardiac arrest patient because I thought that was the patient who would need our help most; I did not think a pharmacist would be much use in a physical trauma. However, when the second patient arrived first, I quickly learned how wrong I was.

The patient required urgent respiratory support, so we began drawing up the medications for rapid sequence intubation (RSI) immediately. Because all pediatric doses are weight-based, having an ED pharmacist on hand to quickly make precise pharmaceutical manipulations is extremely important at CHOA. Within a matter of minutes, Dr. Post prepared and labelled exactly 0.3 mg/kg of etomidate to sedate the patient, 1 mg/kg of 2% lidocaine to reduce intracranial pressure and minimize gag reflex, and 1 mg/kg of rocuronium to induce muscle paralysis.

We were called in to assist with the newly arrived cardiac arrest patient at the same time the physician in the current room noticed early signs of brain swelling and ordered 3% saline to prevent herniation. The decision to say "no" to the staff asking us to assist with the cardiac arrest must have been difficult for my preceptor, but he did not hesitate. In a single moment, realizing that both cases were severe and both patients needed his help, he determined that it was most important to stay with the current patient. We finished preparing the initial RSI medications, provided the nurses with the bag of 3% saline from our trauma kit, and began drawing up doses of midazolam and fentanyl that the patient would need for continued sedation while intubated. We stayed with the patient and prepared his medications until he was stable enough to transfer to the pediatric intensive care unit (PICU).

The ultimate goal in the trauma room is to "send them up alive."
- Dr. Matthew Post, BCPPS

Dr. Post told me that the ultimate goal in the trauma room is to "send them up alive," and I can safely say that CHOA meets this goal with amazing consistency. Not a single patient died in the emergency department during my five week rotation, including both of the patients from that night. Though we didn't know it at the time, the cardiac arrest patient experienced a return of spontaneous circulation while in the air, and ultimately required only minimal pharmaceutical intervention. My preceptor helped to save the life of a little boy by successfully triaging multiple emergencies and correctly helping the patient who needed him the most. This kind of quick decision making and problem solving cannot be taught in school and is the sort of lesson that you can only learn in the emergency department. I encourage all pharmacists and pharmacy students to seek out emergency medicine experience, whether it is working in the ED, during the APPE year, while on residency, or becoming advanced cardiac lifes support (ACLS) or pediatric advanced life support (PALS) certified. With proper training and experience, pharmacists can and do save lives.

Written By: Libby Daugherty (Atlanta, GA)

1. Cohen V, Jellinek SP, Hatch A, et al. Effect of clinical pharmacists on care in the emergency department: a systematic review. *Am J Health Syst Pharm*, 2009. 66(15): 1353-61.

Zinplava® for the Treatment of Recurrent *C. difficile* Infection

In October 2016, the FDA approved bezlotoxumab, a monoclonal antibody indicated to reduce the risk of recurrence of *Clostridium difficile* infections (CDI). This new medication will be available on the market in the first quarter of 2017 under the brand name Zinplava®.

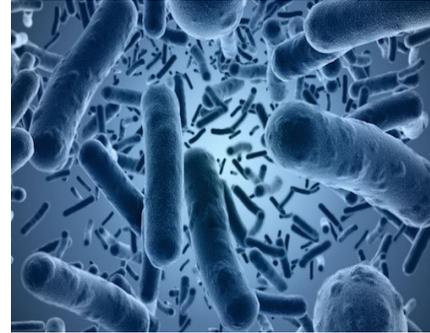
Bezlotoxumab is a human monoclonal antibody that works by binding to *Clostridium difficile* toxin B to reduce recurrence of CDI in those 18 years or older with a high risk of recurrence. Bezlotoxumab should not be used as monotherapy for treating CDI but instead an adjunct to appropriate antimicrobial therapy. It is given as a single 10 mg/kg dose IV infusion over 60 minutes. Repeat administration has not yet been studied.¹

No known contraindications to bezlotoxumab exist and adverse reactions are fairly mild in most patients with only nausea, pyrexia, and headache having greater frequency than placebo within the first 4 weeks after administration. The prescribing information includes a warning for patients with heart failure, which was found more commonly in the bezlotoxumab group than the placebo group. There were also more deaths in patients with a history of heart failure who were treated with bezlotoxumab. Causes of death included cardiac failure,

infections, and respiratory failure. Bezlotoxumab should only be used when benefit outweighs risk in patients with a history of heart failure. Immunogenicity is a potential risk for any biologic medication, including bezlotoxumab, but no patients in the trials developed anti-bezlotoxumab antibodies. There are no known drug-drug interactions with bezlotoxumab, as it is eliminated by catabolism¹, with a half life of 19 days.^{1,2}

Bezlotoxumab has not yet been studied in pregnancy, lactation, or pediatric patients. In clinical trials, 50% of patients were elderly with 27% being at least 75 years of age. No differences in efficacy and safety were observed between elderly patients and patients aged 18-64 years. No dosage adjustments were required for patients older than 65 years, patients with renal dysfunction, or patients with hepatic impairment.¹

While full trial data has not yet been released, a study published in the New England Journal of Medicine in 2010 showed a statistically significantly lower rate of recurrence of CDI in patients treated with monoclonal antibodies in addition to standard of care when compared to placebo ($p < 0.001$)³. However, it should be noted that this trial used a combination of human monoclonal antibodies against *Clostridium difficile* toxins A and B. Bezlotoxumab is a



<http://www.novaerus.com/emea/airborne-transmission/clostridium-difficile/>

human monoclonal antibody against *Clostridium difficile* toxin B only.

The approval of bezlotoxumab is an exciting step forward in combating recurrent *Clostridium difficile* infection as a preventative therapy. However, its place in therapy is yet to be decided due its potential high cost as a monoclonal antibody, and future trials should compare bezlotoxumab to fecal transplants to determine which is a better and more cost-effective treatment for recurrent *C. difficile* infection.

Written by: Madeline Burke
(Savannah, GA)

Reviewed by: Christopher Bland,
Pharm.D., FCCP, FIDSA, BCPS

1. Zinplava® [package insert]. Whitehouse Station, NJ: Merck & Co, Inc.; 2016.

2. FDA. FDA Briefing Document: Bezlotoxumab Injection. FDA; 2016.

3. Lowy et al. Treatment with Monoclonal Antibodies against *Clostridium difficile* Toxins. *The New England Journal of Medicine*. 2010. 362(3):197-205.

Anticoagulation for Continuous Renal Replacement Therapy

Renal failure is a common problem seen among hospitalized patients and can progress to requiring dialysis. Intermittent hemodialysis (IHD) remains the gold standard, as this method is highly effective and safe on an outpatient basis. Continuous renal replacement therapy (CRRT) is indicated in critically ill patients who are not hemodynamically stable enough to receive intermittent dialysis. The machine's slow and uninterrupted flow prevents the drastic decline in blood pressure often seen in IHD because of the large volume of fluid quickly removed from the patient. Blood purification is achieved with CRRT by diffusion (hemodialysis), convection (hemofiltration), or a combination of both mechanisms (hemodiafiltration). Regardless of the mode chosen, the machine is an extracorporeal device that attaches to the patient at two venous cannulation sites. The system creates a circuit where blood is taken from the patient, forced through a filter via hydrostatic pressure, and re-infused into the vasculature. Passage of blood through an extracorporeal circuit acti-

Continued on page 6

Anticoagulation for CRRT, *continued*

vates platelets and other prothrombotic mediators, resulting in fibrin deposits throughout the filter. Therefore, anticoagulation is warranted in a patient on CRRT to preserve filter integrity and prevent interruptions in therapy, which can overwhelm damaged kidneys and worsen renal failure. Anticoagulation methods for CRRT include heparin, low molecular weight heparins, and citrate.

Heparin: Unfractionated heparin is the standard of care for anticoagulation in CRRT. It works by potentiating antithrombin to inactivate thrombin, factors IX, X, XI, XII, and plasmin and by preventing the conversion of fibrinogen to fibrin. Typically, heparin is administered directly into the inflow arm of the circuit as a bolus dose of 50-2000 units, followed by a continuous infusion of 300-500 units per hour. Therapy can be monitored by checking the partial thromboplastin time (PTT) from the circuit's outflow arm, targeting a value of 1.5 to 2 times the control. Some institutions prefer to monitor anti-Xa levels, targeting a range between 0.3 and 0.7 units per milliliter. Although heparin is infused directly into the circuit, its effects outlast the duration of blood circulation so the patient is exposed to heparin's systemic effects. Therefore, it is possible for the patient to develop heparin-induced thrombocytopenia (HIT), a contraindication to heparin use. Heparin is also relatively contraindicated in patients with a high risk of bleeding, such as post-operative patients, who are not uncommon to the critical care service. Anticoagulation with heparin in CRRT is best when used in a patient with a low risk of bleeding and normal platelet count.



<http://www.west-ward.com/en/Products/ProductsRoot/Heparin%20Sodium%20Injection%20USP>

Low Molecular Weight Heparin (LMWH): LMWHs such as enoxaparin is not FDA approved in the United States for use in dialysis. These agents are excreted primarily via the renal route, and serious bleeding complications have been reported in dialysis-dependent patients. Although anti-Xa level monitoring is available, protamine is less effective in reversing LMWH than unfractionated heparin, so clinicians are more likely to choose the safer agent.

Sodium Citrate: Sodium citrate offers an advantage over heparin because it works regionally. Sodium citrate acts as an anticoagulant by binding ionized serum calcium, which is required for multiple steps of the clotting cascade to occur. Sodium citrate is infused into the inflow arm of the circuit to chelate calcium and prevent clotting before blood enters the filter. The citrate-calcium complex is then cleared from the blood via CRRT. Simultaneously, the patient is infused with calcium gluconate to reverse the citrate and restore normal serum ionized calcium concentrations. There are a few different methods to monitor citrate efficacy, including targeting an ionized calcium concentration of less than 0.4 mmol per liter in the filter, or targeting 3 mmol of citrate per liter of blood in the circuit. Serum concentration of ionized calcium should also be monitored frequently, targeting normal values (1.1 to 1.35 mmol per liter) to ensure the patient is repleted correctly. Besides requiring strict monitoring, this method of anticoagulation is more costly than heparin and requires special dialysate with no calcium. Sodium citrate, an alkaline agent, can also cause metabolic alkalosis. However, complications with this technique are uncommon when monitoring is performed appropriately, and filter longevity is increased. Therefore, sodium citrate for regional anticoagulation of CRRT circuits may be safer and more effective than heparin.

Other anticoagulation methods currently under investigation include prostacyclin, regional heparin using protamine reversal after blood circulation, and argatroban for patients with a history of HIT. Although heparin remains the drug of choice for anticoagulation in CRRT, sodium citrate is gaining popularity among clinicians and is utilized at an increasing number of institutions. Pharmacists should be proactive in monitoring CRRT patients regardless of which anticoagulation method is used to prevent complications requiring an interruption in therapy.

Written by: Charlotte Dunderdale (Atlanta, GA)

Reviewed by: Vickie Malloy, Pharm.D., Children's Healthcare of Atlanta

1. Anticoagulation for Continuous Renal Replacement Therapy. *UpToDate*. Wolters Kluwer UpToDate, 2016. Web. Accessed 17 November 2016.
2. Cronin RE and RF Reilly. Unfractionated heparin for hemodialysis: still the best option. *Seminars in dialysis*. 2010. 23(5): 510-515.
3. Oudemans-van Straaten HM, Kellum JA, and R Bellomo. Clinical review: anticoagulation for continuous renal replacement therapy - heparin or citrate? *Critical Care*. 2011. 15(1): 202.
4. Pannu N and RTN Gibney. Renal replacement therapy in the intensive care unit. *Therapeutics and Clinical Risk Management*. 2005. 1(2): 141-150.

New Drug Update: Epclusa®

Hepatitis C virus (HCV) is a contagious viral infection that leads to inflammation of the liver. Constant inflammation can cause the liver to become cirrhotic, leading to end-stage liver disease if left untreated. Currently, more than 170 million people are affected by this virus worldwide. Only recently, with the advent of new direct-acting antivirals (DAAs), have higher cure rates for HCV been feasible. Both the European Association for the Study of the Liver (EASL) and the American Association for the Study of Liver Disease (AASLD) have recently published updates on the use of these new DAAs and their role in therapy.

Sofosbuvir/velpatasvir (Epclusa®), approved in June 2016, is the first pan-genotypic oral tablet, covering all 6 types of chronic HCV. Epclusa® is a fixed-dose combination of the previously approved sofosbuvir (Sovaldi®) and the newest DAA velpatasvir. Sofosbuvir inhibits NS5B polymerase causing HCV-RNA synthesis inhibition through RNA chain termination. Velpatasvir inhibits the NS5A protein, which is also needed for replication of the virus. Three international phase 3 trials (ASTRAL-1, ASTRAL-2, ASTRAL-3)¹ led to the FDA approval of sofosbuvir/velpatasvir for use in patients without cirrhosis or with compensated cirrhosis (Child-Pugh A). One international phase 3 trial (ASTRAL-4) led to the approval of use in those with decompensated cirrhosis (Child-Pugh B or C) with concurrent ribavirin therapy. The sustained virological response over 12 months (SVR12) for both indications, 98% and 94% respectively, gave sofosbuvir/velpatasvir a Class IA recommendation in both EASL and AASLD guidelines for all genotypes of HCV.²

Sofosbuvir/velpatasvir dosing is simplified by its fixed-dose formulation of 400 mg/100 mg per tablet. The combination product can be used as monotherapy in the treatment of HCV with a dosing regimen of one tablet once daily for 12 weeks for compensated cirrhosis patients and one tablet once daily with ribavirin for 12 weeks for decompensated patients. Headache and fatigue were the most common side effects reported in clinical studies. Caution should be used when using concomitant P-gp, CYP2B6, CYP2C8 or CYP3A4 inducers.³

While some insurances may cover sofosbuvir/velpatasvir, prior authorizations and overrides are likely obstacles. Many formularies still only carry the alternative medications such as sofosbuvir (Sovaldi®) or the combination pill ledipasvir/sofosbuvir (Harvoni®). Currently, one twenty-eight count bottle of sofosbuvir/velpatasvir retails for just under \$30,000 but is in fact less costly than alternatives for hepatitis C treatment. Although the efficacy of this novel medication can be clearly seen by the highly sustained virological response in all genotypes of HCV, insurance-related obstacles hinder its widespread use in the treatment of HCV.

Written by: Khushbu Tejani (Atlanta, GA)

Reviewed by: Rosemary P. Cross, Pharm.D., Piedmont Atlanta Hospital, Atlanta, GA

1. Feld LJ, Jacobson IM, Hezode C, et al. Sofosbuvir and velpatasvir for HCV genotype 1, 2, 4, 5, and 6 infection. *N Engl J Med*. 2015. 373(27): 2599-607.
2. AASLD-IDSA. Recommendations for testing, managing, and treating hepatitis C. <http://www.hcvguidelines.org>. Accessed November 2016.
3. Epclusa® (sofosbuvir and velpatasvir) [prescribing information]. Foster City, CA: Gilead Sciences Inc; June 2016.

Easy as Cake—but cookies!

Cake Mix Cookies (Makes about 1 ½ dozen cookies)

Now, this is a recipe for the cooking newbies, a foolproof cookie that leaves you with soft cookies for days! The options are limitless. You can add sprinkles, chocolate chips, icing- whatever your heart desires.

Ingredients:

Box of cake mix (anything except super moist)
2 eggs
½ cup of vegetable oil.

Instructions:

1. Preheat oven to 350°
2. Mix all ingredients in a mixing bowl
3. Place about a teaspoon on a greased cookie sheet and add toppings
4. Bake for 8 to 10 minutes, let cool. Enjoy!



Submitted by: Paige Hughes
(Columbus, GA)



University of Georgia
Augusta University
UGA Clinical Pharmacy Program
1120 15th Street, HM Building
Augusta, GA 30912
Phone: 706.721.4915
Fax: 706.721.3994
Email: TheTransitionUGA@gmail.com

EDITORIAL BOARD

Chief Editors:

Andrea Clarke, Pharm.D. Candidate, 2017 (Augusta)
Belinda Li, Pharm.D. Candidate, 2017 (Augusta)

Faculty Advisor:

Dianne May, Pharm.D., BCPS, FCCP
Clinical Professor, UGA College of Pharmacy



Upcoming Events

- January 5th: College of Pharmacy Research Day
- January 9th: Return to Rotations
- January 31st: GPhA's Day at the Dome
- February 28th: Professionalism Portfolio Due
- March 3rd: Match Rank Order List Due
- March 17th: Match Day

Test Your Knowledge: Answers

Body Surface Area

The Mostellar formula for BSA is

5 ft 6 in = 66 inches

66 inches * 2.54 cm/inch = 168 cm

185 lbs * 2.2 lbs/kg = 84 kg

$$\sqrt{\frac{\text{height}(cm) * \text{weight}(kg)}{3600}}$$
$$\sqrt{\frac{168 \text{ cm} * 84 \text{ kg}}{3600}} = 1.98 \text{ m}^2$$



Compounding Lingo

ad = to make

DTD = dose to deliver

0.4 mg atropine sulfate * 40 = 16 mg

200 mg total weight for each capsule * 40 = 8000 mg total of atropine+lactose

16 mg is too small to measure—will need to make an aliquot.

Need 16 mg atropine sulfate x 10 = 160 mg atropine sulfate

160 mg aliquot * 10 = 1600 mg total

-160 mg atropine sulfate

1440 mg lactose

8000 mg - 160 mg aliquot = 7840 mg additional lactose needed to make total amount