St. John's University - College of Pharmacy & Health Sciences

RHO PX CHI post

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Justin Budz

A Message from the Editor-in-Chief

As the 2022 Fall Semester comes to an end, I would like to take a moment to highlight the phenomenal work done by the Rho Chi Post Editorial Team. This year, we were able to create a redesigned newsletter, increase the number of articles per issue by 40%, introduce interview-style writing into the newsletter, increase the size of our editorial team by over 50%, and create a pilot mentor-mentee program to help in the professional development of younger pharmacy students. Since entering my sixth year of the pharmacy program, I have been flooded with unique experiences, including a multitude of experiential rotations, the opportunity to present clinical research, and my own personal endeavors through the post-doctoral fellowship application process. Keeping in mind the influx of responsibilities I took on this year, I would like to thank all members of the editorial team for their diligent and passionate work, as the growth and success of the Rho Chi Post would not have been possible without their significant contributions. With the upcoming 2023 Spring Semester right around the corner, I would like to wish our student body the best of luck with their upcoming classes and other extracurricular opportunities that they may be seeking!

Frequently Asked Questions

Who can write for the Rho Chi Post?

Anyone can write for the Rho Chi Post! Our newsletter is not exclusive to St. John's University students. The Rho Chi Post accepts articles on a daily basis!

How do I submit an article?

You can submit an article by creating an account on our website! Go to www.rhochistj.org/RhoChiPost, click the login button from the upper menu bar, and click register. Upon making an account, you will be able to submit articles to our author inbox.

Who determines article topics?

You are free to choose an article topic of your choice. Take a look at our Author Guidelines for ideas.

What happens after I upload my draft article on the Rho Chi Post website?

Our Editor-In-Chief (EIC) will either edit the article directly or assign the article to a staff editor. If any revisions are needed, the editor will upload the article back to the portal, notifying the author via email. The author can then download the edited article, make the suggested revisions, and reupload the draft back to the portal. Additional drafts will be revaluated by our copy editor and then EIC, repeating this process. Once no further revisions are needed, the article is accepted for publication.

Is there a deadline for authors to send revisions?

There is no deadline to submit revisions for an article. However, the quicker revisions are made, the quicker the article can move through our editing process. Once an article is accepted for publication, it will be moved into a queue to be placed into an upcoming issue.

About the Rho Chi Post

The Rho Chi Post was developed by the St. John's University Rho Chi Beta Delta Chapter in October 2011 as an electronic, student-operated newsletter publication with a team of three student editors and one Editor-in-Chief. Today, our newsletter boasts 12 volumes, over 87 published issues, and more than 600 unique articles to date with a staff of first to sixth year student pharmacists, as well as returning PharmD graduates.

The newsletter is distributed by St. John's University College of Pharmacy and Health Sciences to more than 1,500 students and faculty members. Our monthly electronic mailing lists continues to extend readership far beyond campus.

Mission

The Rho Chi Post is an award-winning, 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 and faculty.

Vision

The Rho Chi Post aims to become the most creative and informative 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 sets the stage for the development of individual writing skills, collaborative team work, and leadership.

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AstraZeneca's Farxiga is First Heart Failure Drug to Show Across-the-Board Mortality Benefit

By: Jennifer Galvet, PharmD Candidate c/o 2024

Farxiga (dapagliflozin) is a first-in-class, oral, once daily sodium-glucose cotransporter 2 (SGLT2) inhibitor indicated for improving glycemic control in type 2 diabetes (T2D), reducing the risk of cardiovascular (CV) death and hospitalization in heart failure (HF), and reducing the risk of sustained eGFR decline in chronic kidney disease.[1] Dapagliflozin inhibits SGLT2 located in the proximal renal tubules of the kidneys. SGLT2 is responsible for the reabsorption of filtered glucose from the tubular lumen. Inhibition of SGLT2 reduces the reabsorption of filtered glucose, promoting its excretion through the urine. Additionally, dapagliflozin reduces sodium reabsorption, lowering both preload and afterload of the heart.[2]

Original Phase III DAPA-HF Trial

In 2020, dapagliflozin was approved in the United States to reduce the risk of CV death and hospitalization in HF with reduced ejection fraction (HFrEF), with or without T2D.[3] The Food and Drug Administration (FDA) approved dapagliflozin using data from the *Dapagliflozin and Prevention of Adverse Outcomes in Heart Failure* (DAPA-HF) trial.[4] In this phase III, prospective, placebo-controlled trial, 4,744 patients with New York Association class II, III, or IV HF and an ejection fraction of ≤ 40% were randomized to receive either dapagliflozin 10 mg once daily or placebo, in addition to standard recommended HF device and drug therapy.[4]

The primary outcome was a composite of worsening HF, signified by hospitalization or the need for intravenous therapy, or CV death.[4] Over a median of 18.2 months, the primary outcome occurred in 386 patients (16.3%) in the dapagliflozin group and in 502 patients (21.2%) in the placebo group (hazard ratio [HR] 0.74; 95% confidence interval [CI] 0.65 to 0.85; $p < 0.001$).[4] Dapagliflozin was superior to placebo in all individual components of the composite primary outcome. When comparing patients given dapagliflozin vs. placebo, 231 (9.7%) vs. 318 (13.4%) were hospitalized for HF (HR 0.70; 95% CI 0.59 to 0.83) and 277 (9.6%) vs. 273 (11.5%) died from CV causes (HR 0.82; 95% CI 0.69 to 0.98), respectively.[4] During the trial period, 21 patients needed to be treated to prevent one primary outcome (95% CI 15 to 38).[4]

A secondary outcome of the DAPA-HF trial was a composite of hospitalization for HF or CV death.[4] In the dapagliflozin group, there were 567 total first and recurrent events, including 340 hospitalizations for HF and 227 deaths from CV causes. In the placebo group, there were 742 total events, including 469 hospitalizations for HF and 273 deaths from CV causes.[4] This data showed a relative risk (RR) of 0.75 (95% CI 0.65 to 0.88; $p < 0.001$).[4] Among patients with HFrEF, it was concluded that those who received dapagliflozin had a lower risk of worsening HF or death from CV causes than those who received placebo, regardless of the patient's diabetes condition.[4]

Dapagliflozin Demonstrates Mortality Benefit Irrespective of Ejection Fraction

Results from a patient level pooled meta-analysis of the DAPA-HF and *Dapagliflozin Evaluation to Improve the LIVEs of Patients With Preserved Ejection Fraction Heart Failure* (DELIVER) trials demonstrated that dapagliflozin, compared to placebo, showed mortality improvements in patients with HF, regardless of their left ventricle ejection fraction (LVEF) range.[5] In this meta-analysis, 11,007 patients were included. Of these patients, 4,744 (43%) had an LVEF ≤ 40% and 5,504 (50%) were randomized to receive dapagliflozin.[5]

This meta-analysis evaluated the incidence of death from CV causes, death from all causes, total hospitalizations for HF, time to first hospitalization for HF, and death from a composite of causes. Regarding incidence of death from CV causes, dapagliflozin, compared to placebo, exhibited a HR of 0.86 (95% CI 0.76 to 0.97; p = 0.01).[5] In a subgroup analysis of patients with a LVEF ≤ 40%, dapagliflozin exhibited a HR of 0.82 (95% CI 0.69 to 0.98). In patients with an LVEF > 40%, dapagliflozin showed a HR of 0.89 (95% CI 0.76 to 1.04).[5] Regarding death from all causes, dapagliflozin was found to have a HR of 0.90 (95% CI 0.82 to 0.99; p = 0.03).[5] Lastly, regarding total HF hospitalizations, dapagliflozin had a RR of 0.71 (95% CI 0.65 to 0.78; p < 0.001).[5] These results directly reflect the valuable role dapagliflozin can play in clinical practice as treatment can be initiated while waiting for the ejection fraction to be measured.

Farxiga vs. Jardiance

Jardiance (empagliflozin) is indicated to reduce the risk of CV death and hospitalization in adults with both HF and T2D with established CV disease, as well as to improve glycemic control.[6] Similar to dapagliflozin, empagliflozin is also a SGLT2 inhibitor that reduces sodium and glucose reabsorption in the kidney. SGLT2 is located in the early segment of the proximal tubule and is responsible for reabsorbing 80 to 90% of filtered glucose. The remaining glucose is reabsorbed by SGLT1 in the latter portions of the proximal tubule.[7] In terms of their selectivity for these transporters, dapagliflozin approximately has a 1200-fold higher potency for SGLT2 than SGLT1, whereas empagliflozin approximately has a 2700-fold higher potency.[7] In addition to their ability to improve glycemic control, both dapagliflozin and empagliflozin provide cardioprotective effects and reductions in adverse CV outcomes.[7]

In 2022, Shi et al. published a meta-analysis comparing the efficacy of dapagliflozin 10 mg and empagliflozin 10 mg in HF.[8] Databases were searched up to October, 2021, resulting in the inclusion of 11 randomized controlled trials. The primary outcomes were hospitalization for HF and exacerbation of HF. When individually compared to placebo for risk of hospitalization from HF, empagliflozin had an odds ratio (OR) of 0.76 (95% CI 0.69 to 0.84) while dapagliflozin had an OR of 0.68 (95% CI 0.58 to 0.80). The network meta-analysis comparing both agents together showed that the OR of dapagliflozin vs. empagliflozin was 0.90 (95% CI 0.75 to 1.10).[8] Regarding risk of exacerbation of HF, empagliflozin, when compared to placebo, showed an OR of 0.68 (95% CI 0.62 to 0.74) while dapagliflozin showed an OR of 0.70 (95% CI 0.59 to 0.84).[8] When comparing both agents, the OR of empagliflozin vs. dapagliflozin was found to be 0.70 (95% CI 0.59 to 0.84).[8]

Additional outcomes of interest included CV death/hospitalization for HF, all-cause death, and hypoglycemia. When individually

compared to placebo for the risk of CV death/hospitalization from HF, dapagliflozin showed an OR of 0.71 (95% CI 0.62 to 0.82) while empagliflozin showed an OR of 0.74 (95% CI 0.64 to 0.87).[8] The network meta-analysis of dapagliflozin vs. empagliflozin demonstrated an OR of 0.95 (95% CI 0.78 to 1.17).[8] In the analysis of all-cause death, the OR of dapagliflozin, compared to placebo, was 0.77 (95% CI 0.66 to 0.91) whereas the OR of empagliflozin was 0.96 (95% CI 0.86 to 1.08).[8] When comparing dapagliflozin vs. empagliflozin, the OR was 0.80 (95% CI 0.66 to 0.98).[8] Lastly, when comparing each agent individually to placebo to look at the risk of hypoglycemia, dapagliflozin showed an OR of 0.85 (95% CI 0.40 to 1.83) while empagliflozin had an OR of 0.92 (95% CI 0.67 to 1.27).[8] The OR of dapagliflozin vs. empagliflozin was 0.92 (95% CI 0.40 to 2.12).[8] Overall, the results from this meta-analysis show that both dapagliflozin 10 mg and empagliflozin 10 mg had comparable results when evaluating their efficacy in reducing mortality, hospitalizations, and risk of adverse effects like hypoglycemia.

Conclusion

The results from the above studies help show the cardioprotective role of SGLT2 inhibitors, supporting their place in treatment guidelines for HF. The American College of Cardiology (ACC), American Heart Association (AHA), and Heart Failure Society of America (HFSA) released a joint guideline updating recommendations for preventing, diagnosing, and managing HF.[9] The new guidelines recommend that patients at risk for HF with T2D and either CV disease or high CV risk should initiate SGLT2 inhibitor therapy. For patients with HFrEF, the guidelines recommend pharmacological intervention with SGLT2 inhibitors regardless of whether they have T2D. For patients with HF with mildly reduced ejection fraction (HFmrEF) or HF with preserved ejection fraction (HFpEF), initial treatment with SGLT2 inhibitors are now deemed potentially beneficial in decreasing CV mortality and hospitalization risk.[9] Overall, these updated guidelines increase the recommended uses for dapagliflozin, allowing for improved prevention and delay of HF and CV disease.

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Want to brush up on the updated guidelines for the treatment of Heart Failure? Visit the American Heart Association/American Stroke Association website at:

www.ahajournals.org

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Interested in joining our Editorial Team?

The Rho Chi Post currently has positions open for staff writers, staff editors, content-focused copy editors, and graphics-focused copy editors.

Scan the QR Code below to learn more about these positions and to apply for a spot on our team!

Rho Chi Talks: Valuable Networking Opportunities at Alumni Insider's View

Featuring: Amanda Murray, PharmD Candidate c/o 2024 and Laura Cranston, B.S.Pharm
By: Ashley Dao, PharmD Candidate c/o 2024

Alumni Insider's View (AIV) is an annual program held in Washington D.C. that provides students from St. John's University with the opportunity to explore nontraditional career pathways in pharmacy. Students are able to network with pharmacists that hold positions as pharmaceutical executives, legislators, and lobbyists. In 2022, students had the chance to speak with pharmacists from AstraZeneca, the American Association of Colleges of Pharmacy (AACP), Pharmacy Quality Alliance (PQA), Walter Reed National Military Medical Center, and many other organizations.

Meet Amanda Murray

Amanda Murray is a fifth-year pharmacy student at St. John's University. She stumbled upon pharmacy because of her love for chemistry in high school. Pharmacy seemed like a great profession for her to pursue because of the plethora of career paths that she could take. During her time at St. John's, Amanda has served as the fundraising chair for Lambda Kappa Sigma, secretary and president for the American Association of Psychiatric Pharmacists (AAPP), and events coordinator for the Student Society of Pediatric Pharmacy (SSPP). Currently, Amanda is interested in practicing in population health and learning more about association management. Outside of school, Amanda enjoys running, volunteering with the American Foundation for Suicide Prevention (AFSP), and raising awareness for suicide prevention through a brand she created in 2020 known as OneMoreDay.

Why did you decide to participate in Alumni Insider's View?

I wanted to see what opportunities are available for me regarding APPE rotations and residency programs in Washington D.C. I knew someone who participated in AIV a few years ago. She had a great experience and encouraged me to apply.

What was the application process like?

The application process required an essay, curriculum vitae, and an interview. The essay was to assess what you hoped to gain out of the AIV trip. For me, I really wanted to gain exposure to the various nontraditional pathways in pharmacy. I prepared for the interview by

thinking of ways I could apply my previous experiences to what I wanted to gain from AIV.

Tell us about your experience at Alumni Insider's View.

The first site we visited was AstraZeneca. I enjoyed seeing the diverse group of alumni holding various positions in industry. We were able to meet current fellows, as well as past fellows who were hired after their fellowships. I did not have much exposure to industry prior to AIV, so it was interesting to hear about the different perspectives and avenues to entering the pharmaceutical industry. Next, meeting with AACP was a highlight of my trip because of the positive energy from the panelists. It was very encouraging to see pharmacists advocate for our profession and it exposed me to the opportunity to work within an association. Additionally, we were also able to hear from a group of pharmacists from the PQA, the American Society of Consultant Pharmacists (ASCP), and the National Community Pharmacists Association (NCPA). Our final stop was at Walter Reed National Military Medical Center. We were able to hear from a mixed panel of uniformed and civilian pharmacists, helping me gain a perspective on the different responsibilities these pharmacists play in a federal hospital.

What did you gain from this experience?

I was able to gain a network in the Washington D.C. area that I could rely on in the future. All the panelists were very welcoming and willing to help. I also gained a new perspective on pharmacy. Before AIV, I wouldn't have considered the association pharmacy sector, but now I am thinking about doing an APPE rotation at an association.

What was the most valuable lesson you learned?

The most valuable lesson I learned is that there is always going to be a career path for you, no matter how long it takes to find it. Don't be afraid of change because you don't have to be trapped. At AIV, I was able to meet pharmacists who broke the mold and got themselves unstuck from stagnate positions.

What tips do you have for students interested in participating in Alumni Insider's View?

Just go for it! You never know what you will learn from this trip. The school finances the trip for students, so the only thing you have to pay for are snacks, breakfast, and one lunch. If you are worried about missing class, remember that it is equally important to show up for yourself. Don't be afraid to take a chance and remember that you can always find someone who is willing to help you get to where you want.

Interested in applying for Alumni Insider's View? Keep an eye out for emails from the College of Pharmacy and Health Sciences.

Application forms are typically sent out early in the Fall Semester around September.

Meet Laura Cranston

Laura Cranston graduated from St. John's University in 1983 with her Bachelor of Pharmacy. Post-graduation, she chose to pursue an executive fellowship in association management at ASCP. In 2006, Laura founded PQA, a nonprofit organization focused on improving medication safety, adherence, and appropriate usage. Laura was the CEO of PQA for over a decade before creating her own consulting business, Cranston & Associates, LLC. Laura provides a unique perspective as an alumna because she too participated in AIV when she was in school.

Why did you choose to go to pharmacy school?

When I was in high school, I worked in a pharmacy in Flushing, NY. I always admired the role pharmacists played in patient care. I decided to apply to the St. John's pharmacy program. While in school, I spent a lot of time considering whether I should pursue a traditional career in community pharmacy or a nontraditional pathway. My trip with AIV as a student played a big role in this decision and I ultimately chose a nontraditional path, which began with a life sciences organization, followed by over three decades in healthcare association management positions.

What made you interested in being involved in Alumni Insider's View and what brings you back every year?

I had the opportunity to be involved in the program (AIV) as a student and I saw how valuable it was. Once I moved to Washington D.C., I became involved again and stayed involved ever since. Over the 25 years I have participated in AIV, I have seen over 500 students and I am still in touch with some of them. It's very exciting to see students grow and I have enjoyed mentoring many of the students in their early professional years, post-graduation.

Tell us about your role at Pharmacy Quality Alliance.

PQA is a national quality organization dedicated to improving medication safety, adherence, and appropriate usage. As the founder, my role was to establish the vision and strategic direction of this multi-stakeholder organization that would help influence the nation's approach to medication use quality. The team at PQA, along with its nearly 250 corporate members, helps to shape and inform quality measure development, connect with industry influencers, quality experts, healthcare thought leaders, and quality stakeholders, and develop educational resources that support our measure development and implementation initiatives. At the time it was established in 2006, this was a field that was not well defined in pharmacy. During my time as CEO, I had the opportunity to work with organizations to define quality when it came to medication use.

Tell us about your responsibilities as a consultant.

As a consultant, I am using the expertise that I have gained throughout my previous roles to help other organizations, both in the nonprofit and for-profit communities, with strategic growth initiatives. I am fortunate to have been in this field for a long time and to have grown a

network throughout my years as CEO of PQA and as part of the leadership team at the National Association of Chain Drug Stores. The focus of my consulting practice is to utilize my expertise and understanding of the changing landscape in healthcare quality for business development and strategic growth.

What tips do you have for students who are interested in a nontraditional career path?

AIV allows you to become professionally engaged early on, but it is not required to gain more insight into nontraditional roles. Whether it is on a school, state, or national level, I highly recommend that students engage in state and national pharmacy organizations and build their knowledge of the broader initiatives impacting the profession and strengthen their pharmacy advocacy skills. Start to build your network by creating a LinkedIn profile and connecting with other students, pharmacists, and associations. Follow associations on LinkedIn or Instagram and sign up to be a part of their email lists to make sure you don't miss opportunities for internships or residencies.

On behalf of the Rho Chi Post, we would like to thank Amanda Murray and Laura Cranston for taking the time to share their experiences with our community!

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Mark Your Calendars!

Join the Rho Chi Post this upcoming 2023 Spring Semester as we prepare to host the following events:

Jan. 30th: **Activities Fair**

Feb. TBD: **Writing Workshop**

Follow us on our Instagram and Facebook pages to get the most up to date information on all of our semester events!

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Pediatric COVID-19 Immunization Schedules Updated with Bivalent Booster Vaccines

By: Helen Li, PharmD Candidate c/o 2023

On June 18, 2022, Centers for Disease Control and Prevention (CDC) Director, Rochelle P. Walensky, M.D., M.P.H., endorsed the Advisory Committee on Immunization Practices' recommendation to expand eligibility of Coronavirus Disease 2019 (COVID-19) vaccinations to children 6 months through 5 years of age.[1] On August 31, 2022, the United States (US) Food and Drug Administration (FDA) amended the emergency use authorizations (EUAs) of the Moderna and Pfizer-BioNTech COVID-19 vaccines to authorize bivalent formulations for use as booster doses at least two months following primary series or booster vaccination.[2] As of December 2022, pharmacists are able to administer the Pfizer-BioNTech and Moderna vaccines to children as young as 6 months of age.[3] Primary series doses utilize monovalent vaccines, designed to protect against the original strain of the virus that causes COVID-19. Booster doses utilize updated, bivalent vaccines, designed to protect against both the original strain and the Omicron variant BA.4 and BA.5.[3]

Pfizer-BioNTech: Immunization Schedule for Children 6 Months to 4 Years of Age

Pfizer-BioNTech permits primary vaccination in children 6 months to 4 years of age using two doses of the monovalent vaccine followed by one dose of the bivalent vaccine. Both the monovalent and bivalent vaccines are packaged as maroon-capped vials with maroon -bordered labels. Each vaccine must first be reconstituted using 2.2 mL of 0.9% sodium chloride. Each dose for administration is 3 µg/0.2 mL.[4] The first two doses of the vaccination series utilize the monovalent vaccine. The second dose is administered 3 to 8 weeks after the first dose. The third dose given is the bivalent vaccine, which can be administered at least 8 weeks after the second dose. Children 6 months to 4 years of age are considered up to date with the COVID-19 vaccination 2 weeks after the third dose. As of December 2022, an additional booster dose is not recommended for this age group.[3] The injection site for children 6 months to 2 years of age is the vastus lateralis muscle, located in the anterolateral thigh. The injection site for children 3 years of age and older is the deltoid muscle, located in the upper arm.[4]

Pfizer-BioNTech: Immunization Schedule for Children 5 to 11 Years of Age

Children ages 5 to 11 can complete the vaccination series with the administration of two doses of the monovalent vaccine and one booster dose of the bivalent vaccine.[3] Both the monovalent and bivalent vaccines are packaged as orange-capped vials with orange-bordered labels. Each vaccine must first be reconstituted using 1.3 mL of 0.9% sodium chloride. Each vaccine is administered as a dose of 10 µg/0.2 mL.[4] The second dose of the primary series is administered 3 to 8 weeks after the first dose. The booster dose is administered at least 8 weeks after the second dose or last booster. Children ages 5 to 11 are considered up to date immediately after receiving the most recent bivalent booster.[3]

Pfizer-BioNTech: Immunization Schedule for Children 12 to 17 Years of Age

A three-dose vaccination series, consisting of two monovalent vaccine doses and one bivalent booster dose, is available for children 12 to 17 years of age.[3] Both the monovalent and bivalent vaccines are packaged as gray-capped vials with gray-bordered labels. Reconstitution is not needed for either vaccine vial. Both vaccines are administered as a dose of 30 µg/0.3 mL.[4] The second dose of the primary series is administered 3 to 8 weeks after the first dose. The booster dose is administered at least 8 weeks after the second dose or last booster. Children ages 12 to 17 are considered up to date immediately after receiving the most recent bivalent booster.[3]

Moderna: Immunization Schedule for Children 6 Months to 5 Years of Age

The Moderna vaccination series in children 6 months to 5 years of age consists of two doses of the monovalent vaccine and one dose of the bivalent booster. The monovalent vaccine is packaged as a blue-capped vial with a magenta-bordered label. Each dose for administration is 25 µg/0.25 mL.[5] The bivalent vaccine is packaged as a dark pink-capped vial with a yellow-bordered label. Each dose for administration is 10 µg/0.2 mL. Reconstitution is not required for either vaccine vial. Children 6 months to 5 years of age will receive two doses of the monovalent vaccine. The second dose is administered 4 to 8 weeks after the first dose. The booster dose is administered at least 8 weeks after the second primary series dose. Children 6 months to 5 years of age are considered up to date immediately after they have received the most recent bivalent vaccine.[3] Similar to the Pfizer-BioNTech vaccine, the injection site for children 6 months to 2 years of age is the vastus lateralis muscle, located in the anterolateral thigh. The injection site for children 3 years of age and older is the deltoid muscle, located in the upper arm.[5]

Moderna: Immunization Schedule for Children 6 to 11 Years of Age

Children ages 6 to 11 can complete the vaccination series with the administration of two doses of the monovalent vaccine and one booster dose of the bivalent vaccine.[3] The monovalent vaccine is packaged as a blue-capped vial with a purple-bordered label. It is administered at a dose of 50 µg/0.5 mL. The bivalent vaccine is packaged as a blue-capped vial with a gray-bordered label. It is administered at a dose of 25 µg/0.25 mL. Neither of the vaccines have to be reconstituted.[5] The second dose of the primary series is administered 4 to 8 weeks after the first dose. The booster dose is administered at least 8 weeks after the second primary series dose. Children ages 6 to 11 are considered up to date immediately after receiving the most recent bivalent booster.[3]

Moderna: Immunization Schedule for Children 12 to 17 Years of Age

A three-dose vaccination series, consisting of two monovalent vaccine doses and one bivalent booster dose, is available for children 12 to 17 years of age.[3] The monovalent vaccine is packaged as a red-capped vial with a blue-bordered label. It is administered at a dose of 100 µg/ 0.5 mL. The bivalent vaccine is packaged as a blue-capped vial with a gray-bordered label. It is administered at a dose of 50 µg/0.5 mL. Neither of the vaccines have to be reconstituted.[5] The second dose of the primary series is administered 4 to 8 weeks after the first dose. The booster dose is administered at least 8 weeks after the second primary series dose. Children ages 12 to 17 are consid-

ered up to date immediately after receiving the most recent bivalent booster.[3]

Conclusion

As of November 30, 2022, the US has seen approximately 1,610,000 children under the age of 5 receive at least one COVID-19 vaccine dose since June 18, 2022.[6] Regarding those 5 years of age and older, about 265,553,660 (85%) Americans have received at least one COVID-19 vaccine dose. Within this age group, about 39,719,443 (12.7%) Americans have received an updated, bivalent booster dose.[6] The increased eligibility criteria and expanded availability of bivalent booster vaccines enable pharmacists to maximize immunization efforts. Pharmacists play a vital role in the community to help ensure that patients are receiving the appropriate vaccines in a timely manner. As vaccination eligibility and recommendations evolve, healthcare providers must stay informed and remain vigilant to ensure adherence to vaccine schedules and improve public health efforts.

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FDA Approves Tzield (teplizumab-mzwv) to Delay Onset of Type 1 Diabetes

By: Justin Budz, PharmD Candidate c/o 2023

Diabetes mellitus encompasses both chronic and reversible conditions that affect the body's ability to utilize glucose. In 2019, about 28.7 million (8.7%) people in the United States (US) had diagnosed diabetes. Of this population, about 1.6 million (5.7%) people ages 20 or older and 244,000 (0.9%) people ages 19 or younger had diagnosed type 1 diabetes (T1D).[1] T1D is characterized by the destruction of insulin-producing pancreatic beta cells, which eventually results in an absolute deficiency of insulin. The majority of T1D is attributable to autoimmune-mediated destruction of beta cells by CD4+ and CD8+ T cells and macrophages that infiltrate the islets of Langerhans.[2,3]

Immunotherapy that can directly inhibit beta cell destruction serves as a potential treatment for autoimmune T1D at clinical onset in patients with remaining functional beta cells. Preservation of beta cell function results in prolonged adequate glycemic control to lessen the risk of retinopathy, nephropathy, hypoglycemia, and ketoacidosis.[4] Anti-CD3 treatment was identified as a potential candidate for treatment of T1D when studies in non-obese diabetic mice showed that injections of an anti-CD3 antibody could reverse disease.[5] Since those preclinical trials, current studies have attempted to achieve the same results using a non-activating humanized monoclonal anti-CD3 agent, such as teplizumab.[6]

On November 17, 2022, the US Food and Drug Administration (FDA) approved Tzield (teplizumab-mzwv) injection to delay the onset of stage 3 T1D in patients 8 years of age and older who currently have stage 2 T1D.[7] Teplizumab-mzwv is a monoclonal antibody that binds to CD3, a cell surface antigen present on T cells. This anti-CD3 mechanism involves partial agonistic signaling and deactivation of pancreatic beta cell autoreactive T cells. Anti-CD3 activity leads to an increase in the proportion of regulatory T cells and of exhausted CD8+ T cells in peripheral blood, suggesting an augmented immune tolerance.[4,8] The FDA's recent approval of teplizumab-mzwv affords patients with a delay in the burdens of T1D, extending clinical diagnosis by months to years.

Literature Review of the Phase 2 Clinical Trial Supporting the FDA's Approval of Teplizumab-mzwv

The FDA based its approval of teplizumab-mzwv from the results of a phase 2, randomized, placebo-controlled, double-blind

trial conducted by Herold et al.[9] The trial was conducted from 2011 through 2018 at sites in the US, Canada, Australia, and Germany.[9] Eligible patients were between the ages of 8 to 45 with at least one first or second degree relative diagnosed with T1D. Additional inclusion criteria required the presence of at least two diabetes autoantibodies, as well as evidence of dysglycemia confirmed by an oral glucose tolerance test within 7 weeks of the baseline visit.[9] Patients with previously diagnosed T1D, abnormal laboratory chemical values, evidence of an acute infection, or previous treatment with teplizumab or other monoclonal antibodies within one year of the trial were excluded from the study.[9]

Study investigators recruited 112 potential participants, of which 76 underwent randomization in a 1:1 ratio to receive either teplizumab-mzwv or placebo. Randomization was stratified by age (< 18 years or ≥ 18 years) and second oral glucose-tolerance test results before treatment (impaired tolerance, normal tolerance, or diabetes).[9] 55 (72%) of the participants included in the trial were less than 18 years of age. The majority of participants were white, and more than half were siblings of patients with T1D.[9] Upon randomization, 44 patients were assigned to the teplizumab-mzwv group, receiving a 14-day outpatient course of teplizumab-mzwv administered intravenously in a clinical research center. Teplizumab-mzwv was given at a dose of 51 μg/m^2 of body-surface area on day 0, a dose of 103 μg/m^2 on day 1, a dose of 207 μg/m^2 on day 2, a dose of 413 μg/m^2 on day 3, and a dose of 826 μg/m^2 on days 4 through 13. For the control group, 32 patients were assigned to receive placebo, following the same 14-day outpatient dosing schedule.[9]

41 (93%) of the participants in the teplizumab-mzwv group and 28 (88%) of the participants in the placebo group completed the 14-day course of their respective agents. The median total dose of teplizumab-mzwv administered was 9.14 mg/m^2.[9] The median follow-up duration was 745 days. During this study, the primary end point investigated the elapsed time from randomization to clinical diagnosis of diabetes. The secondary endpoint evaluated the number of participants who experienced adverse effects.[9]

Regarding efficacy data, teplizumab-mzwv, compared to placebo, was able to show statistically significant results in delaying the onset of T1D. In the teplizumab-mzwv group, 19 (43%) participants were diagnosed with T1D, compared to 23 (72%) participants in the placebo group. The annual rates of diagnosis of T1D were 14.9% per year in the teplizumab-mzwv group and 35.9% per year in the placebo group. The median time to diagnosis was 48.4 months in the teplizumab-mzwv group and 24.4 months in the placebo group. The overall hazard ratio (HR) of teplizumab-mzwv compared to placebo was 0.41 (95% confidence interval [CI] 0.22 to 0.78; P = 0.006).[9] Overall, 42 (55%) participants were diagnosed with T1D. The progression to clinical T1D diagnosis was greater in the first year after trial entry (17 participants, 40%) than in year 2 (10 participants, 24%), year 3 (6 participants, 14%), or year 4 (5 participants, 12%).[9] Teplizumab-mzwv was found to have its greatest effect in the first year, where diabetes was diagnosed in only 3 participants (7%) in the teplizumab-mzwv group, compared to 14 participants (44%) in the placebo group (HR 0.13; 95% CI 0.05 to 0.34).[9]

Additionally, subgroup analyses were conducted to compare the effects of teplizumab

-mzwv based on human leukocyte antigens (HLA) type and autoantibodies.[9] Among the participants in the teplizumab-mzwv group, 21 (49%) had HLA-DR3 and 28 (65%) had HLA-DR4 major histocompatibility complex (MHC) molecules. The presence of HLA-DR4 and the absence of HLA-DR3 were both associated with greater responses to teplizumab-mzwv (HR of 0.20 [95% CI 0.09 to 0.45] and HR of 0.18 [95% CI 0.07 to 0.45], respectively).[9] The response to teplizumab-mzwv was also greater among participants without anti–zinc transporter 8 (ZnT8) antibodies (HR 0.07; 95% CI 0.02 to 0.26).[9] The presence or absence of other autoantibodies was not associated with a clinical response from teplizumab-mzwv.[9]

Regarding safety data, the most common adverse event categories (those occurring ≥ 5%) associated with teplizumab-mzwv included blood/bone marrow, dermatologic, pain, infection, gastrointestinal, metabolic/laboratory, pulmonary/upper respiratory, constitutional symptoms, and allergy/immunologic.[9] The most common adverse reactions were lymphopenia, rash, leukopenia and headache. A total of 15 lymphopenia events occurred in the teplizumab-mzwv group during the first 30 days after administration, with lymphocyte counts decreasing to a nadir over 5 days. Lymphopenia resolved by day 45 in all participants except one. In that one participant, lymphocyte counts returned to normal by day 105. Additionally, a spontaneously resolving rash occurred in 16 participants in the teplizumab-mzwv group.[9]

Conclusion

This phase 2 trial indicates that a single course of teplizumab-mzwv significantly slows the progression to clinical diagnosis of T1D.[9] Those who received teplizumab-mzwv were able to achieve a median delay in the diagnosis of diabetes by 4 years. At the conclusion of this trial, the majority of diabetes-free participants were in the teplizumab-mzwv group (57%) compared to the placebo group (28%).[9] The identification of specific HLA types and autoantibodies may be beneficial prior to initiating teplizumab-mzwv, as subgroup analyses showed differing responses to teplizumab-mzwv depending on participant characteristics.[9] It is also important to consider that this trial only evaluated the effects of teplizumab-mzwv from one course of treatment. It is unknown whether repeated dosing may provide additional benefits such as a prolonged therapeutic effect, or create potential risks such as the development of antidrug antibodies.[9]

Currently, teplizumab-mzwv is approved for patients 8 years of age and older with a diagnosis of stage 2 T1D. Prior to initiating teplizumab-mzwv, the stage 2 T1D must be confirmed with documentation of at least two positive pancreatic islet cell autoantibodies and dysglycemia using an oral glucose tolerance test. A complete blood count and liver enzyme test must also be obtained to prevent contraindications based on certain abnormal lab findings. Teplizumab-mzwv is administered once daily for a 14-day course via intravenous infusion over a minimum of 30 minutes. Teplizumab-mzwv is dosed by body surface area at 65 $\mu g/m^2$ on day 1, 125 $\mu g/m^2$ on day 2, 250 $\mu g/m^2$ on day 3, 500 $\mu g/m^2$ on day 4, and 1,030 $\mu g/m^2$ on days 5 through 14. Patients must premedicate prior to infusion for the first 5 days of teplizumab-mzwv treatment with either a nonsteroidal anti-inflammatory drug (NSAID) or acetaminophen, along with an antihistamine and/or an antiemetic.[8]

Overall, the delay of progression to T1D achieved by teplizumab-mzwv is clinically im-

portant, especially in pediatric patients where the diagnosis of diabetes is often associated with adverse outcomes. Complications include cardiovascular disease, neuropathy, nephropathy, retinopathy, and osteoporosis.[10] Diagnosis of diabetes in pediatric patients is also associated with challenges in daily management of the disease. Based on the child's age, early management of diabetes may be very overwhelming as the child and parents must learn how to give injections, count carbohydrates, and monitor blood glucose.[10] Teplizumab-mzwv, along with future investigational immunotherapies, may hopefully pave the way for a future where patients are able to be treated, or at the very least, significantly delayed, from the clinical diagnosis of T1D.

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Evaluating the Risk of Neurodevelopmental Disorders from Antidepressant Use During Pregnancy

By: Geraldine Ciaccio, PharmD Candidate c/o 2025

Pregnant women treated with antidepressants may no longer have to endure the worry that their medications will harm their newborn. Previous studies have shown a correlation between the use of antidepressants in pregnant patients and the prevalence of various birth defects, including cardiac defects, anencephaly, and gastroschisis, in their children. These birth defects occurred 2 to 3.5 times more frequently among infants of women treated with paroxetine or fluoxetine early in pregnancy.[1] However, a recent cohort study by Suarez et al. yielded different results, concluding that exposure to certain antidepressants in pregnancy does not increase the risk of developmental disorders in children.[2]

On October 3, 2022, the Journal of the American Medical Association (JAMA) published the results of this cohort study, which evaluated the correlation of antidepressant use in pregnancy and neurodevelopmental disorders (NDDs) in children.[2] The subjects in this group were studied during synaptogenesis, the period of fetal development when the synapses between neurons are formed. This period ranges from week 19 until delivery and is essential for the formation of neuronal connectivity. NDDs evaluated in this study included autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), developmental speech/language disorder, developmental coordination disorder, intellectual disability, and behavioral disorder.[2] Using Medicaid Analytic eXtract (MAX) and the IBM MarketScan Research Database (MarketScan), a total of 3.18 million pregnancies were evaluated, following children from birth until diagnosis of NDD, disenrollment, death, or end of study (maximum of 14 years). Of this total, 145,702 pregnancies had maternal antidepressant-exposure.[2]

The unexposed group was defined as having no antidepressant dispensed from 90 days prior to pregnancy start through one day prior to delivery.[2] The exposed group was defined as pregnant individuals having at least one dispensed antidepressant from 127 days after week 19 of gestation to delivery. The exposed group was further divided by which class of medications were taken, including selective serotonin receptor inhibitors (SSRIs), serotonin-norepinephrine reuptake inhibitors (SNRIs), and tricyclic antidepressants. The five most common antidepressants used included sertraline, fluoxetine, bupropion, citalopram, and escitalopram.[2]

The most common neurodevelopmental outcome assessed was ADHD. In the exposed group, the cumulative incidence of ADHD at age 12 was 33.3% (95% CI 32.2% to 34.5%) in the MAX database and 17.6% (95% CI 15.8% to 19.5%) in the MarketScan database.[2] In the unexposed group, the cumulative incidence of ADHD at age 12 was 20.3% (95% CI 20.0% to 20.5%) in the MAX database and 9.6% (95% CI 9.3% to 10.0%) in the MarketScan database.[2] Another common neurodevelopmental outcome assessed was ASD. In the exposed group, cumulative incidence of ASD at age 12 was 4.1% (95% CI 3.5% to 4.7%) in the MAX database and 2.9% (95% CI 2.4% to 3.6%) in

the MarketScan database. In the unexposed group, the cumulative incidence of ASD was 2.1% (95% CI 2.0% to 2.1%) in the MAX database and 1.6% (95% CI 1.4% to 1.7%) in the MarketScan database.[2] These incidence rates for neurodevelopmental outcomes were higher among children of women with antidepressant exposure during pregnancy than in those of unexposed women, suggesting a correlation between antidepressant use in pregnancy and neurodevelopmental disorders in children.

However, the investigators took the crude data and made adjustments for potential confounders, including demographics, indications for antidepressant prescribing, mental health diagnoses, lifestyle factors, other medication use, comorbidities, and adequate level of prenatal care.[2] After these adjustments, the analysis showed no association between antidepressant use in pregnancy and neurodevelopmental outcomes. For example, unadjusted hazard ratios (HRs) for all NDD outcomes suggested an increased risk in children of women exposed to antidepressants during pregnancy compared to those of unexposed women. These unadjusted HRs ranged from 1.32 for specific learning disorders to 2.02 for ADHD.[2] Once adjusted for confounders, HRs ranged from 1.01 for specific learning disorders to 1.20 for ADHD. Similarly, the HRs for data from the unexposed group were consistent with the adjusted results for all NDD outcomes.[2] Compared to the crude analysis, the adjusted results support the idea that an increased risk of neurodevelopmental disorders is correlated with various factors associated with antidepressant use during pregnancy, rather than the use of the antidepressant itself.[2]

Sandy LaMotte from CNN interviewed study investigator Elizabeth Suarez, who acknowledged the contradicting results of previous studies on this topic, but believed her study provides clarity "due to our large population size and careful study design." [3] These results express reassurance for pregnant individuals who struggle with mental health, and clinicians are aiming to remove the negative connotations associated with antidepressant use in this patient population. CNN was also able to interview Dr. Tiffany Moore Simas, a member of the Committee on Clinical Practice Guidelines on Obstetrics for the American College of Obstetricians and Gynecologists, who claimed that "one in five perinatal individuals will experience a mental health condition." [3] She stressed the importance of allowing pregnant individuals to care for themselves by stating that "healthy babies need healthy mothers." [3]

Overall, the results of the cohort study by Suarez et al. support the idea that antidepressant medications on their own do not increase the risk of NDDs in children. The crude results do provide insight that screening for NDDs may be beneficial in children birthed by mothers who took antidepressants during pregnancy. Antidepressant use during pregnancy is still a strong indicator of the risk of NDDs in children.[2] Ultimately, early screening and intervention can improve outcomes for children at risk for NDDs.

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6th Year Perspective: Working with State Representatives at a Pharmacy Association

Featuring: Christina Swiger, PharmD Candidate c/o 2023
By: Justin Budz, PharmD Candidate c/o 2023

Christina Swiger is a sixth-year pharmacy student at St. John's University. Christina was inspired to pursue a career in healthcare by her mother who is a store manager at a community pharmacy. Growing up, Christina was able to aid in the care of a close relative, building her curiosity in the pharmacology behind medications. Finding a perfect fit in pharmacy practice, Christina is currently completing her APPE rotations near her home in Pennsylvania, where she has had several unique experiences, including a rotation in pharmacy association.

What clubs and organizations have you been a part of at St. John's?

I'm a member of the American Pharmacist's Association (APhA), the American College of Clinical Pharmacy (ACCP), and the Student Society of Pediatric Pharmacy (SSPP).

What was your favorite experience out of these organizations?

As a member of ACCP, you can sign up to have mentees. Last semester, I started with two mentees that were both second-year students. This year, I have a fourth-year student. I think it's special to be able to build connections with younger students while also being able to guide them through school and classes.

How were you able to complete most of your APPE rotations from Pennsylvania?

I'm probably the first student from St. John's who's ever done a majority of their APPE's out-of-state. My first two rotations were with faculty. Other than an online rotation I have coming up, I managed to get six of the nine APPEs in Pennsylvania. I reached out to every connection I have ever made and wrote, "I know you take students from these schools, but what would your opinion be on taking a student from out-of-state?" Although I got a lot of rejections, I eventually did find enough people that did say yes.

What is the process to get an out-of-state APPE rotation approved by St. John's?

When a preceptor first agrees to take you as a student, you send that email communication back to the experiential office. Dr. McAvoy handles all the out-of-state contracts. There are multiple forms that need to be signed by both the preceptor and St. John's. It's a lengthy process and can take a lot of work, but if you're motivated enough to do it, it's possible.

What has been your favorite experiential rotation thus far?

My favorite experience has been with the two rotations in the Impact Bundle. The first rotation was with Dr. Ezzo in an ambulatory care setting with medical residents. I would work up three or four patients each day and go through all their medications and labs. It was nice to have that experience straight out of classes so that I could apply everything that I learned. The second rotation was in the Impact Clinic, which was made up of four faculty-run clinics. The Impact Clinic mainly provides care to Medicaid patients. Our focus was on improving healthcare costs to come up with the best options for patients with minimal financial resources. At the Impact Clinic, I was able to follow 10 to 12 patients each day and present their cases to the attending physician and medical residents.

What was an important lesson that you learned from the Impact Bundle?

Although we have so much knowledge as pharmacy students, it's okay to not know an answer. Going into rotations, some students may be scared that you have to have all the answers. In reality, most people are more than okay if you say, “I don't know this, let me look it up and I'll get back to you”.

Tell us about your APPE rotation in association management.

The APPE rotation was with the Pennsylvania Pharmacists Association in Harrisburg, Pennsylvania. I was able to attend a lot of committee meetings, including poster committees, nomination committees, and government relations committees. These meetings gave me the opportunity to speak with the overheads of different national associations like the American Society of Health-System Pharmacists (ASHP) and the American Pharmacists Association (APhA). During these meetings, we would talk about the different legal advances in pharmacy happening within different states.

I also had a unique opportunity to work with different teams to make the Prep Act permanent. In Pennsylvania, interns can’t immunize legally, except with the Prep Act, which became active during the COVID pandemic to allow interns to administer COVID and influenza vaccines. One of my projects was to make an appointment with my local house representative and senator. I got to sit down with them individually and talk to them about the importance of making the Prep Act permanent.

During my rotation, I also got to see a bill get passed in Pennsylvania. The bill granted the Auditor General legal authority to audit Pharmacy Benefit Managers (PBMs). This process has been ongoing for around two years now, so I got to see it passed on the last day of session. It all happened because one of the members of the Pennsylvania Pharmacists Association formed a relationship with their local representative, who ended up being one of the last people to sign on to the bill which is what got it passed. This goes to show that sitting down with local representatives and forming relationships can help create conversations and move pharmacy forward.

Lastly, I got to meet with many student pharmacists. Students from Duquesne University came to the capitol where we met up and taught them about our work within the Pennsylvania Pharmacists Association. I also got to travel to Jefferson University in Philadelphia and talk to students about the importance of our organization and its impact on pharmacy practice.

6th Year Perspective

What made you want to pursue an APPE rotation in association management?

I'm very clinically focused so I wanted to do something that I'm not comfortable with to help me become more well-rounded. This rotation helped me gain a better understanding of how everyone works together. Without this experience, I would never have known about how intensive legal processes can be and how closely different organizations are pursuing provider status for pharmacists.

What tips do you have for pharmacy students as they progress through pharmacy school?

In terms of coursework, remember that it's not the end of the world if you don't do as well on an exam as you may have hoped. There are always options to figure out how to work through difficult courses. In terms of moving into APPEs, it's okay to go into a rotation feeling confused. It's okay to admit that you don't know something, as long as you take steps to figure it out. Getting comfortable with this idea will help you be more than successful on rotations.

What are your post-graduation goals?

I want to pursue a residency. I have very strong interests in pediatrics, as well as in ambulatory care. My rotations have helped me learn more about these areas, so either of those focuses would be perfect.

On behalf of the Rho Chi Post, we would like to thank Christina for taking the time to share her pharmacy experiences with our community!

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The Discovery of IL-6 and its Growing Role in Clinical Drug Development

By: Nancy Yousry, PharmD Candidate c/o 2024

The essential role of T-cells in antibody production was first discovered in the 1960s. Following this discovery, it was hypothesized that T-cell-derived soluble factors were required for the growth of activated B cells and antibody induction in B cells. Originally, these factors were given names such as B-cell stimulatory factors (BSF) followed by a consecutive number. More accurate nomenclature and classification of these factors became possible by cloning the complementary deoxyribonucleic acid (cDNA) encoding cytokines. By 1986, the cDNA for three BSFs were cloned and identified as interleukin (IL) -4, -5, and -6. After its identification, it was found that IL-6 plays a role in inflammatory and autoimmune diseases.[1]

IL-6 is classified as a pleiotropic cytokine. IL-6 has been identified to be part of a unique receptor system comprised of IL-6R, a receptor specific for IL-6, and gp130, a signal-transducing receptor component. Gp130 is able to mediate the signal transducer and activator of transduction 3 (STAT3) and suppressor of cytokine signaling (SOCS) pathways.[1] STAT3 has a dual effect where it can enhance both the production of anti-inflammatory cytokines, such as IL-10, and also inflammatory cytokines, such as IL-17 and IL-6. In contrast, SOCS acts as a negative regulator for STAT3, suppressing the cytokine signaling process.[2]

Several mechanistic pathways have been proposed for the utilization of IL-6 in the treatment of inflammatory diseases. For instance, blocking IL-6 cytokine signaling with a humanized anti-IL-6R antibody can be used to treat rheumatoid arthritis.[3] There are several IL-6 inhibitors currently on the market. Tocilizumab, sarilumab, and satralizumab are all monoclonal antibodies directed against IL-6R. Siltuximab is a monoclonal antibody specific for IL-6. Additionally, clazakizumab and olokizumab are two anti-IL-6 antibodies currently under investigation for chronic active antibody mediated rejection in kidney transplant patients and rheumatoid arthritis, respectively.[4]

There are strong indications supporting the use of IL-6 inhibitors in various immune diseases. Specificity for IL-6 holds great value in drug development, minimizing the risk of side effects while maximizing therapeutic effects. Currently, IL-6 blockers can assist in the treatment of chronic inflammatory and autoimmune diseases, including systemic sclerosis, systemic lupus erythematosus, inflammatory myopathies, Crohn's disease, and autoimmune hemolytic anemia.[5] The full scope of the biological activities of IL-6 related to different systems in the body remains unclear, but future research holds promise in finding the complete target profile of IL-6 and utilizing its pharmacology to cure various rare diseases.

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Justin Budz
Editor-in-Chief

Over the past year, I had the pleasure of serving as the Development and Outreach Coordinator for the Rho Chi - Beta Delta Chapter. The most invaluable aspect of serving a role on their executive board was to continue the tradition of developing and distributing resources to stimulate intellectual leaders in our college of pharmacy student body. As the new Editor-In-Chief, I look forward to working alongside the talented students and graduates to produce publications that will follow advancements in healthcare and pharmaceutics in order to continue that same tradition of promoting intellectual leadership among our readers.

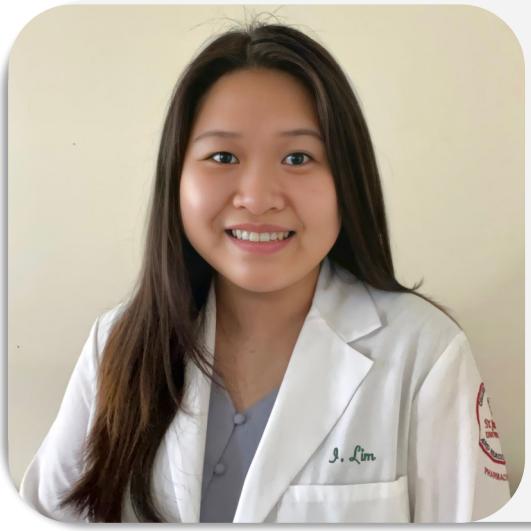
Helen Li
Content-Focused Copy Editor

The Rho Chi Post allows pharmacy students the opportunity to be well informed about the amazing contributions in the field of pharmacy. It is a great platform for students to report current advancements in healthcare. My passionate for writing began at a young age as I began to understand just how powerful words can be to communicate. I look forward to being a part of the editorial team and to share new information to my peers. I am so excited to be a part of the Rho Chi Post team.

John Ortiz

Content-Focused Copy Editor

Rho Chi Post is an opportunity for students to foster their writing and investigative skills concerning pharmacy practice. By honing our understanding of new innovations and developments in pharmacy, we will be better at providing accurate information to readers and maintaining the continuous education expected of pharmacists.



Isabelle Lim

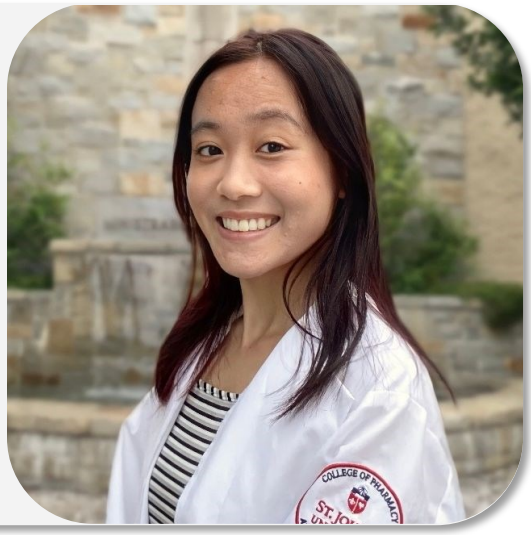
Content-Focused Copy Editor

The Rho Chi Post serves as a platform for students and faculty to collaborate in sharing their knowledge and ideas with the pharmacy community. As future pharmacists, it is important that we keep ourselves updated as well as voice our opinions on healthcare matters. Engaging in the Rho Chi Post helps us accomplish this while also providing students with a unique experience to develop their writing and editing skills outside of the classroom. I am honored to be a part of the Editorial Team and look forward to serving as a Content-Focused Copy Editor!

Joanne Fung

Content-Focused Copy Editor

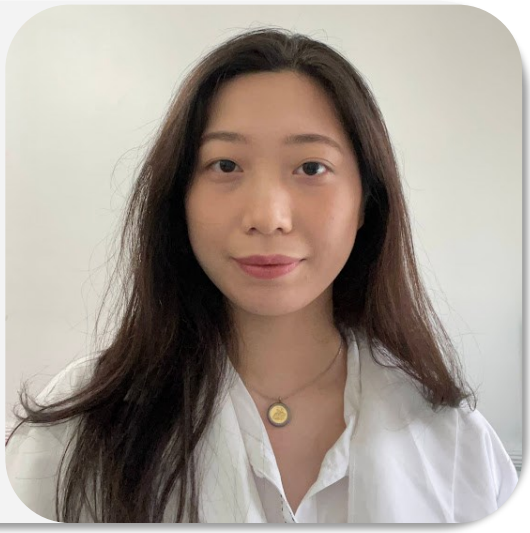
If there is one thing that pharmacists and students should understand, it is that the world's knowledge regarding drugs, disease states, and public health matters is ever-growing. As a pharmacy student, I feel responsible for keeping myself and others up to date. Being a part of the Rho Chi Post's editorial team is a unique and creative way to educate myself and help relay important information to my peers. It is also an excellent opportunity to expose myself to a variety of perspectives. I appreciate the newsletter for providing me an opportunity to not only pursue one of my lifelong interests of writing, but to start delving even deeper into the field of pharmacy unlike ever before.



Mandy Zheng

Senior Graphics-Focused Copy Editor

The Rho Chi Post allows pharmacy students the opportunity to be well informed about the amazing contributions in the field of pharmacy. It is a great platform for students to report current advancements in healthcare. My passionate for writing began at a young age as I began to understand just how powerful words can be to communicate. I look forward to being a part of the editorial team and to share new information to my peers. I am so excited to be a part of the Rho Chi Post team.



Ruksabha Zaman

Graphics-Focused Copy Editor

It is an honor to be able to contribute to the Rho Chi Post, a publication that promotes intellect, values, and inclusivity in order to allow student voices to make an impact, not only in our school, but in the pharmacy profession as a whole. The role of pharmacists is constantly evolving and it is more important than ever for us to not only be aware of the changes and new discoveries that are occurring in our field of practice but to be able to collaborate with other professionals on our team as well. The Rho Chi Post serves as a bridge between students, faculty, pharmacists, and other healthcare professionals outside of the classroom. I look forward to gaining new knowledge on current events from my peers and providing my own insight to further the excellence of this newsletter.

Jannatur Rahman

Staff Editor

Being a part of the Rho Chi Post is really honorable because Rho Chi is a national academic honor society in pharmacy. This society encourages and recognizes intellectual achievement. Being a part of the Rho Chi Post means that I will be responsible for communicating with the editorial team members and encourages me to teach and get to know other students and future newcomers.

Emily Kelley

Staff Editor

As a part of the Rho Chi Post team, I aspire to expand the importance of the health education programs by empowering and educating the community to live healthier lives. Knowing that my work and research could change the lives of millions is inspiring and motivating.

Sana Ahmed

Staff Editor

I believe the Rho Chi Post is a means to serve the university and impact its professional and health-oriented student community through its various stories. With exposure to a myriad of areas of the healthcare field throughout my work experience, I have secured much knowledge from assisting a diverse array of patients. I will prioritize staying up to date and aiding student writers in presenting the latest pharmaceutical and medical advancements. Through the Rho Chi Post, I intend to promote the pharmacy profession through creativity and effective communication. I am honored to serve as a Staff Editor for this organization and hope it will facilitate meaningful connections with my peers.

Geraldine Ciaccio

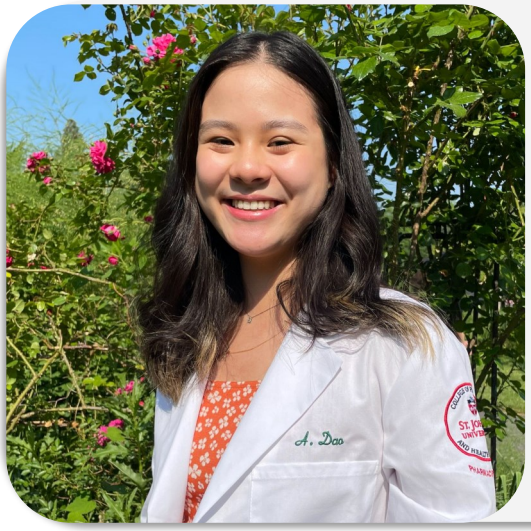
Staff Writer

The pharmacy profession is constantly growing as it drives for discovery. The Rho Chi Post allows student pharmacists to expand their knowledge of pharmacy while offering a space of collaboration and encouragement. I have always enjoyed writing, and I am so honored to be a Staff Writer for the Rho Chi Post this year. This opportunity will allow me to explore my personal interests within the pharmacy profession as well as encourage my peers to do the same. I am excited to collaborate with and learn from faculty, alumni, and my fellow students. These conversations are vital for change and discovery to occur. Taking a step beyond the classroom and building on previous knowledge is all it takes to grow as professional student pharmacists

Jennifer Galvet

Staff Writer

With the pharmacy profession constantly evolving and shifting its focus to advanced patient care, it is important to be knowledgeable of these changes. Although never formally part of the Rho Chi Post e-board before, I was able to utilize this platform in the past to share my writing on various pharmacy topics. I am looking forward to serving as a staff writer this upcoming year and continuing to share my passion about vital developments in healthcare through my writing. As I enter my fifth year of pharmacy school, I hope to keep fellow students informed, while simultaneously inspiring them to expand their knowledge on our ever-changing profession.



Ashley Dao

Staff Writer

The Rho Chi Post offers a place for students, alumni, and faculty to collaborate and share their experiences. Last year, I had the opportunity to serve as the Website Liaison of RCP and I am happy to come back this year as a Staff Writer. As someone who has always had a love for writing, I am grateful for the voice that the Rho Chi Post has given me. I hope that I can encourage more students to contribute to the Rho Chi Post. After all, without conversations, there can be no change.

Imaan Sekhery

Staff Writer

As students in pharmacy, it's our responsibility to educate and update, not only our peers on new medical advancements, but also educate ourselves. Being apart of the Rho Chi Post team allows us to consistently keep up to date with the ongoing improvements and innovations within the pharmaceutical field. There is only so much we can learn from our day-to-day classes, Rho Chi Post stands as another gateway to familiarizing ourselves with the professional world we will soon enter. The world around us continues to evolve, it is up to us to remain in the know. As a staff writer, I am delighted to join the editorial team and look forward to contributing in the aspect of benefitting the pharmacy community as a whole.

Sairah Sheikh
Staff Writer

Ever since I was little, writing has always been a passion of mine. I would find joy in editing my friends' and family's works of writing. I would create short stories and eagerly read them out loud to entertain guests at social gatherings, which they would take great joy in listening to. As a staff writer now for the Rho Chi Post, I am excited to merge the knowledge I have gained in pharmacy school with my love for writing to create thought-provoking pieces for our community to read. Since pharmacy is an ever-evolving profession, it is important for our community to stay informed on the latest events in our field and I am looking forward to playing a small part in that as a member of the incredible editorial team.

Learn More About Our Editorial Team Responsibilities!

Staff Editor

Staff editors are the first to revise an article upon submission. The focus is to review the structure and content of an article. Specifically, staff editors evaluate the clarity/flow of the article and writing mechanics used by the author.

Staff Writer

Staff writers produce 2 articles per semester. Topic ideas are pharmacy/healthcare related, falling under any of the following categories: *News/Politics, Events, Clinical Articles, Pharmacy Pearls, Advice/Opinions*

Content-Focused Copy Editor

Content-focused copy editors are second in line to revise an article. After staff editors have made revisions, copy editors go through the same steps, with the addition of fact checking. Copy editors ensure that all names, dates, times, statistics, facts, URL's, and citations are all accurate, properly cited, and from credible sources.

Graphics-Focused Copy Editor

Graphics-focused copy editors create the upcoming official electronic issue via Microsoft Publisher. They are tasked with updating the Rho Chi Post template with newly approved articles, relevant images, advertisements/filler information, etc.

Noor-ul-ain Buksh

Engagement & Outreach Manager

I am incredibly grateful to be serving as an Engagement and Outreach Manager for the Rho Chi Post. As someone who has frequently seen people silenced in the media, I strongly feel that it is important that our newsletter displays diverse perspectives on pharmaceutical topics and I hope to play a meaningful part in helping that happen. Oftentimes, it is easy to lose connection with the student community. I want to avoid that and prioritize the opinions of our readers and writers. While upholding the Rho Chi Post's mission, I plan to work my hardest to promote inclusivity and stay connected with the student body. The pharmaceutical world is never static so I am excited to learn and work alongside my peers.

Anjali Thykattil

Engagement & Outreach Manager

I am beyond grateful for this opportunity, and I am excited to have the honor of serving on the executive board as the Engagement and Outreach Manager. The Rho Chi Post is not only a creative outlet for students, but also one that is invariably relevant to the ever-changing world of healthcare. In this position, I aim to further expand the growth of the Rho Chi Post among pharmacy students here at St. John's. Let's not forget, it is us as students who will become the healthcare leaders of tomorrow.

Nancy Yousry

Engagement & Outreach Manager

It was such an amazing opportunity to become part of Rho Chi Post's Editorial Board last year, and I am really excited to continue being a part of Rho Chi Post this year! I believe one of our responsibilities as Student Pharmacists is to be aware of the current events impacting our profession as well as the critical and unique role Pharmacists play in a variety of healthcare settings . As incoming Staff Writer, I look forward to bringing these current events to light and to serve as an educational resource for passionate readers and writers alike.

Advisors

Dr. Elsen Jacob

PharmD, MS, BCPS, BCGP, CPPS

As the faculty advisor for the Rho Chi Society and Rho Chi Post, I've had the opportunity to work closely with exceptional students who have a genuine passion for learning, service, leadership, and innovation. I look forward to what Rho Chi will accomplish this year!

Dr. Joseph Etzel

PharmD

Dr. Joseph Etzel is serving as the Rho Chi Post's interim faculty advisor for the 2022-2023 academic school year. Dr. Etzel is not new to our organization, as he has previously served as the faculty advisor for the Rho Chi Honor Society. He has been a huge influence to the success of Rho Chi in the past, and we look forward to working with him this year!

Dr. Mohammad Rattu

PharmD, BCOP, BCPS, BCGP

I am thankful to have been the 2012 editor-in-chief of the Rho Chi Post newsletter, as well as on the 2019 alumni honor roll of the national Rho Chi organization. This is one of the most successful longitudinal projects at my alma mater, as evidenced by its decade-long persistence and teams of highly-motivated students. I remain available for professional support and assistance with the new year's initiatives.

Meet Our 2022-2023 Rho Chi Executive Board

Executive Board

Vassilia Plakas
President

Rho Chi represents academic excellence, professional development, and service to our younger peers and fellow colleagues. Our programs and events reflect the value of scholastic leadership. Being part of Rho Chi has been such a wonderful experience so far; I am humbled and grateful to work with a strong executive board and a dedicated fifth year class.

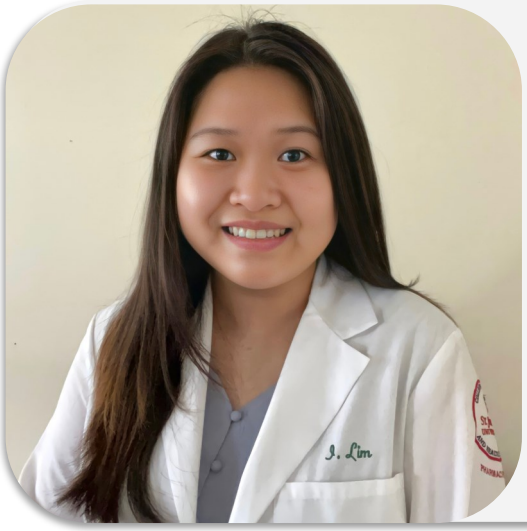
Frances Alexis Dela Cruz
Vice President

Rho Chi is a community that promotes academic excellence and service to others. By providing academic assistance and professional development opportunities, we strive to foster a supportive space for our members and younger peers to succeed. Rho Chi has played a significant role in my pharmacy journey thus far, and I am honored and humbled to be a part of this organization.

Rachel Kneitel

Secretary

Rho Chi to me is a collaborative space where students can encourage and support each other to excel. This organization allows students to spark stimulating conversations about pharmacy and healthcare as a whole.



Isabelle Lim

Treasurer

Rho Chi serves as an opportunity for students to academically support and collaborate with one another. Over the years, I personally have come to appreciate Rho Chi's study materials and review sessions as an integral resource when preparing for exams. I am honored to be a part of Rho Chi in a way where I can help other students just as Rho Chi has helped me in previous years.

Amanda Schleider

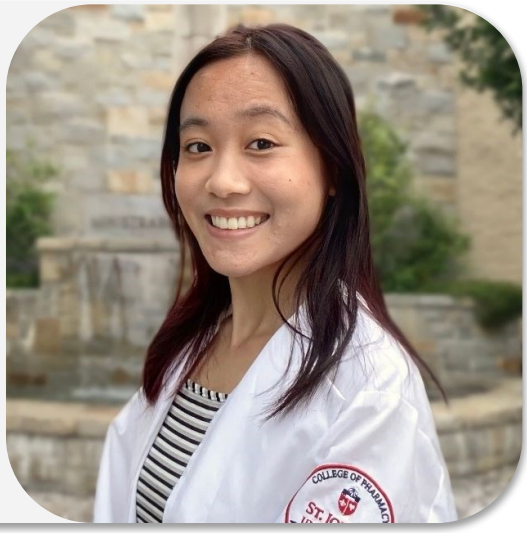
Historian

As the top students in our class, we have a unique opportunity to help our fellow classmates and younger pharmacy students succeed. This is a challenging program, and we all want to get through it. I am proud to be part of an organization that values assisting pharmacy students with their studies and connecting them with alumni and faculty members at our famous coffeehouse chats!

Joanne Fung

Development & Outreach Coordinator

To me, Rho Chi is a great opportunity for all pharmacy students to advance themselves. This society offers something to everyone, whether you are a member of the society, a part of the newsletter staff, or a student taking advantage of the resources offered by Rho Chi. The effort put forth by every person affiliated with Rho Chi is amazing, and I will always appreciate this society's mission and values.



Shankun Lin

Academic Committee Coordinator

Rho Chi is an honor and an accomplishment that I am proud of. As a Rho Chi member, we should be humble and give back to our community for intellectual and professional success

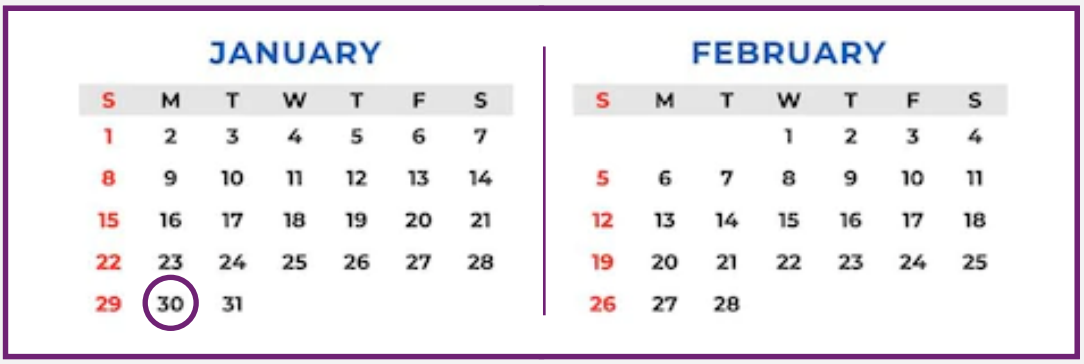
Riya Vinoy

Academic Committee Coordinator

Rho Chi is a collaboration of individuals that are committed to advancing the field of pharmacy that recognizes and promotes intellectual leadership. This collaboration fosters the growth of intellectual leaders by providing resources that can assist in achieving academic excellence.

RHO Rx CHI post

Mark Your Calendars for our 2023 Spring Semester Events!



JANUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

FEBRUARY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

Jan. 30th: Activities Fair

Feb. TBD: Writing Workshop

Interested in writing for the Rho Chi Post?

Go to http://rhochistj.org/RhoChiPost and click on the login option from the menu bar to make an account! With an account, you'll have access to the article submission portal where you can submit your writing for publication in an upcoming issue!

Remember, you do NOT have to be a member of Rho Chi, a member of the editorial team, or a student of St. John's to write for our newsletter!

Interested in joining our Editorial Team?

The Rho Chi Post currently has positions open for staff writers, staff editors, content-focused copy editors, and graphics-focused copy editors. Scan the QR Code below to learn more about these positions and to apply for a spot on our editorial team!