



UNIVERSITY OF
GEORGIA
College of Pharmacy

The Transition

4th Year Pharmacy Students Entering the Real World of Pharmacy

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Augusta: Beautiful from Amen Corner to the Corners of the Savannah

I can't help but smile and laugh when I hear people refer to "Disgusta". It's a misnomer for a city that most people never truly experience. Sure, it doesn't have the bright lights of Atlanta or bustling nightlife of Athens, but it contains the most sacred playing field of sports in the world, shares part of the strongest river in Georgia, and has one of the largest man-made lakes in the country.

I was born in University Hospital in January of 1993, and Augusta has been home ever since. Augusta, to me, is the city that everyone says they can't wait to leave, but no one ever really does. Ask anyone from Augusta, and they'll tell you their family is rooted generations deep in that red Georgia clay. Even more so, Augusta features an expansive medical district that rivals any other in the southeast. With six hospitals in a twenty-mile radius, it's hard to imagine a better place to live for any healthcare professional. So what does it offer a pharmacy school student? For me, coming back as a student has revolutionized my view of the city.

Ask any student assigned to Augusta what makes the campus so special, and I can guarantee they'll start with the faculty and

staff. It's hard to imagine a better group of mentors and role models. Whether it's talking about sports with Dr. David Deremer, who will be sorely missed, asking Dr. Clemmons clinical questions, having confidence replenished by Dr. Fagan, or seeking life advice and motivation from Drs. Dianne and Rusty May, the open-door policy in Augusta has benefited all of us at some point or another. Take away the shiny new building, the proximity to the hospitals, and the networking opportunities; the Augusta campus would still be unparalleled because of those who are completely dedicated to their students in all areas of life.

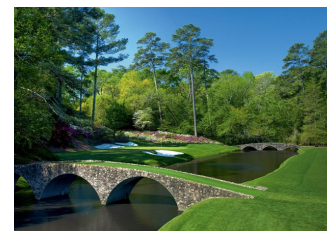
Aside from the faculty and staff, the Augusta campus offers a few other unique perks to aid the development of future pharmacists. One of these is the ability to participate in research with Dr. Segar, Dr. Shenoy, and Dr. Fagan. In fact, full size labs are being added onto the campus to facilitate student involvement in research opportunities. Students have been able to make presentations and contribute publications for novel research in these labs. Another perk is the vast network of clinical pharmacists who have volunteered their time as mentors to answer

questions and provide guidance to students seeking a postgraduate residency. This has led to greater residency interest and a general feeling of being more prepared for the next steps.

If I could go back and do it all again, knowing then what I know now, I would rank Augusta as my top choice ten times out of ten. The people here have helped shape me as a person as well as a future pharmacist. So again, all I can do is smirk when I hear people refer to this beautiful city as "Disgusta."



<http://news.uga.edu/releases/article/pharmacy-opens-new-educational-facility-in-augusta/>



<https://steamcommunity.com/sharedfiles/filedetails/?id=501724370>. Accessed August 9, 2017.

Written By: Daniel Anderson
(Augusta, GA)

Agent to Watch: Andexanet Alfa

Many have heard of Andexanet alfa, yet the agent is not currently FDA-approved. The highly anticipatory nature surrounding this agent stems from its potential role of serving as a reversal agent for major bleeds associated with the factor Xa inhibitors class like rivaroxaban or apixaban. Currently, only two FDA-approved agents exist as reversal agents for anticoagulants: Idarucizumab (Praxbind®) for dabigatran and Vitamin K (phytonadione) for warfarin. The lack of a reversal agent for factor Xa inhibitors is apparent to practitioners right now. Therefore, it will become important for pharmacists in all settings to understand the properties of Andexanet alfa if and when it becomes FDA-approved and makes its way into the market.

Andexanet alfa is a recombinant modified human factor Xa decoy protein. It simply functions by acting as a decoy for factor Xa without having any intrinsic catalytic activity.¹ By doing so, factor Xa inhibitors bind the decoy protein instead of binding human factor Xa. Theoretically, this should decrease plasma

levels of unbound factor Xa inhibitor and decrease anti-factor Xa activity, which are the main efficacy outcomes being investigated in the ANNEXA-4 study currently underway.²

The ANNEXA-4 study began in 2014 to examine the efficacy and safety of andexanet alfa in patients experiencing a potentially life-threatening acute major bleed associated with factor Xa inhibitors. As of 2016, 67 patients have been evaluated and a descriptive preliminary analysis was published in the New England Journal of Medicine (NEJM).²

This analysis reported findings on endpoints including the per-

centage of reduced anti-factor Xa activity and the percentage of effective hemostasis seen in patients who received andexanet alfa. In regards to safety, an initial bolus and subsequent 2-hour infusion of andexanet alfa markedly reduced anti-factor Xa activity, with effective hemostasis occurring in 79% of patients. However, the study is still awaiting full enrollment to provide adequate statistical power to support a positive relationship between andexanet alfa and reduction in anti-factor Xa activity with clinical hemostatic outcomes. Furthermore, it was reported that 18 of 67 patients experienced a thrombotic event or death after being treated with andexanet alfa over a

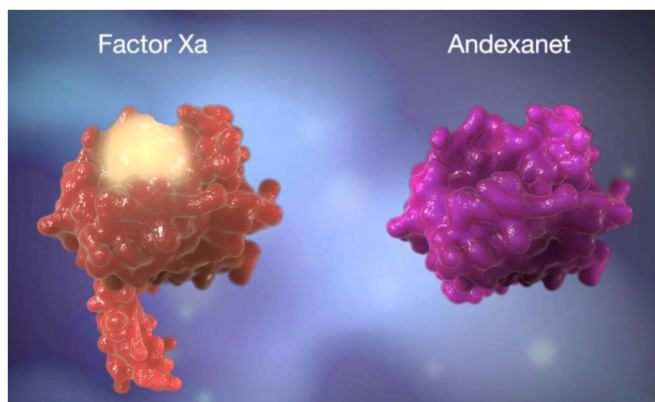
30-day study period, though the study acknowledged that a controlled study would be needed to assess whether the frequency of these events exceeded what is expected in patients who have increased thrombotic risk.²

In the realm of anticoagulation, factor Xa inhibitors have their own unique set of advantages: minor drug and food interactions, a lack in the need for lab

monitoring, and convenience of use.¹ It will be interesting to see how the introduction of a reversal agent such as andexanet alfa will affect the utilization of factor Xa inhibitors. This implication makes the ongoing ANNEXA-4 trial interesting to pharmacists because it will serve as a resource when faced with questions about the appropriateness of these effective but dangerous agents.

Written by: Andrea Tse (Atlanta, GA)

Reviewed by: Mindi Miller, PharmD BCPS



Portola Pharmaceuticals Andexanet Alfa Mechanism of Action (MOA) Video Sep 12, 2014 <https://www.youtube.com/watch?v=LXA7alAA7yQ>

Anticoagulant	Mechanism of Action	Reversal Agent
Warfarin (Coumadin®)	Vitamin K Reductase Inhibitor	Vitamin K, Prothrombin Complex Concentrate (Kcentra®)
Enoxaparin (Lovenox®)	Vitamin K Reductase Inhibitor	No reversal agent currently approved
Dabigatran (Pradaxa®)	Factor VII and VIII Inhibitor	Idarucizumab (Praxbind®)
Rivaroxaban (Xarelto®)	Factor Xa Inhibitor	No reversal agent currently approved
Apixaban (Eliquis®)	Factor Xa Inhibitor	No reversal agent currently approved
Edoxaban (Savaysa®)	Factor Xa Inhibitor	No reversal agent currently approved
Betrixaban (Bevyxxa®)	Factor Xa Inhibitor	No reversal agent currently approved

Amazon Pharmacy: Prime Shipping Your Prescriptions

As we begin preparing for life after pharmacy school, there are several avenues available. Some of us will match for residencies; some will find jobs with retail chains, independents, or hospitals; and some may even have the opportunity to work for Amazon in the near future. The well-known, fast-growing electronic commerce (e-commerce) company has meetings every year to discuss its potential role in the pharmacy industry. This year, the meeting became more serious as Amazon hopes to hire a general manager to spearhead this new endeavor.

With retail, hospital, mail order pharmacies, and delivery services, why would patients turn to Amazon for prescriptions? Many of us take advantage of Amazon to order school supplies, gifts, books, and more. By entering the pharmacy market, Amazon hopes to target patients who either have high dollar deductible plans or who self-pay for their healthcare. From this perspective, Amazon would find its niche in the multibillion-dollar pharmacy industry in providing prescriptions at a lower cost than offered from pharmacy benefit management groups.

How does Amazon's new venture affect the job prospects of pharmacists? Will Amazon's pharmacy expedition introduce more tension in the already surplus of pharmacists due to the

rise in pharmacy schools? More importantly, how will this affect the job market that we will be facing in less than a year? Fortunately, with laws and regulations, Amazon will not be able to function without pharmacists approving prescriptions, transferring prescriptions, and navigating electronic prescriptions. In addition, Amazon has already initiated a smaller model of pharmacy involvement in Japan, where they expanded the popular prime delivery service to offer drugs to patients with pharmacists' approval. Therefore, pharmacists will be integral in the future pharmaceutical component of Amazon's industry.

Once a general manager is hired to organize and solve any issues that may arise, Amazon will be looking at a \$25-50 billion dollar market associated with their involvement in the United States' massive pharmaceutical industry. If Amazon is able to offer convenient, cost-effective prescriptions for patients and utilize an adequate number pharmacists as part of this endeavor, Amazon may be

looking at their next successful business scheme, and some of us may even add "Amazon pharmacist" to our curriculum vitae in a matter of years.

Written by: Taylor Clark (Augusta, GA)

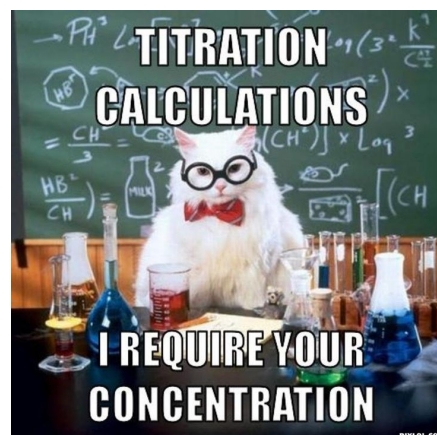


<https://medium.com/@jajaliao/if-amazon-takes-over-prescription-drugs-whats-left-for-startups-172a715c6e9c>

Calculations Review

1. An injection for dental anesthesia contains 5% (w/v) of prilocaine hydrochloride and 1:100,000 (w/v) of epinephrine. Express the concentration of prilocaine as a ratio strength and the concentration of epinephrine as a percentage.
2. How many grams of a 5% w/w hydrocortisone ointment must be mixed with a 0.8% w/w hydrocortisone ointment to achieve 60 g of an ointment with 2.5% strength?

- See page 6 for solutions -



<https://www.pinterest.com/pin/432978951649925277/>

Written by: Sandy Tran (Augusta, GA)

Reviewed by: Brian Seagraves, Pharm.D.

Lifestyle Corner: Stay Fit While You Sit

By now we have all felt some work fatigue at least once during these past two rotations. Whether you are sitting hours at a time at a computer desk or standing at a prescription counter, it is important to remember that your body needs a break from these repetitive activities. Here are a few simple solutions for those everyday aches and pains:



Sit tall with your feet together. With one hand on a desk and the other on the lower back of the chair, slowly twist your torso to stretch your back muscles



Stand behind your chair, holding on to the back for support. Bend your knee and gently kick your foot towards your bum, then lower it.



Sit on the edge of your chair and extend your leg in front of you as high as you can for 2 seconds.

Written by: Christina Huynh (Augusta, GA)
Adapted from www.thrombocoach.com

Narcan[®] to the Rescue!

We are living in an era of increasing rates of drug addiction and overdose, otherwise known as the opioid epidemic. Over 36,000 Americans die every year from drug overdose, more often from prescription opioids rather than heroin and cocaine combined. In Georgia, the number of deaths from prescription overdose increased by 10% from 2009 to 2010, and overdose deaths have tripled from 1993 to 2013 overall.¹ Have no fear, Narcan[®] is here! Narcan[®], generic name naloxone, is an opioid antagonist or antidote for opioid overdose in emergency treatment. Since Narcan[®] has recently become available over the counter (OTC), there are rules that pharmacies must abide by.

Naloxone was previously only available as an injection. Recently, it was approved OTC as a nasal spray formulation. One spray is administered into one nostril. Subsequent doses require a new nasal spray and are given in alternating nostrils.² Despite the OTC status, the product is to be kept behind the counter. The intranasal administration provides easier administration by the general public. Nonetheless,

emergency medical care still needs to be sought immediately after use.

Federal laws have not specifically addressed access to naloxone, but some states have modified laws for its use.³ In 2014, the Georgia 911 Medical Amnesty Law was passed. This law provides legal protection for individuals who possess certain drugs and seek medical care for themselves or for other individuals who are experiencing an overdose. Additionally, it establishes limited civil and criminal immunity for medical professionals, first responders, and laypeople who prescribe and/or administer naloxone. Therefore, pharmacists may administer naloxone as long as they are acting with reasonable care and in good faith. In December 2016, naloxone was rescheduled as a Schedule V exempt drug, and the Department of Public Health (DPH) issued a standing order to allow the product to be dispensed as an OTC drug in Georgia.⁴ Pharmacists must fill out a standing order prescription under the DPH Commissioner, Dr. Brenda Fitzgerald, using her NPI number and each purchaser's information.



<http://www.brighamandwomensfaulkner.org/about-us/general-information/bwfh-news/Empowering-Patients-and-Families-in-Times-of-Crisis.aspx>

Overall, pharmacists in Georgia can fill and administer Narcan[®] without a prescription. The nasal spray formulation makes it easier for the general population to use, but it is important to educate users on how to use the product correctly. Nonetheless, increased access to Narcan[®] will help the opioid abuse epidemic by engaging the community and by providing immediate help to save more lives.

Written by: Lynn Doan (Columbus, GA)
Reviewed by: Gina Daise, Pharm.D.

Rotation Spotlight: Charlie Norwood VA Medical Center



<http://helenogbourn.com/contact-the-charlie-norwood-va-medical-center-charlie>

Dr. Rusty May once asked students if they wanted to be pharmacy managers in the Pharmacy Care Management course. A few raised their hands; however, most students, including myself, displayed expressions that meant the complete opposite. I didn't expect rotations would change my thoughts about management.

The Management rotation at the Charlie Norwood Veterans Affairs Medical Center (CNVAMC) Uptown and Downtown Divisions in Augusta, Georgia started in 2016 with Dr. Jennifer Blanchard as the primary preceptor and as the Chief of Pharmacy. From sitting in a discussion of the CNVAMC Section Chiefs deciding whether or not to add full-time equivalent positions for a particular department to observing how the CNVAMC Director allows his staff to dictate the methods to improve critical metrics, no one day or even one hour was like the other. Each meeting reinforced that pharmacy is not on an island on its own, but is and should be heavily integrated into the medical system to ensure comprehensive and optimal patient care.

I shadowed different areas of pharmacy as well, such as helping the emergency department pharmacist choose an appropriate antibiotic regimen for a patient with meningitis, interviewing warfarin patients over the phone, and assisting the academic detailing pharmacist with heart failure and chronic obstructive pulmonary disease educational materials. Seeing the inpatient, outpatient, and academic sides of pharmacy in addition to the management side provided a comprehensive view of the different roles of pharmacy within the VA system. Since pharmacists have provider status within a scope of

practice and prescribing authority within the VA, pharmacists were on an equal footing to other providers. Pharmacists were often trusted to provide appropriate dosing information, monitoring, follow-up, and education to the medical staff and to the patients, which translated to improved patient care.

Part of the rotation is a book review (Monday Morning Mentoring: Ten Lessons to Guide You Up the Ladder by David Cottrell) and a movie review (We Were Soldiers starring Mel Gibson). The book follows a manager making his way out of a slump and explains management in a broadly relatable manner and easily coherent style. The movie portrays excellent leadership and management skills as well as paints the big picture. The movie takes place during the Vietnam war, the war that most of the veterans seen at CNVAMC were involved with, and has been praised as one of the movies that "did it right" in terms of telling the story as it was without the Hollywood flare. After reading the book and watching the movie, I began to better understand the importance of quality management and the story of the veterans. Serving veterans is a noble mission.

Overall, I was excited to see and experience the many ways pharmacist can be involved in the management process and in the healthcare process. The many lessons I learned not only apply to pharmacy, but also apply to life. If given the chance to answer Dr. May's question again, I can see myself raising my hand in confidence to a future career in management.

Written By: Sindy Tran (Augusta, GA)



<http://www.moviestillsdb.com/movies/we-were-soldiers-i277434/e5bc8312>



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Solutions to Calculation Review

Question 1:

Prilocaine HCl: $\frac{5}{100} = \frac{1}{20}$ written as a ratio is 1 : 20 $\frac{w}{v}$

Epinephrine: $\frac{1}{100,000} = 0.000001 \rightarrow 0.000001 \times 100\%$
 $= 0.0001\% \frac{w}{v}$

Question 2:

5 1.7 parts 5% ointment

2.5

0.8 2.5 parts 0.8% ointment

$\frac{60 \text{ g}}{4.2 \text{ parts}} = \frac{x}{1.7 \text{ parts}} \rightarrow x = 24.3 \text{ g 5\% ointment}$

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UPCOMING EVENTS

September 29, 2017: Residency Showcase at Mercer University Atlanta

September 29, 2017: UGA Pharmacy Career Day

October 13-15, 2017: GSHP Fall meeting

October 19, 2017: Early bird registration deadline for ASHP Midyear conference

December 3-7, 2017: ASHP Midyear conference

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