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RHO Px CHI post

VOLUME 9, ISSUE 5

COVID-19 Edition

An award-winning, bimonthly, electronic, 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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NIH COVID-19 Treatment Guidelines Update: remdesivir, chloroquine, hydroxychloroquine, and azithromycin

By: Jason Ifeanyi, PharmD Candidate c/o 2022

Severe acute respiratory syndrome 2 (Sars-Cov-2), the viral strain responsible for causing COVID-19, continues to have an undeniable impact both on a national level and a global level. As of June 20th, 2020, there have been nearly 2.4 million reported cases in the United States, with nearly 122,000 deaths. In the State of New York, there have been over 400,000 confirmed cases, with a little over 31,000 reported deaths.[6] As a brief overview of the nature of this pandemic, Sars-Cov-2 has an estimated incubation period of 14 days (median of 4-5 days). COVID-19 is characterized by a spectrum of illnesses that can range from asymptomatic infection to severe pneumonia with Acute Respiratory Distress Syndrome (ARDS) and eventual death. The most common symptoms, by percentage, seen in the US include cough (86), fever or chills (85), shortness of breath (80), diarrhea (27), and nausea (24). Other notable symptoms include sputum production, headache, dizziness, rhinorrhea, anosmia (partial or complete loss of the sense of smell), dysgeusia (distortion in the sense of taste), sore throat, anorexia, and vomiting. High risk populations include those over the age of 65, those living in a nursing home or a long-term care facility, and those with pre-existing conditions (hypertension, cardiovascular disease, obesity, renal disease, and chronic respiratory disease).[1]

At this very moment, research studies are being conducted worldwide in order to find an effective treatment for this strain of Coronavirus in the form of randomized clinical trials (RCT's), prospective and retrospective cohort studies, case-control studies, and case series/reports. In the last 3 months, an abundance of medical literature has been published discussing the results of completed studies. Systematic reviews of these medical literature findings have informed the National Institute of Health's (NIH) understanding of the benefits/drawbacks of many drugs being investigated. Consequently, the NIH has since published their current treatment guidelines for COVID-19, which will be continuously updated as more trials and studies are completed and systematically reviewed. This article will highlight 4 drugs that are discussed at length within the treatment guidelines: remdesivir, chloroquine, hydroxychloroquine, and azithromycin. [3]

It is important to note that, "recommendations in the guidelines are based on scientific evidence and expert opinion". [1] Each recommendation includes 2 rating scales: a letter and a roman numeral. The letter (A, B or C) indicates the strength of the recommendation, with "A" being a strong recommendation for the statement and "C" indicating an optional recommendation for the statement. The roman numeral represents the quality of evidence for each recommendation. Roman numeral "I" represents one or more randomized trials with clinical outcomes and/or validated laboratory endpoints. Roman numeral "III" indicates expert opinion. As mentioned prior, types of studies included in systematic analysis include case studies, prospective and retrospective cohorts, and RCT's. The NIH panel includes members from health care and academic organizations, federal agencies, and professional societies. Majority vote was required by the panel for a recommendation to be included in the guidelines.[1]

On the basis of preliminary clinical trial data, the COVID-19 Treatment Guidelines Panel recommends the investigational antiviral agent, remdesivir, for the treatment of COVID-19 in hospitalized patients with severe disease, "defined as SpO_2 (oxygen saturation) ≤ 94 percent on ambient air (at sea level), requiring supplemental oxygen, mechanical ventilation, or extracorporeal membrane oxygenation (BI)".[1] So, why is there interest in remdesivir, a drug recently designated by the FDA as an orphan drug used for the treatment of Ebola virus? [5] This is because remdesivir has demonstrated in vitro activity against Sars-Cov-2, in addition to both in vitro and in vivo activity (based on animal studies) against Middle East Respiratory Syndrome (MERS) and Sars-CoV. Mechanism of action involves binding to the viral RNA-dependent RNA polymerase, inhibiting viral replication through premature termination of RNA transcription. [1]

The rationale for the NIH recommendation is largely based on preliminary data released on April 29th, 2020 for the Adaptive COVID-19 Treatment Trials (ACTT), which was NIH-sponsored. This was an international, randomized, double blind, placebo-controlled trial studying hospitalized adult patients (≥ 18 years of age) with confirmed COVID-19. The primary endpoint of the study was time to recovery. One thousand sixty-three participants were enrolled, and results indicate that those who received remdesivir had a 31 percent faster time to recovery than those who received placebo. Results also showed 8 percent mortality in the remdesivir cohort compared to 11.6 in the placebo group. This trial holds much significance because it is the first randomized, double blind, fully powered study to demonstrate the clinical benefit of a pharmacologic treatment for COVID-19.[1]

Remdesivir is not FDA approved. It is available through Emergency Use Authorization (EUA) for the treatment of hospitalized adults and children with COVID-19 and is currently being investigated in clinical trials.[2] Remdesivir is also available through an emergency access program for children (< 18 years of age) and pregnant patients. Adverse effects commonly reported include nausea and vomiting, with elevated transaminase levels and prothrombin time. Remdesivir is a substrate of CYP3A4, 2C8, and 2D6. Drug-drug interactions with co-administered CYP inducers and/or inhibitors must be monitored, although these interactions are expected to be clinically insignificant. The safety and effectiveness of remdesivir for COVID-19 treatment has not been evaluated in pregnant or pediatric patients,

and remdesivir should only be used if the potential benefit justifies the potential risk for the mother and fetus. Remdesivir should not be withheld from pregnant patients if otherwise indicated. [1]

Chloroquine and hydroxychloroquine are two additional drugs that are being heavily studied during this time. Chloroquine is an antimalarial drug that was developed in 1934. Hydroxychloroquine, an analog of chloroquine, was developed in 1946, and is used in the treatment of autoimmune diseases such as Rheumatoid Arthritis (RA) and Systemic Lupus Erythematosus (SLE). As of June 15th, the Panel recommends against the use of chloroquine or hydroxychloroquine for the treatment of COVID-19, except in a clinical trial (AII). The panel also recommends against the use of high-dose chloroquine for the treatment of COVID-19 (600 mg twice daily for 10 days) (AI). The rationale for this recommendation is that both drugs have been studied in small randomized trials and in some case series, producing conflicting study reports. Mechanism of action for both chloroquine and hydroxychloroquine involves increasing the endosomal pH, which inhibits the fusion of Sars-Cov-2 and the host cell membranes. Chloroquine inhibits glycosylation of the cellular angiotensin-converting enzyme 2 receptor, which may interfere with the binding of Sar-Cov-2 to the cell receptor. In vitro, both drugs may block the transport of Sars-Cov-2 from early endosomes, which may be required for release of the viral genome.[1]

To compare the effects of high dose vs. low dose chloroquine, a randomized, double blind, phase 2b study analyzed hospitalized patients with suspected severe COVID-19. All patients received ceftriaxone + azithromycin, with 89.6 percent of patients receiving oseltamivir. The primary outcome measure was mortality at 13 days after treatment initiation. Originally, the study was supposed to have 440 participants, but the study was stopped by the data safety monitoring board (DSMB) after 81 patients were enrolled in the study. Forty-one patients were in the high dose group, with 40 patients in low dose. Low dose group had 15 percent mortality after 13 days, while the high dose group had 19 percent mortality. However, when the results were controlled for age, results were no longer statistically significant. QTc prolongation was more frequent in the high dose group (24.1 percent vs 3.6 percent). Limitations to this study included that more older patients with a history of heart disease were randomized to the high dose arm than to the low dose arm. [1]

Numerous studies have been done testing the effects of hydroxychloroquine. This includes the retrospective observational cohort from the United States Veterans Health Administration (US VHA). This study, which was not peer reviewed, studied patients who were hospitalized in the US VHA centers from March 9th - April 11th, 2020 with confirmed COVID-19. Patients were categorized as either receiving hydroxychloroquine, hydroxychloroquine + azithromycin, or no hydroxychloroquine. Doses and duration of use were not specified, which limits researcher's ability to confidently make definitive conclusions. All 368 patients were male, which is another limitation of this study, as it is hard to apply the results to a broader population. The primary endpoints studied were death and the need for mechanical ventilation. This study showed no beneficial effect of hydroxychloroquine + azithromycin for the treatment of COVID-19 and possible association of hydroxychloroquine with increased mortality. Another RCT studying the difference in effect between hydroxychloroquine and Standard of Care (i.e. empiric antimicrobial therapy, VTE prophylaxis for patients at risk of a thromboembolic event) was unable to detect a statistically significant difference in viral clearance between the 2 forms of therapy.[1] An observational retrospective cohort of hydroxychloroquine vs. no hydroxychloroquine was carried out at 4 French tertiary centers over a 2 week period (March 17 -March 31, 2020). Primary outcome studied was a composite of transfer to the ICU within 7 days of enrollment and/or death from any cause. Results showed no difference in clinically important outcomes between patients who received hydroxychloroquine within 48 hours of hospital admission and those who did not.

The results of these research studies had originally resulted in the FDA cautioning against the use of chloroquine and hydroxychloroquine for the treatment of COVID-19 outside the setting of a hospital or a clinical trial (AIII). Except in the context of a clinical trial, the panel recommends against the combination of hydroxychloroquine and azithromycin due to potential cardiac toxicity. [1] As of June 15th, the FDA has revoked its initial Emergency Use Authorization (EUA) for the use of chloroquine and hydroxychloroquine donated to the Strategic National Stockpile. The EUA authorized the use of these drugs for the treatment of hospitalized adolescent and adult patients with COVID-19 who weigh ≥50 kg and for whom a clinical trial is not available, or participation is not feasible. However, this recommendation is likely to change following an announcement made on June 22nd that the NIH is putting a halt to a clinical trial on hydroxychloroquine.[4] This trial was the Outcomes related to COVID-19 treated with hydroxychloroquine among In-patients with symptomatic Disease (ORCHID) study. This blind, randomized, placebo controlled RCT originally planned on enrolling 500 patients, and up until this point had enrolled 500. However, the data safety monitoring board (DSMB) has concluded that "while there was no harm, the study drug was very unlikely to be beneficial to hospitalized patients with COVID-19. The NIH joins Novartis and the World Health Organization (WHO) as 3 major clinical programs to end hydroxychloroquine studies in hospitalized patients.[4]

Chloroquine and hydroxychloroquine pose potential cardiac adverse effects, such as QTc prolongation, ventricular arrhythmias, and even cardiac death. These risks are higher in patients taking chloroquine. Consequently, baseline and follow up ECGs are recommended when there are potential drug interactions with concomitant medications or underlying cardiac diseases. Other adverse effects include hypoglycemia, rash, and nausea. Long term use may leave patients susceptible to retinopathy and/or bone marrow suppression. Glucose-6 phosphate deficiency (G6PD) leaves patients at greater risk of hemolysis, and G6PD testing must be done before initiating a patient on chloroquine. Both drugs are moderate inhibitors of

CYP2D6 and P-glycoprotein. Use with caution when co-administering with medications metabolized by CYPD6 (beta blockers, antipsychotics, SSRIs, methadone) and drugs transported by P-glycoprotein: direct oral anticoagulants (DOACs) and digoxin. No dosage adjustments are needed in pregnant patients, and chloroquine has been routinely used in pediatric populations for the treatment and prevention of malaria and for autoimmune conditions (RA). [1]

In conclusion, there are currently no drugs FDA-approved for the treatment of COVID-19. Despite the reports made in medical literature and lay press, definitive critical trial data is needed to identify safe and effective treatments for COVID-19. Presently, the NIH treatment panel recommends investigational antiviral agent remdesivir for the treatment of COVID-19 in hospitalized patients with severe disease. The Panel recommends against the use of chloroquine or hydroxychloroquine for the treatment of COVID-19, except in a clinical trial (AII). The panel also recommends against using high dose chloroquine (600 mg twice daily for 10 days), due to risk of cardiac toxicity. Furthermore, except in the context of a clinical trial, the Panel recommends against using a combination of hydroxychloroquine and azithromycin because of potential cardiac toxicities. As aspiring PharmD. graduates, and for those currently practicing as pharmacists, it is imperative that we understand that the recommendations made in the NIH treatment guidelines are not mandates, "The choice of what to do or not to do for an individual patient is ultimately decided by the patient together with the provider".[1]

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Usage of Ibuprofen and Angiotensin-Converting Enzyme Inhibitors (ACEi) in Coronavirus 2019 (COVID-19) Patients: Should They Be Used?

By: Evan Cheung, PharmD (c/o 2020)

On March 11th, 2020, a research article was published in the *Lancet* journal that informed the public about a hypothesized issue regarding the use of ibuprofen in COVID-19 patients.[1] Because of the information found in this article, patients and medical professions are wary of utilizing nonsteroidal anti-inflammatory drugs (NSAIDs) to treat fever in patients diagnosed with COVID due to the proposed risk of worsening symptoms. This hypothesis was made based on the notion that the COVID-19 virus binds to a specific receptor, angiotensin-converting enzyme 2 (ACE2), that facilitates its ability to enter the cell. In turn, ibuprofen has been shown to upregulate ACE2 expressions in the body.[2] Fang et. al also hypothesized the risk of certain co-morbidities (e.g diabetes, cerebral stroke, hypertension) and utilizing certain medications (e.g ACEi and angiotensin II receptor blockers [ARBs]) that can increase the expression of ACE2 and increase the risk of COVID-19 infection in these patient population.[2]

It is important to note that the claims made in the *Lancet* journal are not made based on clinical, scientific evidence that directly links the worsening of symptoms in COVID-19 patients to the use of ibuprofen and other NSAIDs. The claims are based on proposed mechanisms of the virus's ability to enter the host cell. In a systematic review of SARS-CoV2 and SARS-CoV from 2002, no strong evidence was found suggesting the usage or non-usage of ibuprofen for COVID-19.[3] Although there are limited sources that evaluate the effect of ibuprofen in SARS-CoV2, a study conducted on indomethacin 1 mg/kg on canine coronavirus demonstrated "potent direct antiviral activity against SARS-CoV and CCoV."[4] Both SARS-CoV and SARS-CoV2 share a common target receptor, the ACE2.[5] However, the SARS-CoV2 receptor is longer than that of SARS-CoV with a "completely different receptor binding region."[5] Thus, the study with indomethacin does not necessarily provide sufficient evidence of the usage of indomethacin or other NSAIDs like ibuprofen to provide the same effect on SARS-CoV2. In an article published by the *Annals of the Rheumatic Disease,* ibuprofen was shown to reduce interleukin-6 in human tissues and sputum, granting benefit in reducing the risk of fatal cytokine storm associated with COVID-19.[6] It is advised by the writers of the article that NSAIDs used for the treatment of chronic inflammatory disease (e.g arthritis) should not be discontinued due to the increased risk of infection caused by untreated conditions.[6] With the lack of clinical evidence that links COVID-19 to decline in health in patients taking ibuprofen, clinical judgment by a healthcare practitioner should be used to determine the necessity of NSAIDs for COVID-19 symptom treatment.

For ACEi and ARB, it had also been hypothesized by Fang et. al, that both medications can increase the expression of ACE2.[2] Similar to the hypothesis made with ibuprofen, both classes of medication have limited evidence to link the use of medication with an increased risk of worsening symptoms in COVID-19.[7-9] On the contrary, there are counter-hypothesis that state "elevated ACE2 membrane expression and tissue activity by administration of ARB and/or infusion of soluble ACE2 could confer protective properties against inflammatory tissue damage in COVID-19 infection."[7,8] Due to the uncertainty in linking the types of medications to COVID-19 symptom worsening and the known benefits of decreased mortality in cardiac patients taking the medication, the ACEi should be continued unless the patient develops conditions in which the ACEi is contraindicated.[7,9]

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When Epidemic Meets Pandemic: Treatment of Opioid Use Disorder Amidst Coronavirus Disease 2019 (COVID-19)

By: Preethi Samuel, PharmD Candidate c/o 2021, Aisa Mrkulic, PharmD. Candidate c/o 2022

Opioid use disorder (OUD) is a chronic illness involving misuse of opioids, both prescribed and non-prescribed, as well as the use of illicitly obtained heroin. OUD carries a risk of fatal overdose, preceded by the following triad: pinpoint pupils, respiratory depression, and unconsciousness. Pharmacologic treatments of OUD, which include buprenorphine, methadone, and naltrexone, reduce the likelihood of relapse. Access to care has been challenged by social-distancing protocols in response to the ongoing pandemic. In light of this public health crisis, the Substance Abuse and Mental Health Services Administration (SAMHSA) set forth guidance for OUD treatment made possible by present-day technologies.[1]

Federal and state regulations governing the use of telehealth have been relaxed, acknowledging, "the declaration of a national emergency." [2] Telehealth, as defined by the U.S. Department of Health and Human Services (HHS), "is the consensual use of digital patient information and telecommunication technologies for the provision of remote healthcare services and health-related education".[3] Video conferencing is the most popular platform for telehealth services, but text messaging can be used as an alternative. Telehealth is to be conducted in private settings, ensuring only the participation of intended parties.[3] Lowered voices and speakerphone avoidance are reasonable precautions, just to name a few.

Stigma persists as a barrier to a world where telehealth is the norm. However, the benefits of using telehealth are undeniable. Time and time again, telehealth services are cited as most valuable to rural communities.[4] Remote healthcare services provide passive support for the practice of social distancing, which in turn, minimizes the spread of the virus. Patients with COVID-19 are able to continue with their treatment. Similarly, clinicians who have tested positive for COVID-19 may carry on in the provision of much-needed healthcare services.[2] Remote patient monitoring is no longer of the future, but rather the present!

How does the Health Insurance Portability and Accountability Act (HIPAA) restrict telemedicine? Well, desperate times call for desperate measures and a national, public health emergency surely qualifies as one. Telemedicine technologies may not fully comply with HIPAA. The Office of Civil Rights (OCR) at HHS announced that the, "good faith provision of telehealth" would be permitted for the duration of the pandemic.[5] Under these circumstances, clinicians, including pharmacists, need not fear penalties for failing to abide by HIPAA.[5] The imposition of a penalty for noncompliance with HIPAA will, moving forward, remain unheard of, so long as providers, "enable all available encryption and privacy modes" during remote interactions.[5] Notably, when private or semi-private settings are not accessible to patients seeking care, it is the responsibility of providers to implement "reasonable HIPAA safeguards, the goal of which is limited protected health information (PHI) disclosure".[3]

Opioid treatment programs (OTP) are healthcare facilities that have been deemed essential amidst the present-day COVID-19 crisis.[6] Normally, under federal law, any new patient admitted to an OTP for OUD is required to undergo a complete physical evaluation and cannot be seen via telehealth.[7] However, in these unprecedented times, SAMHSA has the authority to grant exceptions to otherwise non-negotiable OTP regulations.[7] For the duration of the pandemic, any new patients in an OTP may be prescribed buprenorphine, so long as an adequate evaluation can be completed using telehealth.[7] Evaluations of the patient should be performed with the same level of care as would be done in a face-to-face encounter. Simply put, a comprehensive history of substance use, episodes of overdose, and medical history is the expectation in both scenarios.[6] Contrastingly, all new patients starting methadone for OUD are required to be evaluated in person.[7] Methadone requires more careful dose titration as compared to buprenorphine. For this reason, it is not ideal to prescribe methadone via telehealth for first-time patients. Additionally, close follow-up and medical assessment are necessary during initiation so as to minimize adverse events, including overdose.[6] Existing patients can be prescribed either methadone or buprenorphine with telehealth.[7] In order to help aid clinicians, the Addiction Treatment Needs Assessment Tool was created by the American Society of Addiction Medicine (ASAM), Shatterproof, and OpenBeds.[8] This 13-question assessment inquires about substance-related behaviors and environment to guide the level of care or type of treatment needed to optimize OUD treatment.[8]

Effective March 19, 2020, all stable OTP patients are entitled to up to a 28-day supply of take-home OUD medications.[9] A clinician's professional judgement is the deciding factor for patient eligibility. For patients who are deemed less stable, states may request to limit to a 14-day supply, if believed by the OTP that the patient can safely handle take-home medications.[9] A caveat to extended take-home doses is the inability for patients initiated on methadone to lawfully receive escalating doses for self-administration.[7] Dispensing such doses runs the risk of inadequate dosing, attributed to the opioid's sensitive titration schedule.[7] Pertaining to extended take-home doses, patient stability should be reassessed before making a plan. Factors which should be taken into consideration are the use of other CNS depressants, home environment---including availability of a responsible adult-member of the household, and COVID-19 risk.[7] Options range from having the patient come in every other day instead of daily, to giving the full 14 or 28 days, or anything in between.[7] Most importantly, each and every patient should be given unimpeded access to naloxone rescue kits, with instructions from either the OTP or a local pharmacy.[7]

Through a chain of custody protocol, the Drug Enforcement Agency (DEA) has authorized a delivery option for those patients who are quarantined at home from COVID-19.[6] Documentation proving that a patient has been medically ordered to self-isolate is required before delivery can be pursued. Identification of a patient-specified, trustworthy, uninfected member of the household to deliver medications to should be kept on record. If no specified, trustworthy member of the household exists, doorstep delivery, with an approved lockbox, by designated staff, law enforcement, or the National Guard, is permitted. Prior to delivery, the OTP should communicate in advance with the patient to guarantee the designee is available on the date of delivery. After arrival to the destined location, a second phone call is made to notify the patient. Delivery personnel must maintain a distance of 6-feet from the doorstep and remain until the designee accepts the medication. He or she should ensure to document the exchange before departure. If the designated person is absent from the location, another attempt should be made to reach them. Failure to arrive within a reasonable amount of time requires the documented return of medication

to the OTP. Such is the process of DEA-authorized delivery.[10]

Dr. Ebtesam Ahmed, PharmD, M.S, Clinical Professor at St. John's University's College of Pharmacy and Health Sciences, had this to say, "In times of the COVID-19 pandemic crisis, the present regulations that exist in the SUD treatment world highlight the barriers that already exist for patients because of the excessive regulation and policies in the U.S. Currently, healthcare providers have been challenged to address the needs of patients with opioid use disorder in the setting of long-standing regulations around medications such as buprenorphine and methadone. Pharmacists have a role in dispelling misinformation about medications that may be ineffective or could even exacerbate coronavirus disease. They stand ready with colleagues from other disciplines to lead variation in techniques that will remove barriers to treatment for patients with OUD." In conjugation with her faculty appointment, Dr. Ahmed is the Director of Pharmacy Internships of the MJHS Institute for Innovation in Palliative Care. Additionally, she proudly serves as a member of the Board of Directors for the International Association for Hospice and Palliative Care.

The prescribing of controlled substances has remained a subject of debate within the world of healthcare. To curb misuse, legislation dictates, or rather restricts, both the prescribing and dispensing of these drugs. So where do pharmacists fit into this picture? They often serve as the bridge between patient and provider; therefore, the implication of a rise in telehealth is an increased demand of these healthcare professionals. More patient contact provides drug experts with a platform for the justification of their value. Pharmacists are already the most accessible of healthcare providers, and telemedicine would only add to patients' access to care - just think of the potential impact on medication adherence! In aworld of OUD, interruptions in treatment are alarming. Relapse is a real fear clinicians have for their patients. Ultimately, addiction is a disease of isolation, and it is with telehealth, that patients stand a chance against the least favorable of circumstances.

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Dexamethasone and COVID-19

By: Natalia Loomis, PharmD Candidate c/o 2022

The World Health Organization announced the official name "COVID-19" on February 11, 2020 when the outbreak was first identified in Wuhan, China. 'CO' stands for 'corona,' 'VI' for 'virus,' and 'D' for disease and 19 for the year the first case occurred.[2]The Center for Disease Control and Prevention and other public health agencies are learning more every day about this novel virus. For now, we know that it can spread from person to person via close contact and those who do not demonstrate symptoms can still be carriers and infect others. The virus has various symptoms and seems to be affecting different populations. For example, some patients could be carriers and experience no symptoms at all, while others can suffer from severe shortness of breath or clotting. Some of the common symptoms which can show up between 2-14 days of contracting the virus include fever, chills, and shortness of breath, congestion, loss of taste or smell.[5] (World Health Organization)

As of right now, no medication has been approved for the treatment of COVID-19. Scientists and pharmacists have been diligently researching treatments and ultimately a vaccine. Since the outbreak, medications such as remdesivir (Veklury®) hydroxychloroquine and azithromycin have been used to treat the symptoms associated with the disease. However, both medications are no longer endorsed by treatment strategies, due to the risk of hearth rhythm problems and other safety issues.[1]

According to the University of Oxford, there might be a breakthrough in treatment for COVID: a recent trial involving dexamethasone. For patients who required ventilators, dexamethasone treatment reduced mortality by one third. Additionally, preliminary findings released by the World Health Organization showed that patients requiring supplemental oxygen, saw a one-fifth reduction in mortality. The medication benefit group only involved patients who contracted severe cases of COVID-19, requiring further investigation of other patient groups. Severe cases are those in which the virus settles in a patients lungs, causing a severe difficulty of breathing. These patients require hospitalization and support through a ventilator.[4] There is currently a lack of data on patients who contracted milder cases.

We are hopeful that in the next couple of months, as data continues to be tracked, there will be a follow up on if dexamethasone is in fact a new reliable treatment.

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RHO CHI POST: TEAM MEMBERS

@ Katharine Russo

6th Year, STJ; Editor-in-Chief

As a member of the RCP over the past 5 years, I've had the opportunity to take part in this publication as a writer and editor. The RCP has been a cornerstone for the advancement of the pharmacy profession since 2011. Students have continually provided guidance to others regarding the advancements of the pharmacy profession. I am looking forward to continuing on the tradition of this newsletter with the hopes of extending our audience past the walls of St. John's CPHS.

@ 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!

@ Kathleen Horan, PharmD

Graduate Copy Editor [Content-Focused]

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.

@ Nicollette Pacheco, PharmD

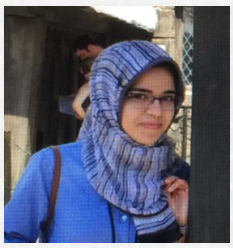
Graduate Editor [Graphics-Focused]

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.

@ Anna Diyamandoglu, PharmD

Graduate Copy Editor [Content-Focused]

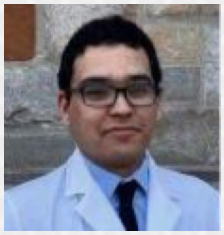
Throughout my time in the PharmD program, my understanding of pharmacy as a profession has evolved and deepened as much as my desire to create awareness, particularly to non-science students, about the diverse role pharmacy plays in various healthcare and non-healthcare settings. I have always had an 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.



@ Sarah Hewady, PharmD

Graduate Copy Editor [Content-Focused]

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.



@ 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.

RHO CHI POST: TEAM MEMBERS

@ Daniela Farzadfar, PharmD
Graduate Staff Writer

Pharmacy is a constantly evolving profession. Writing for the Rho Chi Post gives me the opportunity to enlighten my peers and myself on changes occurring in the field that we are often not taught in the classroom. The Rho Chi Post serves as a creative outlet where students can express their opinions and share new information by combining their passion for writing and the pharmacy profession. I hope that my contribution to this newsletter inspires others to improve patient outcomes by staying up to date on recent changes.

@ Maryam Sekhery, PharmD
Graduate Staff Writer

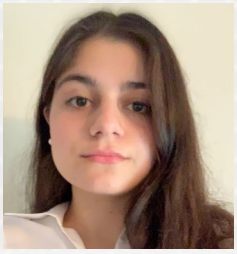
I have always looked forward to reading Rho Chi Post's newsletters and can now proudly say that I am a member of the Rho Chi Post team! The field of pharmacy is always changing, and Rho Chi Post is one-way students can stay up to date regarding current events in the profession and express their views on the dynamic aspects of pharmacy. I look forward to contributing to Rho Chi Post as a staff writer and am grateful for the opportunity to create original content for the newsletter.

@ Judy Koag
6th Year, STJ; Copy Editor [Graphics-Focused]

I am so excited to join the Rho Chi Post, a newsletter which strives to create high quality and creative content. I look forward to working with the team to promote the profession of pharmacy and communicate ideas that inspire and attract readers through the use of graphic design. Graphic design has always been my passion and I hope my contributions continue the Rho Chi Post's mission.

@ Michael Lim, PharmD
Graduate 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.



@ Evanthia Siozios, PharmD
Graduate Staff Writer

Rho Chi Post is a newsletter that gives students the opportunity to learn and write about novel topics and broaden their knowledge while demonstrating their writing skills. For me, being involved with this newsletter is not just about learning something new but also sharing relevant topics which have an impact on patients' lives. I have learned so much from writing for the Rho Chi Post and hope to inspire others with my words. As a future pharmacist I want to learn to teach and get to give.

@ Alisha Kuriakose
5th Year, STJ; Finance & Outreach Manager

I wanted to be part of Rho Chi Post as it provides a platform for students to express their ideas and educate others on global healthcare issues. As a future pharmacist, this is my way of contributing to the change I want to see in our growing profession and make my voice heard. I am very excited for the privilege to work alongside the editorial board to produce a newsletter and serve as the 2020-2021 Finance and Outreach Manager!

RHO CHI POST: TEAM MEMBERS

@ Jason Ifeanyi

5th Year, STJ; Social Media Manager

The Rho Chi Post has a clear mission: to advance the profession of pharmacy by instilling the desire in others to pursue intellectual excellence and critical inquiry. I could not be more excited to join the Rho Chi Post. This an interactive platform that affords me a unique opportunity to contribute to the process of educating readers on advances made in drug discovery and development, modifications in treatment guidelines, and the implications these changes have on the practice of Pharmacy. I am eager to work on this team of equally motivated students, and I look forward to utilizing my skills, past work and volunteer experiences to assist the Rho Chi Post in achieving their goals.

@ Carolina Guerreiro

6th Year, STJ; Staff Editor

As a student of the arts and sciences all my life, I have always been interested in the intersection between the two. The most exciting part about being a Staff Editor for the Rho Chi Post is not only the ability to share the most exciting and clinically relevant healthcare news with our audience, but also having the opportunity to tap into my creative side while relying on my clinical knowledge and previous scientific writing experience. When I'm not busy editing, I am working to capture stories that raise awareness about the diverse roles pharmacists can play in healthcare settings worldwide. I strive to share my vision of untamed areas of pharmacy practice and hope to inspire you as readers to explore them for yourselves.

@Rubab Hassan

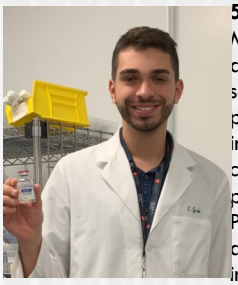
5th Year, STJ; Staff Writer

The Rho Chi Post gives pharmacy students the opportunity to explore their interests, whether it be editing, writing, or graphics, while also enhancing their skills and knowledge as student pharmacists. I am excited to be a part of the Rho Chi Post because it is a great way to expand on what I have learned during my time in pharmacy school and also keep developing my writing skills. Being a writer gives me an outlet to raise awareness on the advancements that are constantly happening in the field of pharmacy and allows me to be part of an amazing team in hopes of providing other students with our best work.

@ Tobin Kuriakose

6th Year, STJ; Staff Writer

The world of pharmacy is constantly making advancements day after day in order to better care for patients and allow them to return to their healthy lives. Rho Chi Post serves as an outlet for students to update themselves without the hassle of having to debate whether the information is accurate or not. I look forward to working with the Rho Chi Post staff to educate students about the growth within the field of pharmacy and to be source of enrichment during a busy school schedule.



@Edwin Gruda

5th Year; STJ; Staff Writer

My name is Edwin and I am a Doctor of Pharmacy student at St. John's University. My favorite aspect of pharmacy school is learning about the clinical and therapeutic components of drugs and diseases. As a kid, I was interested in both the math and sciences. The reason I chose pharmacy over other health care professions is because a lot of people rely on their medications to make them feel better. Pharmacists are the most accessible healthcare providers and are able to help patients optimize their drug therapy in order to improve their health. Throughout the beginning of pharmacy school, I volunteered at Columbia University Medical Center on the oncology department for one year. After that, I have been working as a pharmacy intern at Sandcastle Pharmacy, which is primarily an HIV specialty pharmacy. As a staff writer, I want to highlight the critical role of clinical pharmacists within an interdisciplinary team, in improving and enhancing a patient's quality of life.

@ Natalia Loomis

5th Year STJ; Staff Writer

The profession of pharmacy and what a pharmacist entails is an ever evolving journey. Rho Chi Post becomes an excellent resource in tracking these advances. It provides student pharmacists to not only read and become educated on what other paths might be in store for them, but to become part of the team and create their path. I am so thankful and excited for the opportunity to become a staff writer for the RCP; allowing myself to use my creative ability to not only create my path, but write content to shed a light on all the amazing opportunities that of being a pharmacist entails.

@ Jeremy Mesias

5th Year, STJ; Staff Writer

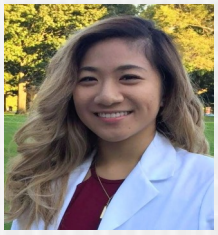
The field of pharmacy is constantly growing and improving with every coming day. Today's headlines become tomorrow's history. As healthcare leaders in a dynamic field, it is important to stay up to date. The Rho Chi Post serves as an excellent tool to help students become more informed about our profession, as well as providing them with the opportunity to contribute their own two cents to the conversation. I am excited to join the team and look forward to contributing to keeping students on top of current pharmacy advancements.

@ Aísa Murkulic

5th year; STJ; Staff Writer

It is admirable of the Rho Chi Post to provide us student pharmacists with a platform to use our voice. Home to the free-exchange of thoughts, opinions & ideas, all are welcome to contribute—so don't count yourself out! Eager to use my voice more than ever before, I counted myself in. As a Staff Writer, patient advocacy, furthering of public health initiatives & diversifying public perception of pharmacists all suddenly become possible. After all, who if not us is to showcase the value of America's most-trusted healthcare professional? I encourage both our loyal & first-time readers to please, read on with us. To learn to read is to learn to write and to learn to write is to become better communicators—disseminators of information. When this occurs, the quality of patient care improves...& that is always the goal.

RHO CHI POST: TEAM MEMBERS



@ Nicole Ng

5th Year, STJ; Website Liaison

Being able to join the Rho Chi Post not only gives me the opportunity to expand my knowledge of the profession of pharmacy, but also allows me to be a part of educating students about the constant changes within the field. Through my involvement, I hope to increase the accessibility of our content and motivate students to broaden their knowledge and stay up-to-date. I am excited to work with the team to produce a newsletter that effectively and efficiently communicates all news that affects our healthcare profession.

@ Tolulope Omisakin

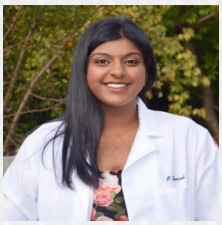
5th Year, STJ; Staff Editor

As an avid reader, I have always taken an interest in how things were written. Whether it be novels, journal articles, or magazine columns, there is always a peculiar way in which a writer tells a story. The real story is only 50% of what is written and the rest is in how the writer decides to disseminate that information. The Rho Chi Post serves as an amazing outlet for student pharmacists, allowing us to delve into the intricacies of different perspectives and ideas in the world of pharmacy. It also gives us the opportunity to decide how we want to detail these new found perspectives and ideas to our audience. As an incoming editor for The Rho Chi Post, I hope to enhance and curate the way each writer tells their stories and help them reach their audience at new levels.

@ Shivani Shah

6th Year, STJ; Staff Writer

As students in an 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!



@ Preethi Samuel

6th Year; STJ; Staff Writer

As future drug experts, we student pharmacists have a responsibility to take initiative and educate ourselves on advancements in healthcare, so as to improve the quality of patient care. The Rho Chi Post serves as a great platform for students to get information that is both accessible and accurate. To be a voice for my future, fellow pharmacists is to be heard and my patients cared for---as pharmacists are their best, sometimes their only, advocates. I hope that my contributions to the RCP spark readers' curiosity, and inspire conversations of how we may become better pharmacists.

@ Mah Noor

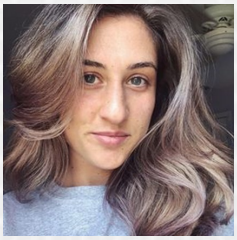
6th Year, STJ; Staff Writer

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.

@ Nishanth Viswanath

5th Year, STJ; Staff Writer

The profession of pharmacy is continuously expanding to meet new demands and offer novel platforms for innovation in healthcare. With an abundance of new information and guidance being published everyday, it can become difficult for students and professionals to stay updated with relevant information and find new outlets to learn. The Rho Chi Post not only allows us to be informed about the current state of our profession, but also allows students to voice their opinions and connect with each other through literature. I am excited to be part of its team, and hope to provide meaningful and resourceful contributions.



@ Dana Weinstein

5th Year; STJ; Staff Writer

I am so excited to be a part of the Rho Chi Post team. This opportunity allows both myself and my peers to be well informed about the ever-changing profession of pharmacy and the vital developments in science and healthcare. Beyond the classroom setting, this newsletter fills in the gaps for the most up-to-date and current advancements for students and faculty. As a staff writer, I look forward to acting as an educator, a motivator, and an executor to further the mission and goals of the Rho Chi Post.

MISSION

The Rho Chi Post is an award-winning, monthly, electronic, student-operated, faculty-approved publication that aims to promote the pharmacy profession through creativity and effective communication. Our publication is a profound platform for integrating ideas, opinions, and innovations from students, faculty, and administrators.

VISION

The Rho Chi Post aims to become the most exciting and creative student-operated newsletter within St. John's University College of Pharmacy and Health Sciences

Our newsletter continues to be known for its relatable and useful content

Our editorial team continues to be known for its excellence and professionalism

The Rho Chi Post essentially sets the stage for the future of student-operated publications in pharmacy

VALUES

Opportunity

Teamwork

Respect

Excellence

GOALS

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