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Mission Statement:

To advance the profession of pharmacy, enabling our members to provide optimal care to those they serve.

President's Letter

As we start off 2022, I want to take a moment to recognize my fellow line officers, committee chairs, CEO Elise Barry, and Association Services Administrator Samantha Miller for the work they do to support *New Jersey Pharmacists Association*. I also want to extend my appreciation for all of the health care staff who have been working tirelessly to take care of patients in the current health crisis.

I would like to give thanks to Mayank Amin who shared his story as the convention keynote speaker and inspired us all to serve our communities. Thank you to all the presenters and attendees of the 151st Annual Virtual Convention in October 2021.

As a brief overview of plans NJPhA has planned for 2022, there are several student events in the works as well as a "collaboration program" between NJPhA and NJSHP to look forward to.

As we move toward the future, NJPhA will continue to work to strengthen relationships with pharmacists, student pharmacists, pharmacy technicians, and our fellow healthcare professionals while increasing member engagement and improving member offerings through advocacy, education, and communication.

Aakash M. Gandhi, PharmD
2022 Prresident

Message from the Chair of the Board of Trustees

Dear Colleagues,

New Jersey Journal of Pharmacy,
I am offering gratitude to the pharmacists, pharmacy students, and pharmacy technicians who ensured our New Jersey adults and children were vaccinated against the COVID19 virus. Plus, I extend gratitude to pharmacists in many different areas who were doing their part during the pandemic – compounding, long-term care, pharmaceutical industry, health-system and all other areas. Due to the administrative orders enacted during the pandemic, pharmacy students including those at the Ernest Mario School of Pharmacy at Rutgers University and Fairleigh Dickinson University (FDU) School of Pharmacy and Health Sciences were able to participate in vaccinating patients. I'd like to mention Antonia Carbone, preceptor and faculty member at FDU, who supervised Advanced Pharmacy Practice Experience (APPE) students who volunteered at the Holy Name Medical Center Mega Site. I am pleased to add that Ernest Mario School of Pharmacy was one of the Rutgers University vaccine sites located on the Piscataway campus.

I want to recognize the many volunteers as well as Elise Barry, NJPHA CEO, and Samantha Miller, Association Services Coordinator, for coordinating this year's workshops. The New Jersey Pharmacists Association responded to the COVID19 pandemic by offering the APHA Pharmacy-Based Immunization Delivery Certificate Training for pharmacists and technicians. Thank you to [insert names here].

The news media and government leaders were focused on the COVID19 health crises affecting vulnerable patients in long-term care facilities. Consultant Pharmacists are important health professionals who provide their expertise in this population. This year we offered the certificate program "Preparing for a Consultant Pharmacist Career." Thank you to [insert names here] for making this event happen.

Thank you to all of the presenters and to those who attended the 151st Annual Virtual Convention in October, 2021. Mayank Amin, PharmD delivered an inspirational keynote speech. Dr. Amin is the "pharmacist superman" whose Facebook picture when viral when he delivered medications to a sick child wearing his superman costume! We learned of his success stories which resulted from his personal and sincere aims to serve the people in his community. I hope that Dr. Amin will inspire all of you to recommit yourself to your vital role in serving our patients and the public.

Grace Earl, PharmD
Chair, New Jersey Pharmacists Association

https://www.rutgers.edu/news/rutgers-university-opens-vaccination-sites-piscataway-newark-and-camden

From The Editors' Desks...

Dear Colleagues,

Thank you for your continued support for The New Jersey Journal of Pharmacy – the official peer-reviewed journal of the *New Jersey Pharmacists Association*. It is our sincere hope that you enjoy the spring edition of our journal. This issue expands upon the Spring 2021 review of beta-blocker use among patients abusing cocaine with a CE.

We welcome submissions for the next issue of The New Jersey Journal of Pharmacy. If you are interested in submitting a manuscript for publication consideration or serving as a peer reviewer, please email the Journal Committee at njpharmacists@gmail.com.

Jessica Chmielewski, PharmD, MHS, RPh
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Beta-Blocker Use in Cocaine Users: Is the Contraindication Real?

Timothy Nguyen, PharmD and Zhe (Amy) Wang, Pharm D

Learning Objectives:
After participating in this activity, the pharmacist shall be able to:
Pharmacists:

1. **Identify the mechanism by which cocaine affects the cardiovascular system.**
2. **Describe studies of beta blocker use with HFrEF and active cocaine users.**
3. **Determine disease states where management with beta blocker therapy would be beneficial in non-cocaine users.**

Author disclosures: None of the contributors have anything to disclose related to this educational activity

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ABSTRACT

Background:
Beta-blockers are commonly used in patients with heart failure (HF) with reduced ejection fraction (HFrEF) and post myocardial infarction (MI), and have been shown to improve outcomes, such as mortality and recurrent MI. Cardiovascular disease is prevalent in cocaine users, and cocaine may adversely affect the cardiovascular (CV) system by its sympathomimetic effects. Administering beta-blockers to cocaine users may provide an unopposed alpha-adrenergic stimulation, which can also lead to coronary vasoconstriction. Aim of this clinical manuscript is to describe the literature on the effect of beta blockade on risks of cardiac events in active cocaine users.

Methods:
MEDLINE and **PubMed databases** were searched using keywords, such as beta-blockers, beta blockade, cocaine, and cocaine use. Studies that compared outcomes between beta-blocker use versus no beta-blocker use in patients with cardiac diseases.

Results:
Majority of the studies did not identify a correlation between beta blocker therapy and risk of CV events in HF or MI patients who reported active cocaine use or test positive for cocaine on the urine toxicology screen. Conversely, beta blocker use was shown to increase survival rate, reduce hospitalization, and improve cardiac function.

Conclusion:
Beta-blocker therapy has positive effects in patients with CV diseases. Direct impact of beta-blockers usage in active cocaine users has not been well extensively studied, and needs to be further clarified with strong randomized control trials.

BACKGROUND

Beta-blockers are commonly used in patients with heart failure (HF) with reduced ejection fraction (HFrEF) and post myocardial infarction (MI).[1] Beta-blockers therapy has been shown to prevent left ventricular remodeling, and reduces mortality by an average of 35% in HFrEF patients.[1,2] The 2017 guidelines developed by the American College of Cardiology (ACC), in collaboration with American Heart Association (AHA) and Heart Failure Society of American (HFSA) recommended beta-blockers therapy for patients with Stage C HFrEF, unless contraindicated or not tolerated.[1,3] Additionally, the 2013 and the 2014 guidelines developed by ACC/ AHA recommends administration of beta-blockers within 24 hours for patients presenting with ST segment elevation myocardial infarction (STEMI) or non-ST segment elevation acute coronary syndrome (NSTE-ACS), respectively.[4,5]

More than 5 million Americans reported active cocaine use, which is the most commonly abused substance in patients presenting to emergency departments (ED).[6,7] Prevalence of cardiovascular disease (CVD), including MI and acute decompensated HF, is 70% in asymptomatic cocaine users.[8,9] Beta-blocker usage in active cocaine

use is quite controversial. Cocaine adversely affects the cardiovascular (CV) system, leading to angina pectoris and MI.[10] Sympathomimetic effects of cocaine could lead to tachycardia and hypertension, increase myocardial oxygen demand, and may induce myocardial ischemia, especially in persons with severe coronary artery disease (CAD).[10] Additionally, cocaine reduces myocardial oxygen supply by diminishing coronary blood flow. Vasoconstriction effect is primarily due to agonism of alpha-adrenergic receptors. Administration of beta-blockers in cocaine users may provide an unopposed alpha-adrenergic stimulation, which can also lead to coronary vasoconstriction, further worsening patient's risks of coronary events.[2] The 2014 ACC/AHA guidelines for the management of NSTE-ACS recommends avoiding beta-blockers in patients presenting with ACS who had recent history of cocaine usage and exhibiting signs and symptoms of acute cocaine intoxication. However, literature on the efficacy and safety of beta-blocker usage in active cocaine users is lacking.[4] As beta-blockers play such a significant role improving outcomes for CV disease, its safety in active cocaine users requires thorough investigation. The aim of this manuscript is to describe the literature on the effect of beta blockade on risks of CV events in active cocaine users with history of HF or CAD.

METHODS

MEDLINE and **PubMed databases** were searched using keywords such as beta-blockers, beta blockade, cocaine, and cocaine use. Studies published in English, that compared outcomes between beta-blocker use versus no beta-blocker use in patients with cardiac diseases, such as MI or HF, were reviewed. References of articles were also reviewed for relevance.

RESULTS

Beta-Blockers and Cocaine-induced Chest Discomfort

Use of beta-blocker therapy in the setting of ACS associated with active cocaine consumption is controversial.[11,12] There are reports suggesting that the pathophysiology of the unopposed alpha-stimulation phenomenon in cocaine users is not as simple, and it appears to be unrelated to beta-blocker treatment.[13] Several studies investigated patients who reported cocaine usage or tested positive for cocaine on urine toxicology screenings. Cocaine users did not experience higher risks of elevation in cardiac biomarkers, changes in electrocardiogram (ECG), recurrent MI, or mortality. Conversely, some studies found that beta-blockers use was associated with higher chance of survival post-MI.[13] Beta-blocker use was not associated with rise in troponin in patients who presented with chest pain, and its use was associated with lower risk of mortality and MI in patients who had positive urine toxicology for cocaine.[14,15]

Clinical characteristics and primary composite outcomes (MI, stroke, ventricular arrhythmia, or all-cause mortality) were compared between patients with and without beta-blockers therapy.[16] Beta-blockers were used in 44% of 376 patients with cocaine-related chest pain. Compared to no beta-blockers, patients treated with beta-blockers were more likely to describe anginal chest pain (17% vs 8%, $p = 0.012$), to have known CV risk factors such as hypertension (80% vs 38%, $p < 0.001$), and to receive other therapies for CAD such as aspirin (84% vs 57%, $p < 0.001$). Despite these higher risk clinical characteristics, patients treated with beta-blockers experienced similar peak troponin levels, individual adverse events, and rates of the composite primary endpoint (15.9% vs 12.3%, p=0.32). No differences in outcomes were observed between patients treated versus not treated with beta-blockers therapy in the setting of cocaine-related chest pain (table 1).[16] There were no meaningful differences in ECG changes, troponin levels, length of stay, use of vasopressor agents, intubation, ventricular tachycardia or ventricular fibrillation, or death between those who did and did not receive a beta-blocker. In this trial's conclusion, beta-blockers do not appear to be associated with adverse events in patients with chest pain with recent cocaine use (table 1).[17]

Overall, beta-blocker usage in people with positive urine toxicology, cocaine use within 24 hours and chest pain or chest discomfort did not increase risk of ECG changes, cardiac biomarkers, elevation in troponins or composite endpoint of MI, stroke, arrhythmias, or death (table 1).[16-18] Patients with positive urine toxicology within 48 to 72 hours of admission did not experience any difference in major adverse cardiac events (MACE), and 90-day survival was higher in the beta-blocker group (table 1).[19] Finally, a meta-analysis was conducted to investigate clinical outcomes for cocaine-induced chest pain after treatment with beta-blockers. Relevant studies published through July 2018 were reviewed for eligibility for inclusion. Five studies with sample size of 1447 were included in the meta-analysis. Out of that, five-hundred and thirty-six patients received beta-blocker therapy, while 911 patients did not. Results of the analysis showed no significant association between beta-blockers use and risks of all-cause mortality (risk ratio: 0.75 [RR]; 95% CI: 0.46-1.24) or MI (RR: 1.08; 95% CI: 0.61-1.91) for patients with cocaine-associated chest pain (table 1).[20]

Beta-Blockers Use in Active Cocaine Users with HFrEF

Few research studies have investigated the impact of beta-blocker usage in patients with HFrEF who actively use cocaine. Recommendations for beta-blockers in patients with HFrEF using cocaine are unclear, and available

Table 1: Trials of Beta Blockers (BB) Usage in Cocaine-Induced Chest Discomfort

Trials	Design	Study Groups	Results
Ibrahim et al. 2012[14]	Retrospective chart review	BB (N = 162) vs. No BB (N = 216)	Troponin elevation within 12 hours of admission: 12.1% vs. 10.3%, p = 0.2 Peak troponin levels: 6.5ng/mL vs. 5.7ng/mL, p = 0.6
Dattilo et al. 2008[15]	Retrospective cohort	BB (N = 60) vs No BB (N = 288)	MI: 6.1% versus 26.0%, difference in proportion: 19%, 95% CI: 10.3% to 30%
Rangel et al. 2010[17]	Retrospective study	BB (N = 151) vs. No BB (N = 177)	Worsening ischemia on ECG: 5% vs. 6%, p = 0.9 Positive troponin: 24% vs. 21%, p = 0.52 MI: 10% vs. 10%, p = 0.94
Fanari et al. 2014[16]	Retrospective study	BB (N = 164) vs. No BB (N = 212)	Composite of MI, death, stroke, and arrhythmias: 9.8% vs. 5.7%, p = 0.32
Cediel et al. 2018[19]	Prospective, single center	BB (N = 33) vs. No BB (N = 24)	Major adverse CV events 30.3% vs. 41.7% All cause mortality: 6.1% vs. 20.8% CV mortality: 3% vs. 12.5% 90 day survival: 100% vs. 87.5%, p = 0.035
Pham et al. 2018[18]	Meta-analysis	BB (N = 610) vs. No BB (N = 1144)	MI: OR 1.36, 95% CI 0.68-2.74 All cause mortality: OR 0.68, 95% CI 0.26-1.79
Lo et al. 2019[20]	Meta-analysis	BB (N = 536) vs. No BB (N = 911)	MI: OR 1.08, 95% CI 0.61-1.91 All cause mortality: OR 0.75, 95% CI 0.46-1.24

literature is limited. Many published cases of unopposed alpha-adrenergic receptor stimulation felt this inconsistent and unpredictable phenomenon was most likely the result of cocaine alone and not a side effect of beta-blockers use.[13] A systematic review of the pharmacologic treatment of cocaine CV toxicity revealed beta-blockers to be safe and efficacious.[21] Using carvedilol in HF with a cocaine use disorder did not result in worse outcomes compared to not using carvedilol.[22] Beta-blockers also reduced 30-day, all-cause and heart failure-related readmission rate but not 1-year mortality in patients having HFrEF with concurrent cocaine use.[23] Overall, beta-blockers appear to be safe in patients with HFrEF and cocaine use, and are effective in reducing risks of mortality and morbidity.[22,23]

In a single-center, retrospective chart analysis, 38 patients with HFrEF and active cocaine use who had been started on beta-blocker therapy were reviewed.[24] Beta-blocker use in cocaine users with HFrEF was associated with a lower New York Heart Association (NYHA) functional class and a higher LVEF at 12-month follow-up. No major adverse CV events were observed.[24] Ninety patients with HFrEF and cocaine use were compared with 177 patients with non-ischemic, HFrEF, and no cocaine use. Beta-blockers treatment in patients with HFrEF and cocaine use did not have significant differences in HF readmissions (HR 0.66, 95% CI 0.31 to 1.38), major adverse CV events (HR 0.58, 95% CI 0.39 to 1.47) compared with beta-blocker treatment in patients with HF without cocaine use. Within patients with HF and cocaine use, mortality rates (HR 1.5, 95% CI 0.28 to 8.23) were not significantly different between patients treated with non-cardioselective versus cardioselective beta-blockers. In this trial conclusion, beta-blocker treatment in patients with HFrEF and cocaine use was not associated with adverse outcomes (table 2).[25]

A retrospective analysis was conducted on 72 active cocaine users with HFrEF who were naïve to beta-blocker therapy. Out of 72 patients, 38 received beta-blocker therapy, while 34 did not. Higher percentage of patients in the beta-blocker therapy group experienced an improvement in their NYHA functional class (RR 2.24; CI 1.14–4.41; p=0.0106), and were more likely to experience improvements in left ventricular ejection fraction (LVEF) (RR 2.46; CI 1.27–4.78; p=0.0031) than those who did not receive beta-blockers. In addition, the risk of cocaine-related CV events (p=0.0031) and of HF hospitalizations (p=0.0383) was significantly lower in patients who received beta-blockers. In this trial conclusion, beta-blocker therapy was associated with improvement in exercise tolerance and LVEF in patients with HFrEF and active cocaine use. They were also associated with a lower incidence of cocaine-related CV events and HFrEF-related readmissions.[26] Studies have

Table 2: Trials of BB Usage in Active Cocaine Users with Heart Failure			
Trials	**Design**	**Study Groups**	**Results**
Lopez et al. 2018[24]	Retrospective chart analysis	BB (N = 38)	NYHA FC III or IV: baseline 68.5% vs. at 12 month 26.4%, p < 0.0001 EF < 35%: baseline 73.7% vs. at 12 month 42.1%, p < 0.0001
Banerji et al. 2019[22]	Prospective observational	Carvedilol (N = 404) vs. no carvedilol (N = 99)	Major adverse CV events: 32 vs. 38%, p=0.16
Nguyen et al. 2017[25]	Retrospective study	Cardioselective BB (N = 38) vs. Non-selective BB (N = 28)	Mortality: HR 1.5, 95% CI 0.28 to 8.23
Egbuche et al. 2018[23]	Retrospective study	BB (N = 231) vs. No BB (N = 37)	30-day readmission: 20% vs. 41%, adjusted OR 0.17, 95% CI 0.05-0.5 p = 0.004 Survival at 1 year: 95% vs. 92%, p = 0.09
Lopez et al. 2019[26]	Retrospective study	BB (N = 38) vs. No BB (N = 34)	Improvement in EF: RR 2.46, 95% CI 1.27–4.78, p = 0.0031 Improvement in NYHA FC: RR 2.24; 95% CI 1.14–4.41, p = 0.0106

also shown that higher percentage of patients who were beta-blocker experienced improved ejection fraction after 12 months while maintaining active cocaine use (57.9% vs. 23.5%),26 and beta-blockers reduced 30-day readmission rates in active cocaine users with HFrEF (20% versus 41%; odds ratio: 0.17, 95% CI: 0.05-0.56, p =0.004) (table 2).[23]

DISCUSSION

Although the ACC/AHA guidelines for the management of NSTE-ACS recommends against beta-blocker usage in active cocaine users, the literature, thus far, have not proven a direct association between increased CV risks and beta-blockers in patients who present with cocaine-associated chest pain or HFrEF. Cocaine can have an effect on augmented sympathetic stimulation, norepinephrine and dopamine blockade that can lead to adverse CV effects.[10] The pharmacologic effects of cocaine include both alpha- and beta-receptor stimulation, as well as acute myocardial depression (which is not related to reduced coronary blood flow).[27] Alpha-adrenergic receptor stimulation may theoretically worsen cocaine-related CV complications such as acute left ventricular disease, coronary artery spasm, cardiogenic shock, ACS, hypertensive emergency, aortic dissection, stroke, and sudden death.15,28,29 Cocaine-induced coronary vasoconstriction may be potentiated by beta-blockers; therefore, should be avoided in patients with cocaine-associated myocardial ischemia or infarction.[30] Some studies caution against the use of beta-blockers in patients who actively use cocaine.[31] Others recommend against beta-blockers in patients with clinical evidence of cocaine toxicity.[32] However, these recommendations may rely on literature published more than a decade ago and focus primarily on man-agement of cocaine induced ACS rather than beta-blocker use in cocaine users.

It is unclear whether all beta-blockers, beta-1 selective or mixed alpha-1/beta-adrenergic antagonists are safe in the acute management of cocaine-associated chest pain or MI, due to concerns of unopposed alpha-receptor activity resulting in coronary artery spasm and hypertensive urgency.[14] Although the type of beta-blocker used did not seem to impact outcomes, no specific analysis was conducted to

compare between the various types of beta-blockers.[14-26,29] Majority of the HF studies related to the impact of beta-blockers in cocaine users have focused on HFrEF; however, these studies were generally retrospective and with limited sample size. Cocaine users were primarily identified through self-report, or through urine toxicology screening, so the time interval between cocaine and beta-blockers use was uncertain. Beta-blocker usage in active cocaine users diagnosed with HFrEF needs to be further investigated via randomized controlled trials.

Healthcare providers should weigh the risks versus benefits of initiating beta-blocker therapy and the type of beta-blocker therapy to be employed based on patient-specific factors and comorbidities. Even though literature from previous decades state that the use of beta-blockers in patients with cocaine use may cause unopposed effects leading to detrimental patient outcomes, more recent data suggested otherwise. Beta-blocker therapy remains important for patients with HF and post-MI, and they are among the most commonly used drugs in this patient population.

CONCLUSION

Beta-blocker therapy has positive effects in patients with CV diseases, however, there are controversies about its effects in active cocaine users, which can also lead to coronary vasoconstriction. The direct impact of beta-blocker usage in active cocaine users has not been extensively studied in a well-controlled clinical research environment. Beta-blocker usage in active cocaine users diagnosed with HF and ACS need to be further clarified with strong randomized control trials. Decisions regarding initiating beta-blockers for patients with active cocaine use should be made by a multidisciplinary team, and patients should be counseled to monitor for signs of chest discomfort, dizziness, bradycardia, or elevated blood pressure.

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Rx AND THE LAW

By Don. R. McGuire Jr., R.Ph., J.D.

This series, **Pharmacy and the Law,** is presented by Pharmacists Mutual Insurance Company and your State Pharmacy Association through Pharmacy Marketing Group, Inc., a company dedicated to providing quality products and services to the pharmacy community.

EMERGENCY USE AUTHORIZATIONS

There have been a number of questions from pharmacists about the potential liability of administering COVID vaccines available under an Emergency Use Authorization (EUA) and how that status may impact their insurance coverage. What is the difference between an approved drug and one available under an EUA?

An EUA may be approved by the Food and Drug Administration (FDA) to help make medical countermeasures available for use during public health emergencies. To be approved for an EUA, there must be no adequate, approved, and available alternative. At the beginning of the pandemic in early 2020, this was true. To apply for an EUA, the manufacturer must complete three phases of investigations.

Phase 1 uses the vaccine on a small population of healthy patients. Phase 2 expands the number of patients in the trial to hundreds and includes a wider range of demographics and health statuses. Phase 3 expands to thousands of patients with broad demographic groups. This phase collects critical information on safety and effectiveness. By this point, tens of thousands of patients have been administered the vaccine (or a control) and monitored.

Prior to submission to FDA, the manufacturer of the vaccine will submit their data to an independent Data Safety Monitoring Board for review. After submission, the data is also reviewed by the Vaccine and Related Biological Products Advisory Committee. Failure to receive high marks from either of these groups will likely lead to a denial of the EUA application.

Three vaccines were authorized under separate EUA applications in late 2020 and early 2021. The EUA makes it legal to administer the vaccines in the United States. Most insurance policies for pharmacy professional liability contain an exclusion for acts in violation of pharmacy laws. Because these vaccines are legal for use under the EUA, this exclusion would not apply. Review your policy for any general vaccine exclusion or a specific COVID vaccine exclusion. Also review the policy language for any provision addressing the use of only approved drugs. Absent these, your policy should cover the administration of COVID vaccines under an EUA.

This issue is slowly going away for COVID vaccines because FDA has now granted full approval for two vaccines, the Pfizer-BioNTech vaccine on August 23, 2021 and the Moderna vaccine on January 31, 2022. To gain full approval, the manufacturer gathers additional safety and effectiveness data through continuing trials and monitoring of patients. Clinically, there is little difference between a product used under an EUA and one that has been fully approved. However, any “approved” language in your policy could be problematic for insurance coverage.

Because there is little difference clinically, administration of COVID vaccines should be treated in a similar manner to other vaccines administered in the pharmacy. Use of a specific patient waiver beyond the normal consent form to try to avoid potential liability is not necessary and not likely to be legally enforceable. The professional responsibilities of the pharmacist under statutes and regulations were created to protect patients. Those responsibilities are placed on the pharmacist because of their education and experience. If the idea of a waiver or release like this was viable, every professional would use one with every transaction or encounter. Make sure to provide the required patient information and counsel the patient on important points as you would for any other vaccine.

Legally, the administration or dispensing of a drug under an EUA is every bit as valid as administering or dispensing an approved drug. There is a difference however. When the public health emergency ends, the EUA is also extinguished. When that day comes, the two approved vaccines can continue to be used, but vaccines authorized under an EUA will not be legal to use in the United States any longer. Insurance coverage for administering vaccines under an EUA is likely included in your policy, but a quick review of your insurance policy should be able to verify that for you.

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This article discusses general principles of law and risk management. It is not intended as legal advice. Pharmacists should consult their own attorneys and insurance companies for specific advice. Pharmacists should be familiar with policies and procedures of their employers and insurance companies, and act accordingly.

FINANCIAL FORUM

This series, **Financial Forum,** is presented by PRISM Wealth Advisors, LLC and your State Pharmacy Association through Pharmacy Marketing Group, Inc., a company dedicated to providing quality products and services to the pharmacy community.

College Funding Choices

Explore the different ways you can help finance the costs of higher education.

How can you help cover your child's future college costs? Saving early (and often) may be key for most families. Here are some college savings vehicles to consider.

529 college savings plans. Offered by states and some educational institutions, these plans allow you to save up to $15,000 per year for your child's college costs without having to file an I.R.S. gift tax return. A married couple can contribute up to $30,000 per year. However, an individual or couple's annual contribution to a 529 plan cannot exceed the yearly gift tax exclusion set by the Internal Revenue Service. You may be able to front-load a 529 plan with up to $75,000 in initial contributions per plan beneficiary – up to five years of gifts in one year–without triggering gift taxes.[1,2] Remember, a 529 plan is a college savings play that allows individuals to save for college on a tax-advantaged basis. State tax treatment of 529 plans is only one factor to consider prior to committing to a savings plan. Also, consider the fees and expenses associated with the particular plan. Whether a state tax deduction is available will depend on your state of residence. State tax laws and treatment may vary. State tax laws may be different than federal tax laws. Earnings on non-qualified distributions will be subject to income tax and a 10% federal penalty tax. If your child doesn't want to go to college, you can change the beneficiary to another child in your family. You can even roll over distributions from a 529 plan into another 529 plan established for the same beneficiary (or another family member) without tax consequences.[1,2] Grandparents can also start a 529 plan or other college savings vehicle. In fact, anyone can set up a 529 plan on behalf of anyone. You can even establish one for yourself.[1,2]

Coverdell ESAs. Single filers with modified adjusted gross incomes (MAGIs) of $95,000 or less and joint filers with MAGIs of $190,000 or less can pour up to $2,000 into these accounts annually. If your income is higher than that, phaseouts apply above those MAGI levels. Money saved and invested in a Coverdell ESA can be used for college or K-12 education expenses.[3]

Contributions to Coverdell ESAs aren't tax-deductible, but the accounts enjoy tax-deferred growth, and withdrawals are tax-free, so long as they are used for qualified education expenses. Contributions may be made until the account beneficiary turns 18. The money must be withdrawn when the beneficiary turns 30, or taxes and penalties may occur.[3,4]

UGMA & UTMA accounts. These all-purpose savings and investment accounts are often used to save for college. They take the form of a trust. When you put money in the trust, you are making an irrevocable gift to your child. You manage the trust assets until your child reaches the age when the trust terminates (i.e., adulthood). At that point, your child can use the UGMA or UTMA funds to pay for college; however, once that age is reached, your child can also use the money to pay for anything else.[5] Using a trust involves a complex set of tax rules and regulations. Before moving forward with a trust, consider working with a professional who is familiar with the rules and regulations.

Imagine your child graduating from college, debt-free. With the right kind of college planning, that may happen. Talk to a financial professional today about these savings methods and others.

Citations

1. IRS.gov, March 5, 2021
2. FINRA.org, 2021
3. IRS.gov, March 5, 2021
4. TheBalance.com, April 27, 2021
5. Finaid.org, 2021

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Poster Abstracts

Student-Driven Opioid Stewardship in a Family Medicine Center

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Introduction

Purpose: NJ law regarding controlled medication prescribing states that physicians must enter into a controlled medication agreement with patients who are receiving opioids for chronic use. Physicians should re-enter the agreement every 3 months, perform annual random urine drug screenings, attempt to taper, and provide patients with alternatives. The objective of this study was to review patients receiving opioid medications at Overlook Family Medicine and ensure appropriate processes are implemented.

Methods

A report was retrieved via EPIC, electronic medical record, and filtered to identify current patients receiving opioid medications. A retrospective chart review was conducted to assess whether a controlled medication agreement was on file and to determine whether urine drug screens are being performed annually. Patients receiving opioid therapy were further evaluated to ensure appropriate medication use. Patients excluded from this study were those receiving opioids to treat cancer. This project received an exemption from the IRB. Results: The initial report contained 38 patients receiving opioid therapy. Only 10 patients were receiving chronic opioid therapy. 1 oncology patient was excluded. 6/9 patients required an updated controlled medication agreement. 5/9 patients required an updated urine drug screen. All 9 patients were prescribed appropriate doses with attempts to taper. Of note, medication use agreements were scanned improperly into the electronic medical record for 5/9 patients, which prevented the system from adding patients to an opioid registry.

Conclusion

A presentation was developed to summarize findings and educate staff/medical residents to ensure medication agreements are properly entered in the electronic medical record. Pharmacy students worked with EPIC IT team to re-enter medication use agreements for those that were improperly scanned upon initial completion. This allowed the system to recognize that medication agreements were complete and ensure that patients were added to an opioid registry. Students contacted physicians to request updated medication use agreements and urine drug screens for patients requiring updated documents. Pharmacy students can assist with opioid stewardship activities and ensure compliance with controlled medication prescribing laws.

Evaluation Of Medications Being Delivered Through In-Hospital Pneumatic Tube System

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Introduction

Purpose: At our 431-bed non-teaching hospital, one of the methods utilized to deliver medications throughout the hospital is a pneumatic tube system. Anecdotal reports from the pharmacists and pharmacy technicians indicated that there are medications frequently requested by nursing to be tubed before the next in person delivery. The purpose of this drug information evaluation is to compile a list from staff of medications commonly requested to be tubed and to determine if they can be delivered through the pneumatic tube system.

Methods

A list of medications commonly requested to be delivered via the pneumatic tube system was compiled from our informatics pharmacist, with input from pharmacy staff. A Google search was conducted utilizing the term “pneumatic tube system medications” and the yields were screened to identify relevant national pharmacy organizations, pharmacy journals, and lists from other institutions. Preliminary lists of medications that can and cannot be tubed were cross-referenced with our institution’s list, and tertiary drug references were utilized for each medication on our list to determine if they can be tubed, and if not, why not. Package insert review and other tertiary references review was performed by two independent student pharmacists. Results: There were 29 medications on the list. Out of 29 medications, 4 medications can be safely tubed (13.8%), 10 can be tubed with special precautions (34.5%), and 15 cannot be tubed (51.7%). The medications that require special precautions when tubed consist of medications contained in glass packaging as well as medications that can only be tubed once. The most common reasons for not tubing a medication include alterations to drug products when shaken (26.7%) and aerosol drug products that are under pressure and may burst (66.7%).

Conclusion

A majority of the medications evaluated cannot be delivered through the pneumatic tube system. The most common reason is due to drug products that may burst during transport. Of the medications that cannot be tubed, the ones deemed urgent would require a modification of the pharmacy workflow for timely and safe delivery to the floor. The medications that can be tubed consist of insulins and lyophilized powders that require reconstitution. If pharmacy staff questions if a medication can be tubed, they should favor a more cautious approach. Staff should consider hospital protocols as well as package inserts and manufacturer guideline.requiring updated documents. Pharmacy students can assist with opioid stewardship activities and ensure compliance with controlled medication prescribing laws.

Impact of Pharmacy Telehealth on Diabetes Outcomes During a Remote Experiential Rotation

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Introduction

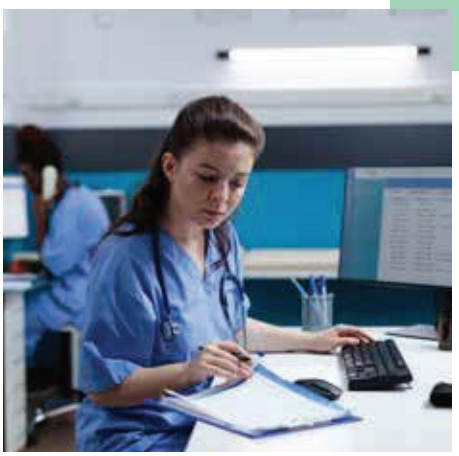
Purpose: COVID-19 resulted in the need for the development of high quality remote experiential rotations. The ambulatory care experiential rotation at Overlook Family Medicine was adapted in response to COVID-19 by performing telehealth services for patients with uncontrolled diabetes. Telehealth services have been linked to positive outcomes in literature. The impact of pharmacy telehealth services was evaluated in patients with type 2 diabetes mellitus at Overlook Family Medicine.

Methods

A prospective chart review was conducted in 47 patients with type 2 diabetes. Patients were followed to evaluate the impact of pharmacy telehealth services from June 2020 to February 2021. The pharmacy students performed pharmacy telehealth services and medication therapy management. A paired t-test was used to determine whether there was a difference in A1c in patients before and after telehealth was performed. Pharmacy students recommended glucose lowering agents to medical residents via staff messages in the electronic medical record, EPIC. Patients were referred to social workers for patient assistance programs as needed to obtain medications at reduced cost. Pharmacy students provided patients with general diabetes education over the phone, discussed insulin or GLP-1 agonist administration technique, reviewed fasting and postprandial blood glucose goals and provided ongoing monitoring to titrate medications to target doses. 47 patients with a mean Hb A1c of 9.651% received pharmacy telehealth services between June 2020 and February 2021. 28/47 patients had pre and post A1c values. The mean post A1c was 8.314% after telehealth services were performed, p=0.001. The mean difference in A1c was –1.371.

Conclusion

There was a statistically significant difference in Hb A1c in patients who received pharmacy services during a remote experiential rotation. Pharmacy students have an important role in performing pharmacy telehealth services for patients and can assist with critical follow-up tasks including dose titration and education related to administration technique and glucose monitoring. Pharmacy students are very helpful in assisting patients who do not have insurance to obtain cost effective medications.



Access to Buprenorphine/Naloxone Films and Naloxone in Community Pharmacies in NJ: A Patient Perspective

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Introduction

Purpose: Patients with opioid use disorder must be able to obtain prescribed buprenorphine/naloxone (BUP/NX) and naloxone nasal spray (NNS) from a community pharmacy promptly to reduce risk for recurrence of use and subsequent morbidity and mortality.

Methods

Trained interviewers followed a script to inquire about availability of BUP/NX and NNS and recorded responses in a standardized data collection template. Primary outcomes included availability of a one-week supply of BUP/NX and a single unit of NNS. Secondary outcomes were willingness to order BUP/NX and estimated timeframe to order if unavailable.

Conclusion

Data from 540 pharmacies (316 chain, 224 independent) were analyzed. Of these, 208 (38.5%) were prepared to dispense both a one-week supply of generic BUP/NX and NNS (46.2% chain vs. 27.7% independent, $p<0.0001$). Fewer than 40% of NJ pharmacies audited were prepared to dispense both BUP/NX and NNS, demonstrating a barrier to timely access of these life-saving medications.

The Role of Iron-Based Phosphate Binder In The Treatment Of Hyperphosphatemia

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Introduction

Purpose: It is estimated that 15% of adults in the United States (US) are having chronic kidney disease (CKD) and hyperphosphatemia is one of a well-known complication of CKD. Phosphate-binder medications have become a mainstay treatment in CKD, but despite the existence of several phosphate-binder medications, there is no one best approach to manage hyperphosphatemia.

Methods

PubMed searching during spring 2021 using the following terms (iron-based phosphate binders, ferric citrate, sucroferric oxyhydroxide, hyperphosphatemia management), and included relevant information related to iron-based phosphate binders. The purpose of this review is to provide the pharmacological profiles of the different phosphate binders, clinical usages, and further elaborate on its place in the landscape of hyperphosphatemia management. The phosphate-binder medications currently available on the market are calcium-based, non-calcium-based (e.g., lanthanum carbonate, sevelamer), aluminum-based, magnesium-based, and others. While calcium-based phosphate binders are used often because they are inexpensive; however, they may cause hypercalcemia. Lanthanum carbonate and sevelamer on the other hand were not linked to hypercalcemia but are costlier. The most recently developed class of phosphate binders is the iron-based, ferric citrate and sucroferric oxyhydroxide. Iron-based phosphate binders might have an important role in controlling phosphate levels due to their ability to lower the phosphate and at the same time it also provides iron sources. This is an important characteristic of iron-based phosphate binder not only used for the management of hyperphosphatemia but also has a positive impact of anemia and decrease use of erythropoiesis stimulating agents (ESAs) and iron requirements.

Conclusion

Iron-based phosphate binder is an important addition to the current landscape of hyperphosphatemia management. This review/presentation is to provide the pharmacological profiles of the different phosphate binders, clinical usages, and further elaborate on its place in the landscape of hyperphosphatemia management.

Pharmaeconomic Impact of Removing Prescribing Restrictions on Intravenous Acetaminophen in A Large, Non-Teaching Hospital

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Background

Intravenous acetaminophen (IV apap) injection is administered as an infusion. Marketed under the trade name Ofirmev® (Cadence Pharmaceuticals, Inc. San Diego, CA), the cost was $28.79 per vial. In 2020, the medication became available generically with a cost of $7.95 per vial, which resulted in our institution removing restrictions on limiting its use to surgery and labor and delivery patients. However, IV apap is still to be used only while the patient is “nothing by mouth.” The purpose of this project was to compare the utilization of IV apap at our institution during formulary restrictions and without restrictions.

Methods

TThis is a retrospective cohort analysis. A report of all patients that received IV apap for one calendar month during restrictions (March 2021) and one calendar month without restrictions (June 2021) was generated utilizing our electronic medical record. Data collected included: location within the hospital, medication frequency, age, sex, specialty of the prescriber, indication, reason for IV apap versus oral (PO), number of IV apap doses in total, if the patient was on PO medications, and the number of IV doses administered after PO meds were restarted. Patients were placed into one of five categories: Pediatrics (PED), Same Day Surgery (SUR), Operating Room (OR), One-Time-Only Doses (OTO), and Greater Than One Time Doses/Standing Order or As Needed Round the Clock (Q6h). Primary

outcome was number of patients in each category during restrictions and without restrictions. Subanalysis was performed for patients that were in the Q6h category without restrictions. Secondary outcomes for this subanalysis included number of doses administered after oral intake was resumed, calculated cost of these doses, and projected annual cost for the year. Costs used were hospital acquisition costs: $7.95 for generic IV apap, and $0.04 per tablet of acetaminophen 325 mg. Dosage equivalents used were 1 vial of IV apap (500 mg acetaminophen) is equal to 975 mg (3 tablets) of oral acetaminophen. Data were analyzed utilizing descriptive statistics.

Conclusion

Despite removal of restrictions, the total utilization of IV apap decreased. However, there is utilization of IV apap when oral acetaminophen may be an option, which would have resulted in a significant cost savings. Further evaluation of potential interventions and reinstatement of restriction guidelines may be considered.