

# RHO Rx CHI post

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## Assessing Risks versus Benefits in Initiating Triple Antithrombotic Therapy

By: Jacqueline Chirico, PharmD Candidate c/o 2016

A dilemma that many clinicians face when treating patients with cardiac problems is determining the appropriateness of initiating triple antithrombotic therapy. While this is appropriate in a select patient population, it is important to understand which patients fall in this category and what risks and benefits should be considered.

Patients are placed on dual antiplatelet therapy (DAPT) when they have a coronary stent introduced or have experienced acute coronary syndrome. DAPT consists of aspirin and clopidogrel, and it can be used beyond a year in patients with a stent to prevent restenosis. Anticoagulation therapy is used in patients who are at risk of a thromboembolic event and include patients with atrial fibrillation, pulmonary embolism, deep vein thrombosis, or mechanical valves. These therapies can overlap in patients who have indications for both DAPT and oral anticoagulation therapy.<sup>1</sup>

Triple antithrombotic therapy is currently recommended for high-risk patients after acute coronary syndrome or Non-ST-Segment Myocardial Infarction (NSTEMI), who, have indications for chronic anticoagulation therapy and also have an indication for DAPT. An example of a patient who fits these criteria is someone who has had a myocardial infarction after percutaneous cardiac intervention (stent placement) or a patient who has atrial fibrillation and, also, has a stent placed.<sup>2</sup> When this therapy is used, it is important to carefully monitor the patient and to regulate the warfarin for an INR of 2-3.<sup>2</sup>

The benefit of triple antithrombotic therapy is lower mortality and a reduction in major cardiovascular adverse events.<sup>3,4,5</sup> A study involving 426 patients with atrial fibrillation undergoing stent placement showed a higher mortality in patients treated with DAPT alone (28%) when compared to patients on triple antithrombotic therapy

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## New FDA Approved Treatment in Patients With Hypoparathyroidism and Hypocalcemia

By: Dimitrios Savva, PharmD Candidate c/o 2016

Hypoparathyroidism is a rare disease that affects approximately 60,000 people in the United States.<sup>1</sup> People diagnosed with hypoparathyroidism are characterized as having insufficient levels of parathyroid hormone (PTH).<sup>2</sup> A person with this disease does not produce or secrete enough of PTH, leading to a decreased level of calcium in the blood, also known as hypocalcemia.

Hypoparathyroidism is caused by a loss of function of the parathyroid glands. The most common cause of hypoparathyroidism is neck surgery, with the removal or destruction of the parathyroid glands.<sup>3</sup> Operations most often associated with hypoparathyroidism are cancer surgeries, total thyroidectomies, and parathyroidectomies<sup>4</sup>. Other causes of this rare disease include autoimmune disease and rare genetic disorders, such as DiGeorge syndrome, as well as familial isolated hypoparathyroidism.

PTH maintains calcium homeostasis.<sup>4</sup> It enhances active reabsorption of calcium in the kidney, primarily in the distal convoluted tubule, and absorption in the intestine by increasing renal production of the active vitamin D metabolite 1,25 (OH)<sub>2</sub>D. <sup>4</sup> These mechanisms of PTH help promote the inflow of calcium into the extracellular fluid.

On January 23, 2015, the U.S Food and Drug Administration approved Natpara<sup>®</sup> to control hypocalcemia in patients with hypoparathyroidism.<sup>1</sup> Natpara<sup>®</sup> is a once-daily subcutaneous injectable recombinant PTH product that can be used as an adjunct to calcium and vitamin D supplementation.<sup>2</sup> Prior to the approval of Natpara<sup>®</sup>, the standard of care for patients was supplementation of both calcium and active vitamin D. The goal of therapy is to maintain calcium levels; however, the use of these dietary supplementation provides inconsistent and inadequate regulation of biochemical indices as well as other complications (e.g., gastrointestinal issues).<sup>2,3</sup>

Natpara<sup>®</sup> is a recombinant PTH that assists in the increase of serum calcium by the same mechanisms as

parathyroid hormone.<sup>5</sup> The REPLACE trial is the pivotal trial for Natpara<sup>®</sup> therapy in hypoparathyroidism.<sup>3</sup> The trial was a 24-week, randomized, double-blinded, placebo-controlled, multi-centered study. Patients in this trial were diagnosed with hypoparathyroidism, and were currently receiving calcium and active forms of vitamin D.<sup>5</sup> The primary endpoints were: 50% or greater reduction from baseline of oral calcium dose, 50% or greater reduction from baseline of active vitamin D dose, and maintenance of a stable albumin corrected total serum calcium concentration greater than or equal to baseline concentration and less than or equal to the upper limit of normal, but ideally within the target range of 2.0–2.25 mmol/L.<sup>6</sup> Results showed that 53% of patients in the Natpara<sup>®</sup> group achieved the primary endpoints established compared to one patient (2%) in the placebo group (percentage difference 51.1%; 95% CI 39.9–62.3; p<0.0001), and showed no difference in adverse or serious adverse events in either group.<sup>3,6</sup> The proportions of patients who had at least one adverse event were similar between groups (84 patients [93%] in the recombinant PTH group vs. 44 patients [100%] in the placebo group), including hypocalcemia, muscle spasm, paraesthesias, headache, and nausea. The proportions of patients with serious adverse events were also similar between the recombinant PTH group (ten patients [11%]) and the placebo group (four patients [9%]).<sup>6</sup>

Natpara<sup>®</sup> (parathyroid hormone) has proven itself to be a promising therapeutic option for patients with hypoparathyroidism.<sup>3</sup> It gives people the chance to have control their disease and improve their ability to live with this rare disease.

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## Seeing is Believing: A Look at VEGF Inhibitors for Diabetic Macular Edema

By: Svetlana Akbasheva, Staff Editor, PharmD Candidate c/o 2016

Diabetes is one of the biggest health problems in the United States, with the 2014 National Diabetes Statistics Report stating that 9.3% of the population, or over 29 million people, has the disease.<sup>1</sup> One of the major complications of uncontrolled diabetes mellitus is diabetic retinopathy, which results when consistently high blood glucose levels cause damage to the blood vessels of the eye.<sup>2</sup> The first manifestations of diabetic retinopathy are microaneurysms, or small swollen areas in the blood vessels of the retina. These blood vessels gradually become blocked, which begins depriving the retina of oxygen and nutrients. In response, the retina sends out signals for more blood vessels to grow. However, these new vessels are very fragile and problems arise if the vessels begin to leak, covering the eye with blood and resulting in the loss of vision.<sup>2</sup>

It is estimated that approximately 28.5% of patients with diabetes go on to develop eye problems.<sup>1</sup> One of the common manifestations of this retinopathy is diabetic macular edema (DME). The macula is the part of the eye that is responsible for sharp, central vision. Macular edema occurs when fluid from ruptured blood vessels leaks into this part of the eye, causing swelling and blurry vision.<sup>2</sup> DME can arise at any stage of diabetic retinopathy but is more common with severe disease.<sup>2</sup>

In the 1980s, the standard treatment for DME was laser eye therapy, but in recent years that has given way to intravitreal injection therapy using medications that block vascular endothelial growth

factor (VEGF).<sup>3</sup> The VEGF family is responsible for the proliferation and permeability of blood vessels and thus is a big player in the pathology of DME.<sup>3,4</sup> The three VEGF inhibitors currently in use for DME are aflibercept (Eylea®), ranibizumab (Lucentis®), and off-label bevacizumab (Avastin®).<sup>3</sup> Aflibercept is a recombinant protein,<sup>4</sup> while ranibizumab and bevacizumab are monoclonal antibodies.<sup>5,6</sup>

A recent multicenter, randomized, long-term trial conducted by the Diabetic Retinopathy Clinical Research Network put these three therapies head to head for the first time to determine which, if any, was superior in treating DME.<sup>3</sup> Visual-acuity scores were used to assess the severity of retinopathy; these scores range from 0 to 100, with a higher score indicating better vision and a score of 85 corresponding with a Snellen score of 20/20.

Patients included in the study were over 18 years old with type I or II diabetes and at least one eye with a visual acuity score between 24 and 78 as a result of clinical DME. Patients were excluded if they had received any VEGF inhibitor therapy in the past year. Block randomization was used to assign 660 patients to one of the three therapies in a 1:1:1 ratio. If patients had macular edema in both eyes, the non-study eye received the same treatment as the study eye. Investigators and study coordinators were the only people who were aware of the drug assignments; participants and personnel in charge of measuring outcomes were blinded.

Study drugs were administered every four

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weeks, at doses of aflibercept 2.0 mg, ranibizumab 0.3 mg, and bevacizumab 1.25 mg. Patients were eligible to receive laser photocoagulation therapy in addition to their anti-VEGF therapy after 24 weeks of treatment if their DME did not improve. The primary endpoint of the study was the mean change in visual-acuity scores after one year of therapy.<sup>3</sup>

The analysis of the primary endpoint was performed using the intent-to-treat population. Excluding deaths, 96% of participants completed the first year of the study. At the one-year mark, the mean improvement in the visual-acuity score from baseline was greatest in the aflibercept group, significantly better than bevacizumab (13.3 vs. 9.7,  $p < 0.001$ ) and ranibizumab (13.3 vs. 11.2,  $p = 0.03$ ).<sup>3</sup>

The investigators then further assessed these results by comparing the efficacy of the treatments depending on the baseline vision of the participants. For participants with baseline visual-acuity scores of 69 to 78 (Snellen equivalent 20/32 to 20/40), there was no significant difference in the mean improvement from baseline between the three drugs. However, in participants with baseline visual-acuity scores of less than 69 (Snellen equivalent 20/50 or worse), aflibercept was associated with significantly better vision at one year compared to both ranibizumab and bevacizumab, with a mean visual-acuity score improvement of 18.9 +/- 11.5 versus 14.2 +/- 10.6 for ranibizumab (difference 4.7,  $p = 0.003$ ) and 11.8 +/- 12.0 for bevacizumab (difference 6.5,  $p < 0.001$ ). Ocular and systemic adverse effects were comparable among the three groups, with one of the most common being intraocular pressure elevation.<sup>3</sup>

The results of this study are significant because the three VEGF inhibitors currently in use for DME differ considerably in their cost profiles. According to Medicare data, the cost of a single dose of medication is \$1950 for aflibercept, \$1200 for ranibi-

zumab, and \$50 for bevacizumab.<sup>3</sup> However, a complication with bevacizumab is that it must be repackaged into aliquots of 1/500<sup>th</sup> of the systemic chemotherapy dose to be used for intravitreal injection, which makes sterility, purity, and potency testing an additional requirement before use.<sup>3</sup> In terms of clinical practice, the results of the current study suggest that it may be more cost-effective to use intravitreal ranibizumab or bevacizumab in DME patients with baseline visual-acuity scores above 69, and reserve the more expensive aflibercept for use in patients with baseline scores of less than 69.<sup>3</sup>

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## Assessing Risks versus Benefits in Initiating Triple Antithrombotic Therapy

By: Jacqueline Chirico, PharmD Candidate c/o 2016

(18%) (hazard ratio 3.43, 95% CI 1.61-7.54).<sup>3</sup> A retrospective cohort study of 604 patients with atrial fibrillation who underwent percutaneous coronary interventions, all of whom, were given oral anticoagulation agents at discharge resulted in reduced major cardiovascular adverse events (hazard ratio 0.4, 95% CI 0.22-0.74) and lower all-cause mortality (0.34, 95% CI 0.17-0.68).<sup>4</sup> Lastly, a retrospective study of 478 patients with indication for oral anticoagulation therapy found that patients treated with DAPT alone had a significantly higher rate of stroke (8.8%) and stent thrombosis (5.9%) when compared with patients on triple antithrombotic therapy (2.8% and 1.9%, respectively).<sup>5</sup> This data suggests that major cardiovascular adverse events occur more frequently when patients who have an indication for oral anticoagulation are not put on triple antithrombotic therapy, but more information would be necessary to say this for certain.<sup>6</sup>

The risk of using this approach is the heightened risk of bleeding.<sup>3</sup> Antiplatelet and anticoagulant drugs prevent blood clots from forming and traveling to the brain or lungs. Individually, these agents each increase a patient's risk of bleeding and, when used in combination, they further worsen this risk.<sup>3</sup> In a retrospective study of 74 patients with coronary artery disease who were also treated with percutaneous coronary intervention, the three year incidence of major bleeding was 12.2% (9 out of 74 patients).<sup>7</sup>

Unfortunately, there is limited data on triple antithrombotic therapy, so if used, there should be clear indications, as well as the use of clinical judgment. If the benefits outweigh the risks, this therapy should be used for the smallest possible amount of time at the lowest effective doses necessary. More evidence is needed on this issue, but using the guide-

lines and evaluating each patient on a case-by-case basis should help health care providers have an idea of how to use this therapy in patients who need it.

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## Is SAM-E an Effective Treatment for Fibromyalgia?

By: Jacqueline Meaney, PharmD [PGY-1 Resident at Gainesville VAMC in Florida]

Fibromyalgia is a syndrome of chronic pain that affects the musculoskeletal system. Typical symptoms include pain, stiffness, fatigue, insomnia, and tenderness over specific areas. Active depression is seen in one-third of patients with fibromyalgia, and a lifetime history of depression is seen in one-half of fibromyalgia patients.<sup>1</sup> It is difficult to determine if the depression seen in fibromyalgia is a cause of fibromyalgia, or a result of coping with symptoms of this disease. Symptomatic control of fibromyalgia is the goal of therapy, since there is no cure. There are many pharmacologic and non-pharmacologic therapies to choose from when treating a symptomatic patient with fibromyalgia, however most of these therapies have not been well studied, or have failed to show statistically significant responses.<sup>2</sup>

Treatment strategies for fibromyalgia typically include a combination of medications, lifestyle modification, and self-help strategies such as acupuncture and heat therapies. There is no gold-standard of treatment, but self-efficacy and adherence to the treatment regimen have been shown to improve quality of life in fibromyalgia patients. Medications typically used to treat symptoms of fibromyalgia include analgesics, antidepressants, and GABA-analogues. There are only three medications currently FDA-approved for the treatment of fibromyalgia symptoms. These medications include milnacipran (Savella®), pregabalin (Lyrica®) and duloxetine (Cymbalta®). Exercise is currently recommended as the first step of a treatment strategy for fibromyalgia, since it has been shown to improve well-being, physical function, and pain in fibromyalgia patients.<sup>3</sup> In addition to exercise, another common non-pharmacological treatment for symptoms of fibromyalgia is diet modification. In addition to non-pharmacologic approaches, contemporary alternative medications (CAMs) are used in approximately 90% of fibromyalgia patients. CAMs typically have little evidence of efficacy, as studies often report mixed results.<sup>4</sup>

S-adenosylmethionine (SAME) is a CAM and a naturally occurring methyl donor compound that plays a role in many chemical reactions in the body. There are over 40 metabolic reactions that involve

the transfer of a methyl group from SAME to substrates such as proteins, nucleic acids, and other metabolites. Along with other contemporary alternative medications such as capsaicin, St. John's Wort, melatonin, valerian, magnesium, and Siberian ginseng, SAME has been studied for the symptomatic relief of fibromyalgia.<sup>5</sup>

Specifically, the efficacy of SAME has been studied in seven double-blind clinical trials. Of these seven trials, two trials studied IV SAME, four studied IM SAME, and one studied oral SAME.<sup>5-12</sup> These trials looked at the efficacy of SAME at doses ranging from 200-600mg daily over a range of 15-42 days. Each trial measured pain points using the Tender Point Scale (TPS), and depression using the Hamilton Rating Scale for Depression (HRSD). In addition, each trial measured additional outcomes that varied between trials, including isokinetic muscle strength (IMS), and additional measures of depression using alternative depression scales. SAME was effective in decreasing the number of tender points or the severity of tender point scores in five of the seven clinical trials.<sup>5,7,9,11,12</sup> In six of the seven trials, depression ratings improved in one or more measures (Self Evaluation for Depression, Hamilton Rating Scale for Depression, Zung's Self-Rating Scale for Depression, or Beck's Depression Inventory [BDI]).<sup>5-7,9-12</sup> However, in the seventh trial, there was no significant difference between the treatment group and the placebo group in pain ratings on a Visual Analog Scale, number of tender points, tender point score, BDI score, and physician-rated global assessment of depression. The seventh clinical trial studied 34 patients over the course of 10 days, and demonstrated no statistically significant difference between patients treated with SAME at a dose of 600mg IV daily as compared to patients treated with placebo. Four of the thirty-four patients withdrew from this study owing to adverse events resulting from SAME.<sup>8</sup>

Only one of these studies compared the efficacy of oral SAME with that of a placebo. In this study, forty-four patients with fibromyalgia were randomly assigned to either the treatment group or the placebo group. The treatment group was given 400mg of SAME twice daily for 6 weeks. A visual analog scale

was used to measure the patients' pain, morning stiffness, quality of sleep, mood, fatigue, and disease activity. The results of this randomized controlled trial (RCT) demonstrated that improvements were seen in terms of a decrease in clinical disease activity, a decrease in morning stiffness, reductions in fatigue, and improvements in mood among the SAME-treated patients compared with the placebo group. All of these factors were statistically significant. However, there was no significant difference in tender point score, depression (BDI score) or muscle strength. Mild adverse effects such as stomach upset and dizziness were reported.<sup>6, 13</sup>

Unfortunately, all seven studies used a small number of subjects (n= 10, 44, 17, 47, 34, 30, and 30). In addition, three studies did not use a placebo control group, and an additional three studies did not control the use of analgesics. Two out of the original seven studies did not show any significant difference in pain when patients were treated with SAME, <sup>6, 10</sup> and one study did not show any difference in depression.<sup>8</sup> The single study that looked at oral SAME showed a positive effect on fatigue and mood, but no significant effect on pain. <sup>6</sup>

In terms of safety, SAME is typically well-tolerated. Most of the reported adverse effects are short-lived and are of mild to moderate severity. Very few patients have withdrawn from clinical trials due to adverse effects resulting from treatment with SAME. However, that does not mean that SAME lacks adverse effects altogether. Adverse effects of oral SAME include gastrointestinal distress, dizziness, and hypomania. Adverse effects seen with injectable SAME include transient pain at the injections site, mild psychoactivation, anaphylaxis, nausea, vomiting, and diarrhea. <sup>5</sup>

While the efficacy of SAME for symptoms of fibromyalgia has been evaluated in seven clinical trials, all of these studies were small and demonstrated mixed results. The effects of oral SAME have only been reported in a single RCT, which demonstrated some positive effects on symptoms of fibromyalgia.<sup>13</sup> Furthermore, while SAME appears to be relatively safe, it is very expensive, and interactions with other medications are not well-studied.<sup>14</sup>

Larger-scale, placebo-controlled clinical trials are still needed before more definite conclusions can

be drawn with regards to the role of SAME in the symptomatic treatment of fibromyalgia. However, this does not mean that SAME should not be taken by patients with fibromyalgia to see if it results in a symptomatic relief. Oral SAME can be clinically efficacious and should not be overlooked as an agent for symptomatic relief in patients with fibromyalgia.<sup>15</sup> In a disease like fibromyalgia, where symptoms vary greatly from patient to patient, it is especially important to consider all therapeutic options, since the response to therapy varies greatly as well.<sup>4</sup>

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## Immunizations and College Gameday: A Collaboration of Opportunity for Pharmacy

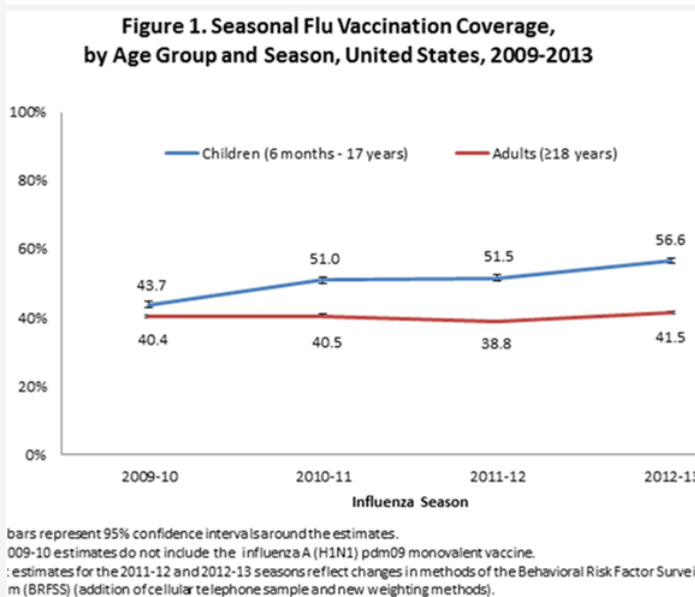
By: Jordan Kelley, Rachel Strait, Andrew Smelser, Kelsey Stephens, Trey Warnock, Tia Collier

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### Adult Vaccination Rates and Statistics

Mississippi is ranked the number one state regarding childhood vaccination rates due to a Mississippi state law stating that children are not exempt from vaccinations unless medically necessary. Most would agree that the highest ranking is beneficial to the herd immunity of our state.<sup>1</sup> According to "The College of Physicians of Philadelphia," the number of doctor visits decreases as patients age, and the number of people staying up-to-date on vaccinations is waning. Vaccinations need to be assessed yearly for each individual patient through examining his/her risk factors.<sup>2</sup> The Center for Disease Control (CDC) has specific recommendations for vaccinations in the adult population.<sup>3</sup> The truth is that many patients are unaware of the recommendations and fail to keep up with the dates that they received specific vaccinations. **Figure 1** shows that flu vaccination rates in both children and adults leave much room for improvement and pharmacists could have a significant impact in that area.

Figure 1. Seasonal Flu Vaccination Coverage, by Age Group and Season, United States, 2009-2013<sup>4</sup>



If morbidity and mortality from disease or illness can be prevented, healthcare providers' are responsible to educate and evaluate patient for possible

vaccinations. In Mississippi, pharmacists and registered student pharmacists are able to administer vaccinations to individuals of all ages in Mississippi under a protocol with a prescriber. For our state, the influenza vaccination rate is around 40.8%, while the highest rate in the United States is in Iowa at 54.7%. The adult vaccination rates have been increasing nationwide, due to the availability of pharmacists and advocacy of all healthcare providers.<sup>1</sup> The Immunization Action Coalition has guidelines for adult vaccinations, as well as the CDC. All vaccinations are not recommended for adults but under specific circumstances they could help save a life.<sup>5</sup>

### Operation Immunization

Through Operation Immunization, the University of Mississippi School of Pharmacy's American Pharmacists Association-Academy of Student Pharmacists (APhA-ASP) Chapter set a goal to immunize a total of 500 people – 185 more from the previous year. We began our campaign in September, to coincide with the CDC influenza guidelines on when to get vaccinated.<sup>3</sup> We teamed up with advisors, peers, faculty, and pharmacists to provide vaccine recommendations, vaccine schedules, and immunizations at various locations including Lyceum, Union, Grove Stage, Circle, Athletics Department, and the Pharmacy School. At each location, there were licensed pharmacists and at least five student pharmacists to help promote Operation Immunization.

### Pharmacy Students Have School Spirit

To promote the event, students advertised each event date throughout campus on bulletin boards, displayed campus TV promotion ads, and shared extensively on numerous social media outlets such as Facebook, Instagram, and Twitter. The Dean of Pharmacy, Dr. David Allen, helped to provide all student athletes with the influenza vaccine. Student pharmacists were able to immunize numerous members of various teams including football, basketball, baseball, soccer, track, tennis, rifle, band, and choir. The students were proud of their success, but they were about to be given an opportunity to advocate for



pharmacy nationwide and make Operation Immunization a legacy.



*Caption: Ole Miss student pharmacists setting up to counsel patients and give vaccinations*

The 2014 Ole Miss Rebels achieved the most regular season wins since the 1969 team. Season tickets sold out in record time. Every facet of the team worked together as one, particularly the defense, which was number one in the nation in points allowed, giving the Rebels the opportunity to succeed during the season. As the fall progressed, so did the football success for Ole Miss. The first weekend in October not only marked the beginning of American Pharmacists Month, but it was also the first time ESPN's College Gameday would be visiting The Grove. The Sunday before the Gameday crew was set to arrive in Oxford, the APhA-ASP Chapter Operation Gameday team met to develop the best immunization game plan on a 5-day period.

### **Chapter's Game Plan**

While the Rebels defense was impressive, student pharmacists were working on a defensive strategy to combat the upcoming flu season. The students developed a game plan, much like Head Coach Hugh Freeze did to overcome a #1 ranked Alabama football team. What most coaches and leaders know is that no matter how thorough a game plan is, some-

times the best "plays" come from unexpected situations. During Operation Immunization, the student pharmacists realized that it would be a remarkable opportunity to advocate for the profession of pharmacy through ESPN College Gameday. This was also an opportunity to combine pharmacy and sports, a collaboration rarely seen. The chapter used social media to start a blitz and target the hosts of College Gameday in hopes of providing each of the hosts with their Influenza vaccination.



*Caption: College Gameday's Chris Fowler (2<sup>nd</sup> from left) with Ole Miss student pharmacists*

### **Social Media Blitz**

The social media blitz began on Monday morning, September 29<sup>th</sup>. Student pharmacists sent out messages through every social media they could manage asking the hosts of College Gameday to let pharmacy students give them a flu shot. They targeted anything and everything College Gameday via Twitter and Facebook. As the week progressed, members of the College Gameday crew began to arrive and setup on campus. A group of students caught up with broadcaster Lee Corso to take a photo and promote American Pharmacists' Month. With persistence and determination, the College Gameday staff, production assistants, and even more ESPN members received their flu shots at the University of Mississippi School of Pharmacy and on the College Gameday stage. The ultimate opportunity came when Chris Fowler, the host of College Gameday, asked to receive his flu shot from one of

**BACK TO COVER**

our very own student pharmacists. The student's sign "Every Day is Gameday for Ole Miss Pharmacy" was featured on television helping to promote the profession of pharmacy during October, which is American Pharmacists Month.



*Caption: Lee Corso (4<sup>th</sup> from left) and Pharmacy Students posing with American Pharmacists Month sign*

**A Week to Remember**

The success of Operation Immunization on the Ole Miss campus greatly exceeded the goals and objectives of the chapter. In one month, the chapter immunized over a thousand people on the University of Mississippi Oxford campus with the intent of helping to improve the health of the campus community. In addition to striving to promote a healthy campus through immunizations, the ambitious pharmacy students were able to counsel patients on additional vaccines and answer any questions regarding their medications and overall health.

From fellow students tying the hosts' bowties for their first appearance on the College Gameday set, sleeping in the pharmacy building to ensure a spot on television, vaccinating one of the most recognized faces in college football, to taking down the #1 team in the nation, the Ole Miss student pharmacists had a unique opportunity to promote the profession of pharmacy in a national spotlight. Immunizations have been under scrutiny for years about their safety and effectiveness. It is up to pharmacists, as trusted health professionals, to educate and advocate.



*Caption: As the sign says: 'Every day is Gameday for Ole Miss pharmacy.'*

**SOURCES:**

1. Blinder A. Mississippi, a Vaccination Leader, Stands by Its Strict Rules. *Nytimes.com*. 2015. Available at: [http://www.nytimes.com/2015/02/05/us/mississippi-a-leader-on-vaccination-rates-stands-by-strict-rules.html?\\_r=0](http://www.nytimes.com/2015/02/05/us/mississippi-a-leader-on-vaccination-rates-stands-by-strict-rules.html?_r=0). Accessed June 1, 2015.
2. *Historyofvaccines.org*. Vaccines for Adults — History of Vaccines. 2015. Available at: <http://www.historyofvaccines.org/content/articles/vaccines-adults>. Accessed June 1, 2015.
3. Centers for Disease Control and Prevention. Recommended Adult Immunization Schedule. 2015. Available at: <http://www.cdc.gov/vaccines/schedules/downloads/adult/adult-combined-schedule.pdf>. Accessed June 1, 2015.
4. *Cdc.gov*. Flu Vaccination Coverage, United States, 2012-13 Influenza Season | FluVaxView | Seasonal Influenza (Flu) | CDC. 2015. Available at: <http://www.cdc.gov/flu/fluview/coverage-1213estimates.htm>. Accessed June 1, 2015.
5. Immunization Action Coalition. Vaccinations for Adults: You're never too old to get immunized!. 2015. Available at: <http://www.immunize.org/catg.d/p4030.pdf>. Accessed June 1, 2015.

EVENTS

Matching Column:

**LOOK ALIKE  
SOUND ALIKE**



By: Sang Hyo Kim  
Section Editor

Can **YOU** match the  
fact with the correct  
medication?

**Answers**

on next page

1. Each gram contains Trypsin 0.12 mg, Balsam Peru 87 mg, and Castor Oil 788 mg

2. May be used for refractory hypertension or in attention deficit hyperactivity disorder

3. Helps loosen phlegm (mucus) and thins bronchial secretions

4. Anticoagulant used for venous thromboembolism

5. Sodium hyaluronate used in ocular procedures

6. Rapid-acting insulin

7. An injection used for osteoarthritis knee pain

8. Aminoglycoside that causes nephrotoxicity and ototoxicity

9. Sulfonylurea available in immediate and extended release formulations

10. Sulfonylurea used with caution in elderly patients

A. Gentamicin

B. Glipizide

C. Glyburide

D. Guaifenesin

E. Guanfacine

F. Granulex

G. Healon

H. Heparin

I. Hyalgan

J. Humalog

## How Did You Do???

Answers to Look Alike and Sound Alike

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

## Quote of Month

By: Nicollette Pacheco, Staff Editor [Graphics-focused]

“You will never do anything in this world without courage. It is the greatest quality of the mind next to honor.”

Aristotle

PUZZLES

**Do you enjoy our puzzle?**

**Send us a suggestion for a brainteaser at**

**[RhoChiPost@gmail.com](mailto:RhoChiPost@gmail.com)**

**We will feature your work in our next issue!**

# RHO CHI POST: TEAM MEMBERS

**@ Tasnima Nabi (6<sup>th</sup> Year, STJ; Editor-in-Chief)**

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.

**@ Katharine Cimmino (PharmD; Graduate Copy Editor [Content-Focused])**

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; Graduate Copy Editor [Content-Focused])**

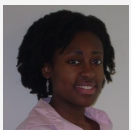
I received my doctorate in Industrial Pharmacy researching nanoparticles for delivery to the brain. The only thing I enjoy more than reading a well-written piece of work is writing it. I am glad to work for the Rho Chi Post, and I encourage others to do the same.

**@ Hayeon Na (PharmD; Graduate Copy Editor [Content-Focused])**

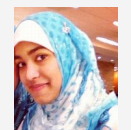
Hello! My name is Hayeon Na. I am one of the Graduate Copy Editors for the Rho Chi Post. I hope the information I present will be helpful, or at least interesting. If you have any comments regarding my contribution, feel free to contact me at any time!

**@ Melissa Roy (PharmD; Graduate Copy Editor [Graphics-Focused])**

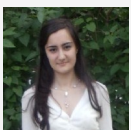
We as future healthcare professionals owe it to our patients and ourselves to be aware and current on the events affecting our profession. The Rho Chi Post is our way to learn new things and stay in touch with the pharmacy world, on- and off-campus. Feel free to reach out to me with suggestions and comments.

**@ Davidta Brown (5<sup>th</sup> Year, STJ; Copy Editor [Content-Focused])**

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.

**@ Fatema Elias (6<sup>th</sup> Year, STJ; Copy Editor [Content-Focused])**

I am honored to be a part of the Rho Chi Post team. In this age of technology and the continuously changing healthcare profession, I hope to engage like-minded students and professionals. Writing is something that I hold dear to my heart and I hope with this newsletter we can all stay well informed, interested, and educated.

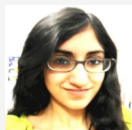
**@ Tamara Yunusova (5<sup>th</sup> Year, STJ; Section Editor: Clinical)**

My name is Tamara Yunusova, and I am a 5<sup>th</sup> 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.

**@ Sang Hyo Kim (4<sup>th</sup> Year, STJ; Section Editor: Puzzles)**

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.

## RHO CHI POST: TEAM MEMBERS



**@ Azia Tariq** (5<sup>th</sup> Year, STJ; Section Editor: News)

The Rho Chi Post is a prominent and highly esteemed resource for pharmacy students and professionals. I am privileged to be a part of the team and hope to contribute informative and engaging pieces to the newsletter.



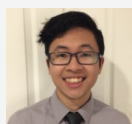
**@ Nicollette Pacheco** (5<sup>th</sup> Year, STJ; Staff Editor [Graphics-Focused])

As a new member of the Rho Chi Post team, I have a vast appreciation of what it means to be a future pharmacist in the rapidly evolving world of healthcare. I am looking forward to being on the team as a graphics-focused staff editor, and I hope to bring my passion for science and creativity to the Rho Chi Post.



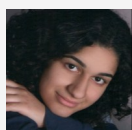
**@ Svetlana Akbasheva** (6<sup>th</sup> Year, STJ; Staff Editor [Content-Focused])

I am very excited and honored to be part of the Rho Chi Post! In a profession that is constantly evolving with new developments, it is so important to remain informed and current. The Rho Chi Post helps do just that, and I look forward to contributing to this unique publication.



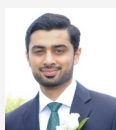
**@ Andrew Leong** (6<sup>th</sup> Year, STJ; Staff Writer)

Students have to do more than what is required of us in classes to truly learn about our profession. That's why I joined the Rho Chi Post. This publication represents a channel by which our team members, faculty, and readership can share information - something I believe is important in this ever-changing pharmacy world.



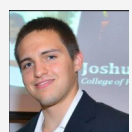
**@ Sylva Ohanian** (5<sup>th</sup> Year, STJ; Staff Writer)

The Rho Chi Post is a refreshing outlook on our profession. I am thrilled and grateful to be able to work with the other members in continuing its success, and hopefully to bring greater attention to it, which it deserves.



**@ Fawad Piracha** (6<sup>th</sup> Year, STJ; Finance and Outreach Manager)

I am delighted to join the editorial team. I have the firm intention of broadening readership and facilitating growth of the Rho Chi Post.



**@ Joshua Bliss** (6<sup>th</sup> Year, STJ; Social Media Manager)

By providing student-organized, reliable information in the healthcare field, the Rho Chi Post helps us all in fulfilling our education both in and out of the classroom. Education is the tool we use to set paths for our futures, and every chance to expand our education is a chance at building a better future. I am honored to be a part of the Rho Chi Post & look forward to the future!



**@ You!**

We are always looking for creative and motivated students to join our team!  
If you are interested in becoming a Rho Chi Post editorial team member, please visit:  
<http://rhochistj.org/RhoChiPost/Application>

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 an award-winning, monthly, electronic, student-operated, faculty-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



Michael, Lina, Julia, Jessica, Davidta, Zachary at the 2015 Induction Ceremony

**President:** Michael Bosco

**Vice President:** Lina Lin

**Secretary:** Jessica Langton

**Treasurer:** Julia Kamuda

**Historian:** Davidta Brown

**Media Relations Coordinator:** Zachary Piracha

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

## UPCOMING EVENTS

**June 14-18:** DIA 51st Annual Meeting  
Washington, DC

**June 23-24:** Annual NSCLC Summit  
Boston, MA

**June 29-July 2:** APHA Childhood Diabetes  
Conference  
San Diego, CA