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

Inside This Issue

Meet the President: An Interview with Father Levesque

By: Beatrice Popovitz, Staff Editor and Ada Seldin, Staff Editor

In August 2013, St. John's University welcomed Rev. Joseph L. Levesque, C.M., former president of Niagara University, into the community as interim president. Fr. Levesque has an elaborate background in Vincentian leadership and higher education, having taught in various religious institutions such as St. John's Preparatory School in Brooklyn, St. Joseph's Seminary in Princeton, New Jersey, and subsequently Niagara University. Fr. Levesque was a scholar at Mary Immaculate Seminary in Northampton, Pennsylvania., and was ordained as a Vincentian Priest in 1967. He later earned a doctoral degree from The Catholic University of America and an honorary doctorate degree from Christ the King Seminary, in East Aurora, New York. Fr. Levesque also holds honorary degrees from St. John's University and Niagara University. He has held many prestigious positions over the course of his career, including Dean and President of Niagara University, Provincial Superior of the Eastern Province of the Congregation of the Mission (Vincentian Community), and Chair of the Boards at both Niagara University and at St. John's University.

Fr. Levesque has spent much of his life being a Vincentian leader and during this interview we explore his role as our interim president.

Read the Full Interview on Page 21

Single Line Stories

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NEWS

Hospital Drug Shortages

By: Hamid Razaki, PharmD

Drug shortages seen across pharmacies in the United States continue to be an issue in patient care. A drug product shortage is defined as a supply issue that affects how the pharmacy prepares or dispenses a drug product, or that influences patient care when prescribers must use an alternative agent.[1] Drug shortages have steadily risen in frequency over the past decade. In 1996, University of Utah Health Sciences Center (UUHSC) had 3 drug shortages, which quickly jumped to 18 drug shortages by the year 2000. By 2002, UUHSC had 157 shortages.[2] Whether in the hospital or community setting, many details need to be addressed once a prescribed medication is not available due to a shortage in supply. Some examples of these pertinent issues include whether the patient or hospital can afford alternative medications, if the alternative is appropriate in managing the disease-state according to guidelines, what adverse patient outcomes are related to the drug shortages, the consequent delay in medical procedures, etc. There are several factors that go into why we have a drug shortage crisis on our hands. A thorough understanding of why drug product shortages occur is essential for their successful management.[1]

One of the most problematic contributions to drug supply shortages is when the raw and bulk materials are unavailable for drug manufacturers. Issues arise when multiple manufacturers are producing a drug product from which there is only one source of raw material.[3] Around 80% of the raw materials used by manufacturers are imported from outside the United States.[4] Several issues such as the political disruptions, quality of the materials, and climatic changes have all contributed to unavailability of raw and bulk material.[1] Natural disasters such as hurricanes have led to the destruction of raw materials. Also, areas hit by a natural disaster may be in demand for medication themselves. A recent example was in 2005, when Hurricanes Katrina and Rita both caused an increased need for medications and the inability to obtain them[1]. Shortages can also occur when the FDA halts a manufacturer's production due to non-compliance with Good-Manufacturing Practices (GMPs).[3] Resolution of these issues often takes time due to lengthy inspections, injunctions, or seizure of products.[1] When the drug product involved is considered a medically necessary product, the FDA aids the manufacturer in restoring GMPs rapidly.

Voluntary recalls may create shortages, especially when one manufacturer produces majority of a drug product.[3] Recalls usually affect specific lots of medications, due to a concern in safety to the public or due to technical issues such as labeling deficiencies. Manufacturers may also decide to reduce production of certain drug products to reallocate resources for other drug products. Discontinuance of a drug product because of insufficient financial return or a high cost to correct manufacturing issues can cause an unanticipated and serious shortage, especially in the instance of a sole-source or medically necessary product.[4]

Poor inventory practices may also lead to drug shortages. Stockpiling and hoarding medications expected to be out of stock impacts inventory in other pharmacies. Facilities in rural areas face additional inventory challenges due to the distance between them and the distribution centers, along with the difficulty in borrowing items from nearby pharmacies.[1] When an unexpected increase in demand for a certain drug product occurs, production may not be adequate to keep up. Reasons for an increase in demand for a drug product include disease outbreaks, and drug products with newly approved indications and new therapeutic guidelines.

While most view drug shortages as something detrimental, others have tried to take advantage of the current drug shortage crisis. "Grey" market vendors have seen the profitability of pharmaceuticals in high demand, and certain vendors selectively purchase excessive quantities of certain drug products. As the available stock diminishes, these vendors then sell the products to consumers at inflated prices.[3]

Managing drug shortages can be a difficult task in any healthcare setting, but there are resources to aid in its management. Three main resources are currently available for assistance with drug shortages:

the manufacturing company supplying the drug in short supply, the Food and Drug Administration website, and the American Society of Health-System Pharmacists.[3] You can find information about drug product availability, information on alternative agents, reports of emerging drug shortages, and strategies on how to manage drug shortages.[3]

Manufacturers are not obligated to inform pharmacies of drug shortages. Along with not having notifications of drug shortages from manufacturers, calling the company for information may be difficult at times. Often manufacturing companies cannot specify how long a drug shortage may last. Although some hospitals might want to be on the safe side and "stockpile" certain medications, this practice is not recommended. "Stockpiling" may lead to the expiration of drugs that could have been used in other hospitals and increases difficulty in getting the drug to patients that need it the most.[5]

Awareness of drug shortages is imperative for pharmacies throughout the country. At a national level, professional organizations as well as congressional representatives should be aware of the shortage, and actively lobby for action.[2] When congressional representatives are aware of drug shortages, help from the government level can be attained. Drug shortages due to lack of raw material or natural disasters can be resolved quicker with help from congressional representatives. Hospital Pharmacy and Therapeutics committees should collaborate with physicians in coming up with strategies to manage current and future drug shortages. Attempting to compound products or purchase them from compounding pharmacies during shortages can be hazardous to patients due to lack of oversight by the FDA. The FDA has no control over the quality and consistency of the preparation process used.[2] This point was illustrated by the recent outbreak of fungal meningitis in 2012 was caused by compounded methylprednisolone acetate epidural injections. According to the Center of Disease Control and Prevention (CDC), as of January 14, 2013, 678 people in 19 states had contracted the fungal disease, of which 44 had died.[6]

Drug shortages are caused by multiple factors, and these shortages have increased over recent years. It's impractical for pharmacies to avoid all drug shortages, but in the event that shortages do occur, there are increasing strategies and resources that can help facilities manage. Proper planning can help reduce adverse effects in patient care. Collaborative work with pharmacies, physicians, administrators, and manufacturers is imperative for successfully managing these shortages.

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NEWS

Ponatinib Taken Off the Market

By: Sherine Jaison, PharmD Candidate c/o 2015

The leukemia chemotherapy drug ponatinib (Iclusig®) has just been taken off the market. The drug was under investigation by the Food and Drug Administration (FDA) following several reports of serious and life threatening blood clots and narrowing of the blood vessels.[1] Ponatinib is a BCR-ABL tyrosine kinase inhibitor that was approved in December 2012 for the treatment of chronic myeloid leukemia (CML) and Philadelphia chromosome positive acute lymphoblastic leukemia (Ph+ ALL) in patients who are resistant or intolerant to prior tyrosine kinase inhibitor therapy.[2] Philadelphia chromosome is an abnormality in which a part of chromosome 9 is transferred to chromosome 22. Patients who are positive for this chromosome often have chronic myelogeous leukemia or chronic lymphocytic leukemia.[3] Ponatinib was granted accelerated approval by the FDA based on the results from the Phase II PACE trial. In the trial, Ponatinib, used at a dose of 45 mg daily, was seen to have substantial antileukemic activity in patients with CML or Ph+ ALL. The study enrolled patients who were resistant or tolerant to dasatinib or nilotinib, or those who harbored a T313I mutation.[4]

Even though the medication showed significant toxicity during the experimental trials, it was approved because of its clinical advantage. However, the medication warranted a black box warning because of high rates of arterial thrombosis and hepatotoxicity. During the post-marketing follow up, the rates of serious arterial thrombosis substantially increased. Approximately 24% of the patients in the Phase II clinical trial and about 48% of the patients in the Phase I trial experienced serious vascular events such as fatal and life threatening heart attack, stroke and loss of peripheral blood flow, which resulted in tissue death. There were also cases of severe narrowing of blood vessels in the extremities, heart, and brain, which required urgent surgical procedures to restore blood flow.[1] In some instances, patients experienced these side effects as early as two weeks into the treatment. Since both these clinical trials did not include control groups, it is not possible to pinpoint ponatinib as the sole factor for the adverse effects.[1] However, the increasing rates of serious adverse vascular events suggest that these are directly correlated to the drug. In addition, 67% percent of the patients developed hypertension in Phase II clinical trials. Patients also experienced very serious side effects such as blindness or blurred vision when treated with ponatinib.[1]

Earlier in October, Phase III EPIC trial, in which ponatinib was used in patients who were untreated for chronic myeloid leukemia, was discontinued because of high occurrence of thrombotic events.[1] As of right now, healthcare providers may continue patients on ponatinib only for those who are responding to the drug and for whom the benefits outweigh the risk of treatment.[5]

These significant side effects have prompted the FDA to ask the manufacturers to suspend marketing and sales of ponatinib, which has been in the market for less than a year.[1] The FDA will continue to evaluate the drug to understand its risks and to assess if the drug may provide benefits in any other patient populations.[1] The drug manufacturer, Ariad Pharmaceuticals, has agreed to FDA's request to suspend marketing and sales of ponatinib while the investigation goes on.[6]

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Provider Status for Pharmacists: Call to Action or Distant Dream?

By: Samantha Schmidt, PharmD Candidate c/o 2014, Palm Beach Atlantic University

The role of pharmacists in healthcare has grown exponentially over the years. Pharmacists now provide advanced patient-centered care services including coordination of medications during transitions of care, comprehensive medication reviews with medication monitoring, chronic disease management, disease education, prevention and wellness services, and patient education. Unfortunately, pharmacists are not listed as healthcare providers in the non-physician section of the Social Security Act, which deprives them of compensation for comprehensive patient-centered care under Medicare Part B.[1] This omission impedes the integration of pharmacists into innovative healthcare delivery models like patient-centered medical homes (PCMH) and accountable care organizations (ACO), both of which are being brought forth by the Affordable Care Act (ACA).[1]

Proper medication use is essential to improve quality of life and to ensure that health outcomes are achieved in a cost-effective manner. In the United States, more than 1.5 million preventable medication -related adverse events occur every year.[2] It costs Medicare, whose enrollees are people aged 65 and older, $887 million every year to treat preventable medication errors.[2] Pharmacists have extensive education and training in the use of medications for the treatment, management, and prevention of disease and can be an essential part of the healthcare team.[3] One simple tactic to improve patient outcomes and decrease costs is for pharmacists, working with physicians, to have a greater role in managing patients' medications.[3]

Recently, Governor Jerry Brown of California signed a bill (SB 493) that establishes Advanced Practice Pharmacists (APP), giving new authorities to licensed pharmacists.[1] SB 493 will allow APPs to perform patient assessments, order and interpret drug therapy, refer patients to other healthcare providers, and initiate, adjust, and discontinue drug therapy (according to established protocols with physicians).[1] Although this bill does not address compensation, it is a major step toward provider status recognition for pharmacists.[1] The American Pharmacists Association, along with other professional pharmacy organizations, needs each and every pharmacist and pharmacy student to take an active role in making this change. The time to act is now.

Please visit: http://www.pharmacist.com/providerstatusrecognition

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NEWS

Still a Long Road Ahead for New Hepatitis C Treatment

By: Ramya Mathew, PharmD Candidate c/o 2015

Vertex Pharmaceuticals, an American biotechnology company based in Cambridge, Massachusetts, has been researching a new "nuke" for the treatment of Hepatitis C called VX-135. This nucleotide polymerase inhibitor is currently undergoing clinical trials, but the FDA has put the research on a partial hold due to findings of possible liver toxicity. The partial hold was initiated after the adverse effect was seen in Europe, where VX-135 is approved. Patients involved in a post-marketing study had elevated liver enzymes levels. Three out of ten patients who were on a 400-mg dose of VX-135 had this liver toxicity, and the problem resolved once the medication was discontinued.[1] The partial hold only concerns the 200-mg dose of the medicine; however, the 100-mg dose regimen, which remains unaffected by this hold, is also under study.

Hepatitis C virus (HCV) causes infection that leads to inflammation of the liver. The infection commonly goes unnoticed due to the initial asymptomatic stage. Because of this, patients may go untreated for years until the virus causes serious liver damage, found during routine medical checkups.[2] Current treatment regimens for HCV involve using drugs such as pegylated interferons, which is administered subcutaneously and can have serious side effects. The new drug is expected to be a game-changer in hepatitis C management but has been plagued by safety concerns.

Vertex Pharmaceuticals is not the first to have the FDA intervene on their clinical trials. Finding treatments for HCV has become a multibillion-dollar market and several drug companies, including Bristol-Meyers Squibb and Idenix Pharmaceuticals, have also had their clinical trials for similar medications stopped due to toxicity findings. BioCryst Pharmaceuticals also dropped their "nuke," BCX5191, in October 2012 due to an unfavorable safety profile.[1]

But the FDA has not halted all "nuke" trials. Recently, two new drugs have received FDA approval, simeprevir and sofosbuvir. Both are currently in their Phase III clinical trials and show promising results. Simeprevir, developed by Janssen Pharmaceuticals, showed continued virologic response for 12 weeks post-treatment in 79% of treatment-experienced adults who have genotype 1 chronic hepatitis C. Simeprevir is administered once daily with pegylated interferon and ribavirin.[3] Sofosbuvir, developed by Gilead Sciences, has shown a 90% sustained virologic response at 12 weeks when given with pegylated interferon and ribavirin in patients with geno-type 1 or 4 HCV infection.[4]

Finding new oral treatments, such as these nucleotide polymerase inhibitors, is the goal of many drug companies. They hope that the new treatments will be better tolerated and be more effective than the agents currently available. Although there are numerous HCV treatment compounds in the pipeline, only a few seem to have a chance in being approved and placed on the shelves in the US. For now, all we can say is that it might take a few years before drugs like VX-135 can show their potential to revolutionize the treatment of Hepatitis C.

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Possible Mandatory Lung Cancer Screening

By: Jenny Park, PharmD Candidate c/o 2015

Lung cancer takes away the lives of about 160,000 individuals annually, which is more than a quarter of all cancer deaths.[1] The U.S Preventive Service Task Force is now recommending lung cancer screenings for heavy smokers which could save up to 20,000 lives a year (or about 13% of total deaths).[2] It is recommended that heavy smokers get a low dose CT scan once a year. However, the scans are expensive and cost over $300 per scan. This creates a dilemma in which many are left wondering if these diagnostic and preventative procedures are worth the extra cost burden on the US healthcare system.

According to the NIH-funded National Lung Screening Trial (NLST), lung CT scans were more effective in lowering mortality related to lung cancer than chest X-rays. The NLST included more than 50,000 former smokers and current smokers ages 55 -74 who smoked a pack a day for 30 years. Individuals were randomized and given a scan between a low-dose spiral CT scan and a chest X-ray. They received annual scans for three years and then monitored for an additional five years.[3] This study showed a 20% greater reduction in deaths with CT screenings compared to X-ray screenings. Adenocarcinomas and squamous cell carcinomas were detected early in both trial arms; however, these cancers were detected more frequently by the low dose CT scan.[4]

This trial did include some drawbacks such as false positives for CT scans in which 39% of smokers tested positive, and 95% of the these turned out to actually be false positives. For X-ray screening, it has been calculated that screening 287,000 high-risk individuals can prevent 521 deaths, but there will be an additional 24 deaths due to radiation exposure.[5] Radiation exposure associated with a low dose CT is much lower than a regular CT scan. However, the long term effects of exposure to radiation from low dose CT scans cannot be measured and have not been studied yet. Despite some of these drawbacks, the US Preventive Service Task Force is the fifth organization to recommend lung cancer screenings.

The Task Force grades lung cancer with a "B". A level B indicates that screening is recommended and that the net benefit from screening is moderate. Lung cancer is on the same level as breast cancer for women between the ages 50-74.[6] For every 320 people screened for lung cancer, one life is saved. It takes about 900-1900 mammograms to save one life from breast cancer. Going further, it takes 500 colonoscopies to save one person's life from colon cancer. Compared to the latter two, lung cancer screening is more effective.

The Task Force will take about another six months to come to a final conclusion, but according to the lines of the chairman, "a small proportion of a big number is still a big number. And 20,000 lives is a lot of people."[6] Although insurance will not pay for lung cancer screenings, once the Task Force's final recommendation is issued, this will change the standard of care and costs for patients. Medicare patients will be reimbursed and other insurances will cover these procedures. Under President Obama's Affordable Care Act, those eligible will receive the scan without a co-pay.

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Despite these pending changes, screening is not a substitute for smoking cessation. The most effective way to prevent lung cancer is to stop smoking and avoid any form of tobacco. Tobacco also increases the risk for several other cancers which equates to about 443,000 tobacco related deaths per year.[7] Director Dr. Harold Varmus of the National Cancer Institute states that "screening should not give smokers a false sense of security. The main message is still clear."[1] However, that still does not discount the benefits of screening. Even though prevention may remain the most effective method to save lives from lung cancer, screenings pave the road for early detection and carries great potential to continue to save numerous lives.

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Possible Inhaled Option for Diabetics

By: Sang Hyo Kim, Staff Editor

Near the end of December, the pharmaceutical company, MannKind Corp, will submit their clinical data to the U.S Food and Drug Administration for the approval of an inhaled dosage form of insulin, Afrezza®.[1] Administered with the Dreamboat inhaler, this inhaled dosage form delivers insulin packaged into single dose cartridges.[1] The Dreamboat inhaler can be used for a range of products and therapies, and can serve as hope to the millions of diabetics throughout the world.[2] With an estimated number of half a billion diabetics by 2030, the approval of Affrezza® can improve quality of life and create a multi-billion dollar market for Mannkind.[2]

Mannkind states that their new dosage form is more effective than other insulin products on the market and that its cost will be comparable to current injectable pens.[3] Most importantly however, the Dreamboat inhaler is pocket-sized and will be convenient for diabetics to use anywhere, compared to injecting insulin. The insulin is provided as a small tablet and is placed into the chamber of the inhaler where it is then crushed into a fine powder when the chamber is closed.[4] Insulin therapy is maximized when it is administered in a way that mimics the body's normal pattern of insulin release. Insulin levels normally spike in response to the ingestion of food. Because Afrezza® takes twelve to fourteen minutes to reach peak blood levels, the time of administration would be immediately preceding a meal.[3] Mannkind believes that this inhaled dosage form will revolutionize insulin therapy for diabetes because of its characteristic fast action, which is superior to any

existing, rapid onset injectable insulin product.[4]

The idea of inhaled insulin is not new. It was attempted in the past but did not prove to be successful. In 2007, Pfizer Inc. withdrew its inhaled insulin product, Exubera®, from the market because it was too costly to produce in the face of poor sales.[2] Additionally, Exubera® was large in size, decreasing its appeal. The FDA also rejected Afrezza® in 2011 for lack of sufficient data on its efficacy.[2] Mannkind was told to conduct two trials again and therefore performed Study 171 and Study 175, referred to as the AFFINITY trials.[5]

Study 171 compared various endpoints of glucose control in three different groups: 518 patients with type I diabetes receiving either insulin aspart injections (NovoLog®), Afrezza® delivered via the Dreamboat inhaler, or Afrezza® delivered via an older device, the MedTone inhaler. The study was performed over 24 weeks, during which HbA1c levels, fasting blood glucose levels, and incidence of hypoglycemia were all favorable in patients receiving Afrezza® via the Dreamboat inhaler compared to the other two groups.[5,6] Study 175 was performed on 353 patients with uncontrolled type II diabetes, currently on metformin with or without another oral medication. These patients were randomized to receive either Afrezza® or Technosphere, an older inhaled insulin on the market, both delivered by the Dreamboat inhaler. This study revealed that HbA1c levels were significantly lower in patients receiving Afrezza®, with a larger proportion of patients reaching target levels below 7% and 6.5%.[2,5] Results from both trials indeed showed the benefits of Afrezza® over previous inhaled, injected, and oral diabetes medications.[5]

According to the Transparency Market Research, the global insulin market is expected to reach $32 billion in 2018.[1] Furthermore, the Centers for Disease Control and Prevention estimates that the number of Americans with diagnosed diabetes has more than tripled (5.6 million to 20.9 million) from 1980 to 2011.[1] Because diabetics typically start out with orally-administered medication and often move on to injectable products to regulate blood-sugar levels, the approval of an inhaled insulin will surely be convenient, increasing patient compliance.[2] Healthcare providers and patients are both excited to see whether Afrezza® will be approved.

With just an inhale, Diabetics may now be free of needles if Affrezza® does become approved by the FDA.

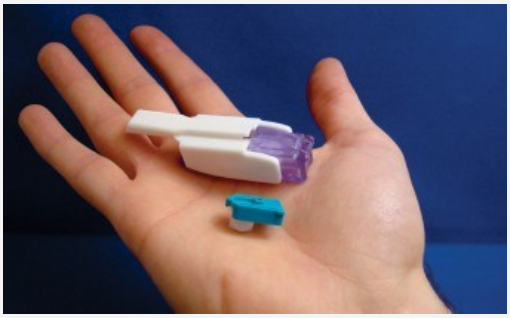

Image Source: Chris Lech. Insulin in Nation. "Inhalable Insulin-A Breathtaking Development." 3/28/13. http://insulinnation.com/inhalable-insulin-a-breathtaking-development/. Accessed November 2nd, 2013

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Phi Lambda Sigma's 12th Annual Healthy Halloween

By: Taryn Mondiello, PharmD Candidate c/o 2015

Halloween came early this year to St. John's University and to the children at the "Hour Children" program in Long Island City. On Wednesday October 30th, Phi Lambda Sigma, also known as the Pharmacy Leadership Society, hosted their 12th Annual Healthy Halloween, a Halloween celebration for local children that emphasizes maintaining good health while still enjoying the holiday. The participants ranged from kindergarteners to freshmen in high school. Members of various student organizations, including the American Pharmacists Association, Fashion Club, Lambda Kappa Sigma, Muslim Students Association, Phi Delta Chi, Raaz, and Rho Chi, also volunteered their time and contributed to the success of the event. Together, the organizations transformed the D' Angelo Center Organization Lounge into a Halloween festival, complete with decorations, and even a haunted house.

Similar to previous years, Healthy Halloween was sponsored by Walgreens Pharmacy. Two Walgreens pharmacy supervisors, Louis and James, both St. John's University alumni, gave a presentation on the importance of oral hygiene. The pharmacists stressed to the young audience that while it is okay to have candy, it is imperative that they brush their teeth right after to avoid cavities. They demonstrated how much toothpaste to use and how long to brush. They even had the kids form a chain that resembled teeth to demonstrate how to floss correctly, using a rope to represent a piece of floss. At the end of the session, the kids were given goody bags that included Halloween toys, pencils, candy, toothbrushes, and dental floss.

Each student organization that participated was in charge of their own station that the kids rotated around. For example, Phi Delta Chi entertained the children with their "Haunted Hallway," an activity they host every year. Members of the organization closed off the hallway outside of the Organization Lounge and transformed it into a haunted house. Another organization, The Fashion Club, painted faces and fulfilled requests ranging from a cat to the more elaborate designs, including "The Joker" from the Batman series. Known for their artistic skills, Raaz and Lambda Kappa Sigma assisted the children in pumpkin decorating. Members of American Pharmacists Association used toilet paper to see who could wrap the best mummy in their "Mummy Wrapping Contest." Furthermore, the Muslim Student's Association helped kids make face masks out of paper plates. After rotating around the individual stations, the kids relaxed and enjoyed healthy yet tasty snacks such as cheese, crackers, fruits, and vegetables, all donated by Rho Chi.

Rosa Yen, Director of Multicultural Affairs at St. John's University, played a major role in helping Phi Lambda Sigma plan the event. Rosa coordinated transportation to campus, and also generously donated 50 pumpkins for them to decorate during the event. She also provided pizza to student volunteers during event set up.

Lisa, one of the directors of "Hour Children," told Rosa, "Thank you once again. The children couldn't stop talking. The haunted house and decorating were most talked about." Overall, the children had a wonderful time and also learned a few tips on staying healthy during Halloween season. Phi Lambda Sigma and all the other participating organizations hope to continue their annual tradition to inform kids on healthy eating and hygiene.

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EVENTS

Cyril Collantes, Alex Yu, Max Magun, Michael LoCascio, Anthony Vecchione, Dimitri Savva, Andrew Ong, Michael Sforza

Fashion Club helped with the face painting.

Taryn Mondiello and Praneeta Nagraj

The Haunted Hallway which was put together by members of Phi Delta Chi.

Sabrina Rahman, Caitie Stehling, Dr. Hilas, Sean Caltabiano, and Taryn Mondiello

Praneeta Nagraj, George Aziz, Jesson George, Sabrina Rahman, Tracey Li, Jason K. James, and Dave Said

Newly Approved: Macitentan (Opsumit ®)

By: Rebecca Gilene, PharmD Candidate c/o 2014, St. Louis College of Pharmacy

The FDA approved macitentan (Opsumit®) on October 18, 2013 for the treatment of pulmonary arterial hypertension.[1] Pulmonary arterial hypertension, often referred to as PAH, is a disease characterized by high blood pressure in the arteries between the heart and lungs. An increase in peripheral vascular resistance of these arteries places a strain on the right side of the heart, requiring it to pump with greater contractile force. Typically, PAH is idiopathic, meaning there is no known cause. However, genetic factors, heart disease, human immunodeficiency virus (HIV), and illicit substance abuse may contribute to this disorder. PAH currently affects over 50,000 patients in the US, with a mortality rate around 15% after one year.[2]

Typical symptoms of PAH include fatigue, shortness of breath, exercise intolerance, and chest pain. Patients are evaluated based on a six-minute walking distance as well as their World Health Organization (WHO) functional class to determine their risk and prognosis. The six-minute walking distance measures the distance a patient can walk in six minutes- better prognosis is associated with lengths greater than 400 meters. WHO functional classes are based on the extent to which PAH limits a patient's physical activity. A patient's ability to perform daily activities are ranked from I-IV, with class IV exhibiting poor prognosis.[2] Because PAH is a chronic disease, symptoms may worsen over time if untreated. PAH may progress and necessitate lung transplantation, or even lead to death.[2] Although there is no cure, the goal of therapy is to normalize blood pressure. The mainstays of PAH treatment include endothelin-receptor antagonists (ERA), calcium channel blockers (CCB), and phosphodiesterase-5 inhibitors (PDEI).

CCBs are typically used as first-line treatment; usual agents include non-dihydropyridine diltiazem (Cartia®) as well as dihydropyridines amlodipine (Norvasc®) and nifedipine (Procardia®). However, some patients may not respond to this therapy. Patients in most WHO functional classes who are unresponsive to CCBs are started on an ERA or PDEI. Examples of PDEIs are sildenafil (Revatio®) or tadalafil (Adcirca®). Third line treatment for patients with progressing disease on these agents is prostanoids, such as epoprostenol (Flolan®, Veletri®), treprostinil (Remodulin®, Tyvaso®), or iloprost (Ventavis®).

Macitentan belongs to the ERA class along with ambrisentan (Letairis®) and bosentan (Tracleer®). These agents work to decrease constriction of the pulmonary arteries by blocking endothelin receptor A, located on smooth muscle cells, and endothelin receptor B, located on vascular endothelium. Ambrisentan selectively works on the endothelin A receptor, whereas bosentan and macitentan work on both A and B receptors.[3] Bosentan has more supporting data compared to macitentan, has been approved for pediatric use, and has been studied in combination with a PDEI. However, macitentan, a derivative of bosentan, is being studied for use in both ischemic digital ulcers as well as glioblastoma.[4]

The results of a multicenter, double-blind, randomized, placebo-controlled, event-driven study evaluating safety and efficacy showed favorability of macitentan. In this study, 741 adult patients, primarily in WHO classes II and III, were randomly assigned to one of three groups: 3mg of macitentan, 10mg of macitentan, or placebo. Macitentan had a statistically significant decrease in occurrence of worsening disease compared to the placebo group. Worsening disease was defined as death, lung transplantation, necessity of treatment with intravenous or subcutaneous prostanoids, and/or worsening of PAH symptoms. The incidence of worsening disease occurred in 46.4% of patients in the placebo group compared to only 38% of patients in the 3mg group and 31.4% of patients in the 10mg group (hazard ratio for 3mg vs. placebo 0.70, $p = 0.01$; hazard ratio for 10mg vs. placebo 0.55, $p < 0.1$). Both macitentan groups also showed a reduction in death and hospitalizations.[5]

Secondary endpoints of six minute walking distance and WHO functional class after six months of treatment showed a slowing of progression with macitentan. Some adverse events experienced by

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both of the macitentan groups included headache, nasopharyngitis, and anemia. Compared to the patients receiving 3mg of mactitentan, the patients in the 10mg group did not have more frequent side effects. Overall, these adverse events caused 12.4% of patients in the placebo group, 13.6% of patients in the 3mg group, and 10.7% of patients in the 10mg group to discontinue therapy.[3,5]

Similar to other ERAs, macitentan is classified as pregnancy category X, due to its teratogenic effects. Therefore, the Risk Evaluation and Mitigation Strategy (REMS) Program must be employed for all women taking this drug. Additionally, pharmacies must be authorized to dispense macitentan in compliance with this program. Other potential side effects with this medication include spermatogenesis impairment, sore throat, liver dysfunction, and increased risk for infections such as bronchitis, influenza, and urinary tract infections.[1,4]

The study that led to the approval of macitentan was evaluated over a period of two years, so lengthier studies are needed to assess potential long-term effects. Additionally, Actelion Pharmaceuticals, the same company that markets both macitentan and bosentan, funded the study. There may be a major conflict of interest, considering that bosentan loses its patent protection in a couple years.[6] Therefore, despite the approval of macitentan, it is yet to be determined where this drug fits in the PAH algorithm. Further studies comparing this new drug to current standards of care, utilizing it in combination therapy, and evaluating its uses in other patient populations are warranted to truly identify the role of macitentan in treatment of pulmonary arterial hypertension.

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Commonly Used Pharmacologic Agents for Gastrointestinal Conditions

Jenny Prakash, PharmD Candidate c/o 2014 & Aleena Cherian, Co-Copy Editor (Graphics Focused) & Beatrice Popovitz, Staff Editor

ACID SUPPRESSING AGENTS

Pharmacology	Agents	Adult Dosing Rang	Clinical Use, Monitoring & Patient Teaching	Risks/Toxicities
Antacids Neutralizes hydrochloric acid in stomach and increases intragastric pH. Also inactivates pepsin and binds bile salts.	Magnesium hydroxide Aluminum hydroxide Calcium carbonate	OTC dosing recommendations may vary by product and/or manufacturer. Consult specific product labeling	Doses: hourly to as-needed bases. Short duration of action (1-3 hours) requires frequent administration May require monitoring of electrolytes with long term use	ADR: alterations in mineral metabolism, diarrhea (Mg) or constipation (Al, Ca) Drug Interactions: May interact with a variety of medications by altering gastric/urinary pH or adsorbing medications and forming complexes. Clinically significant interactions with: -tetracyclines (i.e doxyclycline, minocyclin -flouroquinolones (i.e. ciprofloxacin, levofloxacin, etc.) -isoniazid Precautions: Aluminum containing antacids may bind to phosphate in the gut (bone demineralization) Caution in patients with impaired renal function due to impaired excretion of minerals
	The US marketplace for antacids often employs "reusing" of common brand names with different active ingredients. Clinical practitioners should always refer to the active ingredient when selecting/recommending OTC products			
Surfactant Decreases surface tension of gas bubbles, reducing foaming and esophageal reflux	Simethicone (Gas-X®, others)	40-360 mg after meals and at bedtime as needed	Used for relief of bloating, pressure, gas Should be taken after meals	ADR: mild GI irritation or diarrhea
H2 Receptor Antagonists (H2RA) Reversibly compete with histamine for binding to H2 receptors on basolateral membrane of parietal cells, primarily inhibiting basal acid secretion	Cimetidine (Tagamet®)	200-400 mg twice daily	Similar efficacy between all products Take 30-60 minutes before a meal Duration of therapy varies based on indication (intermittent heartburn, GERD, esophagitis)	ADR: Headache, diarrhea, dizziness, fatigue, confusion (generally well tolerated) Precautions: May see increased CNS side effects (confusion, delirium) in elderly and those with hepatic impairment
	Ranitidine (Zantac®)	75-150 mg twice daily or 300mg daily		
	Famotidine (Pepcid® Duexis®- with ibuprofen)	Pepcid® 10-20 mg twice daily Duexis® 800 mg ibuprofen/26.6 mg famotidine three times daily		
	Nizatidine (Axid®)	75-150 mg twice daily		

Reviewed by: Dr. T Jodlowski and Dr. R Ginzburg

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Proton pump inhibitors (PPI) Inhibit H+/K+ ATPase enzyme system within gastric parietal cell, producing a long-lasting antisecretory effect	**Omeprazole (Prilosec®** **Zegerid®- with sodium bicarbonate)**	**Prilosec® 20-40 mg once daily** **Zegerid® omeprazole/sodium bicarbonate** **Capsules: 20 /1100 mg, 40/1100 mg** **Oral Packet: 20/1680 mg, 40/1680mg** **Do not substitute two 20 mg for the 40 mg strength**	**Superior to H2RA in moderate-severe GERD and in healing of erosive esophagitis** **Should be taken in the morning** **Degrade in acidic environment-formulated as delayed-release** **Long term use: monitor Mg levels, B12 levels, Ca levels and routine bone density scans (if risk factors for osteoporosis/bone fractures are present)**	**ADR: Headache, dizziness, somnolence diarrhea, nausea, constipation, abdominal pain (generally well tolerated)** **Long term ADR: hypomagnesemia, bone fractures ,B12 deficiency** **Drug interactions with agents that require acidic environments (ketoconazole, itraconazole, atazanavir, rilpivirine), 2C19 inhibitors or 3A4 substrates**
	Esomeprazole (Nexium®)	20-40 mg once daily		
	Pantoprazole (Protonix®)	40-80 mg once daily		
	Lansoprazole (Prevacid®)	15 mg once daily		
	Dexlansoprazole (Dexilant®)	30-60 mg once daily		
	Rabeprazole (Aciphex®)	20 mg once daily		
Prostaglandin Analog Increase mucosal resistance and increasing production of gastric mucus and secretion of bicarbonate.	Misoprostol (Cytotec®)	200mcg four times a day	For prophylaxis of NSAID-induced gastric ulcer continue therapy throughout NSAID use Take with food and last dose at bedtime	ADR: Abdominal pain, diarrhea, especially at higher doses Black Box Warning: abortifacient, increased risk of premature births or birth defects when given to pregnant women (Category X)
Mucosal Protective Agent Polymerizes at site of tissue damage and protects against further damage	Sucralfate (Carafate®)	Initial: 1g 4 times daily or 2 g twice daily Maintenance/prophylaxis: 1 g twice daily	For short term management or maintenance of duodenal ulcers Take with water on empty stomach	ADR: constipation Drug interactions: multiple drug interactions due to binding of sucralfate to other agents and reducing gastric absorption
Bismuth salts Weak antibacterial effect, increase mucosal prostaglandin synthesis. Do not inhibit or neutralize	Bismuth subsalicylate (Pepto-Bismol, Kaopectate, others)	524 mg orally up to 8 times a day)	For nonspecific diarrhea, heartburn, nausea, upset stomach and H.pylori eradication Bismuth salts may impart a black color to stool and possibly tongue	ADR: generally well tolerated Precautions: subsalicylate salt should not be used in those with salicylate sensitivity or in children recovering from varicella or influenza. Caution in elderly and in renal failure Drug Interactions: may decrease serum concentration of tetracycline salts
	Bismuth subcitrate potassium	140 mg 4 times daily in combination with metronidazole, tetracycline, omeprazole for H. pylori eradication		

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LAXATIVES

Saline Laxatives Osmotic agents that promote bowel evacuation by increasing water retention, thereby stimulating peristalsis	Magnesium hydroxide (Milk of Magnesia®, others)	*Dosing varies based on formulation. Consult specific product labeling*	Short term treatment of occasional constipation. Continuous use can cause electrolyte imbalance and dehydration	ADR: Diarrhea, GI disturbances, metallic taste Electrolyte imbalances with continuous use Precautions: Use caution in renal dysfunction
	Sodium phosphate enema (Fleet® Phospho®-Soda)			
	Magnesium citrate (Citroma®)			
Bulk-forming laxatives Increase volume of colon, stimulate evacuation by absorbing water in intestine.	Methylcellulose (Citrucel®, others)	*Dosing varies based on specific brands and formulations. Consult specific product labeling*	Adjunct in treatment of occasional constipation Must be administered with adequate fluids (1,000–1,500 mL/day)	ADR: dyspepsia, cramping, flatulence
	Psyllium (Metamucil®, others)			
Stimulant Laxatives Acts on the colon to stimulate peristalsis	Senna (Senokot®, Senna-Lax®, Ex-Lax® Maximum strength, others)	70-100mg/day (up to 130 mg once for complete bowel evacuation on the day prior to procedure)	Short-term treatment of intermittent constipation or for complete bowel evacuation.	ADR: cramping, abdominal pain, nausea electrolyte abnormalities urine discoloration C/I: Abdominal pain or obstruction
	Bisacodyl (Dulcolax®, others)	*Oral:* 5-15 mg as single dose (up to 30 mg when complete evacuation of bowel is required) *Rectal:* Suppository: 10 mg once		
Stool Softeners Lubricate stool via surfactant activity and eases passage. Draws water into stool but doesn't stimulate activity	Docusate (Colace®, others)	50-300 mg *orally* once daily or in 2-4 divided doses or *rectally* as enema	Onset of activity 72 hrs , preferable for prophylaxis	ADR: nausea, diarrhea, cramping Rare hepatotoxicity C/I: intestinal obstruction, acute abdominal pain, nausea/vomiting
	Mineral oil (Fleet®, others)	15-45 mL orally at bedtime OR 1 bottle (133 mL) as rectal enema once	Only approved for children over 2 years (rectal) or 6 years (oral)	ADR: irritation, pruritis, incontinence May cause pneumonitis if inhaled C/I: appendicitis, ulcerative colitis, colostomy/ileostomy, diverticulitis
Chloride Channel activator Stimulate chloride secretion into intestine and increases fluid content	Lubiprostone (Amitiza®)	8 mcg orally BID 24mcg orally BID	For constipation associated with IBS For idiopathic constipation or opioid-induced constipation in non-cancer patients	ADR: abdominal distention, abdominal pain, diarrhea, flatulence, nausea C/I: known or suspected mechanical GI obstruction

Reviewed by: Dr. T Jodlowski and Dr. R Ginzburg

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ANTIDIARRHEAL DRUGS				
Activates mu-opioid receptors in enteric nervous system, slowing gut motility	Loperamide (Imodium®, others)	2-8mg/day orally (maximum of 16mg/day)	For nonspecific, noninfectious diarrhea	ADR: mild cramping
	Diphenoxylate/ Atropine (Lomotil®)	Up to 20mg/day diphenoxylate	For treatment of diarrhea	ADR: mild cramping, CNS toxicity Precautions: Withhold in cases of severe dehydration or electrolyte imbalance
5-HT3 antagonist Reduces smooth muscle activity in the gut	Alosetron (Lotronex®)	0.5-1 mg daily	For women with severe diarrhea prominent IBS with inadequate response to conventional therapy. Should only be prescribed by physicians in the *Prometheus Prescribing Program for Lotronex®*	ADR: abdominal pain, nausea, headache May cause bowel obstruction, constipation, IBD, colitis, toxic megacolon Black Box Warning: acute ischemic colitis, serious complications of constipation C/I: active or history of chronic constipation, concomitant fluvoxamine, bowel/GI disorders, history of thrombophlebitis or hypercoaguable state, severe hepatic impairment

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Reviewed by: Dr. T Jodlowski and Dr. R Ginzburg

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Dyspepsia	Peptic Ulcer Disease (PUD)	GERD
Nonulcer dyspepsia: episodic or persistent pain or discomfort localized to the upper abdomen	Predominant symptom: epigastric pain Duodenal ulcer: occurs at night or during fasting state Other dyspeptic symptoms: fullness, bloating, early satiety, nausea Complications: bleeding, perforation, gastric outlet obstruction	**Typical symptoms:** Heartburn (tight, burning sensation radiating from the xiphoid process to the neck) and acid regurgitation Symptoms are exacerbated by fatty foods, caffeine, and recumbent position Hoarseness, chronic cough, dental erosions, and asthma exacerbation may all occur with or without typical symptoms of GERD.
Symptom Patterns Ulcer like symptoms Dysmotility-like symptoms Reflux like symptoms (overlap between symptom patterns)	**Etiology** H.pylori Infection Drug induced (i.e. NSAID, steroids, bisphosphonates, chemotherapy, SSRI) Diet: coffee, alcohol, fat intake Acid hypersecretory state (i.e. Zollinger-Ellison syndrome due to gastrin secreting tumor causing diarrhea and malabsorption) Tumors (cancer, lymphoma)	**Pathophysiology** Imbalance between body's defensive factors that protect the esophagus and erosive factors from stomach Common cause: transient lower esophageal sphincter (LES) relaxation\ Predisposing features: hiatus hernia, lower esophageal sphincter hypotension, loss of esophageal peristaltic function, abdominal obesity, increased compliance of the hiatal canal, gastric hypersecretory states, delayed gastric emptying, overeating, inappropriate esophageal acid clearance
Diagnosis: diagnosis of exclusion Differential diagnoses include PUD Irritable bowel syndrome GERD Chronic biliary or pancreatic disorders	**Diagnosis:** via endoscopy, with a mucosal break of diameter 5mm or larger, covered with fibrin break smaller than 5 mm – erosion ulceration in more distal duodenum: consider underlying Crohn's disease, ischemia or Zollinger-Ellison syndrome testing for *H pylori:* *nonendoscoping testing:* serologic testing for IgG antibodies, non-invasive ^{14}C-urea breath test (UBT), stool antigen test *endoscoping testing:* urease-based test, histologic assessment, culture	**Diagnosis:** based on symptoms chief concern: heartburn (must differentiate GERD from episodic heartburn less conventional symptoms: burping, hiccups, nausea, vomiting extraesophageal symptoms: noncardiac chest pain, worsening of asthma, laryngitis, chronic cough Tests to confirm diagnosis usually not completed unless symptoms are suggestive of more serious condition (esophagitis, ulcer, Barret esophagus, esophageal cancer) empiric treatment has failed measuring esophageal acid exposure: ambulatory pH monitoring **ALARM SYMPTOMS REQUIRING IMMEDIATE REFERRAL** Anemia Chest pain Choking Epigastric mass Frequent vomiting Troublesome dysphagia Gastrointestinal bleeding Unintentional weight loss

Reviewed by: Dr. T Jodlowski and Dr. R. Ginzburg

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Quote of the Month

By: Melissa Roy Co-Copy Editor (Graphics Focused)

OPINIONS

Expanding a Technician's Role

By: Sang Hyo Kim, Staff Editor

Pharmacy, like much of medicine, is constantly changing, and the new changes in pharmacy practice are even happening to technicians. While there were originally no national standards for pharmacy-technician education and training, the American Society of Health-System Pharmacists (ASHP) and the Accreditation Council for Pharmacy Education (ACPE) have collaborated and announced their decision to accredit pharmacy technician education and training programs beginning in late 2014.[1,2] Their new plan will result in the creation of a Pharmacy Technician Accreditation Commission (PTAC), which will be tasked with assuring and advancing the quality of pharmacy technician education.[1]

Accreditation, by definition, is a system for declaring that a program or institution meets established quality standards to provide assurance and confidence to the public.[2] Accreditation seeks to enhance the quality of a program and an institution by promoting self-evaluation, encouraging improvement, and providing public accountability by ensuring specific criteria are met.[2] ASHP, serving since 1982, is responsible for accrediting pharmacy residencies and pharmacy technicians, while ACPE, serving since 1932, is recognized for accrediting professional degree programs in pharmacy and providers of continuing pharmacy education.[3] The creation of the PTAC will allow the technician training program to now become more focused. For example, the current programs will need to lengthen training schedules to provide more-in-depth coverage of educational goals and objectives. Lab topics such as extemporaneous compounding, sterile product preparation, and computerized application of record keeping and drug distribution systems will be reinforced in classroom instruction before onsite experiential training begins.[2] Lab exercises will prepare the trainee for practice in variety of pharmacy settings such as acute care, ambulatory care and chronic care.[2]

The role of current technicians includes any medication or pharmacy related role that do not require the clinical judgment of a pharmacist. Some technician roles include purchasing and inventory maintenance, data input, billing and insurance and assisting in prescription dispensing. The ideal technician role is one that enables pharmacists to devote more time to patient care.[4] Fred M. Eckel, Editor-in Chief of the Pharmacy Times, however mentions that some pharmacists are against the advancing of pharmacy technicians because technicians might end up being expanded into pharmacist practice arena such as independently refilling prescriptions. Further, he emphasized that hospital pharmacists became upset when the state pharmacy board wanted to implement new regulations that would allow certified pharmacy technicians to perform "tech check tech" functions such as filled unit dose carts. Therefore, hospital pharmacists feared that their job as dispensing pharmacists might be eliminated. However, Fred Eckel mentions that in order for pharmacists to practice at the top of their license, they must be freed from the pill counting tray.[5]

Although the accreditation of pharmacy technicians is not yet nationally set, we need to question certain factors. To train technicians at the highest ability may require more funding to the accreditation programs, as well as the increase of tuition for applicants who are interested in the degree. As technicians also play a greater role in the pharmacy setting, they will also demand higher salaries. Eckel, PharmD says, "For employers to be able to pay more, they will expect more, thus I am suggesting that employers may play a role in helping to advance a broader role for pharmacy technicians."[5] This statement seems to be oversimplified. In independent pharmacies, employers can pay higher amounts to technicians. Employers at pharmacy chain corporations may not want to pay more for technicians than the minimum wage. Also, it is no secret that the number of PharmD graduates have been increasing. If a technicians role can not extensively be expanded yet their salaries are increasing, many places may do a simple cost-effective ratio and decide if it is better to keep a pharmacist behind the counter rather than higher additional technicians who would get paid more.

Distributing a wider role to technician may seem to clash into duties only pharmacists can do, but there will always be a strict line between a technician and pharmacist's role. Granting technicians more respon-

sibility may overall help the pharmacist to interact more with patient healthcare, as Editor-in-Chief Eckel mentioned. Pros and cons certainly remain to be discussed.

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OPINIONS

Meet the President: An Interview with Father Levesque (cont.)

By: Beatrice Popovitz, Staff Editor and Ada Seldin, Staff Editor

What made you decide to rejoin our St. John's family?

I was invited to serve as interim president for a short period of time. Father Harrington retired as of August 1st and the school year was right around the corner. I came from Niagara University. My purpose is to give leadership to the University and help in the search for a new president. It's hard to say how long I will be here. It may be a year or it may be more.

Every 5 years the University has to undergo new strategic planning. This year calls for such new planning. Where do you see the University heading in the next five years?

The provost, dean, and faculty have already started the planning. They're calling it the "repositioning." It's something that is already in place. I will study it; I will work on it with them; and I will try to move it forward. They're not doing anything so radical that I would object to. They're really trying to continue to grow St. John's University. This is a time of difficult enrollment for undergraduates, because there are fewer students entering college. Retention is also sometimes a challenge. There are many different challenges, which the University is going to try to approach. Then they're going to find new programs that they think will be helpful for new students coming in and students presently here. My role will be to study the plan and decide whether it is promising. In order to make my decision, I will rely upon my own experiences and reasoning, as well as talking to the board members. I mostly work with the Board of Trustees and they'll be studying this plan as well. But really the heart of the planning comes from the faculty, the deans, and the provost. Hopefully the students have serious input into all of this as well. I am going to try to contribute my best thinking. My goal is not to undermine the people who have been working at St. John's for years. Instead, I am trying to play my role in a helpful way.

What major goals do you hope to accomplish during your service?

One goal that will be very important is the development of new plans to increase enrollment. For example, do we recruit guidance counselors to look

for students? We need to develop concrete plans. It is important to retain the number of students at the University if you want to maintain the staff. If you keep enrolling lower and lower numbers, you will have to start eliminating faculty and deans. That gets problematic. Enrollment is declining in many Universities. We had the same experience **at** Niagara University. When a lot of children are born at a particular time, then the schools are filled when they get of age. If there are fewer children born, then you have the current challenge we are facing.

I didn't realize enrollment was declining, because in the College of Pharmacy enrollment is increasing.

Pharmacy has always been a popular major. There is a demand for healthcare professionals in our society, including pharmacists, physical therapists, and physician assistants. It follows that the corresponding programs are filled in schools. However, this is not the case with other fields of study, such as English and Philosophy. In response to these trends, we should ask ourselves, how can we expand or improve the College of Pharmacy and Health Sciences?

Collaboration is truly the key. If the administration, faculty, and students work closely together, are really united, and all have the mindset that they want the University to succeed, well nothing wins like that. My style of administration is collaborative and I want to make a contributive effort. I want to hear what the students and the University members are interested in and I want to respond.

Do you foresee any challenges in implementing these goals?

Not really. It seems to me that when people come together in the University setting, set definitive goals, collaborate with one another, and contribute their full efforts, the plans are usually successful. However, the key is to have all relevant parties participating and striving towards the end goals. The thing that you can't predict is whether new students will come as a result of your efforts. Some colleges have had to close due to declining enrollment, but such colleges are usually small, with 1,000 to 2,0000 students. When they get hit, it hurts them much more than a larger school like St. John's with 21,000 students. Nonetheless, St. John's is affected by a shrinking student body. I don't see any challenges that will be so great that we can't bring our plan forward and be successful.

What did you learn from your experience as President of Niagara University that you will carry over to St. John's?

There are many different lessons that you can take away being president of a University and it seems to me that eventually you are going to hit all the problems that are out there. The biggest challenges at Niagara University were enrollment and retaining students. Here at St. John's that is still a major concern. Another concern is finding ways to obtain grants or funding for the University. This year, St. John's University received its largest number of grants and the largest amount of money ever received through grants (which amounted to $12 million). We also look for ways to maintain a budget. To do so requires cutting back in certain areas. For instance, if we need two professors in an area we may just start off by hiring one full time professor and one adjunct professor to see if the demand is truly necessary. I learned all about these big issues and every day issues throughout the course of a given year being president at Niagara University.

I want to emphasize the things I said before about what makes the plan successful. Collaboration is truly the key. If the administration, faculty, and students work closely together, are really united, and all have the mindset that they want the University to succeed, well nothing wins like that. My style of administration is collaborative and I want to make a contributive effort. I want to hear what the students and the University members are interested in and I want to respond.

How will St. John's continue to uphold its Vincentian traditions in the changing times?

One of the things I've discovered here, as well as at Niagara University, is that everyone I meet at St. John's University is very knowledgeable and very

aware of what it means to be part of a Vincentian University. At the heart of being a Vincentian University is learning how important it is to serve others. Hopefully you will come out of St. John's University and have a great career; hopefully you'll have all your dreams fulfilled. Whatever those dreams are and whatever that goal is, we are helping you to accomplish them. I think people remember that St. John's University is part of their roots and they want to bring a part of the St. John's Vincentian mission into their lives. I think it is so wonderful that so many of our faculty and students make serving others part of their lives. I see this fact and I hear it. Nearly all the students that I speak to say, "we know what it means to serve. We do this midnight run in Manhattan, we given people food, we visit the sick in the hospital, etc…" I just want to keep encouraging people at the University to keep on doing what they are doing. I see a very strong spirit here of what it means to be Vincentian, and the St. John's community knows that it encompasses being sensitive to others who don't have what they have.

What did your role as Chairman of the Board of Trustees entail?

What the Board of Trustees does is work with administrators of the University to oversee everything including student life, academic life, financial aspects, etc… The board is comprised of experts in their own field and it is the chairman's job to organize them, and if necessary, make decisions or encourage ideas and motions that steer the University in a certain direction. From a structural standpoint, it is very important to have a board. If you ever read an article about a Board of Trustees, it will tell you that its most important job is to hire or fire a president. However, for a University, replacing a president is not a common event. The Board of Trustees also has a fiduciary responsibility, to make sure that this University is not being harmed in any significant way, and the board members commit themselves to that. I was a board member for a numbers of years and my experience helped me in my role as president of Niagara University and it certainly has helped me now at St. John's University.

You have an impressive biography. In your opinion, what is the "key" to success?

To do each thing as well as you can do and just see where it will take you. For me, I started out as a teacher and it eventually led **me** down the path of becoming a dean. I worked as a dean for 8 years and I really enjoyed it. It was a lot of fun, but it was very difficult work, so I stepped away. Eventually I became a board member here at St. John's University. It is also important to try new things. When I was young and was studying to become a priest I was actually asked to teach. I never thought I wanted to teach, but I tried something new and I liked it. I was also motivated to be a good teacher since I had many bad teachers. Not only did I want to be a good teacher, but I wanted to be the best teacher possible. You pursue excellence in what you do, you work hard at what you do, and other people recognize that, and it brings you to new levels and to new opportunities and jobs.

The point is to make yourself available, and if people recognize you have a talent with which God has blessed you, just use that talent well.

So when people say what's your key to success? I always start with God. God blessed me, God gave me the gifts to use, and I worked at using them. I was afraid to enter the classroom. I didn't want to be a teacher. Now I've been the president of two universities! How did that happen? It didn't happen overnight.

I'm 75yrs old, it took me a long time. But the key I think is you do your very best, and you are allowed to move forward, and you become desirable to more people. As I was leaving Niagara, I said to a group of people who are leaders, at Leadership Niagara; "one of the important things for being a leader, is to always be able to say 'Yes', when someone asks you to do something for them". The point is to make yourself available, and if people recognize you have a talent with which God has blessed you, just use that talent well.

The Rho Chi Post would like to thank Fr. Levesque for his time and expertise and welcome him in rejoining the St. John's family.

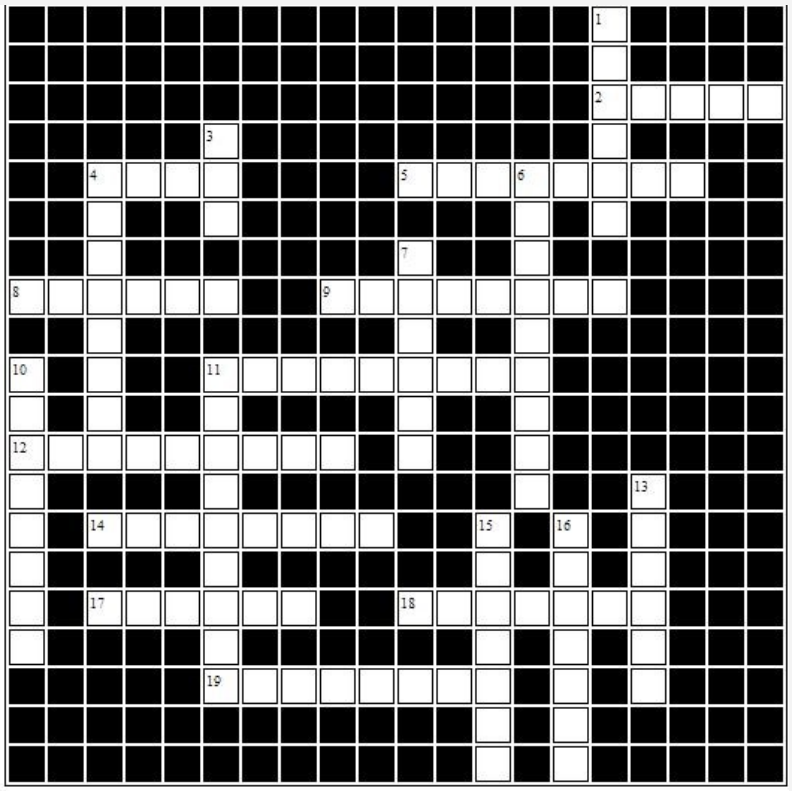
RHO CHI POST

Are You Smarter than a 6th Year?

Crossword Puzzle: Drug Top 200 Challenge

By: Tamara Yunusova, Senior Staff Editor

How well do you know the Top 200? For each generic name listed below, find the corresponding brand name in the puzzle. Good luck!



Across

2. Pioglitazine
4. Carisoprodol
5. Allopurinol
8. Tamsulosin
9. Lansoprazole
11. Promethazine
12. Codeine+ APAP
14. Celecoxib
17. Insulin Glargine
18. Enalapril
19. Levofloxacin

Down

1. Sildenafil
3. Ethinyl estradiol + Drospirenone
4. Quetiapine
6. Oxycodone
7. Methylprednisolone
10. Clonidine
11. Albuterol
13. Fenofibrate
15. Mometasone
16. Ezetimibe + Simvastatin

Answers

PUZZLES

By Frances Trosa
PharmD Candidate
Class of 2015

Many drugs

LOOK – ALIKE

OR

SOUND– ALIKE

causing them to be easily mixed up in practice.

Can **YOU** match these facts with the correct medication?

Answers

Matching Column: Look-Alike Sound-Alikes

1. A small molecule tyrosine kinase inhibitor indicated for the treatment of Philadelphia chromosome positive CML
2. Must allow 14 days between switching between this medication and an MAOI
3. Due to the mechanism of action of this drug, patients should be monitored for hyponatremia and hypokalemia
4. Carries a black box warning requiring patients to avoid abrupt discontinuation as such action may result in acute tachycardia, hypertension or ischemia
5. This topical preparation is indicated for the treatment of actinic keratosis on the face or scalp
6. A selective agonist for serotonin (5-HT_{1B} and 5-HT_{1D} receptors) with a quick onset of action for the treatment of migraine headaches
7. An antidiarrheal that works via opioid receptors
8. A progestin only form of contraception
9. This immunosuppressant carries a black box warning that it is associated with malignancies such as lymphomas
10. Can be used to relieve the symptoms of an acute gouty attack

A. Imodium

B. Imatinib

C. Implanon

D. Imitrex

E. Inderal

F. Indocin

G. Indapamide

H. Imuran

I. Imipramine

J. Imiquimod

Lexi-Comp OnlineTM , Lexi-Drugs OnlineTM , Hudson, Ohio: Lexi-Comp, Inc.; December 9, 2013

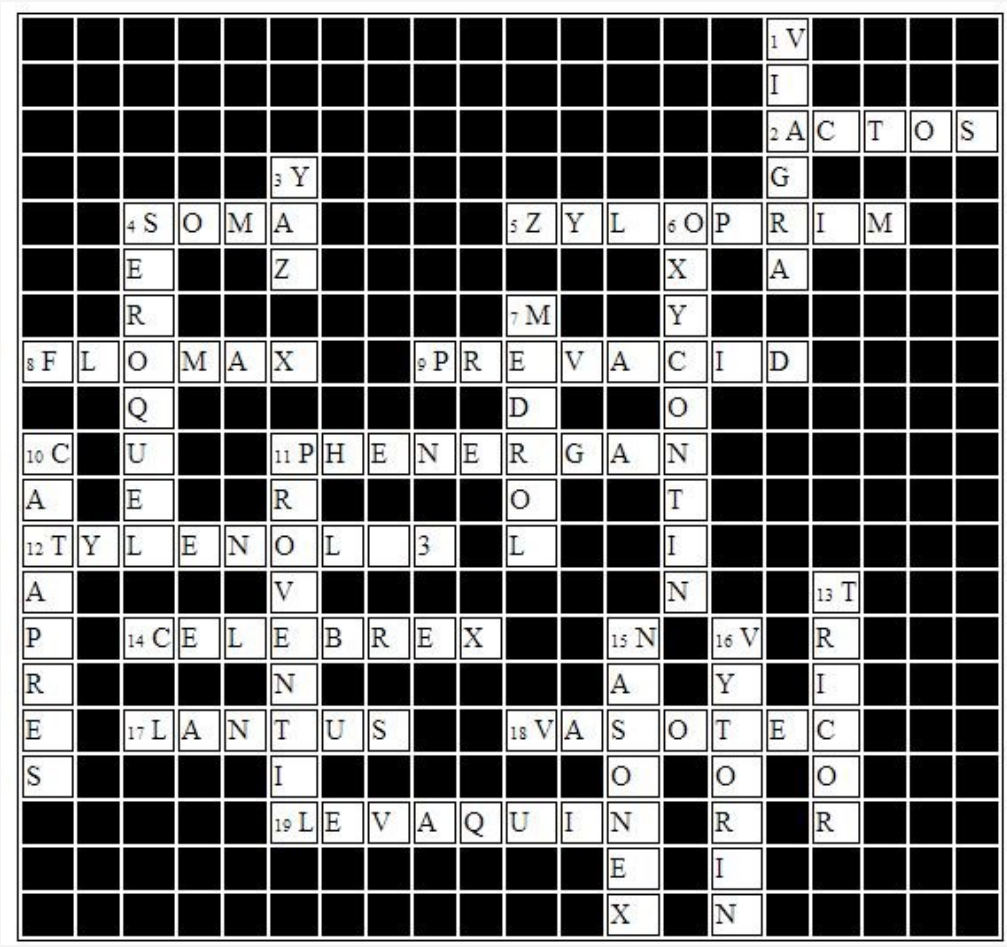
PUZZLES

PUZZLES

How Did You Do???

Answers to Word search & Look Alike and Sound Alike

1. B 2. I 3. G 4. E 5. J 6. D 7. A 8. C 9. H 10. F



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!

RHO CHI POST: EDITORIAL TEAM

@ Katharine Cimmino ***(5th Year, STJ; Editor-in-Chief)***
I have always been an avid reader and writer. As a member 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.

@ Bharat Kirthivasan ***(PhD Candidate, STJ; Co-Copy Editor [Content-Focused])***
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.

@ Hayeon Na ***(5th Year, STJ; Co-Copy Editor [Content-Focused])***
Hello! My name is Hayeon Na. I am a 2015 PharmD Candidate and one of the Copy Editors for the Rho Chi Post. I hope the information I present will be helpful, or at least interesting. If you have any comments regarding my contribution, feel free to contact me at any time!

@ Tasnima Nabi ***(4th Year, STJ; Co-Copy Editor [Content-Focused])***
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.

EDITORS

@ Erica Dimitropoulos ***(5th Year, STJ; Co-Copy Editor [Content-Focused])***
As busy student pharmacists, 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!

@ Aleena Cherian ***(6th Year, STJ; Co-Copy Editor [Graphics-Focused])***
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!

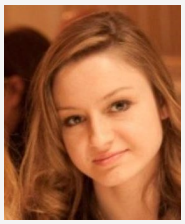
@ Melissa Roy ***(5th Year, STJ; Co-Copy Editor [Graphics-Focused])***
We as future healthcare professionals owe it to our patients and ourselves to become aware and current on the events affecting our profession. The Rho Chi Post is our way to learn new things and stay in touch with the pharmacy world, on- and off-campus. I have gained so much from reading previous publications and feel privileged to have the opportunity be a part of the team. Feel free to reach out to me with suggestions and comments.

RHO CHI POST: EDITORIAL TEAM

@ Tamara Yunusova ***(3rd Year, STJ; Senior Staff Editor)***
My name is Tamara Yunusova, and I am a 3rd 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.

@Davidta Brown ***(3rd Year, STJ; Senior Staff Editor)***
My two great loves are innovative science and quality writing, and the Rho Chi Post is an insightful combination of both. As an editor, I look forward to bringing relevant information and fresh perspectives to the student and faculty of St. John's University, as well as to making the Rho Chi Post a newsletter that offers something new to every reader.

@ Beatrice Popovitz ***(5th Year, STJ; Staff Editor)***
I am eager to relay current information on interesting topics making waves in the world of healthcare pertinent to the advancement of our profession. As student pharmacists, we are molding the future of our profession, and the Rho Chi Post facilitates the cultivation of a relationship (between students, faculty, and other members of the healthcare community) to share ideas and spread awareness of various issues. Feel free to contact me if you would like to share your ideas with other members of the University community through this platform.



@ Ada Seldin ***(5th Year, STJ; Staff Editor)***
I am thrilled to have become a new member of the Rho Chi Post team. I hope to further strengthen the goals of this newsletter and make a lasting contribution. It is important, as future pharmacists, to collaborate with our peers, as well as accomplished professionals in the field. Rho Chi Post provides a vehicle to voice our opinions and share relevant news.

@ Sang Hyo Kim ***(2nd Year, STJ; Staff Editor)***
Advancements of technology and developments of new medicines, prolonging the lifespan and improving the quality of life, have increased the geriatric population. In years to come, pharmaceutical industries and healthcare systems will persistently work to find solutions to changing demands and new problems of the society. Through the Rho Chi Post, I wish to learn, educate, and prepare myself and others for the future.

@ *You!*

We are always looking for creative and motivated students to join our team!

If you are interested in becoming an editor for the Rho Chi Post, please visit:
http://rhochistj.org/RhoChiPost/EditorApplication

EDITORS

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 is a monthly, electronic, student-operated, dean-approved publication that 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 aims to become the most exciting and creative student-operated newsletter within St. John's University College of Pharmacy and Health Sciences. Our newsletter continues to be known for its relatable and useful content. Our editorial team continues to be known for its excellence and professionalism. The Rho Chi Post essentially sets the stage for the future of student-operated 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

Zinnia, Majd, Moisey, Elissa, and Anh at the 2013 Induction Ceremony

President: **Moisey Rafailov**
Vice President: **Majd Ahmad**
Secretary: **Elissa Tam**
Treasurer: **Anh Nguyen**
Historian: **Zinnia L. Yu**

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

UPCOMING EVENTS

Jan 18-19: The NYSCHP Jan Keltz Memorial Winter CE Program
Lake Placid, New York

Feb 2: NYSCHP Pharmacotherapy Geriatrics Symposium
New York, New York

Feb 24-26: 49th AAPS Arden Conference
Rockville, Maryland