Volume 7 Issue 2

November 2020

NYS-ACCP Insider

Long Island University
Arnold & Marie Schwartz College of Pharmacy and Health Sciences

Synopsis of LIU: ACCP Newsletter

Special Points of Interest:

Long Island University-
ACCP Student Chapter Synopsis

New Drug Review: Nurtec ODT® (Rimegepant)

2018 AHA/ACC/AACVPR/ AAPA/ABC/ACPM/ADA/AGS/ APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol

Clinical Spotlight: Maria Sorbera PharmD, AAHIVP, BCACP

Clinical Spotlight: Francesco Ciummo, PharmD, BCCCP

Pharmacy Interns Role in a Pandemic

Palliative Care in the Era of COVID-19: Speaking from the Lungs of a Pharmacist

Blood Pressure Screening Outreach Event in January 2020 Precepted by Dr. Rachel Lumish

Since its inception in 2002, the Long Island University (LIU) American College of Clinical Pharmacy (ACCP) student chapter has continuously aimed to help pharmacy students develop clinical skills that would serve as valuable assets for future careers. LIU-ACCP members have hosted various professional development programs (PDPs), community outreach initiatives, and journal/guideline clubs. Through these opportunities, student members have gained insightful information regarding clinical rotations, interviews, research opportunities, and residency programs. Dr. Roda Plakogiannis and Dr. Briann Fischetti, chapter advisers, oversee and promote clinical knowledge and career readiness by actively encouraging student participation in extracurricular pharmacy activities both off and on campus.

February 2020 Valentine's Day Bake Sale to support Direct

During the 2019-2020 academic year, the LIU-ACCP hosted a series of events to raise health awareness in the community. One of the educational outreach events was held in November 2019, in collaboration with LIU-National Community Pharmacist Association (NCPA) to educate students at New Dorp High School on vaping and its harmful health outcomes. Another event was a blood pressure screening hosted at the Park Slope Center for Successful Aging. LIU-ACCP student members practiced measuring the blood pressure of elderly patients using automated and manual machines. If there were any abnormal readings,

students would counsel and educate patients under the supervision of Dr. Rachel Lumish. This was a great opportunity for students to gain more experience in assessing patients' compliance to medications and communication skills.

Further, our organization hosted several holiday fundraisers and bake sales to give back to the community. Examples include the Halloween Bake Sale for a non-profit organization that provides clean water to developing countries, Toys for Tots, to distribute holiday gifts to children in need, and the Valentine's Day bake sale to support Direct Relief, an assistance program for individuals whose health and lives are threatened by poverty, endemic diseases, natural disasters and civil conflict

Dangers of Vaping Outreach at New Dorp High School in collaboration with NCPA

LIU-ACCP student members held multiple informational sessions to discuss new guidelines and studies. These topics included diabetes, HIV, and Ebola. Some of these sessions compared the effectiveness of certain drugs such as the newly approved FDA drug romosozumab versus alendronate and antiplatelet medications, ticagrelor and prasugrel. There was also a professional development program that was hosted with a PGY1 Brooklyn VA resident, Dr. Anthony Gerber, 2019 LIU Pharmacy graduate. Dr. Gerber educated pharmacy students on how to pursue a residency and what his experience was like at the hospital.

October 2019 HIV Guideline Club

Due to extenuating circumstances caused by the COVID-19 pandemic, many planned events for the spring 2020 were cancelled. Accommodations were made to shift extracurricular activities online. A journal club zoom session was held on April 16th to discuss the investigational use of hydroxychloroquine and azithromycin.

For the upcoming 2020-2021 academic year, our chapter is looking forward to hosting both remote and potentially even in-person events that will enrich and educate students as we continue to navigate through the COVID-19 pandemic. Resident Panel Discussions, guideline club and journal club meetings, mock interviews, and fundraisers will be held each semester. We look forward to organizing community pharmacy outreach programs and research PDPs for the spring semester. We are also planning to host a PDP focused to guide and prepare pharmacy students for the residency application process.

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New Drug Review: Rimegepant (Nurtec™ ODT)

Rimegepant (Nurtec™ ODT) is the first calcitonin gene-related peptide (CGRP) receptor antagonist approved by the U.S. Food and Drug Administration (FDA) on February 27, 2020 for the acute treatment of migraine in adults. Rimegepant orally disintegrating tablet (ODT) is an antimigraine agent indicated for the acute treatment of migraine with or without aura in adults. It is not indicated for the preventive treatment of migraine.

Rimegepant ODT works by inhibiting the binding of Calcitonin Gene-Related Peptides to their receptors. When the protein couples to its receptor in the central and peripheral nervous system, it leads to vasodilation which is associated with the transmission of pain. Rimegepant ODT is only available as a 75 mg orally disintegrating tablet that comes blister packed. The recommended dose is 75 mg taken orally (placed on or beneath the tongue), as needed without exceeding 75 mg within a 24-hours period. It is currently only marketed for adults. A second dose of rimegepant should be avoided within 48 hours from the use of a moderate CYP3A4 inhibitor. The blister pack should be stored at a controlled room temperature 20-25°C (68-77°F). Rimegepant must be administered immediately after removing from the blister pack. It should not be stored out of its original blister pack for future use.

The most common adverse effect associated with continued use of rimegepant ODT was nausea. Less common adverse effects included hypersensitivity reactions involving dyspnea and rash. Use is contraindicated for patients experiencing previous hypersensitivity reactions to rimegepant. There is insufficient data showing safety and efficacy in pregnant and lactating women.

Additionally, safety and efficacy of rimepegant has not been evaluated in pediatric populations and studies did not include a sufficient number of persons aged 65 and older to evaluate the contrasting pharmacokinetics and pharmacodynamics in this population. Patients with mild to moderate hepatic impairment (Child-Pugh score of A or B), require no dose adjustment of rimegepant. Patients with a Child-Pugh score of C, however, should avoid rimegepant use as plasma concentrations of rimegepant were reported as being significantly higher in this population. No dosage adjustment is required for mild, moderate, or severe renal impairment, however, data in populations on dialysis or with end-stage renal disease (CrCl < 15 mL/min) are lacking.

Table 2: Adverse events with rimegepant 75 mg ODT and placebo

	Rimegepant (n=682)	Placebo (n=693)
Participants with adverse event	90 (13%)	73 (11%)
Adverse events reported by ≥1% of participants in either treatment group		
Nausea	11 (2%)	3 (<1%)
Urinary Tract Infection	10 (1%)	4 (1%)
Dizziness	6 (1%)	7 (1%)
Adverse events related to treatment	47 (7%)	36 (5%)
Serious adverse events	0	0

The FDA approval of rimegepant ODT was based on a double-blind, randomized, placebo-controlled, multicenter phase 3 trial that was conducted in 2018 to assess rimegepant's superiority over placebo in the acute treatment of migraines. The study was done at 69 study centers in the United States and included participants aged 18 years and older. The eligibility criteria for participants included at least a 1-year history of migraine with or without aura, as well as migraine onset before age 50, 2 to 8 moderate to severe migraine attacks per month and fewer than 15 days per month with migraine or non-migraine headache within the past 3 months. Participants needed to be on a preventative migraine medication for at least 3 months before starting the trial.

Exclusion criteria included medical conditions that may interfere with trial endpoint assessments, alcohol or drug abuse in the past 12 months, as well as evidence of allergy or laboratory test findings that were cause for concern.

Rimegepant or placebo was randomly assigned in a 1:1 ratio to participants. After a 3 to 28-day screening period, in which participants were treated for an acute migraine attack, participants were enrolled in the study. Participants logged their pain level and migraine characteristics before and after each dose. There were two primary efficacy endpoints and 21 secondary endpoints in this trial. The co-primary efficacy endpoints were freedom from pain and freedom from the most bothersome migraine-associated symptom (e.g., phonophobia, photophobia, nausea) at 2 hours post dose. The secondary endpoints were divided into three categories: endpoints 2 hours after initial dose, endpoints 60 to 90 minutes after initial dose, and endpoints that assessed the durability of rimegepant's effects, including migraine improvement from 2 – 24 hours post dose and 2 – 48 hours post dose. Six hundred participants were needed to provide 95% power in order to detect a substantial difference in freedom from pain and bothersome symptoms 2 hours post dose between rimegepant and placebo. The study used a modified intention-to-treat analysis, with an alpha of 0.05 in both primary endpoints.

The trial recruited 1,811 participants, of whom 1,466 were randomly assigned to either rimegepant or placebo. Efficacy was evaluated in 1,351 of those participants (669 in rimegepant group and 682 in placebo group). The mean age of the participants was 40.2, with white females as the majority demographic. Primary migraine types reported were migraine without aura (70%) or with aura (30%). At 2 hours post-dose, rimegepant was superior to placebo on the coprimary endpoints of freedom from pain (21% vs 11%, p<0.0001, 95% CI 6-14) and freedom from the most bothersome symptom (35% vs 27%, p=0.0009, 95% CI 3-13). Rimegepant was also superior to placebo on all secondary endpoints, with the only exceptions of freedom from nausea and pain relapse , which were statistically non-significant. In regard to the safety data of rimegepant, the most common adverse events reported by participants were nausea and urinary tract infection (Table 2). Rimegepant is safe and tolerable, as no serious adverse effects or evidence of hepatotoxicity were reported in treated participants.

One strength of this trial is the use of a large cohort, which makes the results generalizable, while an important limitation is the single-attack study design which evaluates the response to treatment using single attacks rather than the response from attack to attack.

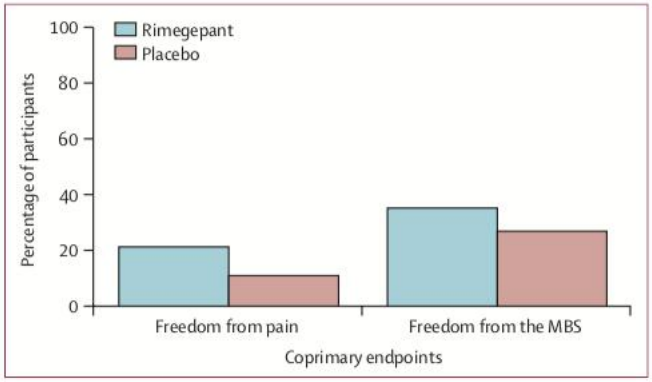

Figure 2: **Rimegepant versus placebo for freedom from pain and freedom from the MBS at 2 h postdose**
Rimegepant was significantly better than placebo on both endpoints (p<0·001). MBS=most bothersome symptom.

The findings of this trial reinforce data from two other phase 3 clinical trials, which previously established the superiority of the oral form of rimegepant to placebo. Moreover, this trial adds new information about the orally disintegrating form of rimegepant, showing that it is a more effective formulation of the drug. The ODT formulation may be the reason behind the fast onset of rimegepant in pain relief, which is a favorable attribute for the acute treatment of migraines. In addition, rimegepant has sustained benefits for up to 48 hours after administration. This may make rimegepant a better alternative for patients who are currently using triptans, which are known to have a fast onset but a short duration of effect.

In conclusion, rimegepant is a single quick-dissolving tablet that shows effective migraine relief within an hour. The migraine relief provided can last up to 48 hours. Rimegepant ODT disperses almost instantly in a person's mouth without the need for water, offering people with migraine a convenient, discreet way to take their medication anytime and anywhere they need it.

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Guideline Review: 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/ APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol

Cholesterol management helps reduce the risk of atherosclerotic cardiovascular disease (ASCVD) and maintains a heart healthy lifestyle. ASCVD entails diseases that occur due to a buildup of cholesterol, in the form of a plaque that results to a myocardial infarction and/or stroke.[1] Over 34 million Americans are diagnosed with hypercholesterolemia.[1]

Cholesterol management is paramount for ASCVD risk reduction.

Seven key topics from the guideline will be reviewed:

Topic 1: Measurements of LDL-C and Non-HDL-C

Measurements of low-density lipoprotein-cholesterol (LDL-C) and non-high-density lipoprotein-cholesterol (non-HDL-C) are very important for lipid lowering therapy recommendations.[2] The desirable cholesterol levels are: total cholesterol (TC) < 200 mg/dL, LDL-C < 70 mg/dL (for patients with ASCVD), high-density lipoprotein-cholesterol (HDL-C) > 40 mg/dL for males, > 50 mg/dL for females, and triglycerides < 150 mg/dL. Elevated LDL-C and non-HDL-C levels leads to atherosclerosis. Hence a combination of healthy lifestyle, physical activity, diet, and lipid lowering therapy are vital for ASCVD risk reduction.

Topic 2: Lipid Lowering Drugs

HMG-CoA reductase inhibitors, otherwise known as statins, are the main stay lipid lowering therapy for LDL-C reduction.[3] For individuals requiring additional LDL-C reduction, add on lipid lowering medications include ezetimibe, bile acid sequestrants, and/or PCSK9 inhibitors. Furthermore, the lipid lowering agents utilized for triglyceride lowering include fibrates, omega 3 fatty acids, and niacin.[2]

TABLE 3 High-, Moderate-, and Low-Intensity Statin Therapy*

	High Intensity	Moderate Intensity	Low Intensity
LDL-C lowering†	≥50%	30%–49%	<30%
Statins	**Atorvastatin (40 mg‡) 80 mg** **Rosuvastatin 20 mg (40 mg)**	**Atorvastatin 10 mg** (20 mg) **Rosuvastatin** (5 mg) **10 mg** **Simvastatin 20–40 mg**§	Simvastatin 10 mg
	…	**Pravastatin 40 mg** (80 mg) **Lovastatin 40 mg** (80 mg) Fluvastatin XL 80 mg **Fluvastatin 40 mg BID** Pitavastatin 1–4 mg	**Pravastatin 10–20 mg** **Lovastatin 20 mg** Fluvastatin 20–40 mg

Table 3. High-Moderate- and Low-Intensity Statin Therapy.[2]

Topic 3: Secondary ASCVD Prevention Management

Initiation of high-intensity statin is the primary recommendation for clinical ASCVD and if that is not tolerated moderate-intensity statin may be initiated. The LDL-C threshold is LDL-C < 70 mg/dL and non-HDL-C < 100 mg/dL. In patients unable to achieve an LDL-C threshold with a maximum tolerated statin, ezetimibe may be considered for additional LDL-C lowering. For patients classified as very high risk ASCVD requiring additional LDL-C lowering a PCSK9 inhibitor may be considered as add on lipid lowering therapy.

Topic 4: Severe Hypercholesterolemia Management

A patient with a LDL-C level ≥190 mg/dL is considered to have severe hypercholesterolemia with high cardiovascular risk.[2] The recommendations for management of severe hypercholesterolemia for patients between the age of 20 and 75 years old are as follows:

1) Patients should be initiated on a high intensity statin therapy or the maximum tolerated dose.[2]
2) A patient on maximum tolerated statin therapy who has an LDL-C level reduction of < 50% and/or has an LDL-C level that is ≥ 100 mg/dL should be initiated on ezetimibe therapy as an add on.[2]
3) A patient taking a maximum tolerated statin and ezetimibe therapy who achieves an LDL-C reduction that is < 50% and has a fasting triglyceride level ≤ 300 mg/dL should be considered for the addition of a bile acid sequestrant.[2] If a patient's fasting triglyceride levels are > 300 mg/dL, a bile acid sequestrant should not be initiated because it can further elevate the triglyceride level.
4) A patient with heterozygous familial hypercholesterolemia on a maximum tolerated statin and ezetimibe combination therapy who has an LDL-C level that is ≥ 100 mg/dL may be considered for initiation of a PCSK9 inhibitor as an add on, such as evolocumab or alirocumab.[2]

Topic 5: Diabetes Mellitus Patient Management

The recommendations for management of adults with diabetes mellitus between the age of 40 and 75 years old are as follows:

1) Should be initiated on a moderate intensity statin.
2) A patient who has an LDL-C level between 70 mg/dL and 189 mg/dL should have a 10 year ASCVD risk assessment done using a sex and race specific pooled cohort equation to help identify ASCVD risk.[2]
3) A high intensity statin is recommended for a patient who develops a risk enhancer from table 5 on the right or is aging.[2] The goal for this patient would be to have at least ≥ 50% reduction in LDL-C levels.[2]
4) A patient who is already taking a maximum tolerated statin therapy with a 10 year ASCVD risk that is ≥ 20% whose LDL levels haven't decreased by at least 50% should be considered for the addition of ezetimibe on top of his/her statin therapy.[2]

TABLE 5 Diabetes-Specific Risk Enhancers That Are Independent of Other Risk Factors in Diabetes Mellitus

Risk Enhancers
Long duration (≥10 years for type 2 diabetes mellitus (S4.3-20) or ≥20 years for type 1 diabetes mellitus (S4.3-6))
Albuminuria ≥30 mcg of albumin/mg creatinine (S4.3-25)
eGFR <60 mL/min/1.73 m² (S4.3-25)
Retinopathy (S4.3-19)
Neuropathy (S4.3-16)
ABI <0.9 (S4.3-22, S4.3-24)

ABI indicates ankle-brachial index; and eGFR, estimated glomerular filtration rate.

Table 5. Risk Enhancers.[2]

Topic 6: Primary Prevention Management

For primary prevention, it is important to assess ASCVD risk in each age group.[2] Depending on an individual's age, their risk varies, however a healthy lifestyle is always recommended.[2] For a patient between the age of 0 and 19 years old with a diagnosis of familial hypercholesterolemia, the recommendation is a statin.[2] For a patient between the age of 20 years old to 39 years old, a statin should be considered if there is a family history of premature ASCVD and if their LDL-C level is ≥ 160 mg/dL.[2] For the last age group, which are patients between the age of 40 to 75 years old, if their LDL-C level is ≥ 70 mg/dL, but < 190 mg/dL and they don't have diabetes mellitus, they should get a 10 year ASCVD risk assessment.[2] The assessment results are then broken down into whether they are at low risk, borderline risk, intermediate risk or high risk and the clinical decision is made from there.[2] For a patient who is low risk, lifestyle modifications should be the primary focus.[2] Borderline risk is when the risks and benefits of a moderate intensity statin are assessed if at least one risk enhancer from table 6 is present.[2] It is recommended for a patient to be initiated on a moderate intensity statin if they are at intermediate risk, have a risk enhancer from table 6, and the benefits outweigh the risks of initiating a statin.[2] Lastly, for a patient who is in the high risk category, a high intensity statin should be initiated.[2]

TABLE 6 Risk-Enhancing Factors for Clinician–Patient Risk Discussion

Risk-Enhancing Factors

- **Family history of premature ASCVD** (males, age <55 y; females, age <65 y)
- **Primary hypercholesterolemia** (LDL-C, 160–189 mg/dL [4.1–4.8 mmol/L); non-HDL-C 190–219 mg/dL [4.9–5.6 mmol/L])*
- **Metabolic syndrome** (increased waist circumference, elevated triglycerides [>150 mg/dL], elevated blood pressure, elevated glucose, and low HDL-C [<40 mg/dL in men; <50 in women mg/dL] are factors; tally of 3 makes the diagnosis)
- **Chronic kidney disease** (eGFR 15–59 mL/min/1.73 m^2 with or without albuminuria; not treated with dialysis or kidney transplantation)
- **Chronic inflammatory conditions** such as psoriasis, RA, or HIV/AIDS
- **History of premature menopause (before age 40 y) and history of pregnancy-associated conditions that increase later ASCVD risk such as preeclampsia**
- **High-risk race/ethnicities** (e.g., South Asian ancestry)
- **Lipid/biomarkers**: Associated with increased ASCVD risk
  - Persistently* elevated, primary hypertriglyceridemia (≥175 mg/dL);
  - If measured:
    1. **Elevated high-sensitivity C-reactive protein** (≥2.0 mg/L)
    2. **Elevated Lp(a):** A relative indication for its measurement is family history of premature ASCVD. An Lp(a) ≥50 mg/dL or ≥125 nmol/L constitutes a risk-enhancing factor especially at higher levels of Lp(a).
    3. **Elevated apoB** ≥130 mg/dL: A relative indication for its measurement would be triglyceride ≥200 mg/dL. A level ≥130 mg/dL corresponds to an LDL-C >160 mg/dL and constitutes a risk-enhancing factor
    4. **ABI** <0.9

*Optimally, 3 determinations.

AIDS indicates acquired immunodeficiency syndrome; ABI, ankle-brachial index; apoB, apolipoprotein B; ASCVD, atherosclerotic cardiovascular disease; eGFR, estimated glomerular filtration rate; HDL-C, high-density lipoprotein cholesterol; HIV, human immunodeficiency virus; LDL-C, low-density lipoprotein cholesterol; Lp(a), lipoprotein (a); and RA, rheumatoid arthritis.

Table 6. Risk-Enhancing Factors.[2]

Topic 7: Statin Safety and Statin Associated Side Effects

The most common side effect associated with statin therapy is muscle symptoms. Patient risk factors for statin associated muscle symptoms (SAMS), listed on the right, must be assessed and resolved, if possible. Several strategies should be considered for patients that experience SAMS. A way to identify if it is the statin causing the muscle symptoms is to discontinue it temporarily for about 1-2 weeks and assess the patient's symptoms. Lowering the statin intensity or intermittent dosing of a long half-life statin are also options. Additionally, switching to a hydrophilic statin is another option in order for patients to continue statin therapy which is paramount for cardiovascular benefit.

Factors Increasing the Risk of Statin-Induced Myopathy

Patient Characteristics	Statin Properties
Age	Lipophilicity
Renal insufficiency	High bioavailability
Hepatic dysfunction	Limited protein binding
Females	Potential for drug-drug interactions
Hypothyroidism	
Diet (grapefruit juice)	
Polypharmacy	
Vitamin D Deficiency	

"Factors Increasing the Risk of Statin-Induced Myopathy" [4]

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Clinical Spotlight: Dr. Maria A. Sorbera, Pharm.D., AAHIVP, BCACP

Dr. Maria A. Sorbera earned her Pharm.D. degree from The Arnold & Marie Schwartz College of Pharmacy and Health Sciences at Long Island University in Brooklyn, NY. After graduating, she completed her PGY1 Pharmacy residency at the NY Harbor VA Healthcare System. Following that, she completed her PGY2 specialty residency in Ambulatory Care at The Brooklyn Hospital Center in Brooklyn, NY. Currently, Dr. Sorbera is an Assistant Professor of Pharmacy Practice with her practice at The Brooklyn Hospital Center. She is board certified in ambulatory care, certified as an HIV pharmacist, and certified to practice collaborative drug therapy management in New York.

Q: What made you want to become a clinical pharmacist?

A: As a student, I was given the opportunity to complete a 3-month combined APPE experience at Mount Sinai Hospital. During this time, I met amazing emergency medicine pharmacists who immediately took on a mentor role and guided me on the path towards residency. Prior to this, I was thinking about residency but truly thought I was going into retail as I worked at a chain and independent pharmacy while in school. The clinical pharmacists at Mt. Sinai would take lunch breaks with me to do CV reviews, mock interviews, and discuss potential options for me. That APPE experience was pivotal in the beginning of my professional career.

Q: What does a typical shift consist of for a clinical pharmacist?

A: Depending on the specialty and institution every clinical pharmacists' day can vary. For me, clinic begins at 9:00 AM three days a week. Two days out of the week, I take part in interdisciplinary clinic sessions where the team consisting of physicians, pharmacists, residents, and students see patients together. In addition, I have two pharmacotherapy clinic sessions under a collaborative practice agreement. After clinic, myself and the students follow up on patient care and complete our notes/documentation.

Q: What would you say was the hardest part of your journey to becoming a clinical pharmacist?

A: Throughout the journey to become a clinical pharmacist, I believe there are several bumps in the road that a person may encounter. My PGY2 was the most challenging year; however, it was also the most rewarding learning experience. Although PGY2 was challenging with learning how to independently manage clinics while completing a 24-hour on-call experience, my clinical skills were enhanced and sharpened and I developed great friendships with fellow co-residents. It was a year that truly prepared me for my current position.

Q: How do you see the clinical pharmacist role evolving over the next couple of years?

A: It is my hope that as pharmacists we will finally obtain provider status allowing clinical pharmacists to participate in Part B of the Medicare program and bill for Medicare services. Provider status would result in coverage and recognition for our services. Actions are currently being taken to achieve this status in New York State, especially with the New York State Council of Health-system Pharmacists and the local regional chapters.

Q: Did you do any research as a pharmacy student that helped you in the process of gaining a residency?

A: As a student, I did not have the opportunity to complete a research project; however, I was able to collaborate on a manuscript with a faculty member.

Q: What advice would you give to a pharmacy student who is looking to complete a residency after graduation?

A: Try to be well-rounded. Work to have a high GPA, but also do not forget to stay involved in local organizations. Aim for leadership positions and network. If the opportunity arises, take advantage of research projects with faculty and/or preceptors. All these experiences will assist in developing skills needed for residency making you a stronger candidate.

Q: During the COVID-19 pandemic, what adjustments did you have to make?

A: During the COVID-19 pandemic, the clinic I practice in limited direct-patient care visits for close to three months. Practicing in an HIV primary care clinic, we needed to ensure patients were maintaining viral load suppression during this time. Myself and the other clinical pharmacists managed patient medications by ensuring they had refills with the necessary lab work. In addition, we preformed pharmacotherapy telehealth visits to manage chronic disease states such as diabetes, anticoagulation, hypertension, etc.

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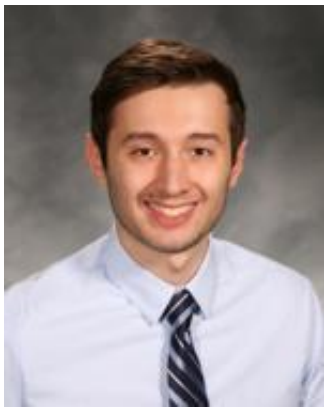
Clinical Spotlight: Dr. Francesco Ciummo, Pharm.D., BCCCP



Dr. Francesco Ciummo earned his Pharm.D. degree from Ernest Mario School of Pharmacy at Rutgers University in Piscataway, NJ. After graduating, he completed his PGY1 Pharmacy residency at Hunterdon Medical Center in Flemington, NJ. Following that, he completed his PGY2 specialty residency in Critical Care at New York-Presbyterian Brooklyn Methodist Hospital in Brooklyn, NY. Currently, Dr. Ciummo is an Assistant Professor of Pharmacy Practice at The Arnold & Marie Schwartz College of Pharmacy and Health Sciences at Long Island University in Brooklyn, NY. In addition, Dr. Ciummo is a Neurocritical Care clinical pharmacist at Mount Sinai West in Manhattan, NY. He is also a board certified critical care pharmacist.

Q: What made you decide to become a clinical pharmacist?

A: During my APPE year, I was fortunate enough to have a rotation in the intensive care unit (ICU) with a wonderful preceptor and I was convinced that I wanted to become an ICU pharmacist. I loved the fast paced nature of the ICU as well as being able to see the immediate impact of changes in medication therapy. My preceptor had a major role as a member of the ICU team and was able to have a significant impact on patient care. After this experience, I was fortunate enough to complete a PGY1, PGY2, and then obtain my current role at Mount Sinai West.

Q: What does a typical shift consist of for a clinical pharmacist?

A: I begin my day by reviewing patients in the ICU prior to the start of rounds. I will then attend rounds and address any pharmacotherapy concerns with the team. Rounds typically take between 3-4 hours on most days. In the afternoon, I will usually use this time to work on any projects and meet with any students/residents. Before I leave for the day, I will follow-up on any outstanding patient care issues.

Q: What would you say was the hardest part of your journey to becoming a clinical pharmacist?

A: I would argue that I am currently in one of the hardest parts of my career as a clinical pharmacist. Residency is incredibly challenging, rigorous, and filled with many sleepless nights, but that eventually passes in 1-2 years. The more challenging part is figuring out where to go after you finish residency and how your career will evolve. Becoming a clinical pharmacist cannot be seen as a destination, but instead a constant journey where you are always striving to improve, learn, and grow as a clinician. Residency is "easy" in the sense that you're learning, like school; it's regimented. After you finish residency, it's up to you as to how you continue to develop.

Q: How do you see the clinical pharmacist role evolving over the next couple of years?

A: I think the role of a clinical pharmacist will continue to expand as time goes on. As more and more individuals graduate with residency training, hospitals will be able to expand clinical pharmacy services. The ideal hospital pharmacy model has pharmacists providing both clinical and traditional staffing pharmacist roles. This hybrid model will expand clinical pharmacy services throughout hospitals. Completing at least a PGY1 pharmacy residency will better prepare you to provide these advanced pharmacy services. Pharmacy services are also continuing to expand in the ambulatory care setting for those individuals that are interested in the outpatient setting.

Q: Did you do any research as a pharmacy student that helped you in the process of gaining a residency?

A: I participated in some bench research with a professor of pharmacology as a student. While I found the work very interesting, it is very different from the research you do as a clinical pharmacist. Instead, I would strongly recommend pursuing research opportunities with a clinical pharmacist. Research with a clinical pharmacist will give you more insight into how clinical pharmacists conduct research. I would recommend reaching out to a pharmacy practice faculty member or clinical pharmacists/pharmacy residents if you currently work at a hospital. I think Spring semester of P4 or P5 year is

a good year to participate in research. In many cases, you may be able to present your research as a poster at the ASHP Midyear Clinical Meeting.

Q: What advice would you give to a pharmacy student who is looking to complete a residency after graduation?

A: Don't get too bogged down by comparing yourself to other people as this will only make you more anxious. There will always be someone who is a better candidate than you, but that doesn't mean that you aren't a great candidate as well. Focus on yourself and doing things that will make you a better candidate. Some of the things I would recommend are as follows:

- I strongly recommend any pharmacy related work experience. While I would say that hospital work experience is preferred, retail experience is also beneficial.
- Take on leadership roles in organizations. You don't need to be President of APhA, but becoming a co-chair or another E-board position will be invaluable leadership experience that residencies look for.
- Participate in clinical research if you can. As I mentioned in my previous question, reach out to faculty or other clinical pharmacists in P4/P5 year. Presenting a poster will help to beef up your CV.
- While grades are important, they are not everything. You do not need to have a 4.0 GPA to get a residency. I would recommend a GPA of at minimum of 3.0-3.2 range. The higher the better, but if you are a well-rounded candidate then you should be okay.
- Pick your APPE rotation sites seriously. Consider picking sites that also have residency programs you are interested in. What better way to convince a residency program to consider you as a candidate than doing a great job on a "month long interview". Even if the program doesn't have a residency program, letters of recommendations from preceptors can be make it or break it for candidates. As much as it pains for me to say this, pharmacy is REALLY a small world where word of mouth carries a lot of weight.
- You don't need all of the above. While all the bullet points I addressed will certainly make you a more diverse candidate, you don't need to check off every single box. Your GPA may be so-so, but you have great work, research, letter of recommendations, etc. Your mental health is more important than completing a "checklist." You are only in college once (even if it is during a pandemic), so make sure you enjoy it.

Q: During the COVID-19 pandemic, what adjustments did you have to make?

A: The COVID-19 pandemic significantly changed my role in the NSICU. During the initial wave in March/April, I made the difficult decision of converting to a remote work model in order to better fulfill my obligations at the University. Although I was working remotely, I would still virtually round with the ICU team on a daily basis as many other members of the team had also converted to a remote model. The Neuro ICU converted to a COVID ICU to accommodate the large number of patients requiring mechanical ventilation. We faced unprecedented shortages of sedatives, analgesics, and paralytic medications that many of these ventilated patients required. I assisted the pharmacy team in ensuring we had appropriate alternatives to these medications in the event that the hospital ran out. Finally, as little information was known about the virus, many providers, myself included, needed to stay up to date on the constant flow of literature. Aside from staying up to date with the literature, pharmacists were essential in critically evaluating these studies to ensure we are practicing safe and effective evidence based medicine.

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Pharmacy Interns Role in a Pandemic

Doctors, nurses, and physician assistants are the healthcare workers that most think of on the frontline of the COVID-19 pandemic**.** Among these healthcare heroes remains a group often forgotten, which include pharmacists, pharmacy technicians, and pharmacy interns. Under the supervision of a licensed pharmacist, pharmacy interns are fighting the pandemic on a plethora of battlefields, including hospitals, community pharmacies, and research facilities.

Hospitals are always the epicenter of any health pandemic, and the COVID-19 pandemic is no exception. Hospitals across the world were struck with endless waves of SARS-COV-2 infected patients and pharmacy interns were quintessential in the treatment. Some pharmacy interns were involved in compounding investigational drugs such as remdesivir into IV bags, while others spent 15 minutes putting on multiple layers of personal protective equipment, including two masks, a face shield and a full body protective suit, to deliver medications directly to intubated patients' bedsides. Furthermore, pharmacy interns on rotations were assisting clinical pharmacists in treating critically ill patients by recommending and verifying hundreds of medication orders.

Historically, community pharmacists are the most accessible and trusted health care professionals. During these unprecedented times, community pharmacists are a vital source of information for the public in regards to staying safe and healthy amidst a pandemic. Many medically vulnerable patients rely on pharmacists and pharmacy interns to support them during these difficult times. Alongside pharmacists, pharmacy interns assure that all patients have a large enough supply of their maintenance medications to last during the state mandated quarantine. From offering delivery services to high risk populations, to dealing with pharmacy benefit managers and insurance representatives on the phone for hours each day to obtain necessary medication overrides, pharmacists and pharmacy interns continuously go the extra mile for their patients. According to Journal Pharmaceutical Health Services Research, direct patient care by pharmacists has been shown to improve various patient outcomes during a public health emergency.[1]

Besides supplying patients with their necessary medications to manage their chronic medical conditions, community pharmacies also became COVID-19 testing centers. This significantly expanded the testing capabilities and accessibility in numerous communities. Pharmacy interns were given the responsibility of demonstrating and counseling patients on how to administer the diagnostic tests. While COVID-19 vaccines are still in clinical trials, pharmacists and pharmacy interns will play a vital role in the distribution and administration. The Health and Human Services Secretary recently issued a new amendment under the Public Readiness and Emergency Preparedness (PREP) Act, allowing pharmacists and pharmacy interns to administer vaccines to children as young as 3 years of age.[1] This will play a tremendous role in making sure everyone in the community is safe and protected against vaccine-preventable diseases. Community pharmacists and pharmacy interns have a key role in advocating for and administering vaccines, and this new amendment will empower us to practice at the top of our license.

Secretary of Health and Human Services, Alex Azar, stated that "pharmacists play a vital role in delivering convenient access to important public health services and information".[2] The role of pharmacists and pharmacy interns continues to evolve and expand during the pandemic, while simultaneously improving patient and population health outcomes. While pharmacists and pharmacy interns may not be the first that come to mind when thinking of essential health care professionals fighting the COVID-19 pandemic, they fought and continue to tirelessly fight alongside all healthcare professionals for each and every one of their patients.

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Palliative Care in the Era of COVID-19: Speaking From the Lungs of a Pharmacist

Pharmacists have a common goal: helping others through pharmacological and non-pharmacological management. But what happens when there are no medications for a disease, or the treatments no longer work? Before 2020, many of us could not imagine regularly breaking bad news about a prognosis or the loss of a loved one. No one could fathom not having the proper equipment or access to the supportive care measures needed to provide the good care we advocate for our patients. Fortunately, there are specialty trained healthcare providers in palliative care with skills to incorporate empathy, critical thinking, and communication in times of grief.

Palliative care addresses emotional distress and unrelieved symptoms while providing assistance with medical decision making, care coordination, and goals of care.[1] Referrals to palliative care are typically made at the diagnosis of serious life-limiting illnesses such as heart failure, chronic obstructive pulmonary disease, cancer, and dementia.[1,2] Often palliative care is associated with hospice care, also known as end-of-life care and comfort care, although they are not the same. Hospice care is limited to individuals with a life expectancy of 6 months or less and treatment to cure serious illnesses are stopped, such as chemotherapy for advanced cancer. Like palliative care, the goal of hospice is comprehensive comfort care including management from an interdisciplinary palliative care team consisting of healthcare providers, social workers, chaplains, and pharmacists. This team of providers works to support the medical, emotional, and spiritual needs of a patient and their family.[3] A pharmacist with experience in this field is well-equipped to handle frequent reassessment of medications, utilization of non-traditional routes of administration, recommendations for severe symptom management, and facilitation of difficult conversations and decisions, as summarized by the American Society of Health-System Pharmacy (ASHP).[4]

Despite the uncertainty and limited options healthcare providers were presented, here are some lessons I learned from being the palliative care pharmacist during the COVID-19 pandemic that I hope you will be able to incorporate into your own practices:

1. Plan for the worst, but hope for the best.

While palliative care is recommended to be initiated at the diagnosis of a serious life-limiting illness, many patients associate palliative care with "death" and will refuse to meet the team until they are nearing the end of life. However, the palliative care teams aim to provide an extra layer of support and resource while working alongside other health clinicians. It is commonplace for the team to spend significant amounts of time with patients and their families to understand their needs and provide emotional support, including bereavement support after the loved one has passed. The focus is on the whole patient and includes coordinating care with the patient's healthcare specialists and addressing any additional wishes a patient may request, including those at the end of life, also known as advance care planning. Advance care planning discussions can lead to formal documentation of values, goals, and future care in the event the patient is unable to make their needs known. The rapid deterioration in some inpatient patients meant that palliative care teams turned to families and caregivers of patients who had never spoken to their loved ones about their goals of care. These included discussion on a "Do Not Resuscitate (DNR)" and "Do Not Intubate (DNI)" orders or when to transition to comfort care. Families felt the urgency to make difficult decisions while healthcare providers felt pressured to appropriately distribute sparse resources. Encouraging patients and families to have these difficult discussions before a change in health status provides a road map for all clinicians while ensuring that a patient's wishes are met.

2. Speak volumes by being silent and present.

To deal with many institutions placing restrictions on visitors and in person visits, palliative care teams turned to the use of telehealth visits over the phone or with video calls. Palliative care teams are trained to use visual or body language cues to facilitate and tailor conversation. By not being able to see the patient's face or being able to reach out and provide a tissue

to dry the tears, the same empathy and trust teams were previously were able to convey were diminished. But there are phrases such as "I wish things were different" or "I think anyone would be scared in this situation" that can help validate feelings with empathy and uncertainty.[5] The most utilized resource during COVID-19 discussions was from Vital Talk that presented various scenarios where difficult emotions could be encountered and ways to respond.[6] However, sometimes the most important thing in times of grief is to being willing to listen. Actively listening, such as maintaining eye contact and nodding along in the conversation instead of responding and talking, can be therapeutic for patients and families trying to voice their concerns and frustrations. At any point, therapeutic silence will allow everyone in the room to gather their thoughts and prepare for the next steps in the conversation.

3. Anticipate the needs of others.

Healthcare providers were extremely overburdened with the overwhelming number of critically ill patients.[10] To deal with the large patient load, I began to work independently of my team members to review patients and address health care providers regarding monitoring parameters, dosing, or side effects of medications. This sometimes meant going to see an inpatient patient to assess their pain or symptoms and reporting back my findings to the team. If I could, I would provide telephonic follow up with patients regarding refills and medication effectiveness. In some instances, during family meetings, families asked me questions on current treatments and to explain why a patient is not a candidate for certain therapies, highlighting the need for the palliative care pharmacist to remain current on literature and therapies. Some of the primary team providers also were unfamiliar with the treatment of a dying patient, including the use of opioids in combination with a benzodiazepine. This gave me the opportunity to provide education on aggressive symptom management, proper dose titrations, and possible adverse effects that may be distressing for the patient or the staff to witness. There is a rewarding feeling that kept me motivated when I was able to bridge gaps in knowledge and advocate for the pharmacy profession.

4. Be more than the medication expert; be a human-being.

At the end of the day, no matter how long or difficult it was, pharmacists are human-beings first. We have a wealth of medication knowledge but not taking care of ourselves means we are unable to take care of others, both mentally and physically. It is normal for all healthcare professionals to have emotional reactions to their experiences at work, and the added stress of the pandemic only compounded feelings. Being part of the palliative care team, I was sometimes the first person to notice my patient's agonal breathing or maybe the last person holding my patient's hand as they passed so they knew they were not alone. These instances highlighted the uncertainties of life and the reality of dying, and it made me overwhelmed with emotions. I found myself coming home every night emotionally drained from trying to keep my composure all day. But, I quickly realized that those around me also were also feeling worn down and spent. We were able to confide in each other similar frustrations and fears. Letting these emotions build up makes it harder to remain motivated. Know that it is normal to cry and grieve, and it is okay to need a moment to regroup.

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Rebecca Chu, PharmD

Dear NYS-ACCP Members,

Please join the Executive Officers in Congratulating our new **President-Elect 2021, Dr. Calvin Meaney**! Dr. Meaney is a Clinical Associate Professor and Vice Chair for Research in the Department of Pharmacy Practice at the University at Buffalo (UB) School of Pharmacy and Pharmaceutical Sciences. He has been an active member of the NYS ACCP Annual Meeting Planning Committee for several years, taking the lead in planning the Research Poster Sessions each year. Dr. Meaney was the recipient of the NYS-ACCP Researcher of the Year Award in 2019. He is the Chair of the Nephrology Practice and Research Network of National ACCP. We look forward to welcoming him to the Executive Board in 2021!

Congratulations to our **2020 Peer Recognition Award Winners**! We had several strong nominees this year, and are pleased to continue recgonizing excellence across the state in clinical practice and teaching!

- Clinical Practioner of the Year- **Dr. Jessica Farrell**
- Educator of the Year- **Dr. KarenBeth Bohan**

Earlier this month, we held our **NYS-ACCP Annual Meeting from November 5-6th**. Thank you to the Planning Committee and Dr. Kathryn Connor, Chair and President-Elect, for all of their very hard work in converting our traditionally in-person event to a smooth and successful virtual one! We hope this program provided you with high quality clinical content, networking with colleagues across the State, and opportunities to share research through the poster forum. New this year – if you were unable to attend the Annual Meeting live, we are able to offer a Home Study for CE credit for the entire Annual Meeting Program. Stay tuned for more updates soon from Dr. Connor on how to access the Home Study. Please enjoy the following summary of the Annual Meeting from one of our Planning Committee student members, Michael Sellars, PharmD Candidate, Class of 2021, Wegmans School of Pharmacy, St. John Fisher College:

> The meeting kicked off on the evening of November 5th with a Virtual Happy Hour and the Pharmacy Quiz Bowl. Attendees enjoyed the Virtual Happy Hour by catching up and networking with fellow attendees. Two teams of pharmacy students from St. John Fisher College and St. John's University competed against each other in the Quiz Bowl. It was an exciting competition with the St. John Fisher team narrowly edging out the St. John's team for the win! Many attendees participated virtually as audience members and followed along with the quiz questions, which were useful refreshers on clinical pearls. The Buddy Program followed the Virtual Happy Hour and Quiz Bowl. The Buddy Program provided a networking opportunity for junior attendees, who were mainly pharmacy students and residents, to meet with experienced attendees. Experienced attendees were able to answer any questions and provide information on several areas of pharmacy including clinical practice, research, academia, industry, and advocacy.
>
> The main meeting on November 6th started with an outstanding presentation by keynote presenter Dr. Amy Dzierba from NewYork-Presbyterian Hospital. Dr. Dzierba discussed the impact that the COVID-19 surge had on hospital pharmacy practice in New York City. She highlighted key areas concerning clinical pharmacy practice and addressed the changing treatment recommendations for COVID-19. Additional exceptional presentations were provided by pharmacists on the topics of burnout, immunotherapy, pharmacogenomics, medication safety, and marijuana/CBD. Three pharmacy residents also gave interesting presentations on pharmacists billing for services, clonidine use to mitigate dexmedetomidine withdrawal, and extended VTE prophylaxis in medical patients post-discharge. All of the presentations were quite unique topics and helped to increase exposure to different domains of pharmacy practice. An Interschool Mixer and Residency Panel were also held for pharmacy students to attend during the meeting in between the presentations.
>
> The meeting provided excellent networking and learning opportunities for attendees from all stages and areas of pharmacy practice. We hope to see everyone in person next year for another exciting meeting, and please stay tuned for further communication about a home study CE option if you were unable to attend our virtual annual meeting!
>
> -Amanda Engle, PharmD, BCPS
> NYS-ACCP President

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