RHO Px CHI POST

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A student-operated newsletter by the St. John's University Beta Delta chapter

RHOCHISTJ.ORG

SINGLE-LINE STORIES

- Jena Marion, PharmD Candidate c/o 2013 joins our editorial team with a focus on rotation experiences
- New Rho Chi executive board elected and supportive of the publication
- Rho Chi Induction Ceremony to take place at Verdi's of Whitestone
- Multiple modifications to the NYS Part III Compounding Examination may translate to greater difficulties for candidates

THE 2012 RHO CHI INDUCTION

BY: NANDINI PURANPRASHAD, PHARM.D. CANDIDATE C/O 2013

On January 17, the Rho Chi Beta Delta Chapter at St. John's University College of Pharmacy and Allied Health Professions held its annual Induction Ceremony at Verdi's of Whitestone. Membership is a privilege accorded to the very few who distinguish themselves by their academic and professional achievement. This year, the Society inducted 57 new members. The ceremony began promptly at 6:30 pm, as the Rho Chi president, Mohamed Dungersi, made his welcome speech to all the guests. He thanked everyone for participating in the special event, congratulated the new inductees, shared his growth and experiences as a member, and, lastly, challenged everyone to "not to rest on [their] laurels, but, rather, to strive and become professionals and caregivers."

We were very fortunate to have Dr. J. Douglas Bricker as the guest speaker for the night. Dr. Bricker has been involved in the Rho Chi Society for many years. Since his induction in 1978, he has served as Faculty Advisor of the Alpha Beta Chapter (1986 - 1996), Regional Councilor (1987 - 1993), and National Secretary (1992-1997), which, during that time, was the National Office. He served as the National President from 1999-2001, and is currently the National Historian. He is also the current faculty advisor for Phi Lambda Sigma, the national Pharmacy Leadership Society. Dr. Bricker shared his thoughts on what it means to become a member, the responsibility that comes with induction, and the dedication / commitment that Rho Chi members make to further the profession.

There was a jovial ambiance in the room during Dr. Bricker's speech. Afterwards, Dean Mangione, our Dean at the College of Pharmacy, gave a heartwarming welcome, congratulated all the new inductees, and highlighted the important decisions the Rho Chi Society made to ensure a successful induction ceremony. These decisions included inviting Dr. Bricker and inducting Dr. William Maidhof, an Assistant Professor and Industry Professional in the Clinical Pharmacy Practice department at the College of Pharmacy.

After Dean Mangione's speech, Dr. S. William Zito, our chapter's faculty advisor and the Associate Dean for Assessment at the College of Pharmacy, came to the podium to start the initiation ritual and announce the new inductees. As Dr. Zito read the names, the new inductees came forward, collected their certificates and pins, and stood in line, facing the podium. After calling all of the names, each member of the current Rho Chi executive board came forward to read his or her respective part of the induction oath. Therefore, just as their predecessors had done before them, the new inductees proudly affirmed the oath and were officially

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welcomed. After the new members took their seats, our chapter's president thanked everyone and presented gifts to Dr. Bricker (for his continuous efforts to promote the Rho Chi Honor Society) and Dr. Zito (for his never-ending support). A five-course dinner was served shortly afterwards. To commemorate the memorable night, the induction ceremony concluded with many group pictures.

ALUMNI SPOTLIGHT: MAKING THE RIGHT DECISIONS BY: JIM FITZGERALD, R.PH.

James (Jim) Fitzgerald is a SUNY Buffalo School of Pharmacy graduate from the class of 1980. He is currently the supervising pharmacist at Pathmark Pharmacy of Baldwin in Long Island, NY. Mr. Fitzgerald is also a community pharmacy preceptor with St. John's University and a longtime member of the Rho Chi Society.

There are many decisions that pharmacists must make each and every day at the pharmacy. *Should I refill this narcotic prescription early? Did the physician evaluate the risk of a drug interaction when he or she wrote this prescription? The EpiPen Jr. prescription on file has no refills, but the patient's mom says her child is having an anaphylactic reaction RIGHT NOW - do I refill it anyway?* Of course, the first reaction in each situation is to contact the prescriber to get his or her authorization and input – but this approach frequently fails because the prescriber is not easily-accessible.

Now what?

Many years ago, when I began working as a pharmacist, one of my patients was a medical malpractice attorney. When I first realized his occupation, I was somewhat apprehensive about filling his prescriptions – I feared that he would find some minor issue to litigate about. Over time, I developed a rapport with him, and as it turned out, he gave me a bit of advice that I use on a daily basis in my pharmacy practice.

He advised: ask yourself, *"Am I acting in the best interest of the patient? Would a reasonable person agree that the pharmacist treated the patient with his/her best interest in mind?"* If the answer to those questions is yes, then document the facts and proceed. For example, in the case of the anaphylactic patient, I personally would dispense the EpiPen Jr. and also call for an ambulance. Additionally, I would also follow up with the patient's pediatrician during normal business hours the next day.

"...am I acting in the best interest of the patient?"

The corollary to my patient's advice was *"never act solely on the profit motive, especially if it puts the patient's wellbeing at risk."*

The early narcotic refill (mentioned above) fits this scenario - filling the prescription would surely improve the pharmacy's daily numbers, but could hurt the patient. As for the drug interaction risk mentioned above, that is often a tough call. The risk of delaying treatment has to be weighed against the risk of the interaction causing harm. Communication with the patient may help to clarify if the prescriber considered possible interactions.

It is indeed a tough judgment call, and just one of the many reasons why pharmacists are healthcare professionals and not merely medication dispensers.

Do you have something to say?

Write to our editors at rhochis@gmail.com and we will feature your response in our next edition!

ASHP MIDYEAR: A PERSONAL RESIDENCY SHOWCASE EXPERIENCE

BY: CHRISTINE LIAW, PHARM.D. CANDIDATE C/O 2012

The American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting and Exhibition is the largest congregation for the pharmacy industry with an attendance of more than 20,000 professionals. This year's meeting included the New Practitioner's Conference, CareerPharm's Personnel Placement Service (PPS), the Residency Showcase, and an exhibit hall with more than 300 companies. Midyear provided an ideal opportunity to network, learn, and advance one's future pharmacy career.

In many ways, the process of applying for a Postgraduate Year One (PGY-1) residency is similar to applying to college. Before going to Midyear, it is crucial for students to have a plan about what they wish to accomplish during their visit. The ASHP website always has helpful tools to assist with preparation, such as residency program listings and floor plans. Students should have their curriculum vitae (CV) reviewed by a current resident or preceptor (from rotations) – this document must be ready for submission to program directors, especially during PPS interviews and booth visits. Similar to a college fair, the residency showcase is a chance to gather more information about the program, as well as an opportunity to leave good impressions for both, the residents and other site personnel.

When considering a residency, students ought to research the site to determine if it is a good match for their ambitions in the pharmacy field. Students focusing on clinical pharmacy should also inquire about the amount of time required to fulfill non-clinical responsibilities. Some residencies, especially in New York, are very administrative-based rather than clinical; some affiliate with a local pharmacy school and offer teaching opportunities. In the hopes of developing a balance, residents may have the program tailored to their interests.

A common strategy for many students is selecting PGY-1 residency sites that also offer a PGY-2 in their areas of interest. The main reason is that the PGY-1 residency experience would allow for an easier transition to the PGY-2 program. It is important to note that not all PGY-1 residencies are equivalent. Although not impossible, residents from a site that is more administrative-based may have a difficult time applying to a specialized PGY-2 residency that prefers residents with a clinical background.

If students desire fair assessments about a residency, they must ask the residents about their experience and if there is anything that they would change about the program. Many residents will not outright speak poorly about a residency, but their tone and body language can be a telling sign. In addition, students should not forget to ask about the major strengths of the residency that make it stand out from the rest. These and other questions will help to determine if the program is something the student will be able to handle.

I believe the most difficult part of the entire residency process is staying honest with one's self. Although there is much excitement before and during Midyear, students should not confuse their goals with everybody else's. Remember that the Midyear/residency process is not a "do-or-die" situation – it is only one of the many possible postgraduate paths. Taking time after school to find one's own niche and passion is entirely fine. Student should not be afraid to do something different from everyone else in the pharmacy class.

"...most difficult part of the entire residency process is staying honest with one's self..."

As the common proverb by Harley Davidson goes, *"when writing the story of your life, don't let anyone else hold the pen."*

THE 2011 ASHP MCM—WHAT TO EXPECT AND HOW TO PREPARE BY: ANON, PHARM.D. CANDIDATE C/O 2012

This year's ASHP Midyear Clinical Meeting took place in New Orleans, Louisiana from December 4 – 8, 2011. It was a keystone moment for many pharmacy students, and especially for those in their final year and in pursuit of a residency, fellowship, or hospital staffing position around the country.

While many students may think to hold off the Midyear experience until their final year, I strongly encourage students from all years of school to attend. The Midyear is a truly unique experience for any student. Students can opt to sign up for Pharmprep® (ASHP's NAPLEX® Review course), which is an all-day, comprehensive, case-based board review session on the first Saturday of December.

Sunday is the day for a majority of student programming, which range from a variety of professional to personal living topics:

Residency Training 101: Should I Do a Residency?
Residency Training 102: Navigating the Application Process
Career Pearls: Days in the Lives of Health-System Pharmacists
Making a Lasting Impression: Evaluating your Interviewing Skills
Mysteries of "The Match"
Effective CV and Resume Writing
Dollars and Good Sense
Life Happens: Guide to Personal Strategic Planning
Clinical Pearls for Students

If any of the above piques your interest, I believe you will find your time at the Midyear truly invaluable. I personally wished I had taken the opportunity to attend the ASHP Midyear in my earlier years, which is exactly why I want to share this information with you. In the large lecture halls of the convention center for student programming, I was surprised to see the strong representation of pharmacy students (in various years) from all around the country.

Going to the Midyear as a final year student requires a lot of planning for your trip to be worthwhile. I would highly recommend researching programs that you think are interesting prior to the meeting, and then keeping an open mind at Midyear. You never know what opportunities will come your way! I would also recommend drafting a curriculum vitae (CV) and seeking peers, current residents, faculty, and mentors to help edit your CV so that it is presentable at Midyear. This is especially true for those who are thinking of engaging in the Personnel Placement Service (PPS).

PPS is a great opportunity to get 30 minutes of one-on-one time with the program's directors, clinical pharmacists/preceptors, and current residents. I found the PPS experience truly invaluable, as having the individualized session allows your personality to shine through, as well as provides you, the candidate, with the opportunity to gauge whether or not the program seems to be a fit for you. Speaking with program directors will also help you understand if a residency is right for you.

Additionally, interviewing takes practice; the more places you interview with, the more comfortable you will find yourself in the interview setting. I was fortunate to receive a wide variety of questions from various programs, which I felt was helpful in developing my interview skills. PPS provides a curtained, quiet space and time for prospective residents and fellows to have the opportunity to ask programs questions that you may have for their specific program. On that note, go to Midyear prepared with a list of questions to ask the programs you are interested in!

Of course, taking part in PPS requires an additional fee, and you will need to upload your CV to CareerPharm® before you can start scheduling interviews with programs at the Midyear.

The earlier you do so the better; many highly-coveted programs' schedules may fill up quickly.

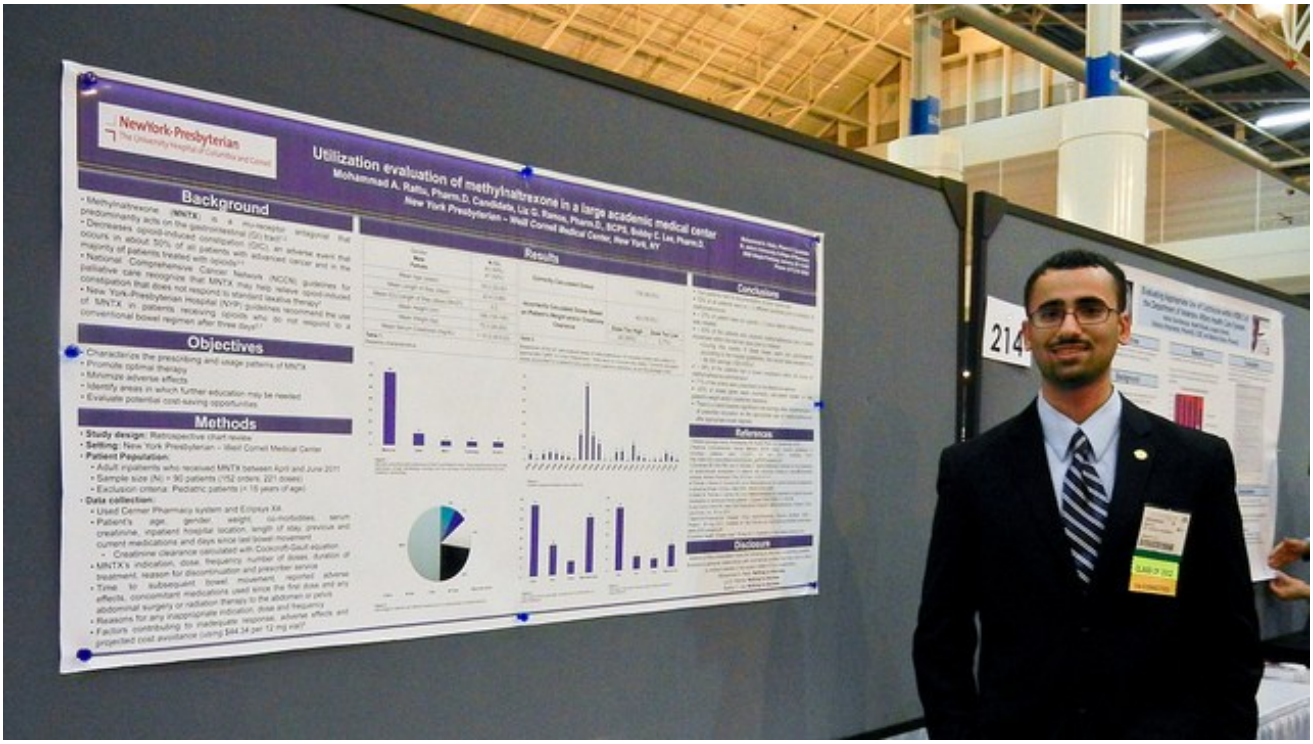
The Residency Showcase is another great opportunity to meet residency programs around the country. While only a few programs take part in PPS, some candidates may opt to forego the PPS and spend their time at the Residency Showcase to engage with these programs. This may also be

a wise decision, as PPS interviews may conflict with Residency Showcase times. Most definitely, one should not miss the Residency Showcase! Residency programs are only available on certain days and at certain times; so, it is beneficial to go to all residency showcase dates and times to gain a comprehensive perspective of the programs that are available throughout the country.

As always, go prepared! Have a printed-out map of the Showcase for all dates and times, and map out your route. With the growing interest in residencies, the Showcase can be a hectic experience. Be as organized and time-oriented as possible.

If you receive an invitation to any evening reception, I strongly encourage you to attend it. This was one of the highlights of my time at New Orleans. Usually in an informal and casual setting, receptions are a great way to comfortably network with and meet program directors, clinical pharmacists, and current residents. It was a lovely opportunity to speak to different hospitals about their programs. I was delighted to take part in pleasant discussions about what they love to do in pharmacy; their willingness to share their experiences, as well as impart wisdom and insight into their professional lives, was inspiring and encouraging.

Attending the Midyear Clinical Meeting gave me a much better understanding of the programs that I would like to be a part of and contribute to if I were fortunate enough to match with a residency program. My list of programs drastically changed after attending, and I am currently amidst the application process as deadlines loom on the horizon. Midyear is a huge turning point in terms of professional growth and self-discovery. Attending Midyear has helped me and peers gain a sense of professional clarity. In contrast, it was also not a rare instance where some students discovered that residencies and/or fellowships were *not* the route they wanted to take. In summary, I strongly believe attending the ASHP Midyear at any professional pharmacy year will prove to be an invaluable and fun experience.



Mohammad A. Rattu presenting "Utilization evaluation of methylnaltrexone in a large academic medical center" at the 2011 ASHP MCM. **Photo Credit:** Erica Cheng, Touro College of Pharmacy Pharm.D. Candidate c/o 2013

Andrew Kaplan, Pharm.D. presenting his resident poster, "Incidence of anti-reflux therapy in patients concomitantly utilizing either warfarin or dabigatran etexilate" at the 2011 ASHP MCM. **Reproduced and used with expressed written permission.**

MY PREPARATIONS FOR ASHP MIDYEAR BY: MARK SHEN, PHARM.D. CANDIDATE C/O 2012

Adding to Ms. Liaw's article (on page 3), my preparation for the ASHP Midyear Clinical Meeting included creating and printing my curriculum vitae, printing my transcript, searching for sites that I was interested in, and thinking of questions to ask the residents and residency directors.

I also had to contact the residency site directors to ask if they participated in the Personnel Placement Service (PPS). If they did participate in PPS, I scheduled days and times to interview with the sites. It was important to ensure that I did not schedule too many interviews per day – I needed enough time to visit the showcases to speak with residency directors and residents.

Residency sessions changed each day (and even during some parts of the day) - it was important for me to manage my time properly and map out the sites that I wanted to visit.

"...it was important ... to manage my time properly..."

Overall, since I had printed maps with marked locations and booth numbers of each site, the meeting was not as chaotic as I had previously imagined. It was imperative for me to prioritize my schedule, but if I had the chances, I would have liked to look at other residency sites and educational events.

How were your Midyear experiences?

Write to our editors at rhochis@gmail.com and we will feature your response in our next edition!

Rho Chi Society

Beta Delta Chapter

St. John's University

Induction Ceremony

January 17th, 2012

Verdi's of Whitestone
Whitestone, N.Y.

NEW YORK LAWMAKERS TACKLE PRESCRIPTION DRUG ABUSE BY: MAHDIEH DANESH YAZDI

We have all heard the mortifying tales of recent attacks on pharmacies by addicts looking to steal prescription pain-killers.

Most notable, perhaps, was the case of David Laffers, who walked into Haven Drugs in Medford, NY and took the lives of the pharmacist, a store clerk, and two patients. A search of his home revealed that he possessed thousands of hydrocodone-containing tablets. David Laffers was sentenced to life in prison and his wife was sentenced to 25 years for her complicity in the crime.

This case shocked and horrified the local community, as well as brought attention to the subject of prescription drug abuse. As such, New York State lawmakers have taken several measures to address this issue.

"...the tragedy in Medford was specifically cited in the justification for Bill S5880..."

Introduced in the New York State Senate, the bill asks to change all references to hydrocodone, a component of the popular drug Vicodin®, from a controlled substance schedule III to a schedule II (higher abuse potential). By itself, hydrocodone is a schedule II, as per federal and state classifications. However, it is only available in combination products, and these medications have schedule III designations. This new legislation would change that designation to schedule II, making it illegal to get refills for the drug without a new prescription.

The bill cites the increase in abuse of hydrocodone as the principle reason behind stricter regulation of this drug. Also, although tramadol is not currently classified as a controlled substance, the bill also designates it as a schedule III substance.

Bill S5880 was referred to the Rules Committee on September 9, 2011, and currently awaits approval by the committee.

The Medford tragedy was also cited in the justification for Bill S6066. This bill would hold all practitioners (including pharmacists) who dispense controlled medications responsible for the drugs they dispense to those who abuse them, especially if done "other than in good faith in the course of their practice."

Previous laws held physicians responsible for intentionally providing medications to drug abusers, and pharmacists were not held accountable. This new law would allow pharmacists who did not exercise *due diligence* in dispensing narcotics to be charged with a Class B Felony and punished accordingly.

This bill has been pre-filed, and will be introduced in the New York State Senate on January 4, 2012.

"...*due diligence* must be exercised by pharmacists dispensing narcotics or be charged with a Class B Felony..."

Both laws were introduced by Senator Kemp Hannon (R-Nassau), who is the head of the public health committee of the New York State Senate. Hopefully, such measures will reduce the abuse of prescription drugs and help prevent horrific tragedies such as the one that occurred in Medford.

For more information please visit:

http://open.nysenate.gov/legislation/bill/S5880-2011
http://m.nysenate.gov/legislation/bill/S6066-2011

PLACEMENT OF CARISOPRODOL INTO SCHEDULE IV BY JENA MARION

On December 12, 2011, the Administrator of the Drug Enforcement Agency (DEA) ruled to place carisoprodol (Soma®) into Schedule IV of the Controlled Substances Act (CSA).

Carisoprodol has been in use since it was approved for marketing in the U.S. in 1959 with the indication of "relief of discomfort associated with acute, painful musculoskeletal conditions" for short-term use of up to two to three weeks. Prior to this ruling, carisoprodol was a controlled substance in 17 states, not including New York or New Jersey.

In October 2009, the US Department of Health and Human Services recommended that carisoprodol be a controlled substance.

The decision was based on several factors, including its actual or relative potential for abuse, its historical and current patterns of abuse, and the adverse effects reported from use of the drug. The FDA utilized data from its Adverse Event Reporting System (AERS) to conclude that carisoprodol results in "harm to individuals and the public." Serious adverse events such as drug dependence and withdrawal symptoms were also reported. Adverse events occurred when carisoprodol was used alone or in combination with both licit and illicit drugs, and the medication has been "implicated as a factor in vehicle accidents due to driver impairment."

Carisoprodol is often seized from persons and places engaged in illegal activities that use other controlled substances, including diazepam, cocaine, methamphetamine, and others. In 2008, the DEA's National Forensic Lab Information System (NFLIS) reported enough identifications of carisoprodol to rank it above codeine, lorazepam, hydromorphone, and methylphenidate as the most widely abused drug.

The FDA concluded that carisoprodol is a CNS depressant and is primarily abused in combination with other drugs of abuse such as opioids, benzodiazepines, cocaine, and marijuana. Furthermore, its abuse was calculated to be at a rate similar to those of benzodiazepines, which are currently placed into Schedule IV of the CSA. Its potential for abuse and the physical and psychological dependence is less than that of Schedule III drugs.

Beginning January 11, 2012, carisoprodol will be a Schedule IV compound in the Controlled Substances Act.

"Any person who engages in the manufacture, distribution, dispensing, importing, exporting, as well as any person who possesses the drug will be subject to the provisions of the Act and DEA regulations, including the Act's administrative, civil, and criminal sanctions which are applicable to schedule IV controlled substances."

More information, including the complete list of regulatory requirements, is available at http://tinyurl.com/carisoprodolcsa

Do you have something to say?

Write to our editors at rhochis@gmail.com and we will feature your response in our next edition!

NEW ORAL DIRECT THROMBIN INHIBITORS AND FACTOR Xa ANTICOAGULANTS BY: NEAL SHAH

Anticlotting agents are staples in the prevention and treatment of thrombotic disorders, such as deep vein thrombosis (DVT), stroke, pulmonary embolism (PE), myocardial infarction (MI), and atrial fibrillation (AF).[1]

Intravenous medications, such as unfractionated heparin (UFH), low molecular weight heparin (LMWH), and direct thrombin inhibitors (DTI), are commonly used in, both, inpatient and outpatient settings. UFH and DTI require activated partial thromboplastin (aPTT) time as a monitoring tool for bleeding, due to the inhibition of the factor Xa and IIa pathways. LMWH are more selective to Xa than IIa, and do not absolutely require aPTT monitoring. A new class of selective Xa inhibitors, pioneered by fondaparinux, also does not require aPTT monitoring.[1] Fondaparinux acts at the step prior to IIa inhibitors: it inhibits factor Xa, which prevents activation of IIa from II (where DTIs act).

Oral therapy was mainly limited to using warfarin or the antiplatelet agent, aspirin. Warfarin is a Vitamin K antagonist (VKA) that inhibits the activation of coagulating factors II, VII, IX, and X, as well as proteins C and S. To exert its effects safely, it requires an International Normalized Ratio (INR) between 2 and 3 (or 2.5 to 3.5 for mechanical valve replacement). An INR above three may indicate an elevated risk of bleeding or hemorrhaging. UFH and warfarin have an advantage over LMWH, DTIs, and fondaparinux - unlike the latter, which have no real "antidote," UFH and warfarin are reversible by protamine and Vitamin K, respectively.[1,2]

The U.S. Food and Drug Administration (FDA) approved a new, oral, reversible DTI in October 2010, known as dabigatran. It is indicated for the reduction of stroke risk in non-valvular atrial fibrillation.[3] Dabigatran has reliable pharmacokinetics, touting no need for therapeutic monitoring, a rapid onset, and no real drug interactions—a stark contrast to warfarin.[4] Unfortunately, dabigatran also comes with downsides, as it must be adjusted for impaired renal function, has a higher dyspepsia and GI bleeding rate than warfarin, and is dosed twice a day.[5] There have been many cost-effective analyses between warfarin and dabigatran. In a subgroup analyses of the RE-LY trial, the $CHADS_2$ criteria was used as the basis for initiation of anticoagulant therapy.[6] In patients with atrial fibrillation, the rates of stroke and intracranial bleeding with dabigatran therapy was comparatively lower than with warfarin.[6] In the RE-COVER trial, dabigatran was noninferior to warfarin (in regards to safety issues), but did have more adverse reactions leading to discontinuations.[7]

In July 2011, rivaroxaban became the first, oral, selective, reversible factor Xa inhibitor. It was approved by the FDA for the reduction of blood clots, DVT, and PE following knee or hip replacement surgery.[8] The FDA also approved its indication for the reduction of stroke risk in patients with non-valvular atrial fibrillation (similar to dabigatran).[9] Rivaroxaban does not require monitoring and is also renally eliminated like dabigatran. Alas, it has multiple cytochrome 3A4 drug interactions – inhibition of 3A4 can increase the anticoagulant effects of rivaroxaban.[10] Johnson & Johnson, which manufactures rivaroxaban, funded the ROCKET-AF trial comparing rivaroxaban to warfarin. In this head-to-head trial, rivaroxaban was noninferior to warfarin for the prevention of stroke or embolism. There was also a reduction in intracranial hemorrhage and fatal bleeding compared to warfarin.[11] Rivaroxaban can potentially be another great alternative to warfarin, especially since its pharmacokinetics are easier to predict and it is dosed once per day (unlike dabigatran).

Apixaban is another oral, reversible factor Xa inhibitor – it has not obtained FDA approval in the United States, yet. According to meta-

analysis, it seems to have similar efficacy to rivaroxaban. Apixaban may be an effective alternative in high-risk patients and those intolerant to aspirin. It is also metabolized via 3A4 (like rivaroxaban), but since less of the drug is eliminated renally (25% apixaban vs. 66% rivaroxaban), it may be preferable in patients with decreased renal function.[13]

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What is your clinical input?

Write to our editors at rhochis@gmail.com and we will feature your response in our next edition!

LEGISLATIVE UPDATE: RESTRICTING MAIL-ORDER SERVICES BY: MAHDIEH DANESH YAZDI

In previous issues, we mentioned Bill 5502, which would prohibit insurers from requiring their patients to use mail-order pharmacies.

The legislature modified the bill to mention that the community pharmacies must provide the same price as mail-order pharmacies and not just "comparable," as was previously written. The language of the bill changed to assure those opposed to the measure that the legislation would not lead to higher prices for consumers.

The legislation, termed the "Anti Mandatory Mail-Order" (AMMO) bill, was sent to the governor's desk on November 30, 2011. Governor Cuomo signed bill into law on December 12, 2011. Pharmacy organizations have lauded the governor for signing the bill, which would give consumers more choices in terms of how they obtain their medication.

The law will go into effect in the second week of January 2012, thirty days after being signed into law.

XIGRIS: A WORLDWIDE WITHDRAWAL

BY: KHILNA PATEL, PHARM.D. CANDIDATE C/O 2012

On October 25 of this year, Eli Lilly and Company announced a worldwide market withdrawal of Xigris® (drotrecogin alfa), a drug previously indicated to treat severe sepsis in high-risk patients.

Drotrecogin alfa is a recombinant form of human activated protein C. The efficacy of drotrecogin alfa was questionable, ever since its FDA approval from almost 10 years ago, in November 2001.

In 2001, the initial efficacy results reported by the PROtein C Worldwide Evaluation in Severe Sepsis (PROWESS) trial were not reproducible. The PROWESS trial was a large, randomized, multi-center, double blind, placebo-controlled trial that aimed to assess whether treatment with drotrecogin alfa reduced the rate of death from any cause among patients with severe sepsis.

"... initial efficacy results ... were not reproducible..."

Exactly 1,690 randomized patients split into the placebo group (840 people) and the activated drotrecogin alfa experimental group (850 people). Patients reasonably matched with an average APACHE II score of 25, and had clinical evidence of sepsis and organ dysfunction within 24 hours of randomization. Exclusion criteria included an age less than 18, platelet counts less than 30,000/mm^3, a known hypercoagulable states, a moribund state, HIV infection, a history of organ transplantation, chronic renal failure requiring dialysis, severe chronic liver disease, acute pancreatitis, or in need of full dose anticoagulation.

Patients received an intravenous infusion of either placebo or 24 μg/kg of activated drotrecogin alfa per hour for a total duration of 96 hours. The primary endpoint was death from any cause, assessed 28 days after the start of the infusion. The results of this trial showed that the 28-day all-cause mortality was 30.8% for placebo vs.24.7% for patients treated with drotrecogin alfa, thus showing a 6.1% absolute reduction in risk of death (p = 0.005). The FDA approved the drug despite the advisory committee's split vote (10 to 10), due to concerns about the validity of the claimed efficacy and safety findings based on a single trial. As a result, the FDA requested two additional trials: a trial in pediatric severe sepsis patients (RESOLVE trial: REsearching severe Sepsis and Organ dysfunction in children) and a trial in adults with less severe sepsis (ADDRESS trial: Administration of Drotrecogin alfa in early stage Severe Sepsis).

In 2002, the European Medicines Evaluation Agency (EMEA) approved the use of drotrecogin alfa for patients with severe sepsis and multi-organ failure. The EMEA later requested that the manufacturer conduct an additional multi-center, placebo-controlled, phase III trial (PROWESS-SHOCK) in severe sepsis patients at high risk of death. This study reported a 28-day all-cause mortality rate of 26.4% in patients treated with drotrecogin alfa compared with 24.2% in the placebo group, which was not considered to be statistically or clinically significant (RR 1.09 [0.92, 1.28]).

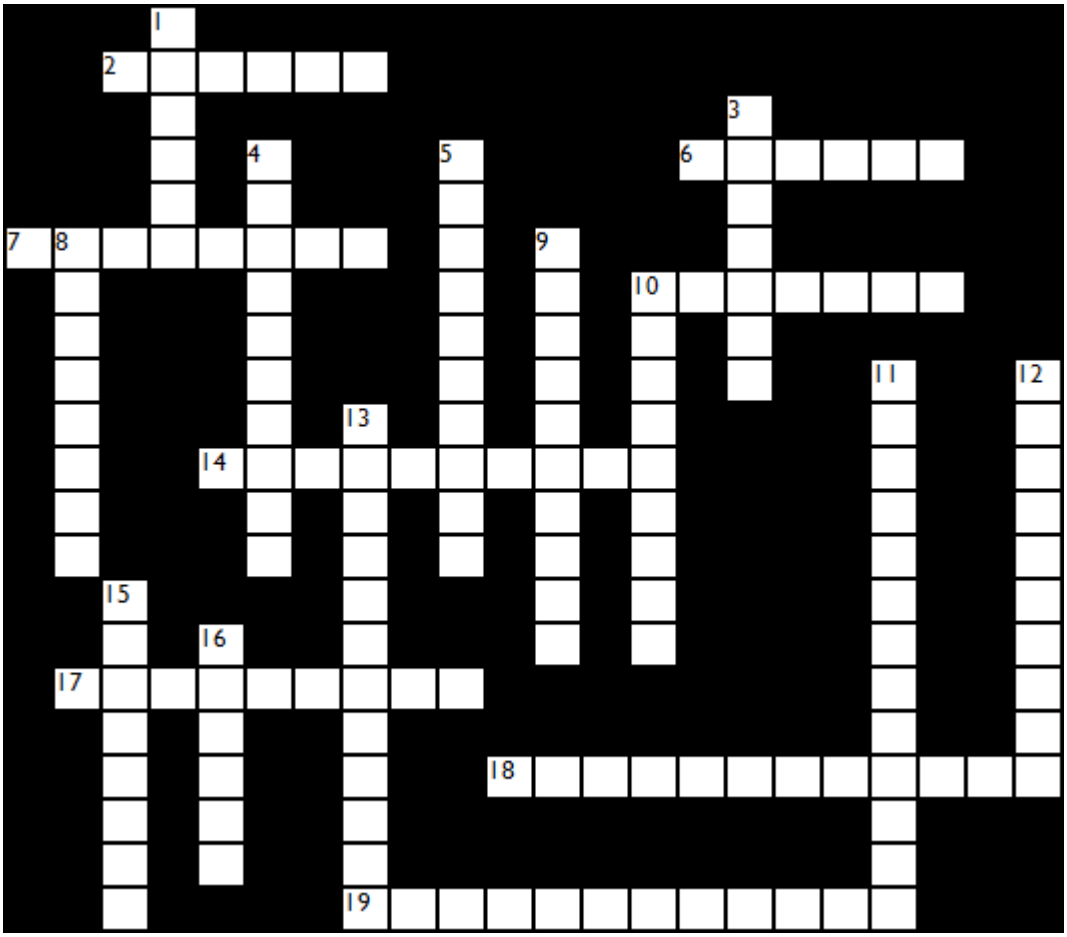
Since the PROWESS-SHOCK trial found no significant reduction in mortality in patients treated with Xigris® compared with placebo, Eli Lilly decided to take action. The company discontinued all other ongoing clinical trials, and announced a voluntary withdrawal of Xigris® from the market.

Patients should not receive Xigris®, and all remaining Xigris® products should be returned to wholesalers / drug suppliers.

IMAGE SOURCE:

http://www.biology.iupui.edu/biocourses/Biol540/images/3xigris.jpg

PUZZLE: CROSSWORD BY: MAHDIEH DANESH YAZDI



Across

2. Most potent H2 receptor antagonist
6. Azathioprine
7. The Purple Pill before Nexium
10. Rabeprazole
14. First H2 antagonist developed
17. 5-HT4 agonist used in the treatment of IBS, withdrawn in 2007
18. Brand names include Somac and Pantecta
19. Second highest selling drug in America

Down

1. Anticholinergic and antispasmodic commonly used in IBS
3. Commonly used OTC anti-diarrheal
4. Salicylate used as first line treatment in mild to moderate ulcerative colitis
5. Axid
8. Monoclonal antibody used in both ulcerative colitis and Crohn's disease
9. Corticosteroid indicated for the treatment of active severe IBD
10. 5-HT3 antagonist used in the treatment of diarrhea predominant IBS
11. Salicylate with toxicity due to sulfapyridine moiety
12. Preferred H2 antagonist with IV formulation
13. Immunomodulator used in Crohn's; supplement with folic acid
15. PPI available as an OTC product since 2009
16. Ranitidine

LIPOSOMAL DOXORUBICIN FOR LIVER CANCER

BY: LUNBAO (JERRY) HUANG, PHARM.D. CANDIDATE C/O 2013

Over the last two decades, there has been an increasing focus on treatments for hepatocellular carcinoma (HCC, most commonly known as liver cancer).

In the United States, as of 2011, there have been an estimated 26,190 new cases and 19,590 deaths from both hepatic and intrahepatic bile duct cancer. Defined by the National Cancer Institute (NCI) as a "primary liver cancer … that forms in the tissues of the liver," HCC is one of the four leading causes of death worldwide.[1]

Doxil® (liposomal doxorubicin) is an anthracyclic, antineoplastic agent approved for the treatment of AIDS-related Kaposi sarcoma (after failure of or intolerance to prior systemic therapy), multiple myeloma (after failure of at least one prior therapy), and ovarian cancer (progressive or recurrent).

The liposomal injection formulation is pegylated and has some advantages over conventional intravenous doxorubicin hydrochloride. Liposomes are microscopic lipid vesicles that contain the active ingredient inside. A liposomal drug delivery system increases doxorubicin's blood circulation time, increases the drug's half-life, decreases its volume of distribution.[2,3] It also enhances drug uptake by solid tumors (including the liver and spleen), and shows an impressive reduction in cardiac toxicity in contrast to conventional doxorubicin.[2,3]

Recently after Johnson & Johnson's liposomal doxorubicin was approved by the FDA for use in the United States, there have been many articles focusing on its utility in liver cancer. [4]

In 2002, Goldberg, *et. al.* demonstrated that liposomal doxorubicin might enhance the efficacy of thermal ablation of liver cancer.[4] Doxil®, when used before radiofrequency ablation (RFA), increased tumor lesion volume and surgical coagulation (which improves the focus of intense light energy used to destroy abnormal tissues).[4] Thus, tumor destruction combined with radiofrequency ablation suggested that similar techniques have the possibility of improving clinical outcomes and efficacy in a variety of focal hepatic tumors.[4]

In 2009 and 2011, Poon, *et. al.* found benefits in using a lyso-thermosensitive version of liposomal doxorubicin (LTLD, later branded as ThermoDox®) in conjunction with radiofrequency ablation.[5,6] The mechanism was similar to Goldberg's finding of Doxil® with RFA.[4] When heated above 39.5 °C (103.1 °F), LTLD released high concentration doxorubicin directly into liver tumors, focusing its cytotoxic effect on the tumor and tumor margin only. The studies concluded that the RFA/LTLD combination could treat Child -Pugh class A-B patients with tumors up to 7 centimeters – offering a substantial increase in potentially curable patients with HCC.

Nanoknife angiodynamics or irreversible electroporation (IRE) is an FDA-approved surgical technique used for ablation of soft tissues in specific conditions.[7] After placing a needle into the target (but not heating the cells above 39.5°C to 100 °C), IRE sends out short but intense electric pulses from the small electrodes placed within tumor. IRE irreversibly opens tumor cells and eventually kills off the tumor.

Generally, Doxil® combined with IRE is a lot "safer" than ThermoDox® with RFA, mostly due to the different temperature distribution caused by nearby, cooler blood vessels – these may "cancel-out" the temperature required to kill the tumor cells. IRE does not have a problem in this area - IRE with liposomal doxorubicin increases the selectivity and focus on liver tumor soft tissues more than RFA with liposomal doxorubicin. With the higher selectivity of IRE, less organ pro-

teins are denatured.

In conclusion, liposomal doxorubicin in hepatocellular carcinoma, along with IRE or RFA, shows promising effects. However, no studies directly compare IRE with Doxil® versus RFA with ThermoDox.® Current data is limited to a few patient cases. Larger studies are needed to compare liposomal and conventional doxorubicin (versus placebo) in combination with IRE or RFA.

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BONE LOSS AND POST-MENOPAUSAL HIV/AIDS PATIENTS

BY: BIBIN THOMAS, LONG ISLAND UNIVERSITY PHARM.D. CANDIDATE

Earlier in 2011, it was reported that that young and middle-aged HIV positive patients did not need to receive routine Bone Mineral Density (BMD) tests. BMD helps to identify patients who are at a high risk for bone fractures or weakened bone structures (and eventually need therapy to prevent fractures). Previous studies indicated that people on highly active antiretroviral therapy (HAART) "would see increasing BMD as they regain weight." This meant that there was at least one less adverse effect to worry about for patients with HIV or AIDS.

Alas, new studies conducted with HIV positive and HIV negative post-menopausal women indicate that the post-menopausal women with HIV may now have to concern themselves about their bones. Despite data from previous trials, patients taking antiretroviral medications may develop osteoporosis or bone fractures. To make matters worse, the bone loss may be greater than previously thought. Researchers say that the best way to address this issue is by utilizing dual-energy x-ray absorptiometry to analyze the BMD and assessing the patient for other treatable risk factors for osteoporosis.

Life is already difficult for HIV/AIDS patients, but the more we learn about bone loss and the earlier we identify high-risk patients the sooner we can begin treatment to prevent bone fracture or osteoporosis. As healthcare professionals, we can go above-and-beyond our duties to make their lives a little bit easier and healthier.

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CHOOSING CLINICAL ROTATIONS SITES

BY: RUBY LIN, PHARM.D. CANDIDATE C/O 2013

Rotation selection begins around mid-October for fifth year pharmacy students. You may begin to panic about what sites you should choose from the huge selection that St. John's University offers. Your upperclassmen may try to help you by sharing their rotation experiences. Alas, what do you do when the amount of information is just not enough?

Here is a quick checklist of what to look for when choosing your sites:

- Personal and professional interests
- Physical locations
- Accessibilities (via modes of transportation)

Whether you are interested in pursuing a residency, fellowship, or still trying to figure out what the "right" path is for you, the selection of your rotation sites is very important. If considering residencies, students may wish to look into the rigorous, five-month NewYork-Presbyterian Hospital (NYP) rotation program. The rotations at NYP expose students to an intense work environment, and help them gain a feeling of what an actual residency may be like. Alternatively, there are also rotations with St. John's University faculty preceptors that provide experiences similar to those in the NYP program. With these faculty rotations, you will have the chance to rank your favorite and/or inspirational clinical professors, whom you probably met through Drugs and Diseases, Drug Information, and several other Clinical Pharmacy Practice courses.

There are many pharmaceutical companies to choose from, especially if a fellowship seems like an attractive option. Unfortunately, some may be very distant from your home. As previously mentioned, locations are crucial when considering and selecting rotations. One of my colleagues provided me with great advice: *"Do not let location be the limiting factor for your choices; you have to go out and explore."* However, if it is difficult to make the daily commute to your desired sites, it is important to find a balance and compromise.

If you are uncertain about your future career, it would be best to select a diverse set of rotation sites that ultimately maximize your exposure to pharmacy. For instance, there are rotations in the Department of Health, Poison Control Center, Emergency Medicine, specialty pharmacies, independent pharmacies, Managed Care, and even Medication Therapy Management (MTM). In order to prepare students for their upcoming compounding examinations, St. John's University also offers compounding pharmacy electives.

Logistically, each rotation lasts for roughly one month. There are only five mandated rotation sites and four elective rotations to take over the course of a year. One or two of the five rotations will be set in a community or ambulatory care setting – these will provide exposure to daily operations and patient counseling for students who do not currently work in a community pharmacy. In addition, for at least two months, students will work in a hospital setting learning about general and focused patient care.

In conclusion, although you rank sites according to preference, it is not a guarantee that you will receive them in that respective order. Keep in mind that, when choosing your sites, you will be indirectly competing with your colleagues (who may desire the same rotations). If you narrow your selection to about 10 sites, you will have a greater chance of receiving your picks. Within a few weeks, you will receive your rotation schedule via a "lottery" (or selective randomization) system on RxPreceptor. There are about two sessions or specific time periods where you may request alternative sites or changes to your schedule, especially if you are not satisfied with your placements.

Remember that no matter what site you receive, you should be proactive and have a desire to be involved in the daily operations of the clinical site for a satisfactory learning experience.

TACKLING THE END-OF-SEMESTER STRESSORS BY: NATALIYA SULYK, PHARM.D. CANDIDATE C/O 2015

Often waiting until the very last minute to begin studying for finals week, students experience a cycle of stressors. They may be overwhelmed with project deadlines, exhausted from studying for examinations, and/or dependent on caffeine for wakefulness. Fortunately, by developing effective studying habits and strategies, students can increase their chances of successful ends to the semester.

"...students can increase their chances of successful ends to the semester..."

Final examinations, especially if cumulative, should be easier to tackle if students review course material each and every week – similar to what is expected for English classes and their respective reading assignments. Alas, this is not always the case, even if considered ideal and compatible with some professors' thinking. Throughout the semester, students have various responsibilities that may impede their ability to continue this studying schedule. They are left exhausted and seeking mental relief after meeting daily work, family, religious, and other important obligations. Yet, days continue to pass by, and finals week approaches ever so quickly as the red-colored Sharpie cross-outs overwhelm their calendars.

So, how can students relieve some of the stress during finals week? Although "cramming" may seem like an attractive option, it is generally not a beneficial investment. It would be quite difficult to learn a semester's-worth of information in one night.

Perhaps a more straightforward and effective approach to studying is utilizing a single piece of paper to create a two-week calendar that indicates the days and times of the finals. Then, students can assign time slots for the workload, and eventually complete small fractions of it each night. Finally, they can review pertinent material during the night prior to the examination.

If students accomplish less than what they anticipated in the first couple of days, a few modifications are permissible. However, in the end, this single piece of paper becomes a contract – it is an agreement that almost guarantees to relieve the stress, pain, headaches, and nervous breakdowns that may accompany study sessions.

Have any advice for students?

Write to our editors at rhochis@gmail.com and we will feature your response in our next edition!

FDA CHALLENGES PHARMACISTS' RIGHT TO COMPOUND BY: EBEY P. SOMAN

With clearly established roles for pharmacists, compounding is recognized and upheld as a core foundation of the pharmacy profession. It allows pharmacists to provide unique and tailored medication regimens for their patients. The U.S. Food and Drug Administration (FDA) thought otherwise when the agency sued Franck's Lab, Inc., a Florida-based compounding pharmacy for veterinary medication. This reflected the age-long battle waged by the FDA to expand its regulatory powers, especially via court cases, against multiple aspects of pharmacy.

The U.S. Constitution gives states all powers not specifically granted to the federal government, thus enabling State Boards of Pharmacy to establish laws and guidelines needed to regulate the pharmacy profession.

The issue at hand came to the forefront when a compounding error resulted in the deaths of 21 polo horses from the Venezuelan National Polo Team in 2009. The pharmacy had compounded a medication called Biodyl (cyanocobalamin), which is commonly used for equine exhaustion (but unapproved in the United States). The compounded medication was a mixture of vitamin B-12, selenium (a form of sodium selenite), and other minerals, but due to the infamous "decimal-point error," there was a lethal dose of selenium in the medication. The Florida State Board of Pharmacy specifically addressed the issue by fining the pharmacy for the mathematical error, and determined that it was not a problem with the compounding procedures of the pharmacy. However, the FDA did not agree, and subsequently filed Form 483 to determine if the pharmacy was compliant with FDA regulations against manufacturing.

In response, the pharmacy stated that the FDA did not have jurisdiction over this medication error, but the FDA filed motion for injunction against the pharmacy. An injunction would have stopped all pharmacy operations, including compounding of prescriptions, until a court hearing of the case and a decision on the matter. The FDA alleged that the pharmacy was involved in illegal animal drug manufacturing, and in violation of the Federal Food, Drug, and Cosmetic Act of 1938 (FDCA) and the FDA veterinary compounding Compliance Policy Guidelines (CPG).

The FDA continued its actions against the pharmacy by stating that all drugs compounded by the pharmacy with bulk ingredients were "new animal drugs," enabling the FDA to regulate these products under the Interstate Commerce Clause. In essence, this would legally place the practice of compounding in equivalence to the mass production used by drug manufacturers – and, thus, make this compounding by pharmacists illegal.

The case came before the Florida Federal Court as *United States v. Franck's Lab, Inc.* The court heard the arguments in February of 2011, and on September 12, 2011, the judge issued an 80-page opinion delving mostly into the statutory construction of the FDCA, the relevant amendments, and the FDA's own regulations promulgated to enforce the congressional intent of the Act. In the opinion, the judge illustrated the long battles waged since the 1990s by the FDA against compounding pharmacists and the history of compounding as a central tenant of pharmacy.

The court said that the FDA's argument that compounded medications need to be treated as new drugs and need to go through the new drug application process was an 'especially poor fit' for regulation compounding pharmacies. Historically,

the State Boards of Pharmacy regulated compounding. They acknowledged that compounding is an important, accepted part of pharmacy that provides clear benefits to society. The court also noted flaws in the FDA's reasoning behind the lawsuit. Despite no clear legislation from Congress addressing veterinary compounding, the FDA tried to derive its authority to regulate compounding by broadly interpreting Congressional objectives in the Federal Food, Drug, and Cosmetic Act of 1938 (FDCA) and its amendments.

The court also questioned the logic behind the FDA suit with this comparison: "A pharmacist who compounds medication from bulk for ingestion by a horse is akin to a manufacturer and subject to an FDA enforcement action, while the same pharmacist compounding medication from bulk for ingestion by the human rider of that horse is not."

In modern times, we appreciate opportunities to tailor patient-specific medications without unjust regulation. Although unclear if the FDA will appeal the court's decision, all pharmacists (not just those that practice veterinary compounding) perceive a victory. Without a vigorous, pre-established defense of legal rights, practiced or otherwise implemented by pharmacists across this nation, our profession's central tenants will continue to face legal actions. These actions will attempt to slowly curtain and regulate more aspects of our profession, but we must work together to protect our freedoms.

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Image Source:

http://post.health.ufl.edu/files/2011/04/Pharmacy-Competition_MBF_IMG_1595.jpg

FDA APPROVES EDARBYCLOR® BY: GOKUL KALLA, PHARM.D. CANDIDATE C/O 2013

Hypertension is a chronic disease that affects one out of every three Americans. Leaving the condition untreated could increase the risk of serious health consequences such as a stroke or a heart attack. On December 21, the FDA approved Takeda Pharmaceuticals' Edarbyclor® (azilsartan medoxomil and chlorthalidone) for the treatment of hypertension in adults. Edarbyclor® is a combination of a fixed dose Angiotensin II Receptor Blocker (ARB), azilsartan medoxomil, and a thiazide diuretic, chlorthalidone.

Earlier in 2011, one of the main components of Edarbyclor® (azilsartan) was marketed as Edarbi®. It works by blocking the action of Angiotensin II, a vasopressor hormone in the body that increases blood pressure. As a diuretic, chlorthalidone reduces the body's fluid volume by increasing urination.

In studies, the combination of these two medications resulted in a greater overall reduction of blood pressure in patients with chronic hypertension and a decrease in hypertension-related complications. To assess the safety and efficacy of Edarbyclor®, a 52-week, 5-phase clinical trial was conducted with 5,000 hypertensive patients. The trial resulted in a lower mean trough systolic blood pressure (SBP) versus azilsartan medoxomil or chlorthalidone alone. In addition, SBP was lower when compared against the highest fixed dose combination of olmesartan medoxomil and hydrochlorothiazide (Benicar-HCT®) at its highest approved dose of 40/25 mg.

More trials are needed to justify its use over more inexpensive and efficacious alternatives in its class.

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CLEVIDIPINE IN THE MANAGEMENT OF HYPERTENSIVE EMERGENCY BY: NEAL SHAH

Defined by the Joint National Committee, hypertension (HTN) is a systolic blood pressure (SBP) greater than or equal to 140 mmHg and a diastolic blood pressure (DBP) greater than or equal to 90 mmHg. Patients with Stage 1 HTN have a SBP between 140 and 159 mmHg and DBP between 90 and 99 mmHg. Stage 2 HTN occurs when a patient's SBP is between 160 and 179 mmHg and DBP is between 100 and 109 mmHg. Stage 3 HTN is the most severe form, with a SBP of over 180 mmHg and DBP over 110 mmHg. Pressures of this magnitude have detrimental effects on organs, such as the eyes, kidneys, heart, and brain.

The diffuse pathological effects of HTN can be gauged by an eye exam, especially since retinopathy occurs with increased blood pressure – eventually causing leakage and obstruction of vision.1 Both, hypertensive urgency and hypertensive emergency, feature Stage 3 HTN. However, unlike hypertensive urgency, hypertensive emergency has targeted organ damage to the aforementioned areas. It is for this reason that hypertensive urgency is treatable with oral medications over a prolonged period, but hypertensive emergency requires immediate intravenous medication to lower blood pressure. To prevent stroke due to decreased cranial perfusion, the goal in hypertensive emergency is to gradually reduce blood pressure to 160/110 mmHg within 6 hours. Oral medications for hypertensive urgency include labetalol, carvedilol, and clonidine.1 Medications used to treat hypertensive emergency include esmolol, fenoldopam, labetalol, nicardipine, nitroglycerin, nitroprusside, and a recently-approved dihydropyridine (DHP) known as clevidipine.2

Clevidipine is a third generation DHP with a rapid onset, ultra-short action, and easy titrations. It is a racemic mixture, and inhibits L-type calcium channels in the arteries rather than the heart; thus, it does not affect contractility or conductivity.2 Since it is contained in an emulsion of phospholipids and other fats derived from soy and eggs, it is contraindicated in patients with: allergies to soy or eggs, hypertriglyceridemia, and severe arterial stenosis. Advantages of clevidipine are that there is no weight-based dosing or need to adjust the dose in renal or hepatic dysfunction (as it is metabolized by esterases). In the open-labeled, non-placebo, non-controlled, VELOCITY trial, clevidipine was administered at a rate of 2 mg/hour (and doubled in dose every 3 minutes to a maximum of 32 mg/hour) to Stage 3 HTN patients. Within 6 hours, 91% of these patients transitioned successfully to oral therapy following the goal of a 25% decrease in arterial blood pressure.3

Clevidipine is not indicated for use outside of an institutional setting; it should be used to stabilize patients so they can begin an oral regimen to manage their hypertension. Major side effects of clevidipine include reflex tachycardia, atrial fibrillation, and acute renal failure.4

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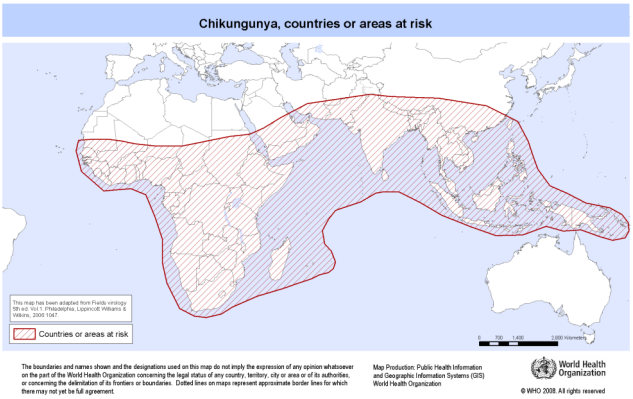
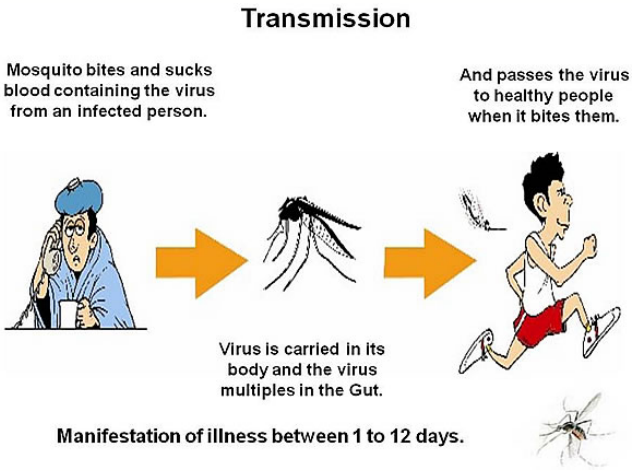
HOPE ON THE HORIZON: CHIKUNGUNYA VACCINE TRIAL BEGINS! BY EBEY P. SOMAN



Since its discovery in Tanganyika (modern day Mozambique and Tanzania in Africa) in 1952, Chikungunya virus outbreaks have been documented in Africa, South Asia, and Southeast Asia. Due to recent globalization and increased travel, infection has also spread outside of tropical regions and even into western nations (such as the United Kingdom). There is presently no cure, effective treatment, or vaccine for the virus, which makes it one of the few untreatable diseases in the world. Chikungunya fever is not directly life threatening, but has led to mortality in third world nations.

The name Chikungunya is derived from the Makonde language (spoken by the people of southeast Tanzania and northern Mozambique in Africa). It means, "…that which bends up," describing the disease's impact on human joints. Infected mosquitos, specifically the Aedes albopictus (the Asian tiger mosquito), transmit the Chikungunya virus. This is the same mosquito acting as the viral vector in the transfer of Yellow fever, Dengue fever, and the West Nile virus. Thus, the Chikungunya virus is an Arbovirus (arthropod borne) in the alphavirus genus of the Togaviridae family of viruses.

Once bitten by an infected mosquito, the virus has an incubation period of up to one week before the patient experiences signs and symptoms of an acute infection. These include rashes on the large parts of the body, symptoms of flu or fever, high body temperatures, and photophobia. The most discernible sign of this virus is the arthralgia that it induces in patients, usually affecting multiple joints in the outer extremities. Within a few days, the acute infection resolves, leaving the patient with most, if not all, the signs and symptoms they experienced during the acute infection for a prolonged period. The virus-induced multiple-joint arthritis tends to be the lasting effect of the virus, and usually presents as extremely inflamed and deformed joints. Case reports state that many patients experience the acute symptoms for years after the initial acute infection.



Unfortunately, untreated complications may lead to mortality. Patients usually experience high fevers and severe flu-like symptoms, and adequate rest and fluid rehydration is important. Often poor, many patients are unable to work, and cannot feed themselves or their families. Thus, these patients cannot maintain good diet, often starve, and develop hypoglycemia. Interruptions in diet and a lack of hydration may cause electrolyte imbalances; these predispose patients to serious complications, such as hypomagnesaemia-induced seizures.

Much like Dengue fever, Chikungunya can also induce thrombocytopenia in patients. Low platelet counts can increase the risk of internal bleeding. With thrombocytopenia and non-steroidal anti-inflammatory drugs (*NSAIDs*), such as ibuprofen, patients may experience severe gas-

trointestinal bleeding. Both, complications from the virus and side effects of drugs used to treat the symptoms, can exacerbate problems and increase mortality.

The virus is usually not life threatening, but in third world nations where livelihood depends on manual labor, the pathogen elicits a heavy toll. Farmers or manual laborers suffer the most, as they are bedridden or their joints are too inflamed (and painful) for them to complete any work. The cost of providing healthcare for a sick family member also plays a role in depriving valuable time and resources; this most often destroys their livelihood.

I personally saw this during the 2006-2007 Chikungunya outbreaks in Kerala, India. I traveled with a Disaster Relief Team from Peniel Revival Ministries, Inc., and visited many patients who were too poor to afford a few tablets of p*aracetamol* (acetaminophen, *Tylenol*®). I could see the despair in patients' eyes and clear evidence of starvation. Thus, in August of 2007, the Peniel Revival Ministries team assisted families in *Vadaserikara* Town in Kerala, and town officials helped to coordinate the event. This specific incident highlighted the great socioeconomic hardships that the virus brought to infected families, as well as the heavy toll these unlucky patients paid.

Scientists at the National Institute of Allergy and Infectious Diseases (NIAID) at the National Institutes of Health (NIH) are conducting a clinical trial to test a Chikungunya vaccine. So far, animal trials in rhesus monkeys demonstrated that treatment with non-infectious viral particles induced an appropriate immune response. Antibodies from the monkeys were then injected into mice and this surprisingly provided passive immunity against the virus, as well.

The fight against the Chikungunya virus may not seem like groundbreaking research, as it is restricted to tropical regions. However, since the 2007 outbreak in Italy, there is evidence that the virus may be changing and adapting itself to new environments. It is important for scientists to develop preventative medicine; thus, the Chikungunya vaccine research, if successful, may prove to be the keystone treatment of choice against other mosquito-borne viruses, such as Dengue fever. In the words of the NIAID Director Anthony S. Fauci, M.D., "If successful [the vaccine], this approach also might be used to develop vaccines against related mosquito-borne viruses, including those that cause Western, Eastern and Venezuelan equine encephalitis."

On a more humanistic level, a vaccine will provide billions of people living in Africa and Asia with a certain level of protection against the Chikungunya virus. Moreover, perhaps we can eradicate the Chikungunya virus as we did with Polio in the United States.

Special thanks to Peniel Revival Ministries Inc. – Disaster Relief Trip 2007

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IMAGE SOURCES:

1. "Chikungunya Facts Sheet." *Chikungunya Media Center*. World Health Organization, March 2008. Web. 21 Dec 2011. <http://www.who.int/mediacentre/factsheets/fs327/en/>.
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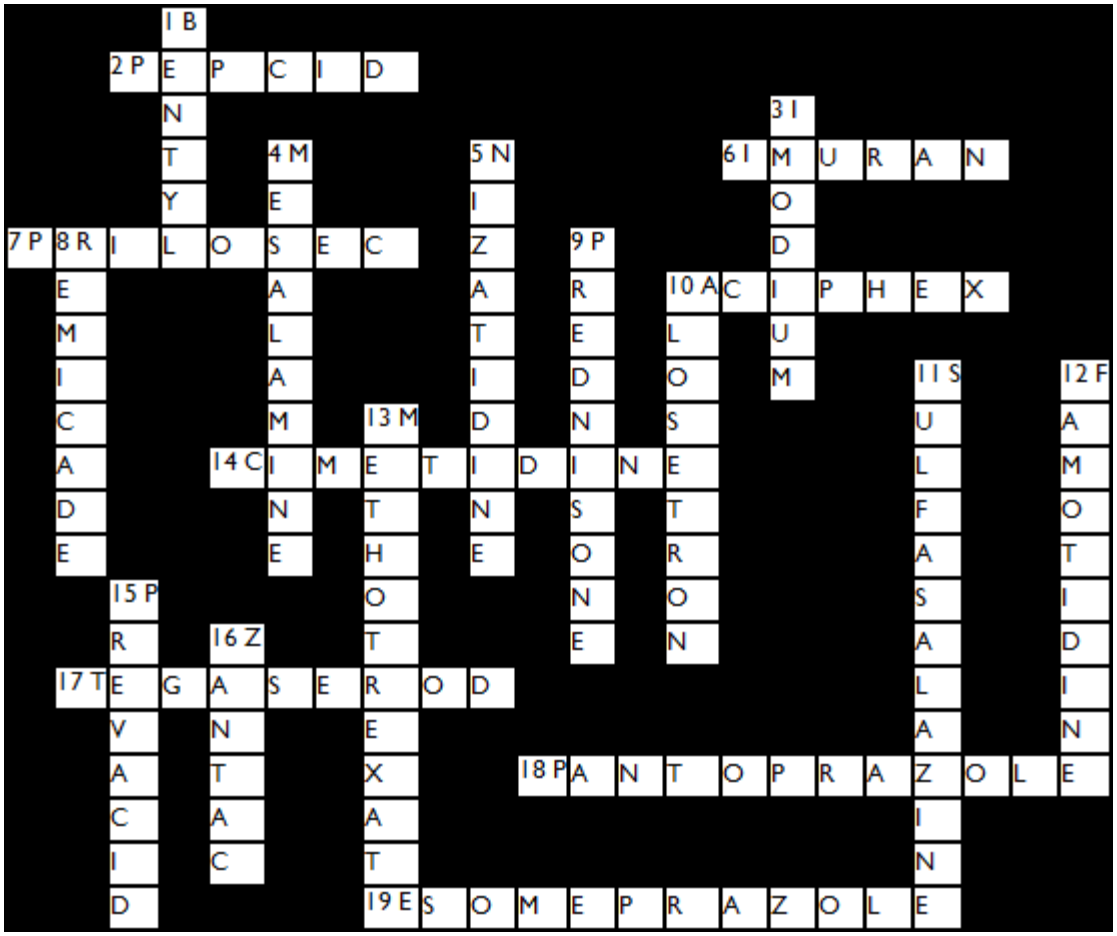
PUZZLE: CROSSWORD (SOLUTION) BY: MAHDIEH DANESH YAZDI



READER FEEDBACK

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**" I was glad to see this post [Rho Chi Post Issue #3].
I had forgotten that I was elected to Rho Chi as a graduate student in 1958 or 1959. Practically at the same time I was elected to Phi Lambda Upsilon.
Good memories. Thank you for jogging them. "**

-Jacob R. Raitt
via LinkedIn Pharmacy MTMS Group
Retired Pharmacist at VetCentric
Former Director of Pharmacy Operations at Children's National Medical Center

What do you think of the Rho Chi Post?

Write to our editors at rhochis@gmail.com and we will feature your response in our next edition!

STUDENT PHARMACIST STAR OF THE MONTH: JAY CHADDERWALA BY: MARIE HUANG

Each month, Rho Chi Post has the wonderful opportunity to sit down with an inspiring leader among the student pharmacists here at St. John's University – someone who is not afraid to stand apart from the crowd and can be the change he or she wants to see in the world. This January, Jay Chadderwala, a 5th year PharmD candidate and last year's National Patient Counseling Competition delegate for St. John's, talks about the future, the secret to his perpetual happiness, and Franklin D. Roosevelt.

Q: I hear that you have participated twice in the National Patient Counseling Competition run by APhA-ASP! It seems like you involve yourself in a variety of extracurricular activities. What has been the most rewarding moment or project of your college career?

A: If I had to pin down my most rewarding project, it would be the National Patient Counseling Competition. When I was representing St. John's University in Seattle, I was able to meet other students and pharmacists who were proudly promoting our profession in multiple ways just as I was. However, I must say, in general, the greatest reward comes whenever I am able to use the knowledge I have acquired from school to help patients with their medications.

Q: Patient interaction and counsel undoubtedly plays a vital role in our profession. At times, does working in a hospital limit a pharmacist's connection with the patient in your opinion? What are you looking to do post-graduation?

A: No, I do not feel that working in a hospital limits a pharmacist's connection with patients. In many institutions, I am seeing an expansion in the role of hospital pharmacists. During my IPPEs rotation at Winthrop Hospital, I saw pharmacists going to patients and asking about prior medication allergies, and now at NewYork-Presbyterian (NYP), I see pharmacists being part of the daily rounds. After graduation, I have my sights on completing a pharmacy residency because I feel the experience and knowledge I will get will help my patients in both the community and hospital setting.

Q: Your peers know you as a mentor – someone who is willing to help and is always smiling from ear and ear. How do you maintain what appears to be lower stress levels yet still find the time to help others?

A: My dad has a PhD in organic chemistry – for as long as I can remember, no matter how tired or busy he would be, he would always take the time to help me with my science homework assignments and with studying. I guess it was then natural for me to help my peers even though I was in the same 'boat' as them. As for the smile and low stress levels, I owe all of that to my pharmacy mentor, Joseph Thomas. When I first met him, he kept telling me, "Time will always pass at the same rate. Regardless of how bad things seem, put a smile on and ride it out."

Q: Which rotation of yours are you looking forward to the most? Where exactly do you see yourself in ten years?

A: I am looking forward to the pharmacy education rotation with Dr. Kanmaz. After completing a residency, I would be interested in teaching at St. John's University. I have been fortunate enough to have professors who have gone out of their way to help me understand a topic, and I think the best way to thank them is by continuing to pass on their teachings and their methods. Ten years from now, I see myself working as a clinical faculty member and a clinical manager.

Q: If you could choose one public figure, alive or dead, to have a fireside chat with, who would it be?

A: That is a hard question, but Franklin D. Roosevelt would be at the top of the list. The reason being: he had the courage to become president during one of the worst, if not THE worst, economic meltdown this country had ever faced. He expanded the role of the federal government, was Commander-in-Chief for the majority of WWII, and did all of this while being paralyzed from the waist down.

Q: If you were only allowed to have three drugs on a stranded island, what would they be and why?

A: I would take Augmentin as my broad-spectrum antibiotic, Benadryl for allergic reactions, and Aleve for pain in case I hurt myself.

Q: Great answer – and now for the most important question of all: Would you rather be able to walk on water forever or fly for three hours on three different occasions in your life?

A: When I was younger, one of my hobbies involved building model airplanes. Even though there is a limitation in being able to fly, I would prefer it to walking on water. Actually, having a limitation only makes the moments I use my flying ability more cherished, whereas if I could walk on water at anytime, I might just take that ability for granted. I guess it all comes down to too much of anything being just as bad as too little of something.

Q: Thanks for sitting down with us! It has been a pleasure. Do you have any last words for our readers?

A: Thank you for the interview, and as for last words, another phrase my mentor often says is, "Time waits for nobody." I encourage everyone who has the opportunity to learn and experience more, whether related to pharmacy or life in general, to take the opportunity!

If you have any additional questions for Mr. Chadderwala, you may contact him at jay.chadderwala07@stjohns.edu

Know an influential colleague with extraordinary accomplishments?

Tell us at rhochis@gmail.com!

MONTHLY TRIVIA QUESTIONS: ABC'S OF PHARMACY BY: EBEY P. SOMAN

A. What intracellular calcium channels does dantrolene (Dantrium®) bind to?

B. What medical condition is dantrolene is most effective for?

C. Replacement of this group in the chemical structure of dantrolene increase its water solubility.

Note to the reader:
Each issue, I will ask questions about drug information, pathology, and medicinal chemistry / pharmacokinetics. If you would like to contribute trivia questions and answers of your own, please contact us at rhochis@gmail.com -or- email me directly at ebey.soman07@stjohns.edu.
Thank you!

Answers:
A. Ryanodine receptors
B. Malignant hyperthermia
C. Replace the nitro group with bromine residue to increase water solubility (Azumolene)

PARTNERS IN HEALTH COMES TO COLUMBIA UNIVERSITY

BY: BETHSY JACOB, PHARM.D. CANDIDATE C/O 2014

On November 16, 2011, Dr. Joia Mukherjee, Medical Director of Partners in Healthcare (PIH), presented for GlobeMed at Columbia University. Manzi Anatole, a hired nurse in Rwanda, accompanied Dr. Mukherjee. Along with a handful of her students, Dr. Joanne Carroll arranged a trip to the open event. The lecture highlighted key issues that affect healthcare in developing areas, particularly in Rwanda.

According to Dr. Mukherjee, the Universal Declaration of Human Rights is not as inclusive as it should be. This declaration embodies two covenants – the covenant of civil and political rights and the covenant of social and economic rights (such as the right to education and health). Too often in the United States, human rights are narrowed on political and civil rights – there is not enough focus on the other sets of rights, which are considered to be more like privileges. Yet, in third world countries, basic human needs are unmet. Therefore, their first concern is food for the family, followed by education and shelter. As important as it may be in the United States, voting (a political right) is not their primary need.

To provide these basic human needs, countries like Rwanda need sufficient money in their treasuries. These nations heavily rely on borrowing, which forces them to create a market-like economy and increase the private sector while minimizing the public sector. PIH works with these governments to support basic the ideology of healthcare as a human right (with the belief that the government is the only way that healthcare can be supported as a right). In the words of Dr. Mukherjee, "If it is a real right, then it is based on citizenship, not a charity.[1]" PIH also works side-by-side with the government to assist with public sector projects, such as the establishment of hospitals.

As with many third world countries, this problem is even more sophisticated in Rwanda because of the poor skill set of healthcare staff. Even with a supported government, the staff does not have the training necessary to treat patients. Most nurses in Rwanda have high school level education and play multiple roles (e.g. doctors and pharmacists). There are many non-governmental organizations (NGOs) that provide training to these nurses, but this has turned out to be counter-productive because training pulls large portions of the nurses from their clinical settings all at once, leaving few personnel to care for patients. Training via PowerPoint presentations is not efficient to the extent of helping these nurses on a clinical, practical level. There is no one to "catalyze" the training, and there is no follow-up or evaluate how well the nurses understand and practice the training they receive.

Manzi, Dr. Mukherjee's colleague, realized the flaw within this system. According to Manzi, it is better to have poor quality of care than to pull the nurses from clinics that are already understaffed. However, is there another option? Yes, it is to provide support and mentorship to these nurses on a local level. There is a program to train district nurses, who, in turn, mentor the local nurses within their healthcare clinics. These district nurses also help to apply the verbal training the local nurses receive. Through mentoring, the nurses can actualize what they learn.

Malaria, HIV, STIs, and opportunistic infections are significant causes of deaths in Rwanda, where the life expectancy is roughly 58 years. The situation requires an intervention to reduce morbidity and mortality. Mentorship is an effective, evidence-based intervention, but there are still many challenges ahead, with nurses leaving clinics to find other jobs, limited equipment despite proper training, and low levels of education. It is also difficult to expand the program to other districts in Rwanda. Reasonably, Manzi said, "Writing down on a piece of paper is different than actual practice. You can have a very good vision, but you need support. It is not enough to have a good vision.[2]" Even though we know what to do in Rwanda, there are too many challenges

and too little support to fully promote and expand the intervention.

As pharmacy students, we learn how medications can cure, improve symptoms and/or limit the progression of diseases and other medical conditions. Many people do not have access to professionals with proper skill sets, technologies, vaccines, or medications. With our background, we should be aware of, and perhaps even support, causes that promote healthcare and social justice.

As Dr. Paul Farmer says, "it is important to believe in human rights in spite of your own troubles.[3]" That goal is to change our world where no one starves, drinks impure water, or lives in fear of the powerful and violent. That world is a utopia and this world is a dystopia. Moving progressively away from this dystopia moves us progressively towards something better and more human.[2]

More information about Partners in Health is available at www.pih.org

Additional reading: www.faceaids.org and www.globemed.org

SOURCES:

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PUZZLE: WORD SEARCH BY: MARIE HUANG

FIND THE FOLLOWING WORDS:

DIGOXIN
METOPROLOL
LOSARTAN
RAMIPRIL
LOVAZA
FUROSEMIDE
SIMVASTATIN
NIASPAN
GEMFIBROZIL
AMLODIPINE

P S E D S Z M L N I I I N
L N E I I I A S V I M P I
I D N O M G P Z O I R L I
A I I O V R O A A E I R L
N A P S A I N X E R D I O
I S I A S L Z T I V R L V
E A D A T R I I Z N O A A
Z N O M A I A R A R L V Z
S R L R T N A T P N T I A
G E M F I B R O Z I L S I
I M A O N A T S I R M M A
F U R O S E M I D E I A L
O Z I O M G A L D L I I R
F A L M L P O A E I M O M

ABOUT US

The Rho Chi Society encourages and recognizes excellence in intellectual achievement and advocates critical inquiry in all aspects of pharmacy. The Society further encourages high standards of conduct and character and fosters fellowship among its members.

The Society seeks universal recognition of its members as lifelong intellectual leaders in pharmacy, and as a community of scholars, to instill the desire to pursue intellectual excellence and critical inquiry to advance the profession.

UPCOMING EVENTS

Jan. 1st-31st: Residency Application Deadlines
Jan. 10th-11th: NYS Pharmacy Compounding Exam
Jan. 16th: Martin Luther King, Jr. Day
Jan. 17th: 2012 Rho Chi Induction Ceremony (6pm)
Jan. 18th: First day of classes
Jan. 28th: APhA-ASP Operation Diabetes (11:30am-3:30pm)
Jan. 30th: Spring Activities Fair (12pm-3pm)

CURRENT EXECUTIVE BOARD

Bethsy, Albana, Yining, Elizabeth, and Aleena at the 2012 Induction Ceremony

President: **Yining Shao**
Vice President: **Albana Alili**
Secretary: **Elizabeth Mo**
Treasurer: **Aleena Cherian**
Historian: **Bethsy Jacob**
Media Relations Coordinator: **Mohammad A. Rattu**
Faculty Advisor: **S. William Zito, PhD**

MEET THE STUDENT EDITORS

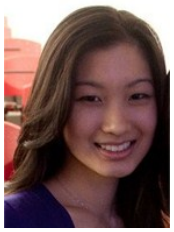
My name is Mohammad A. Rattu, and I am a 6th year PharmD candidate at St. John's University. I have had profound experiences with media-related positions in pharmacy organizations at our university, and continue to support the utilization of technology to further our profession. As the first Editor-in-Chief of Rho Chi Post, I hope to instill motivation and leadership in our student body. Feel free to get in touch with me at: mohammad.rattu06@stjohns.edu

My name is Mahdieh Danesh Yazdi, and I am a 5th year PharmD candidate at St. John's University. I like to stay current with all the changes in our profession, both legal and clinical. I hope to keep you informed with all that I learn. Please enjoy Rho Chi Post, and provide us detailed feedback so that we may improve our newsletter. If you have any questions or concerns, you can reach me at: mahdieh.daneshyazdi07@stjohns.edu

My name is Marie Huang, and I am a 5th year PharmD candidate at St. John's University. I am in a continuous process of self-definition, and constantly testing the boundaries of this world. I enjoy channeling my inspiration through words and photographs. As a student editor and a witness to an evolving profession, I look forward to keeping you updated! Who knows where we will be tomorrow? If you'd like, you can reach me at: mary.huang07@stjohns.edu

My name is Neal Shah, and I am a 5th year PharmD candidate at St. John's University. I frequently assist several professors on campus with their research. My goal is to provide my fellow students with research-based information that correlates with clinical pharmacotherapy. If you have any topics of interest or comments on published articles, please do not hesitate to email me at: neal.shah07@stjohns.edu

My name is Ebey P. Soman, and I am a 5th year PharmD candidate at St. John's University. I enjoy writing very opinionated articles, and am excited to be an editor of Rho Chi Post. I encourage all readers of our newsletter (students, faculty, professionals) to respond with their own literary pieces. I look forward to hearing from you, and welcome your comments and constructive criticisms: ebey.soman07@stjohns.edu



My name is Carina Fung, and I am a 6th year PharmD candidate at St. John's University and Rho Chi's 2010 past Vice-President. Over the course of my academic and professional career, I aspire to discover, learn, hone, and embody the qualities that make up a true and trustworthy health care professional with integrity and further the profession of pharmacy. You can contact me at carina.fung06@stjohns.edu

My name is Jena Marion, and I am a 5th year PharmD candidate at St. John's University. I've had a love of writing from an early age, and am excited to join the team. Through my education and involvement in professional organizations, I have developed a love and respect for the profession; I especially love sharing different facets of pharmacy with my peers. I'd love to talk with you more about pharmacy: jena.marion@gmail.com

?

This could be you!

We are looking for creative and motivated students in the 4th, 5th, and 6th years of pharmacy school. If you are interested in becoming a full-time student editor for the Rho Chi Post, please contact us at rhochis@gmail.com!