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DISTRICT OF COLUMBIA COLLEGE OF CLINICAL PHARMACY

PRESIDENT'S LETTER

INSIDE THIS ISSUE

An independent chapter of the American College of Clinical Pharmacy, the DC-CCP is dedicated to improvements in pharmacotherapy practice, education, and research in the District of Columbia, Maryland, and the Commonwealth of Virginia.

As a founding member of DC-CCP, it has been a great pleasure to watch this organization grow over the last 6 years. And it is such a privilege to serve as your president this year! I have always found the greatest strength of DC-CCP to be the varied backgrounds, specialty areas and practice settings of the talented and accomplished clinical pharmacists that form our membership. I consistently leave our events energized by the passion and dedication our members have to providing high-quality patient care and advancing the practice of pharmacy.

The opportunity for information sharing across organizations, schools, and states offers each of us the chance to gain insights, pearls and inspiration from our colleagues. If you are facing a challenge in your clinical practice (rolling out a new EMR, developing a new protocol, pitching a service to the C-suite), it is very likely that another member has been in this position before. As an organization our goal is to help you form professional relationships to support you in these efforts.

Over the past year, under Dr. Rocafort's leadership, DC-CCP held two interesting and high-quality CE forums, launched the mentorship program, and hosted residency preparation events for our student members. In 2017, the executive board, committee chairs and I hope to bring you even more opportunities to meet each other and share best pharmacy practices.

Our organization has a strong and enthusiastic student membership. We will continue to provide forums for student members to explore opportunities in clinical pharmacy, interact with practicing clinical pharmacists, and to prepare for these careers after graduation.

We will also continue DC-CCP's history of strong clinical programming. We are planning for a CE Forum early this fall as well as opportunities for CE webinars throughout the year. We are also planning quarterly networking events to allow us to get to know each other in less formal settings. And past-president Lisa Peters continues to drive the organization's advocacy efforts – with the annual Advocacy Day planned for March 30th.

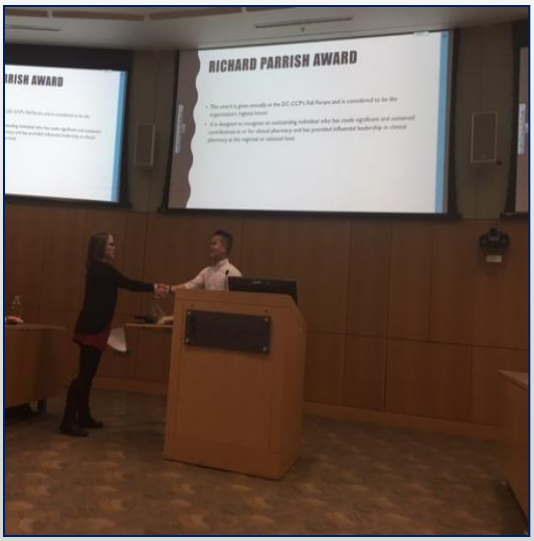
DC-CCP thrives when our members are involved and active! So let us know how you would like to participate. Keep your eyes peeled to your email, Facebook and Twitter feeds for announcements of upcoming events. Contact me directly or any of our committee chairs if you would like to volunteer for a committee, help plan an event, join us for Advocacy Day, become a mentor, present a CE, or write an article for our newsletter.

Hope to see you at one of the events soon!
Katy Pincus, PharmD, BCPS
DC-CCP President
kpincus@rx.umaryland.edu

Lisa Peters Awarded the 2016-2017 Richard Parrish Lecture Award

The Richard Parrish Lecture Award is DC-CCP's highest distinction, and is awarded annually to an individual who exemplifies leadership in clinical pharmacy, by providing significant and sustained contributions in or for clinical pharmacy at the regional or national level. The fifth annual Richard Parrish Lecture Award was presented to Dr. Lisa Peters, PharmD, BCPS.

Dr. Peters earned her Doctorate of Pharmacy with distinction from the University of Michigan College of Pharmacy and completed her PGY1 pharmacy practice residency training at the Richmond Veterans Affairs Medical Center in Richmond, VA. She currently works as a Clinical Pharmacy Specialist in heart transplant at the MedStar Washington Hospital Center in Washington, DC. As one of DC-CCP's founding members Dr. Peters has been an active member since 2011, leading the organization's pharmacy advocacy efforts since 2014. She has served as DC-CCP's President (2015), President-Elect (2014), Secretary-Treasurer (2012-2013), and is currently our Advocacy Chair. Congratulations Dr. Peters!



LOCAL ACCP STUDENT CHAPTER REPORTS

UNIVERSITY OF MARYLAND SCHOOL OF PHARMACY

Angeo Rey Belen, 2nd year Student Pharmacist

This year, the University of Maryland School of Pharmacy chapter of ACCP-SCCP had a great start with over 40 eager P1s joining our organization. Our chapter is dedicated to providing members with a local connection to the national organization while also familiarizing students with the field of clinical pharmacy, providing information about careers and opportunities within the field of clinical pharmacy, and promoting dedication to excellence in patient care, research, and education.

So far this year, our students have had an opportunity to participate in many events which highlight the role and responsibilities of clinical pharmacists: multiple general body meetings have given our students a chance to learn from experts in pediatric care, infectious disease, and toxicology; journal clubs have introduced our students to the process of reading, analyzing, and discussing scientific literature; and our True Life: I'm a Clinical Pharmacist Workshop has shown our students the importance of patient interaction and formulary decisions. Other exciting events included an opportunity to participate in a patient care challenge, a chance to compete in our first ever journal club competition, and a networking Q&A session with residents and residency program directors! As we look forward to the rest of the academic year, we are excited to continue engaging our students through our spring events. A fourth year research symposium, a clinical opportunities roundtable, and a variety of other events will hopefully continue to familiarize our students with the rewarding field of clinical pharmacy.

HOWARD UNIVERSITY COLLEGE OF PHARMACY

Kevin Nguyen, 2nd year Student Pharmacist

Due to various circumstances, we could not make happen many activities for our chapter as previously planned and most of these events will be rescheduled for Spring 2017 semester. On November 18th, 2016, a Generation RX Naloxone Training was held in collaboration with APhA to inform about new changes in naloxone regulation and provide training in Howard University, College of Pharmacy. On November 19th, 2016, we had a community outreach at First Rising Mt. Zion Baptist Church, Washington, DC where we raised awareness about prostate cancer. In collaboration with Howard University Cancer Center staff, members of ACCP Howard chapter had the opportunity to hand out related materials while we educated the public about prostate, colorectal, and breast cancer, and recommended healthy lifestyles to reduce the risk of cancer.

Our chapter members also participated in the ACCP annual meeting in October 2016 and obtained essential knowledge from the Emerge from the Crowd workshop, Residency and Fellowship forums, and poster presentations while networking with clinicians and other students. In addition, our fundraiser event of name tag sales was a success giving us more funds for future events to come in Spring 2017 such as an Interview skills workshop, Flu clinic, Policy day, and Residency week.

SHENANDOAH UNIVERSITY BERNARD J. DUNN SCHOOL OF PHARMACY

Allison Lizer, 3rd year Student Pharmacist

The Shenandoah University chapter of ACCP was involved in a variety of activities throughout the fall semester of 2016. One of the first events of the year was a mock OSCE, which was open to both volunteers and participants and was a resounding success. Volunteers acted as patients and evaluators, and students could sign up as a student pharmacist to practice their skills. The chapter offered blood pressure screenings at local pharmacies and health fairs as a service to the community.

We hosted journal clubs throughout the semester, which allowed students to practice their article evaluation skills. Several of our students and faculty attended the ACCP Annual Meeting and Emerge From the Crowd in Florida. Students presented what they learned while attending at the following general body meeting. Dr. Samuel Johnson visited Shenandoah University on behalf of the chapter to deliver a lecture on advocacy in the profession of pharmacy. We are working on gathering interviews as part of our Clinical Spotlight feature, in which a clinical pharmacist answers questions about his or her career and gives a better idea of what clinical pharmacy encompasses to current students. Also, to help members stay included while juggling class, organizations, and commutes, we started live-streaming our general body meetings to our members. Students could ask questions in person at the meeting or comment on the live stream for us to address them. The year has been off to a great start and we are looking forward to doing just as well during the spring semester.

DC-CCP RESIDENCY SERIES EVENTS

Farah Louzon, 2nd year Student Pharmacist

DC-CCP's Student and Resident Subcommittee of the Education and Networking Committee is in the midst of its Residency Series programming, which kicked off in April of 2016. The aim of the series is to educate student pharmacists that are interested in learning more about residencies and what to expect in the process of pursuing one. The first part of the series was titled "Why Residency?" Pharmacy residents from the University of Maryland Medical Center presented on topics of what a residency entails, its benefits, and an overview of the match process. The first event was held at University of Maryland-Baltimore's campus.

The second part of the series, titled "Residency Forum," was a Q&A panel which consisted of residency program directors and coordinators from Frederick Memorial, Sinai, MedStar Union Memorial, and Holy Cross Germantown Hospital. Students were able to ask about their respective programs and what directors look for in prospective residents. This was held on Notre Dame of Maryland University's campus.

With two parts of the series a success, the committee is excited to continue with more events in the spring semester. Future events will potentially cover qualities of a good residency candidate, with topics such as creating a distinguished CV and portfolio, how to write a cover letter, selecting the residency that is right for you, residency checklists and timelines, and preparing for midyear and interviews. Keep a lookout for updates and upcoming events! For more information, please contact the Student and Resident Subcommittee: pharmacist chair, David Choi (dchoi28@jhmi.edu), student chair, Leslie Ibenana (libenana@live.ndm.edu) or committee member Farah Louzon (flouzon1@live.ndm.edu).

UPCOMING ADVOCACY DAY EVENT AT THE AMERICAN COLLEGE OF CLINICAL PHARMACY

Join DC-CCP on **Thursday March 30 at 1pm** as we meet with John McGlew, director of Government Affairs to review materials and strategy at the ACCP office by the National Mall:

American College of Clinical Pharmacy
1455 Pennsylvania Ave., NW
Suite 400
Washington, DC 20004-1017

DARATUMUMAB FOR TREATMENT OF MULTIPLE MYELOMA

Dan Nguyen, PharmD Candidate University of Maryland School of Pharmacy

Multiple myeloma is a type of blood cancer that is caused by abnormal growth of plasma cells. The lifetime risk of developing multiple myeloma is 1 out of 143 and the five-year survival rate is approximately 49%.[1] Patients with multiple myeloma may have a refractory response or relapse despite receiving primary treatments. Recently, the National Comprehensive Cancer Network (NCCN) has updated its guideline for multiple myeloma with recommendations that daratumumab can be used in combination with bortezomib and dexamethasone or lenalidomide and dexa-methasone for patients with relapsed or refractory multiple myeloma.[2] In November 2016, the FDA approved these combination regimens of daratumumab for patients who have not achieved desired outcomes from at least one previous therapy.[3] Daratumumab is a human IgGκ monoclonal antibody that binds the CD38 glycoprotein of multiple myeloma cells and induces cell death.[4]

The new recommendations are based on efficacy and safety data from the CASTOR and POLLUX trials which are two recent phase 3 studies on daratumumab combination therapies for this group of patients. Both trials indicated better clinical outcomes including progression-free survival rate, overall response rate, and partial response rate in the daratumumab groups compared to the control groups. In these studies, daratumumab was given at a dose of 16 mg/kg intra-venously. According to the CASTOR trial, addition of daratumumab to bortezomib and dexamethasone showed a higher rate of progression free survival than treatment with bortezomib and dexamethasone only, 60.7% (95% CI, 51.2 to 69.0) versus 26.9% respectively (95% CI, 17.1 to 37.5).[4] In the POLLUX trial, patients who received daratumumab with lenalidomide and dexa-methasone had a 12-month rate of progression free survival of 83.2% (95% CI, 78.3 to 87.2) compared to 60.1% (95% CI, 54.0 to 56.7) in patients who received lenalidomide and dexamethasone alone.[5] Safety results from the two studies showed that the daratumumab group had a higher rate of thrombo-cytopenia (in the CASTOR trial), neutropenia, and infusion related reactions.[4,5] However, risk of infusion reactions can be minimized by administering corticosteroids before and after infusion.[5]

Currently, daratumumab combination therapies have not been used as first line treatment. On-going studies will be looking at daratumumab combination therapy with bortezomib and dexamethasone for patients with newly diagnosed and symptomatic multiple myeloma.[6]

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NEW THERAPY FOR PATIENTS WITH PARTIAL ONSET SEIZURES: ROLE OF BRIVARACETAM

Chelsey Song, PharmD, PGY1 Pharmacy Resident, The Johns Hopkins Hospital

Epilepsy is one of the most common neurologic disorders affecting an estimated 65 million people worldwide and approximately 2-3 million Americans [1]. The disease is characterized by the over-activity of neurons leading to patients experiencing re-current seizures. It has been estimated that about 1/3 of patients with epilepsy are considered pharmacoresistant and thereby experience persistent seizures despite being on treatment. [2, 3] There are varying subtypes of seizures depending on which region of the brain is affected. A partial onset seizure is characterized when there is an abnormal electric activity occurring at a localized area of the brain. Partial onset seizures can be further classified into simple partial seizures and complex partial seizures. This is dependent on the impact of the seizure concerning the rest of the brain as well as the level of consciousness the patient is experiencing during the seizure episode[4].

Brivaracetam (BRIVIACT®) is a novel antiepileptic medication that was approved by the FDA in February of 2016 for the adjunct treatment of patients with partial onset seizures who are 16 years of age and older. It is a third generation antiepileptic drug that is structurally similar to the currently existing compound levetiracetam. While the exact mechanism of action for both medications remains unknown, both drugs affect the binding of synaptic vesicle protein 2A (SV2A). SV2A is a synaptic vesicle protein that is abundantly present in the entire central nervous system and is thought to play an intricate role in epi-leptogenesis. [2, 3] Within animal models, brivaracetam has shown to have higher binding affinity to SV2A as compared to levetiracetam, as well as encompassing a more lipophilic profile, thereby allowing brivaracetam to penetrate the blood brain barrier more rapidly.[3]

In key clinical trials, statistically significant results in reducing overall seizure occurrence compared to placebo were shown for doses of 50 mg/day, 100 mg/day and 200 mg/day (maximum recommended dose) *continued on page 9*

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of brivaracetam divided in two doses. In the largest study (n= 768), patients experienced on average a 23.2% (p<0.001) reduction in seizure occurrence in a 28 day period while taking brivaracetam 200 mg/day as compared to a 22.8% (p<0.001) reduction in patients taking 100 mg/day.[2] Two other studies showed a 12.8% (p=0.025) and 11.7% (p= 0.037) reduction in seizure frequency per week compared to placebo in patients taking brivaracetam 50 mg/day and 100 mg/day, respectively. [5, 6]

Since the medication is currently only approved for the adjunct treatment of partial onset seizures, it is important to note that there are minimal adverse drug interactions between existing antiepileptics and brivaracetam, except for phenytoin and carbamazepine. Both these interactions and their specific impact on brivaracetam levels are summarized in Table 1.[7] Concomitant use of brivaracetam with levetiracetam was only studied in small populations. Addition of brivaracetam to already existing levetiracetam therapy provided no additional therapeutic benefit in post hoc analysis of these trials.[3, 5, 6, 8] Interestingly, patients who were not exposed to levetiracetam had better response rates to brivaracetam and in the groups previously treated with levetiracetam, efficacy was greater seen in those who had discontinued levetiracetam due to adverse events as compared to those who had an insufficient response.[3, 5, 6, 8]

The recommended dose of brivaracetam is 100 mg/day divided in two doses which can be titrated to a maximum of 200 mg/day.[6] The most common side effects experienced by patients while on brivaracetam were somnolence, sedation (dose dependent), dizziness, fatigue, nausea/vomiting, and equilibrium disturbance.[7,9] Neutropenia and increase in suicidal ideation were also observed.[7] Interestingly, in a human abuse potential study performed by the manufacture, brivaracetam at therapeutic and supra-therapeutic doses were compared to the abuse potential of alprazolam thereby leading the FDA to classify brivaracetam as a schedule V medication.[7] There are no recommended renal impairment adjustments; however, for patients with hepatic insufficiency the recommended starting dose of brivaracetam is 50 mg/day which can be titrated to a maximum suggested dose of 150 mg/day.[7]

Brivaracetam provides patients who suffer from partial onset seizures a new and safe alternative treatment option. However, it is important for providers to keep in mind that brivaracetam is currently only FDA indicated as adjunctive therapy and therefore should not be utilized as monotherapy in the treatment of partial onset seizures.

Table 1.[7]

Drug-Drug interactions between brivaracetam and concomitant antiepileptic drugs (AED).

Concomitant AED	Interactions between AED and Brivaracetam
Carbamazepine	Brivaracetam concentration: ↓ 26% Carbamazepine concentration: ↑ in carbamazepine-epoxide metabolite*
Lacosamide	Not studied
Lamotrigine	None
Levetiracetam	None
Oxcarbazepine	None
Phenobarbital	Brivaracetam: ↓ 19% in plasma concentration
Phenytoin	Brivaracetam concentration: ↓ 21% Phenytoin concentration: up to 20% ↑ when using dose of 400 mg/day
Pregabalin	Not studied
Topiramate	None
Valproic acid	None
Zonisamide	Not studied

*Brivaracetam is a reversible inhibitor of epoxide hydrolase leading to an increase in concentration of the active metabolite carbamazepine epoxide to approximately 198% when concomitantly used with brivaracetam 100mg BID[7]

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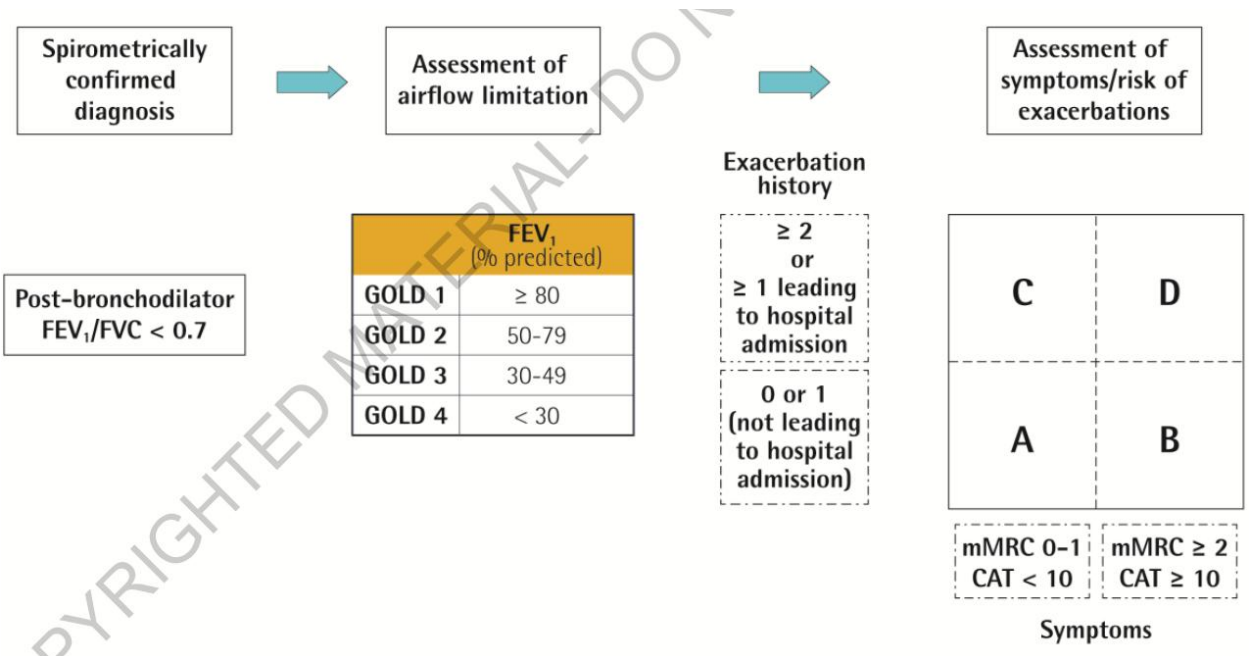
A SUMMARY OF THE 2017 GOLD GUIDELINES UPDATE

Jessica Merrey, PharmD, MBA, BCPS, BCACP, CGP, Clinical Pharmacy Specialist, Ambulatory Care, The Johns Hopkins Hospital

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) released an updated strategy for the diagnosis, management, and prevention of Chronic Obstructive Lung Disease (COPD) in November 2016. This document was originally published in 2001, first updated in 2011, and has been updated annually since then. These updates have been fairly minor in terms of diagnosis and treatment up until this year. The key changes in the 2017 GOLD guidelines can be broken into three categories.

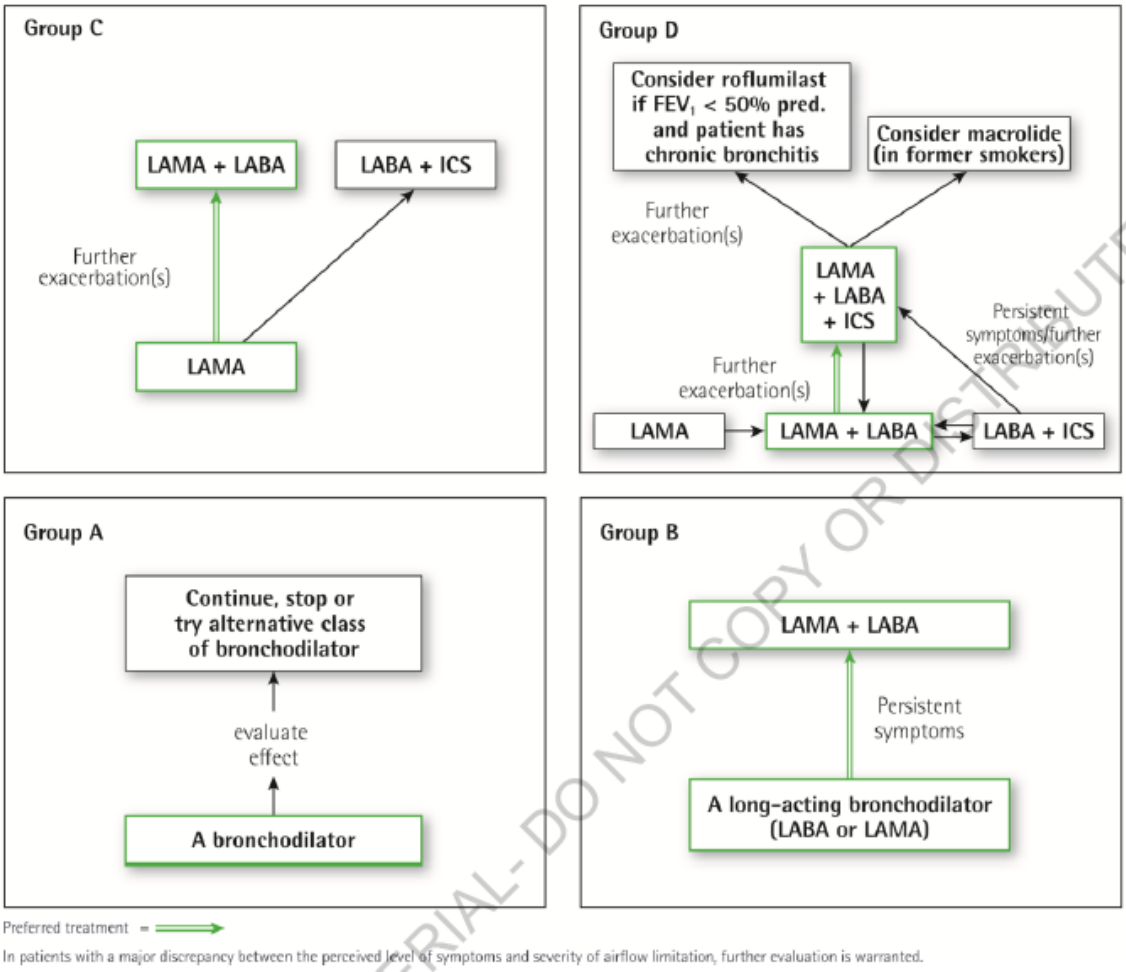
Refined ABCD assessment tool to further stratify risk

The ABCD tool from the 2011 GOLD update combined patient symptomatic assessment with spirometry and the risk of exacerbations.[1] However, in predicting mortality, the tool performed no better than spirometric-only grading.[2] The refined tool attempts to address this by separating the spirometric assessment from the ABCD grouping of symptoms and exacerbation risk.[1] For example, previously patients would be categorized as "GOLD D;" the new tool would label the same patient "GOLD Grade 4, Group D," where the grade refers to severity of airflow limitation and the letter provides information regarding symptom burden and exacerbations. A figure of the new tool is below.



Updated treatment algorithm for stable COPD and emphasis on risk of future exacerbations

Long acting beta-agonists (LABA) and long-acting muscarinics (LAMA) are still the mainstay of treatment, but inhaled corticosteroids (ICS) have been pushed further down the list of appropriate options, except in the case of overlapping asthma and COPD.[1] The 2017 treatment algorithm is below:



Group A no longer has a recommendation to use combination LABA + LAMA if monotherapy fails.[1,3] There were no changes to treatment recommendations for patients categorized in Group B. In Group C, the initial recommendation is a LAMA, which differs from previous versions in which a combination LABA or LAMA with ICS was the initial recommendation.[1,3] This is because LABA + LAMA combination was proven superior to LABA + ICS in patients with a history of frequent exacerbations.[4] Similarly, Group D previously was recommended to start with ICS + LABA, or ICS + LAMA, with triple therapy as a next step.[1,3]

The 2017 guidelines recommend combination LABA + LAMA first, with addition of ICS if symptoms persist.[1]

Addition of hospital discharge and follow-up criteria, including use of integrated care team

The 2011-2015 versions of the GOLD guidelines provided criteria for discharge (ability to use inhaler properly, ability to walk across room without getting winded, etc.) and recommended follow-up within four to six weeks (reassessment of inhaler technique, status of co-morbidities, etc.).[3] The updated guidelines shorten the recommended follow-up period to 4 weeks, citing a reduced rate of readmission in patients seen within the shorter time-frame.[1,5] The guidelines also recommend additional follow-up three months post-discharge to ensure the patient has returned to stable clinical state.[1] While the guidelines do not mention the value of a pharmacist specifically, they do encourage the use of coordinated, integrated care for patients in all settings. Observational studies in patients with COPD have identified a relationship between poor inhaler use and symptom control.[6] The updated GOLD guidelines stress the importance of education and training in inhaler device technique, and then assessment of dosing frequency and technique at each follow-up visit.[1]

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POTENTIAL NEW TREATMENT REGIMEN FOR SEVERE INFLUENZA?

Gloria Kang, PharmD, BCPS, MBA

According to the CDC, the 2015-16 flu season revealed an influenza epidemic.[1] Serious influenza requiring hospitalization is challenging to treat.[2] The standard influenza antiviral oseltamivir is only labeled for uncomplicated influenza.[3] Most studies on influenza treatment were based on patients who were relatively healthy and treated in an outpatient setting.[2] Interestingly, clarithromycin and naproxen have been shown to possess antiviral properties.[4,5] In a study of a small group of pediatric subjects, those treated with clarithromycin and oseltamivir for their influenza, had higher anti-influenza immunoglobulin detected and a lower frequency of residual respiratory symptoms.[4] Through molecular modeling and experimentation with mice, it was determined that naproxen also has antiviral properties against H1N1 and H3N2.[5] Hung et al sought to further research this problem through a phase 2b/3 randomized, open label clinical trial.[6]

Inclusion criteria: ≥18 years old, febrile (≥38 C) with one symptom characteristic of influenza infection (cough, sputum, sore throat, rhinorrhea, myalgia, head-ache, fatigue), symptomatic ≤72 hours, positive for influenza A(H3N2), chest X ray (CXR) or computerized tomography (CT) showing pulmonary infiltrates, and hospitalization.
Exclusion criteria: allergies to any study drugs and eCrCl<30 mL/min.

Subjects were randomized to one of **two arms**: the treatment group (n = 107): clarithromycin 500 mg, naproxen 200 mg, and oseltamivir 75 mg twice daily for two days followed by three days of oseltamivir only; the control group (n = 110): only oseltamivir 75 mg twice daily all five days. Both groups also received amoxicillin/clavulanate 1 gram twice daily for five days as empiric treatment for community acquired pneumonia (CAP) and esomeprazole 20 mg daily as prophylaxis against stress or medication-induced ulcers. The study required 93 subjects in each arm to detect a statistically significant (α=0.05; β=0.2) difference in 30-day mortality.[6] The **primary endpoint** was 30-day mortality. **Secondary end-points** were 90-day mortality, changes in nasopharyngeal aspirate (NPA) viral titer, percent change of neuraminidase inhibitor-resistant A(H3N2) virus (NIRV) quasispecies, pneumonia-severity index (PSI) day one to four of treatment, and hospital length of stay (LOS). The median age of subjects was 80 years and about 25% were from "elderly home" residences. One hundred percent of subjects presented with fever, while cough and sputum production were the next most common symptoms on presentation. Subjects in the treatment group had lower 30- and 90-day mortality (p=0.01) and shorter LOS (p<0.0001).[6] The treatment group had statistically significant decreases in: viral titer

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PSI [-14.52 vs -5.26; $p<0.0001$], and detectable NIRV quasispecies ≥5 on day 1 and 2 [$p=0.003$ and 0.007, respectively].[6] Ten subjects expired at 30 days; one subject was from the treatment group. Nosocomial infections developed in six subjects from each group. Two subjects in the treatment arm had an 18.3 and 24.2%, respectively, rise in serum creatinine; these values returned to baseline two days after naproxen and clarithromycin completion. No subjects developed gastrointestinal adverse effects.

This is a promising study, however, there are several limitations that may make it difficult to apply to clinical practice:

1. It appears the subjects in this study were relatively healthy; however, the details of their past medical history were not fully disclosed, specifically gastrointestinal history.

2. Unknown drug-drug interactions with clarithromycin are unknown as medications subjects were taking were not listed.

3. The small sample size (n = 217) and empiric antibacterial treatment for CAP may not allow generalizability to a larger population. Further studies investigating severe influenza treatment with detailed disclosure of subject characteristics and a larger sample size are warranted.

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Congratulations to our new 2017 DC-CCP officers!

Executive Board

President: Kathleen Pincus, PharmD, BCPS
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Interested in contributing an article for the DC-CCP Spring newsletter or becoming a peer reviewer?

Please contact **dcccpnewsletter@gmail.com**

dc-ccp
District of Columbia
College of Clinical Pharmacy

About DC-CCP

DC-CCP is a non-profit professional association and an independent chapter of the American College of Clinical Pharmacy dedicated to improvements in pharmacotherapy practice, education, and research in the Washington D.C. Capital Region, including the District of Columbia, State of Maryland, and Commonwealth of Virginia. Membership will be open to any licensed or registered health care professional or health care professional student in the Capital Region. Membership in the American College of Clinical Pharmacy is not required to become a member of our organization.

Purpose and Goals of DC-CCP

(A) To promote the rational use of drugs in society
(B) To advance the principles and practice of clinical pharmacy
(C) To promote the full-time, advanced practice of clinical pharmacy
(D) To provide an advanced level of continuing education programs in the area of clinical pharmacy and objectives of ACCP as outlined in its constitution and bylaws
(E) To provide a forum for the expression of opinion on pharmacy practice, education, and research from the perspective of clinical pharmacists
(F)To support, promote, and advance the goals and objectives of ACCP as outlined in its constitution and bylaws
(G) To provide a local recruiting base for ACCP

For more information or to become a member of DC-CCP please visit our website or social media pages:

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