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Preceptor Highlight: Anthony Hawkins, PharmD, BCCCP



Anthony Hawkins

Dr. Anthony Hawkins is a Clinical Associate Professor at the University of Georgia College of Pharmacy on the Albany campus. He graduated from the UGA College of Pharmacy in 2012 and completed his PGY1 and PGY2 specialty residency in critical care at Emory University Hospital in Atlanta, GA. He has served as a faculty member with the College since 2014.

What makes your rotation unique?

My rotation usually consists of a layered learning approach with both a pharmacy student and PGY1 resident. In this way, the student can see the difference in roles and can become confident by observing how capable they will become after just a single year of rotations. I also allow the resident to take ownership of the experience by allowing them to become increasingly involved with precepting the fourth-year

student. Often by the end of the experience, the resident is leading feedback Friday sessions themselves. It is good for the student to see that it is difficult to provide constructive feedback and allows a level of grace for those learning to do so.

The key components of my rotation focus on developing the ability to self-reflect, establish clinical reasoning, metacognition, and emotional intelligence. Facts and guidelines are ever changing, but how you navigate changing information, the thought process, is what is most important. I care about how you come to conclusions, create the plan, and how you synthesize new or changing information to augment that plan. Afterwards, having the emotional intelligence to communicate that information to the health care team is critical.

How would you describe your typical day as a preceptor?

In the ICU, pre-rounds begin around 7:45am. The student starts with 4 patients and increases their patient load weekly, while the resident has 8-9 patients. Pre-rounds consist of the student presenting any overlapping patients to the resident so that they get some precepting experience, and the rest of the patients are presented to me. We discuss developed plans in detail so that both learners are confident going into

rounds. Formal rounds begin at 10 a.m. and last for about 1.5 hours. Afterwards, we reconvene, discuss what items need follow-up, and prioritize them. Learners put in orders and follow-up with any healthcare personnel or patients. The remainder of the day consists of any topic discussions or assignments on the schedule. Depending on which days are on or off-service, I would be teaching in the classroom. Lectures are scheduled ahead of time throughout the week. Outside of that, time is spent on scheduling for the next block, research initiatives, projects, and service work for the College and profession through organizational committees.

What is the most challenging and most rewarding aspect of precepting?

In the ICU, the most challenging task is often balancing layered learning. The resident and student have different levels of experience, strengths, and interests. Learning how to balance these can be fun and challenging. It requires me to be creative and rely on feedback. It can also be difficult balancing the classroom and clinical activities. Sometimes lectures are scheduled at the same time as rounds, so empowering learners to be confident going into rounds alone is key, or if it is early in the

Preceptor Highlight continued...

rotation, potentially delaying interventions until after rounds where we can communicate with providers separately. On the flip side, the most rewarding aspect of precepting in the ICU is seeing the learner fully embrace the role as a valuable member of the team and make meaningful interventions. Observing this growth allows for a lot of pride as a preceptor.

Academia rotations are challenging because many students have not gained any experience in this area which leaves them with an innate deficit. Learning how to make the experience meaningful and rewarding for the learner is certainly a challenge. However, this type of rotation allows for more dedicated time where I do not have to balance clinical responsibilities. It is very rewarding to see the learner's personal goals for the experience met and a level of growth that is very individualized be met. The definition of success in this setting is determined by the learner and their goals.

As a preceptor what advice would you give to a student starting rotations?

Make sure that you identify your goals with the preceptor early on. This will show initiative and help to define areas of growth. This will allow your preceptors time to seek out opportunities that complement these goals. Be honest about your interests and what you can learn from the rotation; growth is diverse and can come in the form of intangible skills as well. Understand how to apply knowledge to practice, how to become independent, and determine a process that is efficient for you. If you are struggling, please do not be scared to be honest with your preceptor. Acknowledging weakness is a sign of strength and maturity.

✍️ Written by Aliya Abdulla, PharmD Candidate 2022
Athens, GA

RESIDENCY TIP:

Stay organized! There are many deadlines for the residency application process, so be sure to have a calendar or planner to keep up with the dates!

Here is a website to give general deadlines.

<https://www.ashp.org/-/media/assets/pharmacy-student/docs/Student-Residency-Guide/psf-residency-application-timeline-Virtual.pdf>

Drug-Resistant Bacteria & New Antibiotics: An Arms Race

When definitive antibiotic therapy must be selected in the classroom setting, the culture and susceptibility report typically guides students by providing one or more antibiotics to which the infecting bacteria are susceptible. Then it comes as a shock the first time a patient presents with a pathogen resistant to all antibiotics tested. Or perhaps the organism is susceptible to some drugs, but these options are eliminated by patient-specific characteristics. This is, after all, no longer an exam question with a pre-determined answer. Tackling these problems requires familiarity with drug-resistant pathogens and new antibiotic approvals.

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a notorious pathogen recognized by the Centers for Disease Control and Prevention (CDC) as a serious antibiotic resistance threat.¹ Vancomycin is often the drug of choice for inpatients requiring MRSA coverage. However, once patients are ready for discharge, vancomycin is often not practical because it is given intravenously two to three times per day in patients with normal renal function. Dalbavancin and oritavancin, which are lipoglycopeptides, have the same anti-MRSA activity as vancomycin, but they have much longer half-lives. Both can be given as a one-time infusion for skin and soft tissue infections, possibly allowing patients to leave the hospital earlier than they would on standard of care.^{2,3} In addition, these agents may prevent admission to the hospital altogether, allowing for discharge from the emergency department.

Although beta-lactams are widely used in general, they historically have not had a role in treating MRSA infections. MRSA prevents beta-lactams from inhibiting its penicillin-binding proteins by altering the site on these enzymes where beta-lactams normally bind. Ceftaroline, however, is a novel cephalosporin with a structure capable of circumventing this mutation. It recently became the first beta-lactam indicated for the treatment of skin and soft tissue infections caused by MRSA, an important advancement given the favorable safety profile of beta-lactams.⁴

Enterobacteriaceae are a family of Gram-negative rods living in the gastrointestinal tract. Carbapenems are a drug of choice for strains of *Escherichia coli* and *Klebsiella pneumoniae* that produce cephalosporinases, also known as extended-spectrum beta-lactamases (ESBLs). However, there are carbapenem-resistant Enterobacteriaceae (CRE) that the CDC considers urgent threats, the highest threat level. Around 30% of CRE evade carbapenems via carbapenemase production.¹ These enzymes can be avoided by using certain beta-lactamase inhibitors. Recently-approved agents effective against carbapenemase-producing CRE include ceftazidime/avibactam, meropenem/vaborbactam, and imipenem/cilastatin/relebactam.^{5,6,7}

Carbapenems are also sometimes ineffective against multidrug-resistant (MDR) *Pseudomonas aeruginosa*, defined as an isolate resistant to at least one drug in three or more antibiotic classes.¹ Because the mechanism by which MDR *P. aeruginosa* resists ceftazidime and meropenem is not a beta-lactamase, adding avibactam or vaborbactam will not restore activity. However, resistance to imipenem is often due to a porin channel mutation

Drug-Resistant Bacteria & New Antibiotics continued...

Activity of New Antibiotics ^{2-4,8,9}					
	MRSA	CRE	MDR <i>P. aeruginosa</i>	CRAB	<i>S. maltophilia</i>
Ceftaroline (Teflaro [®])	✓	✗	✗	✗	✗
Cefiderocol (Fetroja [®])	✗	✓	✓	✓	✓
Ceftolozane/tazobactam (Zerbaxa [®])	✗	✗	✓	✗	✗
Ceftazidime/avibactam (Avycaz [®])	✗	✓	✗*	✗	✗
Meropenem/vaborbactam (Vabomere [®])	✗	✓	✗**	✗	✗
Imipenem/cilastatin/relebactam (Recarbrio [®])	✗	✓	✓	✗	✗
Dalbavancin (Dalvance [®])	✓	✗	✗	✗	✗
Oritavancin (Orbactiv [®])	✓	✗	✗	✗	✗
Omadacycline (Nuzyra [®])	✓	✓	✗	✓	✓
Eravacycline (Xerava [®])	✓	✓	✗	✓	✓
Delafloxacin (Baxdela [®])	✓	✗	✗***	✗	✗
*Ceftazidime/avibactam covers <i>P. aeruginosa</i> but does not provide additional activity beyond that of ceftazidime					
**Meropenem/vaborbactam covers <i>P. aeruginosa</i> but does not provide additional activity beyond that of meropenem					
***Delafloxacin covers <i>P. aeruginosa</i> but does not provide additional activity beyond that of ciprofloxacin and levofloxacin					

along with an AmpC inducible carbapenemase, in which case imipenem/cilastatin/relebactam will restore activity.⁷ Ceftolozane/tazobactam, which contains a novel cephalosporin, is also used for MDR *P. aeruginosa*.⁸ In the fluoroquinolone class, delafloxacin is the latest agent to be marketed. Like ciprofloxacin and levofloxacin, delafloxacin provides an oral option for *P. aeruginosa* coverage, but its reliable MRSA coverage is unique among fluoroquinolones.⁹

Similar to *P. aeruginosa*, *Acinetobacter baumannii* is a non-lactose-fermenting Gram-negative rod. Carbapenems can normally provide coverage, but there are carbapenem-resistant *A. baumannii* (CRAB), another urgent threat.¹ Beta-lactamases are not responsible for this resistance, so combinations containing a beta-lactamase inhibitor will not be effective against CRAB. Cefiderocol is a new cephalosporin that has no Gram-positive activity but covers many Gram-negative pathogens, including CRAB and *Stenotrophomonas maltophilia*, a non-lactose fermenter intrinsically resistant to carbapenems.¹⁰ Cefiderocol enters bacterial cells using a method that allows it to avoid several resistance mechanisms. It chelates iron, permitting the drug to enter bacterial cells through the iron transport system like a Trojan horse, hence the brand name Fetroja[®]. Other options for CRAB treatment include omadacycline and eravacycline.⁸ These new tetracyclines have four holes in coverage: *Morganella* spp., *Pseudomonas* spp., *Proteus* spp., and *Providencia* spp. Between the two drugs, omadacycline has stronger Gram-positive coverage while eravacycline has an advantage with Gram negatives.

Overall, the emergence of multidrug-resistant bacteria has been met with several new antibiotics in recent years. Each pathogen has its own mechanisms of resistance, and each drug has been armed with its own way to overcome. As medication experts, pharmacy students on rotations and pharmacists entering practice should stay updated on the latest antibiotics to assist interprofessional teams in selecting appropriate therapy for difficult-to-treat infections.



Written by Ryan Bok, PharmD Candidate 2022
Savannah, GA

Reviewed by Chris Bland Pharm.D., BCPS, FIDSA, FCCP

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Rotation Highlight: Athens Infusion & Pharmacy

I had the privilege to learn under Dr. Rebecca Welch and Dr. Ann Hansford at Athens Infusion & Pharmacy for my Block 2 APPE rotation. The Athens Infusion & Pharmacy is tucked into a corner on the eastside of Athens. It is a closed-door pharmacy that is a cornerstone to the community it serves. Athens Infusion & Pharmacy adds a personal touch of care provided in patient homes through the site's infusion services. Key areas covered at this site included verifying patient specific unit-dosed medications as well as ensuring that patients have up to date medication profiles for state compliance.

The compounding pharmacy provides patients with pharmaceutical therapy that would otherwise require a mail-order pharmacy to access. Compounding pharmacies undergo additional licensing and rigorous regulations that few pharmacy owners attempt to undertake. Dr. Hansford saw an opportunity to provide patients with easier healthcare access. Her teaching approach allows for observation of pharmacist tasks and then the option to step into the pharmacist role when comfortable. Questions were encouraged and collaboration

was a key expectation. Opportunities at this site included: delivering infusions to patients at their home, checking compounded calculations, observing sterile compounding of autologous serum eye drops, and compounding of antibiotics for home infusion therapy.



Dr. Welch utilized an active-learning approach, encouraging students to step into the responsibilities of a pharmacist very early in the rotation. She does this to challenge students to understand our future responsibilities and expectations as a pharmacist. With Dr. Welch I completed mental health medication reviews and ensured prompt refills.

The team at this rotation site were like

family. An example is they would always answer phone calls on speaker, which I grew to love, because every team member could hear the questions and could chime in if they knew the answer. Something as simple as answering calls on speaker allows the entire pharmacy to work as a cohesive team.

This was the only geriatric pharmacy rotation in my region, and this site provided me with much more experience than I could have ever expected. I visited patients' homes and collaborated with home health nurses to ensure infusions were initiated correctly. I researched and presented the current treatment guidelines with interactive discussions involving all pharmacy staff to reinforce the newest recommendations.

As Dr. Welch said to me, "You'll get out of this rotation what you put into it." If you are interested in a particular aspect of a rotation site, research it! The opportunities are there to show your skills!

✍️ Written by Lilli Hill, PharmD Candidate
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Recipe: Red Velvet Brownies



Ingredients:

1 1/2 cups all-purpose flour
1 1/2 tsp baking powder
1/8 tsp salt
1 tsp vanilla extract
4 large eggs
1 tbsp red food coloring
1 1/2 cup white sugar
1/3 cup cocoa powder
3/4 cup unsalted butter

Cream Cheese Frosting:

8 ounces cream cheese
4 tbsp unsalted butter
1 1/2 cup powdered sugar
1/8 tsp salt
1 tsp vanilla extract



Instructions:

1. Preheat oven to 350° F. Line 9 inch square baking pan with foil.
2. Melt butter in sauce pan over medium heat. Add sugar once butter has melted and whisk for about 5 minutes.
3. Stir in cocoa powder and transfer mixture into large mixing bowl. Let mixture cool for 5 minutes.
4. Add eggs one at a time stirring until incorporated. Stir in vanilla extract and food coloring.
5. Add flour, baking powder, and salt. Whisk until everything is incorporated.
6. Pour batter into baking pan and gently tap against counter to ensure no air bubbles are in the batter.
7. Bake for approximately 27-32 minutes or until a toothpick inserted in the center comes out clean. Cool completely for at least 1 hour.
8. While brownies are cooling, prepare frosting by beating cream cheese, butter, and vanilla extract. Gradually add powdered sugar and salt and beat until blended.
9. Frost the cooled brownies evenly.
10. ENJOY YOUR YUMMY TREAT!

✍️ Written by Mona Modi, PharmD Candidate 2022
Savannah, GA

Pharmacy Calculations:

Dilution Review



If you work in a pharmacy that does compounding, you may come across the need to do some calculations to determine how much of a stock supply will need to be used to make the final strength of the prescription the doctor ordered.

If the physician orders 200g of 6% gabapentin ointment for a patient, but you only have 10% gabapentin ointment in stock, you can calculate the needed quantity of the ointment as follows:

To figure out the amount of stock ointment needed, use the equation $C_1 \cdot V_1 = C_2 \cdot V_2$, where C_1 = the concentration of ointment 1, V_1 = the volume, or weight in this case- grams of ointment 1, C_2 = the concentration of ointment 2, and V_2 = the weight in grams of ointment 2.

Ointment 1 will be our desired product and ointment 2 will be the stock ointment. Solve for V_2 :

$$(6\%)(200g) = (10\%)(V_2)$$

$$V_2 = 120 \text{ g of stock ointment}$$

We need 120 g of stock ointment; however, we need 200 g of final product. Subtract the final product needed and the amount of stock ointment needed to determine the amount of ointment base we need to add.

$$200g - 120g = 80g \text{ of ointment base}$$

*this equation can be applied to liquids, semi-solids, and solids

 Written by Amber Adams, PharmD Candidate 2022 Savannah, GA

Efficacy of Topiramate on Weight Loss

Obesity has become one of the fastest growing and most prevalent disease states in the United States. In 2017-2018, 42.4% of the United States population was classified as obese.¹ Though the primary management of obesity should be through a controlled diet and frequent exercise, there are medications that have been FDA approved to aid in weight loss. The current FDA approved medications for weight loss are liraglutide (Saxenda®), naltrexone-bupropion (Contrave®), orlistat (Alli®, Xenical®), phentermine (Adipex-P®, Lomaira®), semaglutide (Wegovy®), and phentermine-topiramate (Qsymia®). However, the effect of topiramate alone on weight loss is not fully known.²

Topiramate is a medication with labeled indications for seizure treatment and migraine prophylaxis. While these are the only labeled indications for this medication, topiramate also has off-label uses for tremors, headaches, binge-eating disorder, and antipsychotic-induced weight gain.³ The mechanism by which topiramate causes weight loss is still under investigation. There have been several studies conducted to determine the utilization of topiramate as an anti-obesity drug. A 2011 meta-analysis by Kramer et al. looked at the efficacy and safety of topiramate on weight loss across 10 different randomized clinical trials which included a total of 3,320 individuals.⁴ To be included in the meta-analysis, the studies had to be at least 16 weeks long and accurately report effects of topiramate on weight loss along with adverse reactions.

Results from the randomized controlled trials showed that treatment with topiramate with doses ranging from 96 mg to 200 mg per day resulted in significant weight loss, at an average loss of 5.34 kilograms (11.8 pounds) compared to the placebo group. However, the main limitation of topiramate use was the associated adverse effects. The primary adverse events reported in the meta-analysis include peripheral nerve symptoms like paresthesia and hypoesthesia, dysgeusia, and psychomotor impairment. There were no reported major adverse events or cardiovascular side effects. An increase in dosage and treatment duration were associated with additional adverse reactions, with dosages above 96 mg per day being associated with higher rates of treatment discontinuation due to these reactions.⁴

Overall, topiramate has potential to be an adequate weight loss agent if used for a limited time with limited daily dosage due to adverse reactions at high durations and doses. Topiramate could be used for weight loss as an adjunct to lifestyle changes and if other non-pharmacological and FDA-approved pharmacological interventions have failed. Further studies are required to determine the non-inferiority or superiority of topiramate compared to other weight loss medications.

 Written by Maitri Patel, PharmD Candidate 2022 Savannah, GA

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RESIDENCY TIP:

Don't forget about your recommendation letters!
Ask your preceptors, faculty members, or employers if they can write you a positive letter of recommendation!

Important Dates!

November 3rd

Residency Application Opens

December 5th - 9th

ASHP Midyear – Virtual

February 25th - 27th

SNPhA Regional Meeting – Atlanta, GA

March 25th - 27th

GSHP Spring Meeting – Savannah, GA

April 23rd - 24th

ACCP Spring Forum – St. Louis, MO

May 7th

Commencement Ceremony– UGA Stegeman Coliseum

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