

Single Line Stories

- NYS Part III; Jan 8-9, 2013
Are you prepared?
- It was amazing to see so many PharmD Candidates from St. John's at the ASHP Midyear Meeting
- *Enjoy editing? Email us for leadership opportunities!*

VOL 2 | ISSUE 3 | 2012

DECEMBER 1

RHO_χCHI post

www.rhochistj.org

A STUDENT-OPERATED NEWSLETTER BY THE
ST. JOHN'S UNIVERSITY COLLEGE OF PHARMACY AND HEALTH SCIENCES'
RHO CHI BETA DELTA CHAPTER

HAPPY HOLIDAYS AND BEST WISHES FOR 2013!

Dear Readers,

Christmas is just a few days away, and an amazing year of great challenges, pleasant surprises, and worthwhile endeavors are coming to a close. From working on your Drugs & Diseases courses to simply having the privilege of being part of the profession at the White Coat Ceremony, the students have endured and achieved much more than anyone's expectations. Of course, we cannot forget to mention our faculty members, professors, teaching fellows, and administrative staff who ceaselessly toiled to provide us unforgettable learning experiences this past year.

On behalf of the entire Rho Chi Post editorial staff, I have the pleasure, nay the privilege, to wish our readers – the Faculty Members, Professors, Guest Authors, Pharmacists, University Staff, and last but not least, the Student Body – a Merry Christmas, a beautiful festival of rededication (Hänukkāh), a plentiful celebration of the harvest with Kwanzaa, and a blessed New Year.

I wish to offer some tips that will make the holidays full of merriment and ensure a healthy celebration. The holidays, especially Christmas, are filled with gifts; thus, early preparation is important if you want to avoid last-minute stress during the holiday rush. Children should be given age-appropriate toys as gifts and these should only be from appropriate vendors (to avoid lead contamination or other hazardous conditions). It is very

Inside This Issue

Happy Holidays	1
Christmas Child	2
Drug Shortage Crisis	3
Quote of the Month	4
Attention Graduates	5
Drug Abuse Epidemic	6
ADRs from Ingestion	8
Teen Challenge USA	8
Word Search Puzzle	9
ASHP Midyear Posters	10
Crossword Puzzle	14
White Coat Ceremony	15
Gene Therapy	17
Word Search Solution	19
Crossword Solution	20
Letter from the Editors	21
Editorial Team Bios	22
Upcoming Events	24
About Us	24



important that everyone in the home gets plenty of rest in between the festivities to avoid sickness.

The birth of Jesus Christ is a reason to be merry, but that does not mean excessive consumption of alcohol. Please watch your alcohol intake, and have a designated (sober) driver, even it is just a “few drinks.” At parties, eat healthy foods, such as fruits and vegetables, and avoid eating junk foods loaded with sodium and fat. Remember to stay hydrated by drinking plenty of water, and keep in mind that nothing beats a cup of hot chocolate during a frosty day!

It is also important to slow down a little when everyone else around you seems to be in a rush to get elsewhere. How about a walk in the park with a friend or a fox-trot across the room with your partner? These small things help you get 30 minutes of exercise needed to maintain a healthy lifestyle. Stubbing out your cigarettes, and eating foods with plenty of omega-3 fatty acids (e.g. fish) is another great idea.

For some, the holidays may not be filled with merriment. The key thing to remember is that it does not matter how expensive or how big your gift is; it is the meaning behind that gift – the fact that you considered the other person when you bought it. So

do not overcharge your credit cards or be burdened with the season; instead, being simple can have its rewards, as well. GriefShare (grief recovery support groups) programs held in many community centers and churches are a good way to deal with the loss of a loved one. Perhaps you can visit their graves, lay some flowers, or play a favorite musical melody of your loved one to remember their love and joy during this season.

And finally, be yourself! The purpose of the season is not to pretend to be someone you are not or be anxious around other people. So, rejoice, relax, and be thankful for this year. Be thankful for the good and the bad, and look forward to a new year filled with new adventures, joy, and peace.

Once again, we wish you happy holidays. May your Christmas be jolly, your Hānukkāh full of light, and your Kwanzaa bountiful. May the New Year be a year of more blessings in your life and a year of more achievements and milestones reached. We look forward to seeing all of you next year, hearing your feedback, and publishing your article submissions.

Sincerely,
The Editors in Chief



**WISH TO SEND A CHILD A GIFT
THIS HOLIDAY SEASON?**

VIST OPERATION CHRISTMAS CHILD FOR MORE INFORMATION

TACKLING AMERICA'S DRUG SHORTAGE CRISIS

BY: JOHN S LIM, PHARM D CANDIDATE C/O 2013

America's focus on healthcare, as well as its position as one of the wealthiest nations of the industrialized world, is incongruous with the consequences of drug shortages suffered by its population. Shortages in pharmaceutical supply compromise quality of life while increasing health care costs. The pharmaceutical expenditure of the United States has increased alarmingly from around 7% of our GDP in the 1970s to 16%, making our health care expenditure an inexplicable outlier among similarly prosperous and developed nations.¹ Hence it is imperative to trace the origins of drug shortages and to devise solutions to them. There are two main causes of drug shortages: a lack of incentive for generic manufacturers and the shutdown of entire product lines due to lapses in quality control. Even though one has to consider the implications of the drug shortage crisis, there are possible solutions.

An important consequence of the drug shortage crisis is the rise in "gray market" sellers. These sellers take advantage of the current shortage and mark up their prices by over 1000%. For example, a drug indicated for hypertension normally priced at \$25.90 can sell for up to \$1200 in these gray markets. Frequent gray market purchases can cost hospitals up to 415 million dollars annually.² Worse, such products are not regulated - drugs sold in the gray market at 1000% mark-ups may end up having poorer quality than the batches shut down due to poor quality control.

"Why would I make propofol for 48 cents for a 20-cc vial?" asks Robert Rifkin, MD, an oncologist at the Colorado-based Rocky Mountain Cancer Centers and member of McKesson Specialty Health.³ Such questions, and the stagnant inelastic market for generics, make it inefficient to produce drugs with unsatisfactory returns. The FDA states, "54% of [drug] shortages were due to quality or manufacturing issues."³ Absent adequate compensation, manufacturers will not produce, and more money will bleed into gray markets.

Instead of spending resources cracking down on illegal businesses, it is more effective to tackle the drug shortage crisis itself. A possible solution is a two-fold remedy that incorporates a new manufacturers' system with increased compensation.

The first part of the remedy is to bind manufacturers together. This way, the surpluses and deficits of products from each manufacturer would offset each other, and through a subsystem of wholesalers, we can monitor and optimize medication delivery. Information gained and shared through this system would consolidate the drug market and ease its cut-throat competition. Manufacturers would be able to 'share' the market.

The second part of the remedy is to increase compensation. Insurance companies change the billing for medications in short supply, which would include an increased price for the scarce drug with delivery costs. By paying more for drugs in shortage, insurance companies and therefore patients would help jump-start the production of low profit generics.

The manufacturer-binding system, along with a change in billing, would prevent manufacturers from undercutting one another. Different drugs would be assigned to different manufacturers, with premium compensations during a shortage. Information on shortages can be shared; therefore, manufacturing profit margins will be similar across the board. A network of wholesalers shared by multiple manufacturers can provide diversification—the wholesalers would be able to purchase from different parent manufacturers (as opposed to having one bulk supplier per product). Prompt delivery of any type of medication from the closest wholesaler would be possible and gray-vendors would lose business.

Even though this new manufacturer-binding system is a potential solution to gray markets and slowdowns in generic production, the problem of quality control still remains. Jonathan Kafer, Vice President of Sales and Marketing of Teva Health Systems said: "Part of the reason why the number of shortages has spiked so much recently is the way the manufacturing process works today: if there is a problem with manufacturing one oncology drug, the drugmaker has to shut down the entire 'suite' that manufactures all its oncology drugs."³ The FDA has enforced strict guidelines designed to maintain patient safety; however, if these guidelines end up causing drug shortages, which force hospitals to

look to gray vendors, perhaps some liberties can be granted so as not to defeat the purpose of regulation—patient care. A simple solution to this problem might be to increase the scope of quality control tests for drugs with limited production and higher expected rates of failure to meet standards. Instead of shutting down entire lines after discovering a faulty product, more of the product should be scrutinized to avoid wasting a possibly good product.

The drug distribution system is not perfect. Profit margins are just as important to manufacturers as the patients served. Instead of an overhaul, working with the system to increase profitability and reduce waste might help ameliorate the drug shortage crisis. With people's lives at hand, overreacting to a problem with legal clauses is not the solution. Ra-

ther, we must strive to fix the drug shortage crisis as quickly as possible.

SOURCES:

1. Baker, S. U.S. National Health Spending, 2006. <http://hspm.sph.sc.edu/Courses/Econ/Classes/nhe06/> Accessed January 23, 2012.
2. Johnson, L. Hospital Drug Shortages Present Costly Crisis. Huffpost Healthy Living. http://www.huffingtonpost.com/2011/09/24/hospital-drug-shortages_n_979173.html Accessed January 27, 2012.
3. Frieden, J. No Easy Fix for Drug Shortage Crisis. Medpage Today. <http://www.medpagetoday.com/PublicHealthPolicy/FDAGeneral/28749> Accessed January 27, 2012.

QUOTE OF THE MONTH

BY: ALEENA CHERIAN, PHARMD CANDIDATE C/O 2014

SUCCESS
DOES NOT
CONSIST IN
NEVER
MAKING
BLUNDERS

BUT IN
NEVER
MAKING THE
SAME ONE
A SECOND
TIME.

JOSH BILLINGS

RHO CHI POST

INSPIRATIONAL WORDS



 *Apply Now for*
Your Diploma

January
Graduates

Scan here or visit
www.stjohns.edu/mydiploma
to apply for your diploma today!



041-7182-114

GIVING A SECOND CHANCE: THE PRESCRIPTION DRUG ABUSE EPIDEMIC ON LONG ISLAND

BY: MARIA SORBERA, PHARMD CANDIDATE C/O 2013, AMSCOP AT LIU

Author William S. Burroughs states in his novel, "The question is frequently asked: Why does a man become a drug addict? The answer is that he usually does not intend to become an addict. You don't wake up one morning and decide to be a drug addict."¹ Addiction does not occur overnight; it consists of a timeline of events that cannot be reversed. Creating a tight grasp, an addiction makes it extremely difficult for an individual to find freedom. A quick snap of the fingers cannot reverse months or years of abuse. Unfortunately, this country is in the midst of a prescription drug abuse crisis leaving many people wishing that they can simply "snap their fingers" and be lifted from rock bottom. Although the battle against prescription drug abuse presents a difficult road ahead, it has opened numerous doors for healthcare professionals. Medical teams can aid in this crisis by taking a stand. Such positions have already been made by New York in this growing crisis with the Naloxone Pilot Program in Suffolk County and the passing of the Internet System for Tracking Over-Prescribing Act, I-STOP.

Here are the statics: in 2008, there were a reported 36,000 deaths from drug overdoses in the United States. Since 1990, the death rate from drug abuse has more than tripled. Hospital admissions from drug abuse have increased by 60% from 2007 to 2010. In addition, admissions due to oxycodone have exponentially increased by a frightening 160%. It is clear that prescription drug abuse is rapidly spreading with New York directly feeling many of the effects.² Both Nassau and Suffolk County have been experiencing increases in opioid hospital admissions. The majority of deaths due to prescription opioids are caused by oxycodone. From 2008 to 2010, oxycodone prescriptions have increased by 42% in Nassau County and 23% in Suffolk County.³ It's hard to remain blind to the situation. Recent news reports are filled with overdoses, pharmacy robberies, and physician misconduct. A recent instance was with Dr. William Conway in Baldwin who was charged with illegally distributing medication that resulted in patient harm and/or death. The severity of this ongoing crisis reveals the need for continued interventions such as the expansion of the Narcan® Pilot Program.

sion of the Narcan® Pilot Program.

Through the Narcan® Pilot Program recently initiated in Suffolk County, more than 300 police officers have been trained regarding the use of intranasal Narcan®, a drug that can be used to treat overdoses. Positive outcomes have already been displayed as the drug has been administered three times since August 1st in what would have been three potentially fatal overdoses.⁴ With the increase in opioid abuse, it is completely reasonable and valid for police officers and EMS workers to carry this life-saving emergency medication. Deaths resulting from overdoses usually occur within 1 to 3 hours of ingestion. The time frame between when the patient overdoses to the arrival of EMS greatly varies with each situation. More often than not, opioid overdoses are in the presence of others.⁵ This raises the question, if people are present why is it that 911 calls are sometimes delayed? Unfortunately, the presence of others does not always mean that a 911 call will happen immediately.

In many cases, individuals who are present during an overdose try to revive the person themselves using techniques such as immersing the person in a cold bath or injecting them with stimulants. Being that the individuals present might be drug users as well, it is common for them to become frightened of the legal implications once 911 is called. Even with the Good Samaritan Law passed in 2011, which gives the individual who overdosed and the individual who calls 911 legal amnesty, some are still hesitant to seek medical help.⁵ Due to the various ineffective interventions by peers, medical care can be greatly delayed. This delay needs to be minimized. In an overdose, the longer one waits before an antidote or measures is taken to rid the drug from the body, the more likely the person is to lose his or her life. The need for police officers and EMS to have the Narcan® Emergency Kit is essential in overdose situations; however, can this benefit expand even further if users themselves had access to the emergency kit?

Currently, the state of New York has Naloxone Distribution Programs which allow users and non-users to obtain naloxone with a valid prescription and proper training regarding the use of the drug. Some people might argue this is promoting drug abuse. Yes, it very well might be; however, what type of message does the distribution of condoms or Plan B send out to the public? Or the ability for people to obtain syringes due to the public health concerns about users sharing needles? Are they not promoting behavior that some people might also argue unethical? There is a fine line between life and death during an overdose and no value can be placed on an individual's life. Granted there are still several concerns with allowing the distribution of naloxone: such as people having misconceptions that medical attention is not required once the drug is administered and another concern that with administration of naloxone, more opioids can now be ingested safely. With proper training these concerns can be significantly minimized.

Intranasal naloxone has an onset of action of 8 to 13 minutes and a relatively short half-life. Once the drug wears off, the individual can have recurrent respiratory depression. Medical attention is absolutely necessary during an overdose regardless of whether or not naloxone is administered. During training, this is a crucial concept that must be instilled in the individuals. Other concerns consist of users possibly readministering more opioids. Currently, there are no documented cases in which Narcan® distribution programs have had problems with the readministration of opioids following naloxone administration.⁵ It is an absolute necessity that healthcare professionals counsel patients and assess their understanding of the drug in order to avoid any negative consequences from distributing naloxone.

Prescription drug abuse has been casting a shadow over America for years causing deaths, broken families, and economic hardships. It is an issue that must be faced head on and presents an opportunity for health care professionals to take a stand

on saving lives. Providing comprehensive counseling and training if needed are key ways that health care professionals can become involved. On Long Island, there have been steps made to combat this crisis in order to save lives. The three lives saved this past summer since the initiation of the Narcan® Pilot Program in Suffolk County are not just three lives, they are individuals with families and friends who are forever thankful to those police officers. The distribution of naloxone is a way to prevent overdose victims from crossing that fine line between life and death, and hopefully seeing it as a wake-up call. Take a stand and give patients their lives back. Everybody deserves a second chance.

SOURCES:

1. Burroughs WS. *Junky*. New York: Penguin Books; 1977.
2. Centers for Disease Control. Policy Impact: Prescription Painkiller Overdoses. December 19th, 2011. Available at: <http://www.cdc.gov/homeandrecreationalafety/rxbrief/>. Accessed October 20th, 2012.
3. New York State Office of Attorney General. Internet System for Tracking Over-Prescribing (I-Stop): A Proposal Addressing New York's Prescription Drug Abuse and Drug Diversion Epidemic. 2011. Available at: <http://www.ag.ny.gov/sites/default/files/press-releases/2012/ISTOP%20REPORT%20FINAL%201.10.12.pdf>. Accessed October 20th, 2012.
4. Newsday: Suffolk officer saves life through Narcan® pilot program. August 2nd, 2012. Available at: http://www.news12.com/archive/articleDetail.jsp?articleId=329227&position=1&news_type=news. Accessed October 20th, 2012.
5. Kim D, Irwin KS, Khoshnood K. Expanded Access to Naloxone: Options for Critical Response to the Epidemic of Opioid Overdose Mortality. *Am J Public Health*; March 2009: 99(3).

ADVERSE EVENTS FROM INGESTION OF OTC EYE DROPS AND NASAL SPRAYS

BY: TASNIMA NABI, ASSISTANT STUDENT EDITOR

The FDA has issued warnings on accidental ingestion of over-the-counter eye drops and nasal sprays because they can cause serious harm in children at and under the age of five. Ingestion of as little as 0.6 ml of OTC nasal decongestants and redness-relief eye drops has been reported to require hospitalization.¹

The FDA collected data reported to their Adverse Event Reporting System databases and to the National Electronic Injury Surveillance System – Cooperative Adverse Drug Event Surveillance (NEISS-CADES) database between 1985 and 2012 on accidental ingestion of products containing tetrahydrozoline, oxymetazoline, or naphazoline.¹ Tetrahydrozoline, oxymetazoline, and naphazoline are imidazolines used to narrow blood vessels in irritated eyes and congested noses. When used in topical and nasal administration, there is little absorption of imidazolines into the general circulation. Oral ingestion, however, leads to systemic effects.² Of the 96 cases, 53 required hospitalization due to nausea, vomiting, lethargy, tachycardia, decreased respiration, bradycardia, hypotension, hypertension, sedation, somnolence, mydriasis, stupor, hypothermia, drooling, and/or coma.¹

It is a common misconception that even though they are used in very sensitive areas, OTC eye drops and nasal sprays are safe and harmless since one does not need a prescription to acquire them. It is important for pharmacists to stress that these med-

ications are safe and harmless when used as directed.

As a general precaution, medicine should be kept out of reach of children. A large part of this problem, however, lies in how OTC eye drops and nasal sprays are bottled; neither are contained in child-resistant packaging. Although a proposal was made by the U.S. Consumer Product Safety Commission in January 2012 to require CR (child-resistant) packaging of products containing at least 0.08 mg of imidazole derivatives, the rule still has not been finalized.^{1,2} There is no doubt that a push for child-resistant packaging on these medicines will greatly reduce the risk of harm due to accidental ingestion.

SOURCES:

1. FDA Drug Safety Communication: Serious adverse events from accidental ingestion by children of over-the-counter eye drops and nasal sprays. U. S. Food and Drug Administration Web site. <http://www.fda.gov/Drugs/DrugSafety/ucm325257.htm#list>. Accessed November 21, 2012.
2. Ballot Vote Sheet. United States Consumer product Safety Commission Web site. <http://www.cpsc.gov/library/foia/foia12/brief/imidazolines.pdf>. Accessed November 21, 2012.



Help someone break out of addiction! Visit: teenchallengeusa.com

HIV/AIDS WORD SEARCH PUZZLE

BY: TAMARA YUNUSOVA, ASSISTANT STUDENT EDITOR

Note: December is HIV/AIDS awareness month. Listed below are the generic names of various NRTIs, NNRTIs and PIs. Here's the catch - the puzzle also contains the brand equivalents. View answers on **Page 17**

M M Z Z A E O Z Q Q M F R E A
F C M O Y M S R Z Z N E U W V
R E Y A T A Z A I O T M A J I
R Y F E G R D M R R I M S U R
R X D U E F A V O I X N C W T
A J K V R C I V R B V L P N M
Z F M D E R I S N A M N A A E
I V S Y S R T P E C A R I V L
A M G V C H O L O P U U N L Y
G O T I R E Z N T D I E P P E
E L M E I A K O E D P V N W R
N D T S P R R O B K K C I V E
Z Q N P T Q G C S X W F S R A
J N T J O C H Z I M J X G F J
X P C W R F U V F T O N K S H

FIND THE FOLLOWING WORDS:

EMTRICITABINE

LAMIVUDINE

ZIDOVUDINE

STAVUDINE

ABACAVIR

RITONAVIR

NELFINAVIR

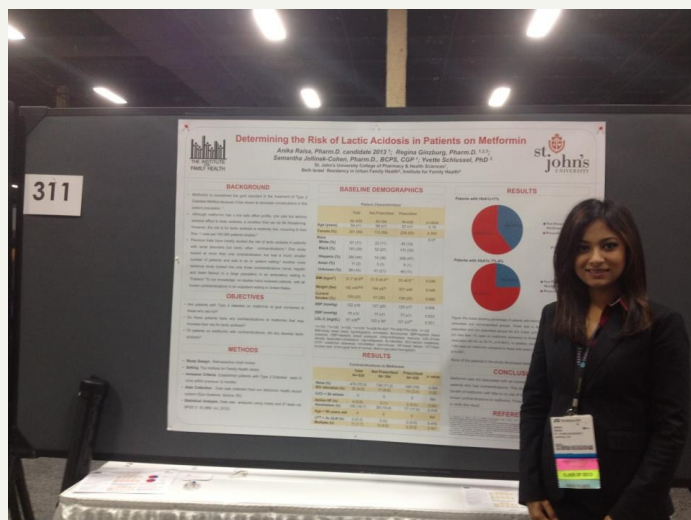
RILPIVIRINE

DELAVIRDINE

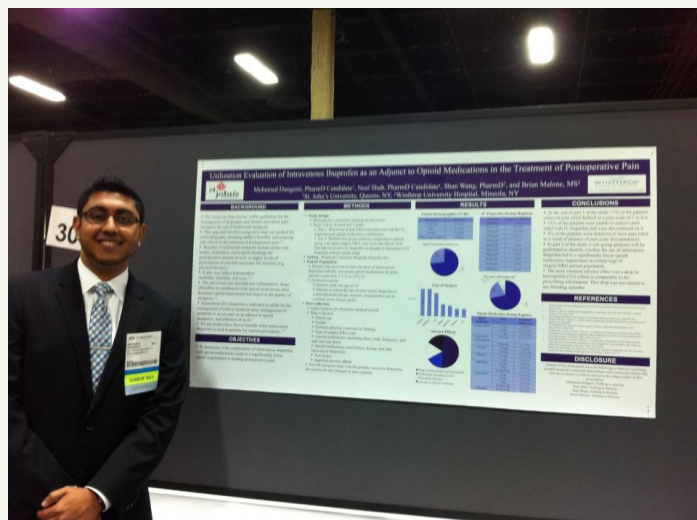
SAQUINAVIR

ATAZANAVIR

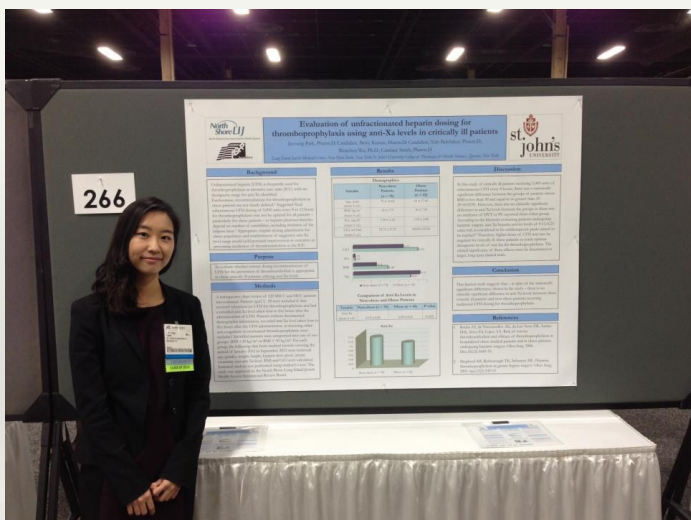
REPRESENTING ST. JOHN'S UNIVERSITY AT ASHP MIDYEAR 2012



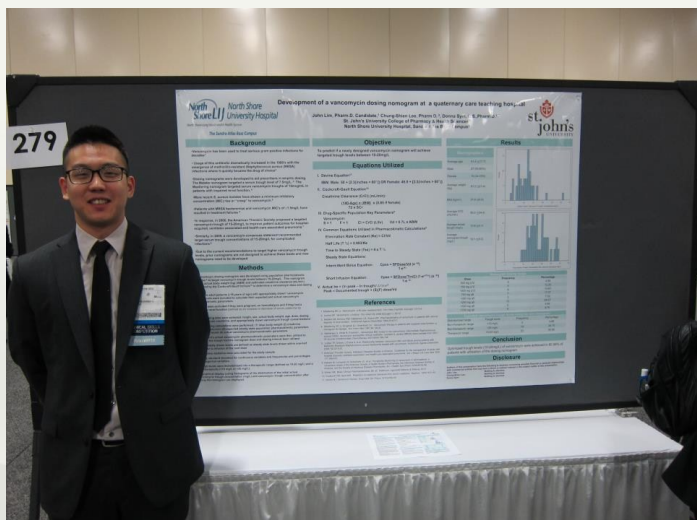
Anika Raisa, PharmD Candidate 2013, with her poster titled "Determining the Risk of Lactic Acidosis in Patients on Metformin."



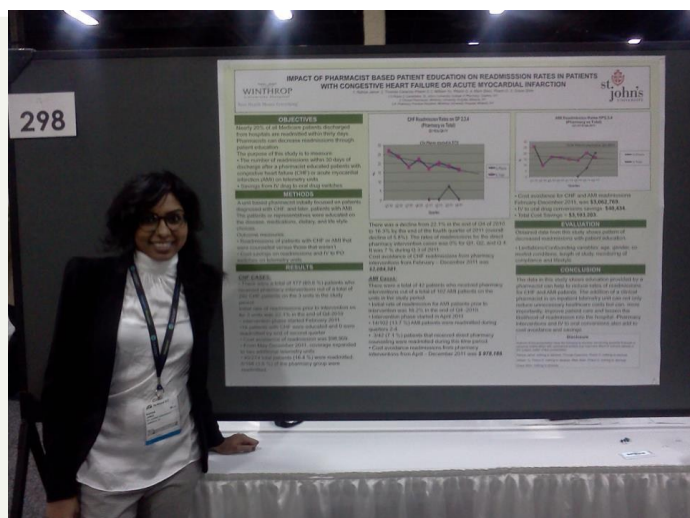
Mohamed Jameel Dungersi, our Associate Student Editor and PharmD Candidate 2013, with his poster titled "Utilization Evaluation of Intravenous Ibuprofen as an Adjunct to Opioids in the Treatment of Postoperative Pain."



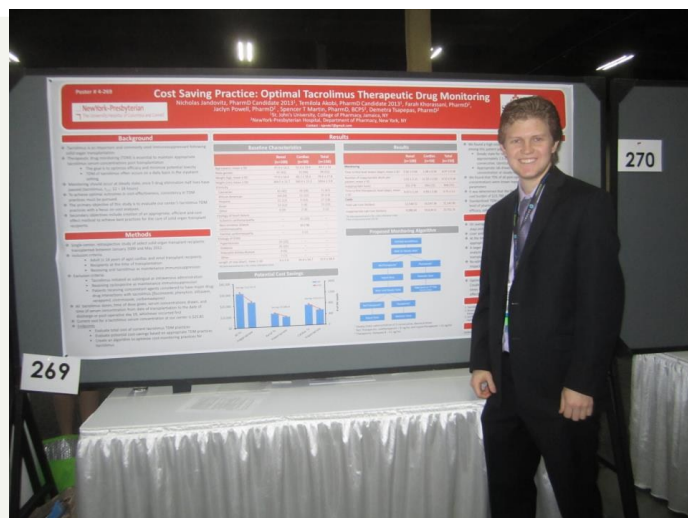
Betsy Kurian (not pictured) and her partner Jayoung Park, PharmD Candidates 2013, with their poster on the "Evaluation of Unfractionated Heparin Dosing for Thromboprophylaxis using Anti-Xa Levels in Critically ill Patients."



John Lim, PharmD Candidate 2013, with his poster titled "Development of a Vancomycin Nomogram at a Quaternary Care Teaching Hospital"



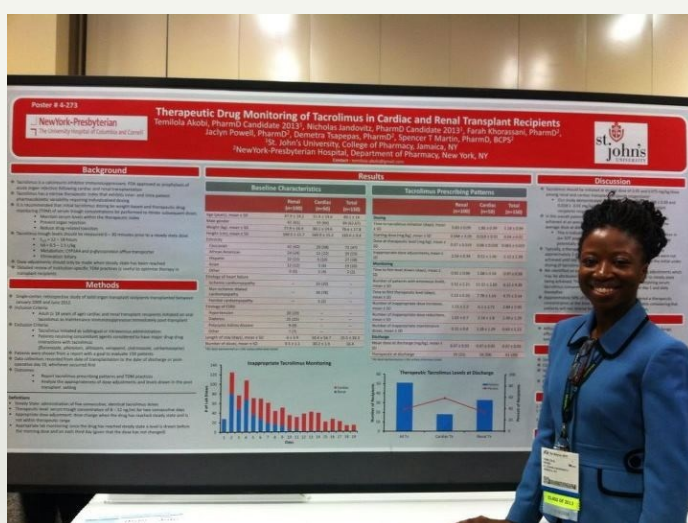
Rahisa Jamal, PharmD Candidate 2013, with her poster titled "Impact of Pharmacists based Patient Education on Readmission Rates in Patients with Congestive Heart Failure or Acute Myocardial Infraction."



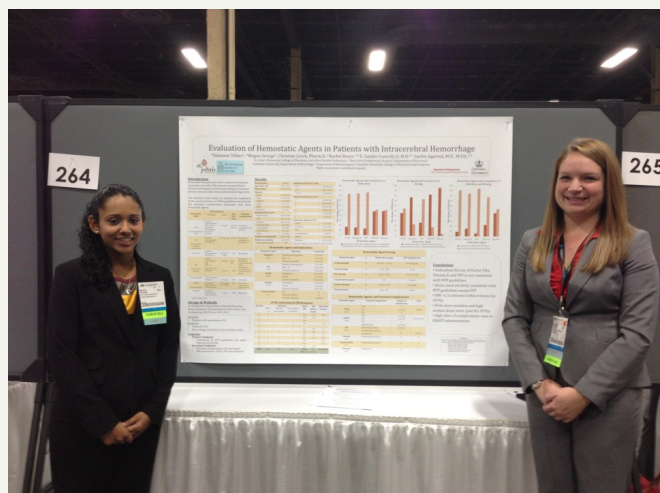
Nicholas Jandovitz, PharmD Candidate 2013, with his poster titled "Cost Saving Practice: Optimal Tacrolimus Therapeutic Drug Monitoring"



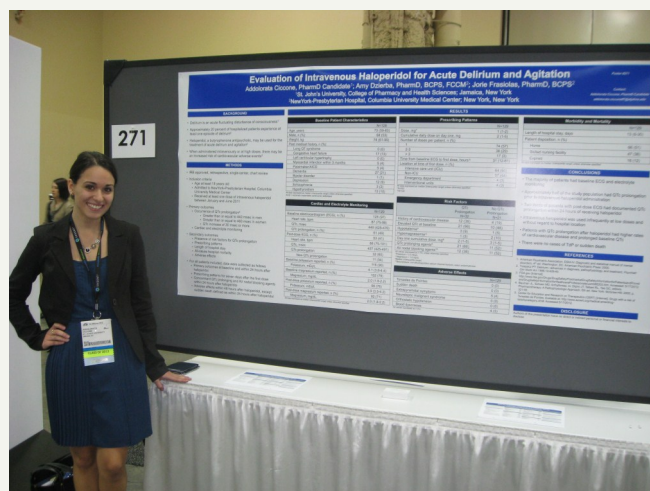
Tracey Cannova (not pictured), Sibyl Cherian, and Nandini Puranprashad, PharmD Candidates 2013, with their poster titled "Documentation of Allergies in Hospitalized Older Adults."



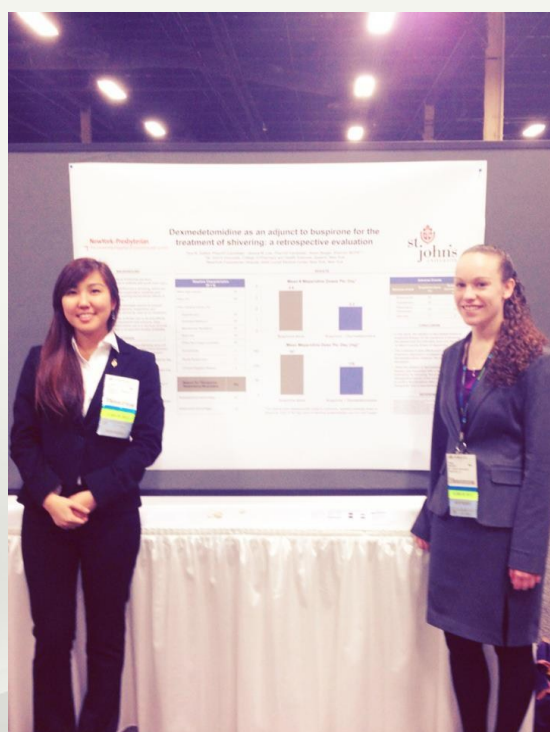
Temilola Akobi, PharmD Candidate 2013, with her poster titled "Therapeutic Drug Monitoring of Tacrolimus in Cardiac and Renal Transplant Recipients."



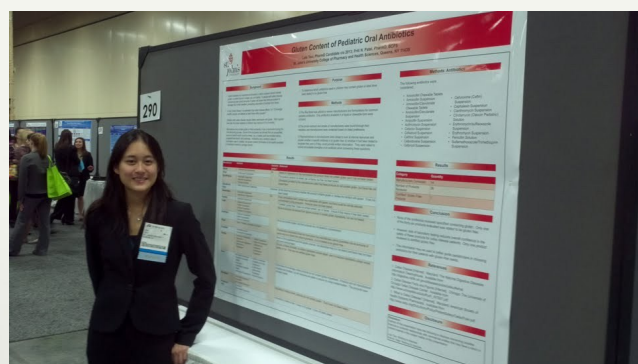
Our Associate Student Editor Shannon Tellier with her partner Magon George, PharmD Candidates 2013, with their poster titled "Evaluation of Hemostatic Agents in Patients with Intracerebral Hemorrhage."



Our very own Co-Copy Editor and PharmD Candidate 2013, Addolorata Ciccone, with her poster titled "Evaluation of Intravenous Haloperidol for Acute Delirium and Agitation."



Jessica Lee and Tara Seifert, PharmD Candidates 2013, with their poster titled "Dexmedetomidine as an Adjunct to Buspirone for the Treatment of Shivering: A Retrospective Evaluation."



Lois Tsui, PharmD Candidate 2013, with her poster titled "Gluten Content of Pediatric Oral Antibiotics."

Drug use evaluation of dabigatran at NewYork-Presbyterian Hospital / Columbia University Medical Center

Peter Campbell, PharmD Candidate, c/o 2013

Timothy Lam, PharmD Candidate, c/o 2013

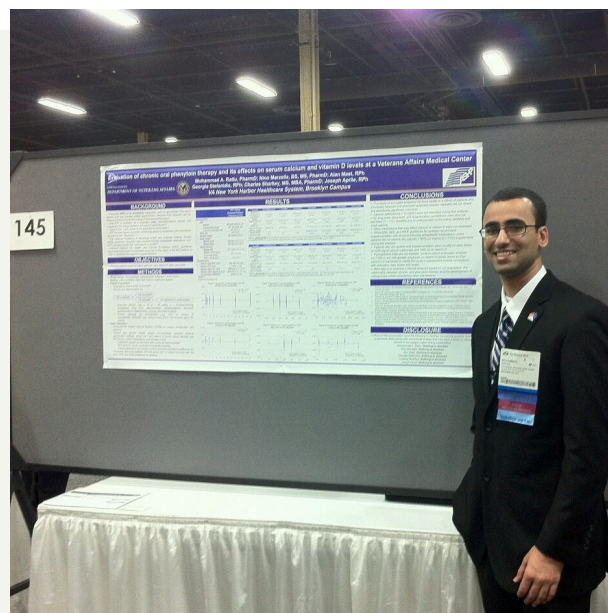
Iran H. Tran, PharmD, BCPS

Pharmacy Student, St. John's University College of Pharmacy and Health Sciences, Jamaica, New York

Clinical Assistant Professor, St. John's University College of Pharmacy and Health Sciences, Jamaica, New York; New York Presbyterian Columbia Medical Center, Washington Heights, New York



BACKGROUND	OBJECTIVES	METHODS												
<p>Background:</p> <p>Dabigatran is a P2Y₁₂ receptor inhibitor that blocks platelet aggregation and is used for the prevention of stroke in patients with atrial fibrillation (AF).</p> <p>The use of dabigatran has increased significantly in the last few years, with an increase in the use of dabigatran in the elderly population.</p> <p>However, the use of dabigatran in the elderly population is limited by its renal clearance, which is decreased in the elderly.</p> <p>The purpose of this study was to evaluate the use of dabigatran in the elderly population and to determine if there was a need for dose adjustment.</p>	<p>Objectives:</p> <p>To determine the use of dabigatran in the elderly population.</p> <p>To determine if there was a need for dose adjustment in the elderly population.</p> <p>To determine if there was a need for renal function monitoring in the elderly population.</p>	<p>Methods:</p> <p>A retrospective chart review was conducted of all patients who were prescribed dabigatran in the last 12 months.</p> <p>Data was collected on age, sex, renal function, and dose of dabigatran.</p> <p>Statistical analysis was performed using SPSS software.</p>												
EVIDENCE	RESULTS													
<p>About This</p> <p>Background: The use of dabigatran in the elderly population was found to be significantly higher than in the non-elderly population.</p> <p>There was a significant correlation between age and the use of dabigatran.</p> <p>There was a significant correlation between renal function and the use of dabigatran.</p> <p>Conclusion: The use of dabigatran in the elderly population was found to be significantly higher than in the non-elderly population.</p> <p>There was a significant correlation between age and the use of dabigatran.</p> <p>There was a significant correlation between renal function and the use of dabigatran.</p>	<p>Primary Endpoints</p> <table><tr><th>Percentage of Patient (%)</th><th>Study Population</th></tr><tr><td>DLE (17)</td><td>82.43</td></tr><tr><td>Secondary Endpoints</td><td>Percentage of Patient (%)</td></tr><tr><td>DLE (17)</td><td>82.43</td></tr><tr><td>Other Secondary Endpoints</td><td>Percentage of Patient (%)</td></tr><tr><td>DLE (17)</td><td>82.43</td></tr></table>	Percentage of Patient (%)	Study Population	DLE (17)	82.43	Secondary Endpoints	Percentage of Patient (%)	DLE (17)	82.43	Other Secondary Endpoints	Percentage of Patient (%)	DLE (17)	82.43	<p>Authors' Disclosures</p> <p>The authors report no conflict of interest and no off-investigation.</p>
Percentage of Patient (%)	Study Population													
DLE (17)	82.43													
Secondary Endpoints	Percentage of Patient (%)													
DLE (17)	82.43													
Other Secondary Endpoints	Percentage of Patient (%)													
DLE (17)	82.43													
<p>Key Messages</p> <p>The use of dabigatran in the elderly population was found to be significantly higher than in the non-elderly population.</p> <p>There was a significant correlation between age and the use of dabigatran.</p> <p>There was a significant correlation between renal function and the use of dabigatran.</p>	<p>Conclusions</p> <p>The use of dabigatran in the elderly population was found to be significantly higher than in the non-elderly population.</p> <p>There was a significant correlation between age and the use of dabigatran.</p> <p>There was a significant correlation between renal function and the use of dabigatran.</p>	<p>REFERENCES</p> <ol style="list-style-type: none">1. 1. J. Am. Coll. Cardiol. 2015; 65: 1015-1025.2. 2. J. Am. Coll. Cardiol. 2015; 65: 1015-1025.3. 3. J. Am. Coll. Cardiol. 2015; 65: 1015-1025.												



Timothy Lam and Peter Campbell, PharmD Candidates 2013, presented on their poster titled “Drug Use Evaluation of Dabigatran at NewYork-Presbyterian Hospital / Columbia University Medical Center.”

Our former Editor-in-Chief, Dr. Mohammad Rattu, with his poster titled “Evaluation of Chronic Oral Phenytoin Therapy and its Effects on Serum Calcium and Vitamin D Levels at a Veterans Affairs Medical Center.” He is currently a PGY-1 Resident at the VA NYHHS.

“We are St. John’s!”

Right: St. John’s University College of Pharmacy and Health Sciences Faculty and Student Pharmacists at the New York State ASHP Midyear Reception.

Photo Credit: Jaclyn Scott, Pharm.D. Candidate 2013

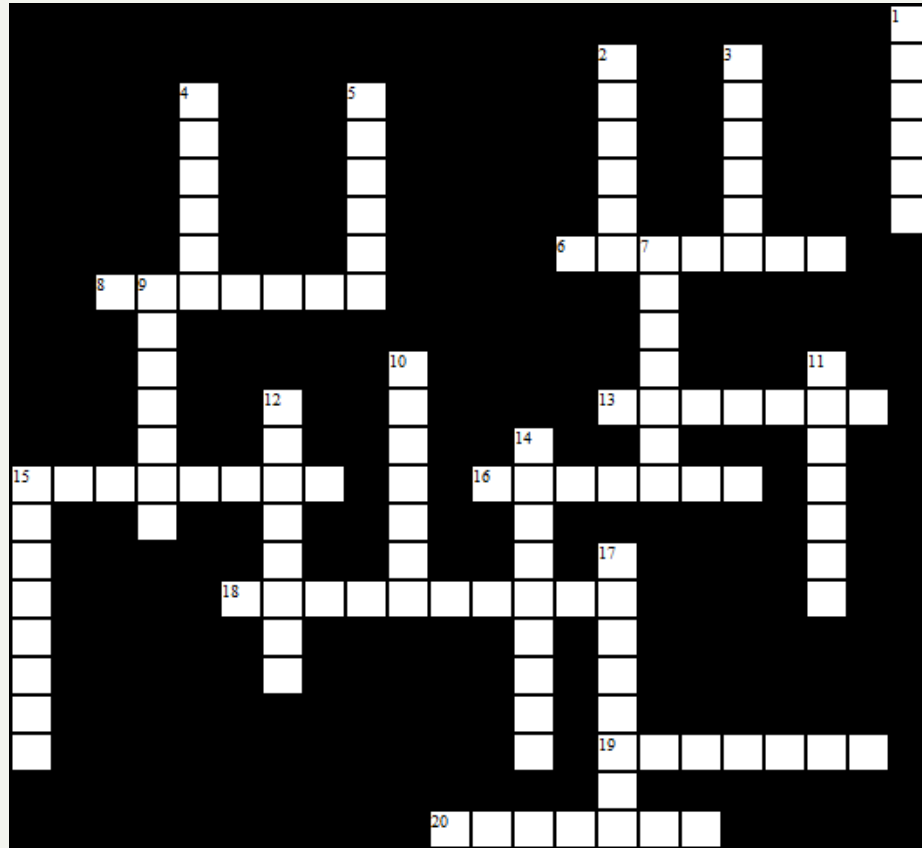


SEND US PHOTOS OF ANY EVENTS YOU ATTEND!
OUR EMAIL: RHOCHIS@GMAIL.COM

CROSSWORD PUZZLE

BY: MAHDIEH DANESH YAZDI, ASSOCIATE STUDENT EDITOR

Directions: Which brand name medications correspond to these generic names and indications?



Across

6. Tofacitinib; mod-severely active rheumatoid arthritis
8. Icosapent ethyl; hypertriglyceridemia
13. Pertuzumab; HER2+ metastatic breast cancer
15. Elvitegravir + Cobicistat + Emtricitabine + Tenofovir; HIV-1 infection
16. Azelastine + Fluticasone; symptoms of seasonal allergic rhinitis
18. Linagliptin + Metformin; type II diabetes
19. Taliglucerase alfa; Gaucher's disease
20. Peginesatide; anemia due to CKD

Down

1. Lorcaserin; chronic weight loss management
2. Ivermectin; head lice
3. Phentermine + Topiramate; chronic weight management
4. Fentanyl sub-lingual spray; breakthrough cancer pain
5. Axitinib; advanced renal cell carcinoma
7. Linaclotide; IBS with constipation
9. Teriflunomide; multiple sclerosis
10. Perampanel; partial-onset seizures
11. Avanafil; erectile dysfunction
12. Ivacaftor; cystic fibrosis with G551D mutation
14. Mirabegron; overactive bladder
15. Lucinactant; prevention of respiratory distress syndrome in premature infants
17. Pazopanib; soft tissue sarcoma

A MEMORABLE MOMENT: THE WHITE COAT CEREMONY

BY: TASNIMA NABI, ASSISTANT STUDENT EDITOR

The most memorable moment of a professional's career is when he or she is handed a symbol of what represents the culture and esteem of the chosen profession. For pharmacy students embarking upon a very intensive yet rewarding path, a white coat welcomes us into the pharmacy profession. The coat allows us to be recognized as competent and dedicated individuals with the determination to serve alongside other professionals in the healthcare field.

On November 18, 2012, St. John's University College of Pharmacy and Health Sciences held the 13th Annual Pharmacy White Coat Convocation. The Class of 2016 is known for being the largest class of Pharmacy students and holding this event was not an easy task. As per usual, the event was scheduled to take place during Pharmacy month in Marillac Auditorium. However, due to the venue size, limitations were placed on how many family members could attend. Students were upset and signed a petition that went viral. Gratefully, the College of Pharmacy and Health Sciences took our concerns into great consideration; they made accommodations for us and changed the venue to Carnesecca Arena. In addition, the college webcasted the ceremony for those who could not attend. On behalf of our entire class, I thank St. John's University and Dr. Brocavich for organizing an event that allowed us to share the special day with all of our family and friends.

The event commenced with Dr. Brocavich welcoming students, faculty, family, and friends. Caitlin McElroy, Assistant to the Dean, led a special prayer for the recovery of all affected by Hurricane Sandy; it is very unfortunate that so many of our students and faculty have been gravely impacted, and I sincerely hope and pray for everyone still suffering from the storm's aftermath. Next, Dean Zito shared his sentiments on everything that a white coat symbolizes. He explained that putting on a white coat is like putting on the history of the profession. A white coat is not just a coat we wear every day, but also a commitment to provide the best pharmaceutical care for our patients. A white coat identifies us

as people who are trusted for our knowledge and respected because of our skills, abilities, and commitment.

Dr. Mangione, Interim Provost, reminded us of all the privileges we have as students at St. John's University. He told us that even though we have earned our white coats, there is still so much to learn and still so much more to do. He advised that we recognize our mentors and that we utilize all our opportunities. Most importantly, however, he highlighted the Vincentian quality of our profession; he highlighted the importance in how many lives we will save and how incredibly satisfying it will be, even if it goes unnoticed. Dr. Mangione's words were very humbling. The ceremony truly would not have been complete without his presence and we are grateful that he was able to attend.

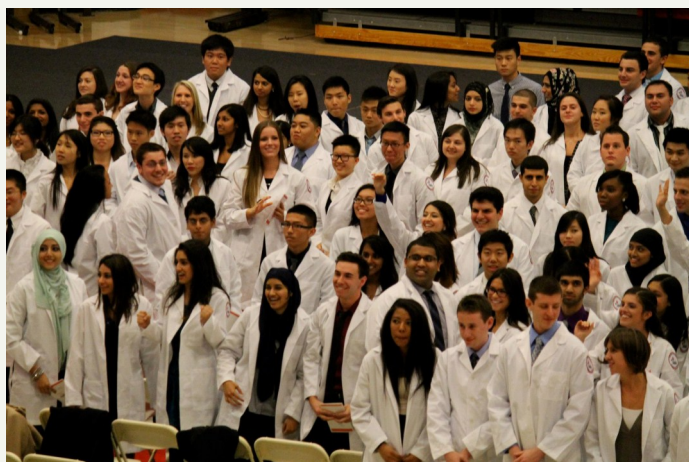
Cathy Y. Poon, an Alumni of St. John's University College of Pharmacy and Allied Health Professions and Vice Dean and Professor at Philadelphia College of Pharmacy, spoke wise words about finding where our passions lie. She shared that one of the most meaningful things in her life was her education at St. John's University, mainly because she met some of her greatest mentors here. It was also on her rotation with Dr. Mangione where she found her passion for Pediatric Pharmacy. Dr. Poon stressed that we should make the most of our years at St. John's because it will be where we find what we want to do for the rest of our lives. It was truly inspiring to hear her journey and see how she has made the most of her experiences and degree.

Dr. Brocavich added a final note, taking us back to the day we sat in Marillac Auditorium for the Introductory Seminar for Pharmacy Students. He told us on the first day of class that six years seems like forever, but that time will pass by before we know it. And it already has. As he told us to prepare to come onstage to receive our white coats, it felt surreal; it felt like our first year in pharmacy school was only a few months ago. After each of us received our white coats, Dr. Etzel, Assistant Dean

for Pharmacy Student Affairs, congratulated us and led us in the Oath of Commitment.

Hearing all the advice shone a different light on my education. We are so often tied up in assignments and exams that we tend to lose track of our purpose and ultimate goal. We are not just here to get our degrees to practice. We are here to meet and learn from exceptional individuals who have accomplished so much, and who are making an ef-

fort to help us achieve our goals. We are here to gain an experience that we will not find elsewhere. The White Coat Ceremony was not just a celebration of reaching our professional years, but a reminder of all the challenges and opportunities that are ahead of us. The white coat that was put on me is not just a symbol of my profession; it will always represent my personal growth and educational journey at St. John's University College of Pharmacy and Health Sciences.



Photographs published on this page are approved by and are the sole property of Joanna Tam, College of Pharmacy and Health Sciences, and the Rho Chi Post.

All Rights are reserved.

It is unlawful to use these images without expressed written consent.

You can obtain use agreements by contacting the photographer Joanna Tam or write to us at rhochis@gmail.com for more information.



BREAKTHROUGHS IN GENE THERAPY: PHARMACOGENETICS AND VECTORS

BY: TAMARA YUNUSOVA, ASSISTANT STUDENT EDITOR

Gene therapy? You scoff in disbelief as thoughts of designer babies, liberal eugenics, clones, and ruthless dystopian societies begin to reel in the back of your mind. Perhaps you may even stop to recall a scene or two from *Jurassic Park* or *Star Trek*. Undoubtedly, gene therapy has long been a fascination of cinema which has toyed with its numerous dilemmas and awe-inspiring promises to produce some of the most cherished science fiction films of our time. But the ambitious road of gene therapy extends beyond a mere science fiction thrill, breakthroughs in gene therapy have increasingly come to the attention of scientists, bioethicists, politicians and healthcare professionals. Pharmacists are no exception as the vortex of biotechnology lures pharmacogenetics and gene transfer into its center.

Current drug therapy takes a “one size fits all” dosing approach. With failure rates of 20% among effective therapies, this standard dosing approach often leads to inefficacy, toxicity, and adverse drug reactions (ADRs).¹ In fact, it is estimated that ADRs result in 7,000 deaths annually, representing the fourth leading preventable cause of death in United States.¹ How can we account for such failure rates? What causes ADRs and how can we take initiative to prevent them?

Genetics provides us with an answer. Although humans share essentially the same genome, many differences exist amongst individuals due to inherited mutations known as Single Nucleotide Polymorphisms (SNPs).¹ While mutations, or changes in DNA, are associated with certain diseases, scientific studies have shown over 1 million mutations that occur in the human genome and are not disease-related.¹ Once unnatural substances such as drugs are introduced into the body, SNPs begin to take a toll. SNPs can alter an individual’s drug response by

affecting both the coding and non-coding regions of a gene.¹ In coding regions, the occurrence of SNP can terminate the production of the normal/ functioning protein.¹ This occurs because the presence of an SNP alters the nucleotide sequence of a gene which results in an altered amino acid sequence thereby producing a different protein instead of the normal functioning protein.

For instance, if an SNP occurred in a gene that codes for a form of drug metabolizing cytochrome P-450 enzyme, it would alter the gene resulting in a poor metabolizer.¹ As a result, the new enzyme is metabolizing the drug at a considerably decreased rate than the normal metabolizer causing decreased drug elimination.¹ If the drug dosage is not lessened for a patient with this SNP to account for slower metabolism, the patient faces ADRs risks and potential toxicity. Likewise, an SNP that leads to an increased metabolizer can also result. In both cases, the normal dosage can no longer be administered and the dosage has to be modified in accordance to the gene charges in order to avoid any unwanted effects.

While SNPs in coding regions hinder the production of a normal protein, DNA changes in non-coding regions alter how the gene is regulated. The discovery of SNPs has underscored the importance of pharmacogenetics which is concerned with understanding how genes influence drug metabolism. Knowing a patient’s metabolizing characteristics can guide the selection of an effective drug therapy and also increase patient safety by guiding drug dosage.¹ Such pharmacogenetic information can enable pharmacists to provide their patients with personalized medicine, tailoring drug therapy to a patient’s unique genetic makeup.

As current medicine veers toward individualized therapy, pharmacists are at the forefront of initiating change. Through the use of genetic screening, pharmacists can evaluate genes that encode certain drug metabolizing enzymes before dosing a drug. Such information can then be used to determine the appropriate drug as well as optimal dosing while minimizing and avoiding toxicity.

Genetic screening is only one of the targeted applications of gene therapy. Once a defective gene is found to contribute to the cause and progression of a disease, replacement genes can then be implemented. Current methods of integrating the replacement gene or transgene are performed by using vectors, which are vehicles that transport the transgene into the target cells.³ This transduction can be performed with cultured cells (*ex vivo*) or cells residing in the body (*in vivo*).³

Defective gene replacement is more than a theory. Currently, viral vector therapy has been used to treat certain cancers. Retroviruses are a type of viral vector in which the RNA virus integrates into the host cell genome and replicates during cell division and therefore can make permanent alterations. Retroviruses have demonstrated some success in cancer patients. In 2003, a study that employed retroviral gene therapy to target cyclin G1 gene in treatment of pancreatic cancer was conducted.² The study suggests that the drug is well tolerated and may control tumor growth in patients with chemotherapy-resistant pancreatic cancer.² Retroviruses have also been used to develop cancer vaccines devised to stimulate the immune system to recognize and destroy cancer cells.² Retroviruses are not the only type of vector therapy being researched. Adenoviruses, another type of viral vector, consist of nucleic acid coated with a protective coat of protein called capsid and lack an outer lipid bilayer. Unlike retroviruses, adenoviruses do not replicate and therefore efficiently target non-dividing cells. Ade-

noviruses instigate alterations that are not permanent.²

Both of the vectors discussed above are known as gene delivery vectors, and as the name itself implies, both serve as agents of specific gene delivery. In order to effectively deliver a transgene into a particular cell, the genetic material must be packaged into a structure which bears a ligand specific to the cell's receptors. Gene transcription, another method of transduction, is more selective and concerned primarily with targeting tumor cells. By utilizing a promoter that is transcriptionally active in transformed cells only, it is theoretically possible to restrict the expression to malignant cells²².

But if vector systems are to become an optimal means of combating diseases, there are many setbacks and challenges that need to be overcome. In order to produce a particular therapeutic response, sufficient amounts of transgene must be inserted into a sufficient number of recipient cells. Due to their small packaging capacities, viruses often result in inefficient gene delivery and inadequate gene expression. Also, depending upon their discrete biological characteristics, viruses are limited to tissues that express the corresponding receptor. Thus, certain viruses are compatible with certain tissues and therefore limited in their applicability. Insertional mutagenesis is another major problem. A transgene must be inserted into the correct chromosomal position of the correct cell nucleus so that it will not interfere with normal gene function and expression.

Despite some of its uprising challenges, gene therapy has witnessed substantial progress promising cures for some of the most debilitating illness in the not too distant future.

SOURCES:

1. Derr, A., Kane D., Kisor, F., Likovich, M., Spra-

- gue, E., Personalized medicine and the future of pharmacy practice. In Pharmacy Times. <https://secure.pharmacytimes.com/lessons/201004-01.asp> Accessed October 27, 2012.
2. Sadelain, M. & Ronald, G. (2001) Imaging transgene expression for gene therapy. Journal of Pharmacy Practice, 14. <http://jpp.sagepub.com/content/14/5/376> Accessed

October 27, 2012.

3. Smith, J. (1996) Gene therapy: Opportunities for pharmacy in the 21st century. American Journal of Pharmaceutical Education, 60. <http://archive.ajpe.org/legacy/pdfs/aj6002213.pdf> Accessed October 27, 2012.

HIV/AIDS WORD SEARCH PUZZLE SOLUTIONS

BY: TAMARA YUNUSOVA, ASSISTANT STUDENT EDITOR

+	+	+	+	+	E	+	+	+	+	+	R	+	A
+	+	+	+	+	+	S	+	+	+	N	E	+	V
R	E	Y	A	T	A	Z	A	+	O	T	+	+	I
+	+	+	+	+	+	+	+	R	R	+	+	+	R
+	+	+	+	+	+	+	V	O	I	+	+	+	T
+	+	+	+	R	+	I	V	+	+	V	+	+	N
Z	+	+	+	E	R	I	+	+	+	+	N	A	+
I	+	+	+	S	R	T	P	E	C	A	R	I	V
A	+	+	+	C	+	+	+	+	P	U	+	+	+
G	+	T	I	R	E	Z	+	+	D	I	+	+	+
E	+	+	+	I	+	+	+	E	+	+	V	+	+
N	+	+	+	P	+	+	+	+	+	+	+	I	+
+	+	+	+	T	+	+	+	+	+	+	+	+	R
+	+	+	+	O	+	+	+	+	+	+	+	+	+
+	+	+	+	R	+	+	+	+	+	+	+	+	+

[Return to Page 9?](#)

THE BRAND NAMES ARE:

EMTIRVA®

EPIVIR®

RETROVIR®

ZERIT®

ZIAGEN®

NORVIR®

VIRACEPT®

EDURANT®

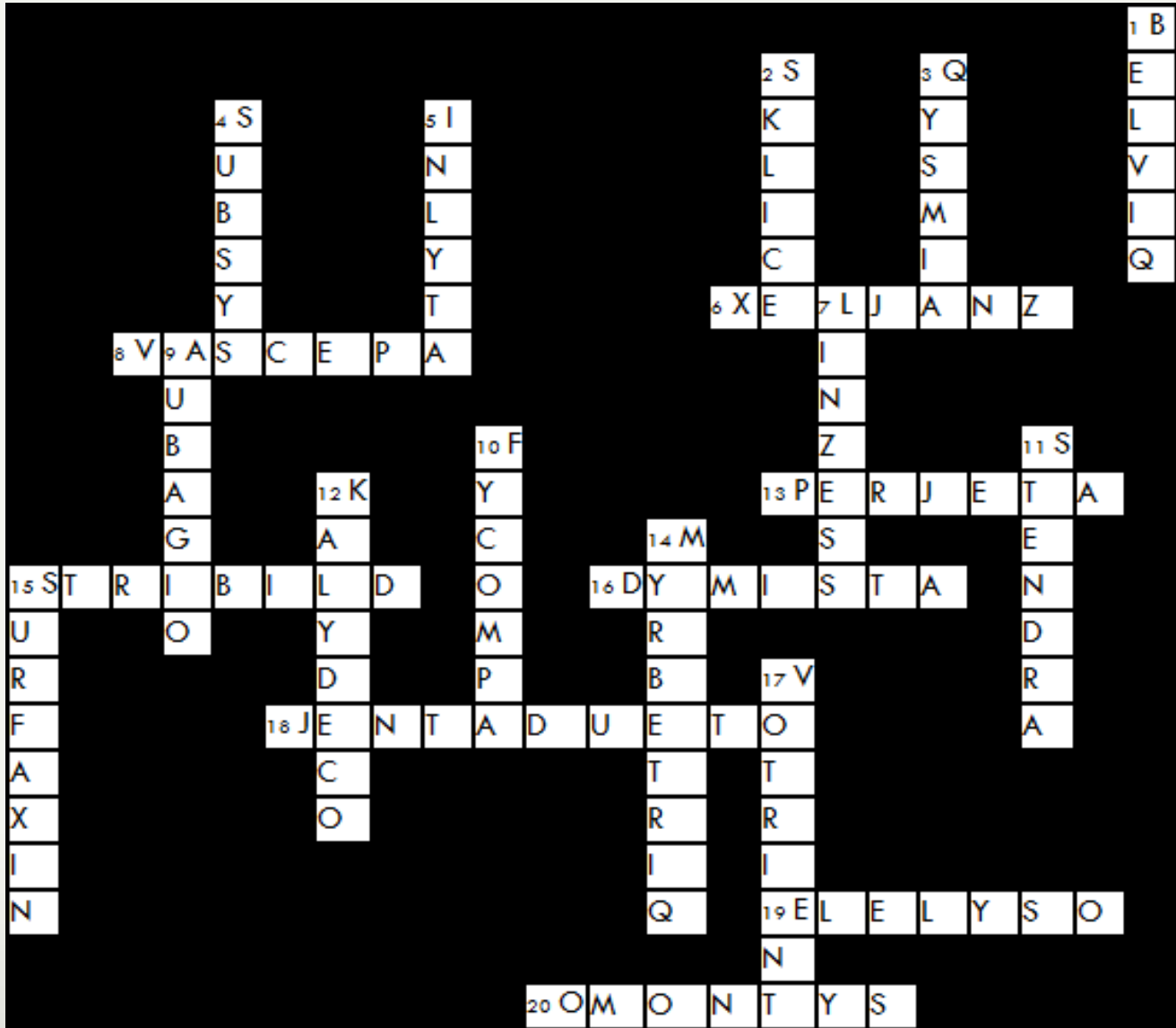
RESCRIPTOR®

INVIRASE®

REYATAZ®

CROSSWORD PUZZLE (SOLUTION)

BY: MAHDIEH DANESH YAZDI, ASSOCIATE STUDENT EDITOR



[Return to Page 14?](#)

Do you enjoy our puzzles?

Send us a suggestion for a brainteaser at rhochis@gmail.com

We will feature your work in our next issue!

LETTER FROM THE EDITORS: WE NEED YOU!

Dear Reader,

We are always looking to engage with each of you. If you are a talented cartoonist or have a passion for art, feel free to contact one of the editors. It is a great way to express yourself and earn a spotlight for your artistic skills while drawing attention to an aspect of the pharmacy profession.

Can't draw? No problem, take pictures instead! We need photographers who can attend campus events and seminars that are related to healthcare or the pharmacy profession. Please feel free to send us the pictures with one or two paragraphs explaining the event. Perhaps you have a passion for writing; if so, feel free to write to us in response to an article you read. Even if it is just a question or a few comments on an article, email us!

Don't like what you see in the newsletter? Then let us know! Tell us what you would like to see in the newsletter, what topics you are interested in, and/or if you wish to read more about a specific topic. The newsletter is for you; so, your feedback is very important to us.

Do you have some clinical knowledge or experiences to share? Feel free to send us interesting drug information questions you have answered or share what you have learned throughout your rotations.

This is a commitment-free way to stay involved with the pharmacy profession. Contributing to our newsletter does not obligate you to contribute to every issue. We are more than happy to have guest authors and talented students work with us whenever they are available or free to do so. If you have any questions, comments, and/or concerns, please do not hesitate to email us at: rhochis@gmail.com.

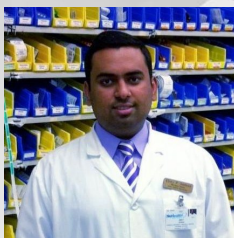
With much gratitude,

The RCP Editorial Team

Image Source: easyvectors.com

RHO CHI POST: EDITORIAL TEAM

CO-EDITORS-IN-CHIEF



@ Steve P. Soman (6th Year, STJ)

Previously known as Ebey P. Soman, I really enjoy writing very opinionated articles. I strongly encourage all readers of our newsletter to respond with their own literary pieces. I look forward to hearing from you, and welcome your comments and constructive criticisms!

@ Neal Shah (6th Year, STJ)



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 currently-published articles, please do not hesitate to email me!

STUDENT EDITORS

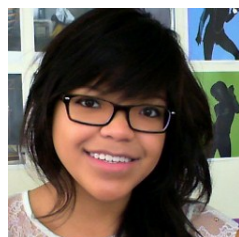


@ Mahdieh D. Yazdi (6th Year, STJ)

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.

@ Mohamed J. Dungersi (6th Year, STJ)

I am enthusiastic about promoting the pharmacy profession, and what better way to do this than by being a part of the Rho Chi Post? Should you have any comments or concerns, feel free to contact me!



@ Marie Huang (6th Year, STJ)

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 witness to an evolving profession, I look forward to keeping you updated! Who knows where we will be tomorrow?

@ Shannon Tellier (6th Year, STJ)

I believe it is important for students and everyone else in the profession to stay informed about current pharmacy events. Rho Chi Post is a great way to continue learning information about what is happening on our campus and in the nation.



@ Addolorata Ciccone (6th Year, STJ)

I am thrilled to serve as a Co-Copy Editor of Rho Chi Post. Whether you are brand new to the world of pharmacy, a seasoned veteran of this profession, or anywhere in between, I hope you find our work engaging, relatable, and informative. I look forward to reading your comments and feedback.



@ Aleena Cherian (5th Year, STJ)



The Rho Chi Post has been a source of current information and great advice to students and professionals in this evolving profession. After years of experience in media and graphics-related work, it is now my privilege to be a part of this endeavor as a Co-Copy Editor. I hope you learn as much from future editions of the newsletter as I have, and I welcome your feedback!



CO-COPY EDITORS

RHO CHI POST: EDITORIAL TEAM

CO-COPY EDITORS

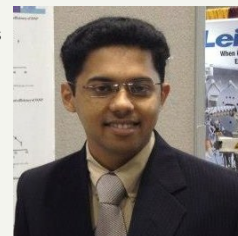


@Katharine Cimmino (4th Year, STJ)

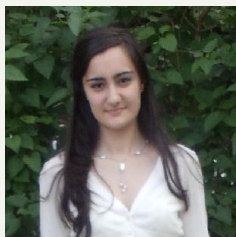
I have always been an avid reader and writer. As a co-copy editor of the Rho Chi Post I am able to merge my passions with the professionalism that comes with aspiring to be a healthcare provider. I am eager to be a part of a publication that promotes my interests and vocation. Contact me at katharine.cimmino09@stjohns.edu

@Bharat Kirthivasan (PhD Candidate, STJ)

I am a doctoral candidate in Industrial Pharmacy researching nanoparticles for delivery to the brain. The only thing I enjoy more than reading a well-written piece of work is writing it. I am glad to work for the Rho Chi Post, and I encourage others to do the same. Email me at: bharatkirthivasan@gmail.com



ASSISTANT STUDENT EDITORS

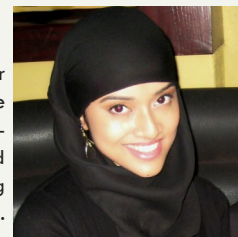


@Tamara Yunusova (2nd Year, STJ)

My name is Tamara Yunusova, and I am a 2nd year Pharm D candidate at St. John's University. I enjoy articulating information in a captivating and insightful way. I hope to make this publication more informative, student-friendly, and innovative. Feel free to contact me: tyunusova93@gmail.com

@Tasnima Nabi (3rd Year, STJ)

Writing has always been my greatest outlet for experience and knowledge, through which I hope to keep you engaged and informed. It is imperative to keep up with our changing profession and community, and I look forward to bringing pertinent information to the newsletter.



@Erica Dimitropoulos (4th Year, STJ)

As pharmacy students, we often fail to keep current with healthcare developments. My aim is to sort through the news and provide quick updates that are important to our profession. Feel free to contact me if there are any topics you would like to see covered in the next issue!

This could be you!

We are looking for creative and motivated students to join the editorial team. If you are interested in becoming a full-time student editor, graphics editor or a assistant student editor for the Rho Chi Post, please contact us at rhochis@gmail.com!



A STUDENT-OPERATED NEWSLETTER BY THE
ST. JOHN'S UNIVERSITY COLLEGE OF PHARMACY AND HEALTH SCIENCES'
RHO CHI BETA DELTA CHAPTER

www.rhochistj.org

RHO CHI

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.

THE RHO CHI POST

MISSION

The Rho Chi Post aims to promote the Pharmacy profession through creativity and effective communication. Our publication is a profound platform for integrating ideas, opinions, and innovations from students, faculty, and administrators.

VISION

The Rho Chi Post is the most exciting and creative student-operated newsletter within the St. John's University College of Pharmacy and Health Sciences. Our newsletter is known for its relatable and useful content. Our editorial team members are recognized for their excellence and professionalism. The Rho Chi Post sets the stage for the future of student-run publications in Pharmacy.

VALUES

Opportunity, Teamwork, Respect, Excellence

GOALS

1. To provide the highest quality student-operated newsletter with accurate information
2. To maintain a healthy, respectful, challenging, and rewarding environment for student editors
3. To cultivate sound relationships with other organizations and individuals who are like-minded and involved in like pursuits
4. To have a strong, positive impact on fellow students, faculty, and administrators
5. To contribute ideas and innovations to the Pharmacy profession

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**

Faculty Advisor: **S. William Zito, PhD**

UPCOMING EVENTS

Dec 13-18: Keystone Symposia Global Health Series

Immunological Mechanisms of Vaccination

Fairmont Château Laurier, Ottawa, Ontario, Canada

December 15: Fellowship Application Deadlines

St. John's University, College of Pharmacy and Health Sciences

8000 Utopia Parkway, Queens, NY

Dec 27-31: APHA-ASP Operation Smoking Cessation

UI College of Pharmacy event at Waterfront Hy-Vee

1720 Waterfront Dr. Iowa City, IA 52240

Dec 28-30: Improving Pain Management in Primary Care Medicine and REMS Certification Topics (CME)

Mandalay Bay Conference Center, Las Vegas, Nevada

Jan 17: Public Health-long term conditions and essential cross sector communication webinar

United Kingdom Clinical Pharmacy Association (UKCPA) and the Royal Pharmaceutical Society (RPS)

Promote your event through us!

Submit the name, location, date, and time of your venue to our editors at:

rhochis@gmail.com

We welcome all pharmacy-related advertisements