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student-operated newsletter publication by the
St. John's University College of Pharmacy and
Health Sciences Rho Chi Beta Delta chapter**



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PUZZLE OF THE MONTH

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

ZOSTAVAX	XANAX
VANCOMYCIN	WARFARIN
REQUIP	TIOTROPIUM
NORCO	SAVAYSA
JANUVIA	PROPRANOLOL
FUROSEMIDE	OXYCODONE
BETAPACE	LORATIDINE
YAZ	KEPPRA
ULTRAM	HEPARIN
QUINIDINE	GABAPENTIN
METOPROLOL	DIGOXIN
IBUPROFEN	COREG
EZETIMIBE	
ALLOPURINOL	

United States Department of Health and Human Services (HHS) recommends co-prescribing naloxone (Narcan®) with opioids in patients with high opioid overdose risk

By: Michael Lim, PharmD Candidate c/o 2020

In 2017, 70,237 overdose deaths occurred in the United States. Of those deaths, 47,600 (sixty-seven point eight percent of all drug overdose deaths in 2017) involved opioids.¹ As the current main driver of drug overdose deaths, opioids and their misuse and abuse represent an ongoing health epidemic that has been targeted by the Trump administration, the Food and Drug Administration (FDA), and other organizations.¹ Among the various strategies enacted to address the epidemic, perhaps one of the most important has been the effort to increase education and awareness about the availability of naloxone (Narcan®). Naloxone is an opioid receptor antagonist that temporarily reverses the effects of an opioid overdose. In a suspected overdose, naloxone is a safe antidote, and when given in time, it can save a life.² As the United States continues to grapple with the opioid crisis, the Department of Health and Human Services (HHS) released a guidance in December 2018 detailing new recommendations for naloxone's use in combatting the opioid epidemic.

According to the guidance, while prior Centers for Disease Control and Prevention (CDC) guidelines and the April 2018 Surgeon General's Advisory on naloxone and opioid overdose have heightened awareness, increased dispensing, and increased the availability of naloxone in reversing opioid overdose, additional measures can be implemented to improve this response and save more lives.^{3,4} The most notable gap in the current response was found in the infrequent co-prescribing of naloxone to patients who are prescribed opioids or to individuals with a high risk of experiencing an opioid overdose.⁴ In fact, based on national data

from patients to whom clinicians should consider co-prescribing naloxone, less than one percent of the patients who need naloxone actually receive a prescription for it.⁴ Consequently, in the spirit of reducing the risk of overdose related deaths, the guidance recommends that clinicians strongly consider prescribing or co-prescribing naloxone as well as counseling about its use to a variety of patients who are prescribed opioids.⁴ This includes patients who are prescribed opioids at a dosage of 50 morphine milligram equivalents (MME) per day or greater, have respiratory conditions such as COPD or obstructive sleep apnea regardless of opioid dose, have been prescribed benzodiazepines regardless of opioid dose, have a non-opioid substance use disorder, report excessive alcohol use, or have a mental health disorder regardless of opioid dose.⁴ Furthermore, it is recommended that clinicians consider prescribing or co-prescribing naloxone to patients who are at a high risk of experiencing or responding to an opioid overdose.⁴ This population includes individuals using heroin, illicit synthetic opioids, illicit stimulants such as methamphetamine or cocaine which may be contaminated with illicit synthetic opioids, individuals misusing prescription opioids, patients receiving treatment for opioid use disorder, and individuals with a history of opioid misuse that were recently released from incarceration or other controlled settings where tolerance to opioids has been lost.⁴

The guidance was narrowly approved in a 12-11 vote by an advisory panel to the FDA.⁵ While approved in response to the growing number of opioid overdose cases, concerns were also raised based on FDA studies

which found that co-prescribing naloxone could increase annual healthcare costs by sixty three point nine billion dollars to five hundred and eighty point eight billion dollars.⁵ Mary Ellen McCann, MD., MPH, Associate Professor of Anesthesia at Harvard Medical School as well as a panelist who voted against the guidance stated, “I think co-prescribing is an expensive way to saturate the population with naloxone. The at-risk populations are not necessarily the ones that are being prescribed new narcotics. I’m concerned about a person going in with a broken arm and ending up with thirty dollars of a codeine product and a (naloxone) autoinjector at four thousand dollars plus.”⁵ However, it is unclear whether these prices reflect actual out-of-pocket costs.⁵ On the other hand, one FDA advisor who voted in favor of the guidance stated that the co-prescribing of naloxone may prompt more discussion between clinicians and patients.⁶ Ultimately, at this early stage the guidance presents a difficult dilemma in regard to weighing costs against benefits.

Naloxone is a highly effective antidote to overdose.⁴ However, it can only save lives from opioid overdose if it is in the right hands at the right time.⁴ Given the nationwide spread of the opioid epidemic, all healthcare providers have a responsibility to ensure that naloxone is available to high risk populations and that these individuals are trained to use naloxone in the event of an overdose. From the pharmacy perspective, pharmacists may be useful in counseling about naloxone and its proper use in the aforementioned high-risk populations as well as in educating prescribers about the new HHS guidance to ensure that naloxone is made available to the applicable groups. Overall, while divisive, the December 2018 HHS naloxone recommendations could offer another promising approach to curbing the opioid epidemic. The effect this

guidance has will be interesting to follow throughout 2019.

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Stricter accreditation standards for the Doctor of Pharmacy program at St. John's University's College of Pharmacy and Health Sciences

By: Michelle Lavrichenko, PharmD Candidate c/o 2020

What does it mean to be a pharmacist? A pharmacist is a qualified health care professional who reviews, prepares, and dispenses medications; but what is the definition of the term qualified as it pertains to pharmacy practice? In order to obtain a license to practice pharmacy, one must pass the North American Pharmacist Licensure Examination (NAPLEX), the Multistate Pharmacy Jurisprudence Examination (MPJE), and, if they plan to practice in the state of New York, an extemporaneous compounding examination. Most importantly, one must earn a Doctor of Pharmacy (PharmD) degree from an accredited pharmacy program in order to practice.¹ What a concept – accreditation. What is accreditation and what purpose does it serve? In brief, accreditation confirms to the public and to employers that the didactic curriculum and professional training one receives at a certain institution is being held to the highest of standards. The students that graduate from such institutions are undeniably qualified to hold the responsibilities their careers entail. Pharmacy programs across the United States are accredited by the Accreditation Council for Pharmacy Education (ACPE), which periodically evaluates whether pharmacy schools meet the standards set forth.² In a sense, accreditation is to the university what licensure is to the student. This begs the question - what effect does accreditation have on the student of a university?

In 2016, the ACPE updated the standards and requirements necessary for pharmacy schools to receive and renew accreditation. This change was seen vividly within St. John's University's six-year accelerated PharmD program. First and second year students who entered the PharmD program before the Fall 2015 semester were required to maintain an overall grade point av-

erage (GPA) of 2.0 at the end of their first semester and an overall math, science, and professional GPA of 2.3 for the duration of their studies. First and second year students who entered the program in or after the Fall 2015 semester are held to a significantly higher standard, requiring them to maintain a math, science, and professional GPA of 3.0 in order to be eligible to interview for progression into the first professional year of the program. However, the changes don't end there. Students who entered their first professional year in or after Fall 2015 but before Fall 2018 may receive no more than three letter grades below a C- throughout the four professional years of the program and must maintain an overall GPA of 2.0. Students who entered their first professional year in or after the Fall 2018 semester are again held to a significantly higher standard in which they may receive no more than three letter grades below a C throughout the four professional years of the program. Furthermore, if a grade lower than a C is received, it is considered an inadequate grade and is treated as if the student failed the course, except for overall GPA calculation, in which the C letter grade is averaged into their cumulative GPA. The student is then required to retake the course and is not eligible to enroll in any course for which the "failed" course was a prerequisite. In addition, the student must also maintain an overall GPA of 2.0.³ Currently, any student who was admitted in or after the Fall 2018 semester and receives more than three grades below a C letter grade during the four professional years of training is subject to dismissal from the PharmD program after review by the College of Pharmacy's administration.

It truly is amazing how in just a few years, the standard of what is “acceptable” or “qualified” with respect to pharmacy education can change so drastically. As time goes on, more and more will be expected of student pharmacists at St. John’s University and throughout the United States. A variety of opinions have been expressed by students, faculty, and administrators regarding the fairness of the changes that have been made and will likely continue being expressed in the years to come. It can be argued that the changes are necessary to ensure that the individuals who hold the title of “pharmacist” after six years of education are deserving, competent, and capable of making decisions which directly affect a person’s life and livelihood. Stringent standards are needed to assure society and patients of the future of health care and that pharmacists are committed to mastering their craft and using their knowledge in the real world, instead of relying on the computer to prompt them if they’re about to injure someone. On the other hand, the major con to the process of implementing updates to the ACPE standards is that it results in students not being evaluated equally solely based on the year they started their education. In the current structure of implementation, just being one year younger results in a student being compelled to abide by much stricter standards. Perhaps if the amendments made to the ACPE standards applied to all students, regardless of the year they were put in place, there would be less underlying exasperation.

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Esketamine (SpravatoTM): a new treatment option for depression

By: Sylvia Hong (PharmD Candidate c/o 2021), Muaz Sadeia (PharmD Candidate c/o 2021)

On March 5, 2019, Janssen Pharmaceuticals gained approval from the Food and Drug Administration (FDA) for esketamine (SpravatoTM), the first fast acting nasal spray antidepressant indicated for treatment of resistant depression as conjunctive therapy to oral antidepressants in adults.¹ This new addition to the antidepressant toolbox comes with promise and concerns.

Esketamine is not a new drug structurally, but rather, the purified (S)-enantiomer of ketamine – an analgesic first approved by the FDA in 1970. Ketamine, a Schedule III Controlled Substance, plays an essential role in modern day sedation during surgery but has also gained a reputation as a drug with abuse potential. In the last decade, off label uses of ketamine have increased in popularity, particularly for the pharmacotherapy of mood disorders. Generic intravenous (IV) ketamine is used off label as a treatment for depression, anxiety, and other treatment resistant psychiatric disorders in hundreds of clinics across the United States.² Despite the apparent improvements observed in patients, no regulations or guidelines are in place for the use of ketamine in the aforementioned indications. Concerns with ketamine use include severe relapse and serious side effects such as bradycardia and respiratory depression. Now with esketamine as an FDA-approved agent, quick action can be taken with appropriate supervision by a health care professional in a more controlled and well-studied fashion.

Typical antidepressants used to treat major depressive disorder, such as Selective Serotonin Reuptake Inhibitors (SSRIs) and Serotonin-Norepinephrine Reuptake Inhibitors (SNRIs), have shown very moderate therapeutic effects and only display significant mood

changes towards recovery after four to six weeks of adherent use. This therapeutic gap can be filled through esketamine's quick onset. In the final Phase III clinical trial conducted by Janssen Pharmaceuticals, TRANSFORM-1, patients who were refractory to previous antidepressant treatments showed a significant improvement in behavior after starting esketamine in conjunction with a new antidepressant over a four-week period compared to placebo.³ The placebo group consisted of patients taking a new antidepressant that differed in class from their original therapy.

Mechanism of Action

Currently, there is no clear understanding with respect to what gives esketamine its antidepressant properties. It has long been established that ketamine acts on NMDA receptors, opioid receptors, muscarinic receptors, and voltage gated calcium channels without interacting with GABA receptors, making it a unique analgesic. However, these mechanisms do not explain esketamine's antidepressant action. Recently, a study published in Science Magazine conducted by Moda-Sava RN of Weill Cornell Medicine tested mice expressing depression and the effects of ketamine on their prefrontal cortex, focusing on neuronal spinal changes.⁴ Their results exhibited a regeneration effect on the dendritic spines of postsynaptic neurons in the prefrontal cortex as a long-term effect of ketamine. This suggests that a reversal in neuronal damage could potentially allow for sustained remission and decreased depressive symptoms.

Potential for abuse

As a Schedule III Controlled Substance, SpravatoTM, can cause dependence and tolerance as well as withdrawal

symptoms including cravings, fatigue, poor appetite and anxiety.⁵ Due to its abuse potential, drug-seeking behavior must be monitored. Several side effects include dysphoria, disorientation, insomnia, flashback, hallucinations, feelings of floating, detachment, and feeling “spaced out”.⁵ Secondary to all the aforementioned effects, Spravato™ is registered in a Risk Evaluation and Mitigation Strategy (REMS) program. The REMS program only allows Spravato™ to be administered intranasally under the direct supervision of a healthcare provider who must monitor their patient for at least two hours after the drug is administered.

Spravato™ Administration

Patients must be counseled to not eat anything for at least two hours prior to administration as well as refrain from drinking liquids at least thirty minutes prior to administration. Blood pressure must be assessed prior to and forty minutes after the administration of Spravato™ because it has the propensity to increase blood pressure. There are two phases of treatment that patients should be aware of – an induction phase and a maintenance phase. Induction lasts from Week 1 to Week 4, in which Spravato™ is given twice per week. The starting dose for induction is 56 mg and subsequent doses can either be 56 mg or 84 mg. Only after the end of the induction cycles, can a healthcare provider, evaluate the therapeutic benefits and determine whether continuing with maintenance therapy will be beneficial.⁵

Spravato™ Device

Each device only has two sprays, one for each nostril, and delivers a total of 28 mg of esketamine. Priming should not be conducted to avoid losing drug. Given that each dose is either 56 mg or 84 mg, a single 56 mg dose requires two Spravato™ devices, and a single 84 mg dose requires three Spravato™ devices. Spacing of five minutes before the use of the second or third device is imperative to allow for drug absorption.⁵

Spravato™ Counseling

Spravato™ has the propensity to increase blood pressure and as a result, blood pressure must be monitored prior to and after administration of the drug. Additionally, patients must be counseled to not operate machinery until the day after they take Spravato™ because it can cause cognitive impairment – attention, judgement, thinking, reaction, speed and motor skills are affected.⁵ Thus, as recommended by the manufacturer, patients should arrange for transportation and be accompanied on their way home after having the drug administered. In accordance with the REMS program, a certified pharmacy, or other certified setting, must monitor the patient for at least two hours after administration, as well as the patient's response, throughout the induction phase. If the patient's healthcare provider deems it appropriate, treatment can extend into maintenance phase if induction phase is successful.

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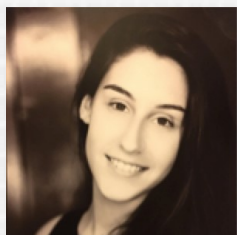
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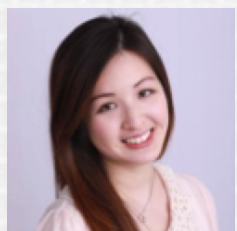
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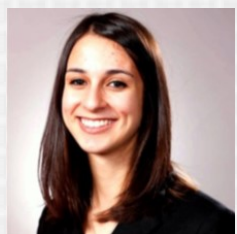
@ Anna Diyamandoglu
6th Year, STJ; Editor-in-Chief

Throughout my time in the PharmD program, my understanding of pharmacy as a profession has evolved and deepened as much as my desire to create awareness, particularly to non-science students, about the diverse role pharmacy plays in various healthcare and non-healthcare settings. I have always had an affinity for writing and look forward to combining my interests in literary composition, editing and pharmacy to produce relevant issues which both pharmacy students and non-pharmacy students alike will find relatable and take an interest in.



@ Karen Lin, PharmD
Graduate Copy Editor [Content-Focused]

The Rho Chi Post allows me to have an appreciation for interactive pharmacy learning as well as the art of writing. With each newsletter, my goal is to provide current information to readers who come across the Post. As an editor, I hope to make the newsletter one-of-a-kind and motivate and influence writers to explore science with their creative talents.



@ Nicollette Pacheco, PharmD
Graduate Editor [Graphics-Focused]

As a member of the Rho Chi Post team, I have a vast appreciation of what it means to be a pharmacist in the rapidly evolving world of healthcare. As a graduate editor, I will continue to bring my passion for science and creativity to the Rho Chi Post.



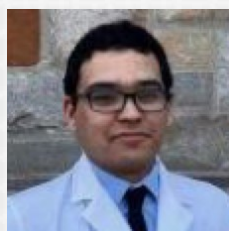
@ Obaid Zia
6th Year, STJ; Copy Editor [Graphics-Focused]

I am honored to be a part of the Rho Chi Post team. I see so much potential and value in having this kind of student-driven platform available to a nationwide community of pharmacists and student pharmacists. I'm excited to help take RCP in a new direction better suited for our contemporary needs and aesthetics.



@ Shireen Farzadeh, PharmD
Graduate Copy Editor [Content-Focused]

I am excited to join Rho Chi Post and contribute to the award-winning newsletter for students to share ideas, opinions, and pertinent topics! Writing for the Rho Chi Post is an opportunity to express our appreciation for pharmacy and educate ourselves and our peers. I hope to inspire students to discover their passion for writing and to stay up to date on our evolving profession!



@ Jonathan Mercado, PharmD
Graduate Copy Editor [Content-Focused]

The Rho Chi Post breaks barriers for students that want a glimpse of their future and acts as an inspiration to work harder to achieve their goals. It is an embodiment of the motivation and intelligence that drives pharmacy students to be the most informed and capable professionals they can be. I am glad to a part of that mission and to channel my passion and interests through this newsletter.



@ Joseph Eskandrous, PharmD
Graduate Staff Writer

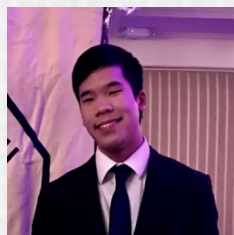
In the world of pharmacy, knowledge becomes outdated within hours of when you learned it. The miracle drug that used to be considered the standard of therapy is replaced by the latest and greatest. My role as a Staff Writer for the Rho Chi Post is to bring these changes to the forefront in order to empower future pharmacists and to improve the quality of patient care.



@ Oudit Balkaran
5th Year, STJ; Social Media Manager & Website Liaison

The Rho Chi Post is not only a great way for students to voice their opinions, but also a great way for them to continue expanding their knowledge of pharmacy. Today's news becomes old news very rapidly in the ever-changing world of pharmacy. Though my involvement in Rho Chi Post, I hope to help students learn and motivate them to take a deeper dive into the vast world of pharmacy. It is crucial we stay on top of our knowledge as future pharmacists. By doing so, we can maximize our abilities to help our future patients.

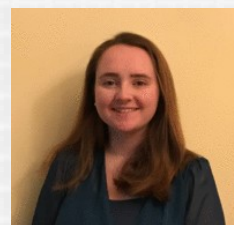
RHO CHI POST: TEAM MEMBERS



@ Adrian Wong

5th Year, STJ; Finance & Outreach Manager

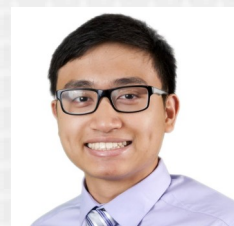
As future "drug experts", I believe it is our responsibility to keep up to date with the ever-changing and dynamic world that is pharmacy. The Rho Chi Post provides a unique platform for students to stay well informed on current healthcare related events, as well as fine-tune their writing skills --both of which are essential for being a successful pharmacist. I am excited for the privilege to work alongside the editorial board to produce a newsletter that can be appreciated by everyone!



@ Kathleen Horan

6th Year, STJ; Staff Editor

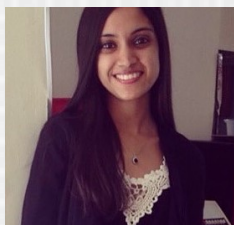
I have always loved writing, and I hope to couple my passion for writing with my interest in clinical pharmacy by becoming a writer and staff editor for the Rho Chi Post. As a writer and staff editor for the Rho Chi Post, I hope to write and edit informative and interesting articles that relate to the world of healthcare and pharmacy. I am so excited to join this team of student pharmacists and writers.



@ Michael Lim

6th Year, STJ; Staff Writer

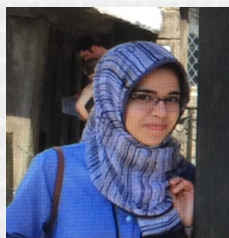
In the spirit of advancing the pharmacy profession, the Rho Chi Post never ceases to produce valuable content showcasing the innovation and diversity of the career. As a Staff Writer for the Post, I am honored to have the opportunity to use writing to both educate and push readers to strive for excellence in their professional pursuits. I hope that my contributions to the newsletter are able to foster growth in an informative and accessible manner.



@ Shivani Shah

5th Year, STJ; Staff Writer

As students in a dynamic healthcare profession, it is important to keep up to date with literature and publications regarding the pharmacy profession. Rho Chi Post serves as a great outlet for students to catch up on pharmaceutical innovations and progress going on in the career. Being a staff writer motivates me to constantly research and share new, exciting advancements with fellow students. I look forward to reading articles in the Post and hope to spark others curiosity and interest!



@ Sarah Hewady

6th Year, STJ; Staff Editor

The importance of staying updated on relevant healthcare matters cannot be overstated. I appreciate the mission of Rho Chi Post in that it successfully compiles clinically relevant and up-to-date information for its audience. Wanting to contribute to this cause is what sparked my interest to become a staff editor. I hope to broaden the scope of knowledge of the public as well as aid healthcare practitioners in the clinical decision-making process.



@ Katharine Russo

5th Year, STJ; Staff Editor

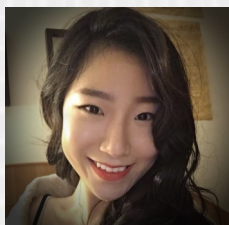
In my first two years as a pharmacy student, I was exposed to numerous opportunities to write medical based articles for classes and clubs. This is what first sparked my interest in health care literature and I look forward to being a Staff Writer for the Rho Chi Post in hopes of being able to share my passion and enthusiasm in writing health-care related publications.



@ Mah Noor

5th Year, STJ; Staff Writer

Rho Chi Post is an amazing student-operated newsletter publication that is doing an astonishing job delivering updated news as well as giving students the opportunity to give back to the pharmacy community. As a staff writer, I hope to play a key role in educating students on the different aspects of pharmacy and how much growth takes place in this field. Reading the Post since freshman year has helped me gain a better understanding of what it means to be a pharmacist and I hope to achieve that same understanding in students who read my articles.



@ Yeonah Suk

6th Year, STJ; Staff Writer

As a student interested in various branches of healthcare, the Rho Chi Post has provided me the opportunity to be part of an organization that discusses this field in a broad scope. As modern society continues to amalgamate and globalize multiple disciplines, it is important that we harmonize these elements and keep ourselves updated on their interactions. I joined the Rho Chi Post to both learn and contribute to a team that has immense diversity and my goal is to continue exploring innovative ideas through writing.

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

To provide the highest quality student-operated newsletter with accurate information

To maintain a healthy, respectful, challenging, and rewarding environment for student editors

To cultivate sound relationships with other organizations and individuals who are like-minded and involved in like pursuits

To have a strong, positive impact on fellow students, faculty, and administrators

To contribute ideas and innovations to the Pharmacy profession