

## Message from the President

Hello OCCP Members,

We hope you will join us for our 2019 OCCP Fall Meeting on October 7<sup>th</sup>, 2019 at Tri-C Corporate College East! This meeting is a great opportunity for PGY-1 and PGY-2 residents to network with peer residents and local clinical pharmacists while also receiving feedback on your residency IRB research or QI project. In addition to giving back to the profession with providing feedback on residency projects, clinical pharmacists enjoy the opportunity to earn their annual Medication Safety

CE with a presentation from a local pharmacist. This year we are planning to change the focus from a competitive judging of presentations to a focus on providing meaningful feedback to resident presenters.

I would like to thank everyone who helped plan, support, and attend our 2019 Spring OCCP meeting this June in Columbus! We were very pleased that we were able to maintain the number of resident poster presenters and meeting attendees as we

*Message from the President continued on page 2*

## OCCP Leadership

**Kelsey Rife, PharmD, BCACP**  
President

**Sarah Petite, PharmD, BCPS**  
President-Elect  
Steering Committee Chair

**Heather Torbic, PharmD, BCPS, BCCCP**  
Immediate Past President

**Jessica Hoover, PharmD, BCPPS**  
Secretary/Treasurer

**Andrea Pallotta, PharmD, BCPS, BCIDP**  
Membership Committee Co-Chair

**Eve Hackett-Garr, PharmD, BCPS, BCIDP**  
Membership Committee Co-Chair

**Karissa Kim, PharmD, BCPS**  
SCCP chapter liaison

**Liz Fredrickson, PharmD, BCPS**  
Planning Committee Chair

**Elizabeth Neuner, PharmD, BCPS, BCIDP**  
Nominations Committee Chair

**Geralyn Water, PharmD, BCPS**  
Advocacy Committee Co-Chair

**Katelyn Simmons, PharmD, BCACP**  
Advocacy Committee Co-Chair

**Julia Kuroski, PharmD, BCCCP**  
Communications Committee Co-Chair

**Sandra Axtell, PharmD, BCPS**  
Newsletter Editor  
Communications Committee Co-Chair

# SAVE *the* DATE

# 10.7.19

Tri-C Corporate College East

4400 Richmond Road  
Warrensville Heights, Ohio 44218

## Tentative Meeting Agenda

8:00-9:00 Registration & Breakfast  
8:30-9:00 Business Meeting  
9:00-10:00 Medication Safety Presentation  
10:00-10:15 Break  
10:15-11:15 Resident Presentations: Session 1  
11:30-12:30 Lunch  
12:45-1:45 Resident Presentations: Session 2  
1:45-2:00 Break  
2:00 – 3:00 Resident Presentations: Session 3

*Resident Abstract Information:*

<http://www.occpweb.org/>



*Initial Submission Deadline:*

September 16, 2019



*Online Registration:*

<http://www.occpweb.org/>

The Ohio College of Clinical  
Pharmacy



Fall Meeting 2019

## Message from the President continued

### *President Message continued from page 1*

have for recent Spring meetings. We are also grateful for the feedback received on the post-meeting survey and the Steering Committee's recent membership survey— we truly value hearing both what is going well and new opportunities to adapt to our membership's needs. At this time, we will plan to ramp up our recruitment efforts from Columbus/Cincinnati-area residency programs to continue to assess the benefits of keeping our Spring meeting in a centralized location. We will also look to incorporate feedback provided on the meeting length, networking opportunities, and continuing education.

Finally, I would like to recognize and thank all of our hard-working committee chairs and members; we are especially appreciative of the new leaders and volunteers we have in several of our committees this year. Look for information at the Fall

Business Meeting on the work being done by these committees. You can also learn more about each committee's goals and how to volunteer on the Committee Membership page of our website's Members Only content.

With Gratitude,

Kelsey Rife



## Planning Committee Update

OCCP Spring meeting at Fawcett Center at Ohio State University was a great success.

Congratulations to the following Award winners:

### **BPS Awards:**

Alison Dailey, Pharm.D., BCPS, PGY2 Psychiatric Pharmacy Resident at VA Northeast Ohio Healthcare System

Paige Sinclair, Pharm.D., BCPS, PGY2 Psychiatric Pharmacy Resident at VA Northeast Ohio Healthcare System



**Pharmacist of the Year:** Robert Barcelona, Pharm.D., BCPS, Cardiology Clinical Pharmacy Specialist at University Hospitals Cleveland Medical Center (pictured with his nominator, Andreea Popa)



**PGY1 Resident Research Poster Winner:** Kayla Rice, Pharm.D., PGY1 Pharmacy Resident at Rainbow Babies and Children's Hospital. "Evaluation of hearing loss in patients with cystic fibrosis"

**PGY1 Resident Research Poster Runner-up:** Caitlyn Crawford, Pharm.D., PGY1 Pharmacy Resident at Cleveland Clinic Main Campus. "Incidence of nephrotoxicity in pediatric patients receiving vancomycin"

**PGY2 Resident Research Poster Winner:** Keti Sulaj, Pharm.D., PGY2 Ambulatory Care Pharmacy Resident at Cleveland Clinic Main Campus. "Effects of non-insulin anti-hyperglycemic agents in patients with type 1 diabetes"

**PGY2 Resident Research Poster Runner-up:** Angela Goodhart, Pharm.D., PGY2 Ambulatory Care Pharmacy Resident at Summa Health System. "Evaluation of ISMP safety recommendations for patients prescribed direct oral anticoagulants (DOACs) in the outpatient setting"



*Planning Committee Update continued on page 3*

## Planning Committee Update

### *Planning Committee continued from page 2*

Thank you everyone who helped with planning and making the day a great success. We are busy planning the upcoming fall meeting! The fall meeting will be held at Tri-C Corporate College East on Monday, October 7, and feature resident research presentations as well as a Medication Safety CE presentation. Registration is now open online (<http://www.occpweb.org/fall-meeting-2019/>)—please encourage your colleagues to attend!

Thanks!

Liz Fredrickson

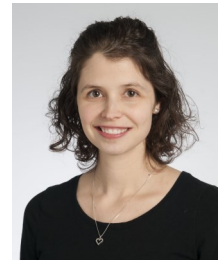


## Membership Committee Update

Year to date, there are 79 members registered. This is slightly down from previous years and the committee will be working this fall to contact past members in the area and recruit recent residency graduates who accepted positions in Ohio. We are excited to announce the start of the 2020 Membership Drive at the Fall Meeting on October 7, 2019. Be on the look-out for emails from the executive committee this fall and be sure to pay your dues before February 1, 2020 for a chance to win a complimentary 2021 membership!

Thanks,

Eve Hackett-Garr, Karissa Kim, and Andrea Pallotta



## Advocacy Committee Update

The advocacy committee recently surveyed OCCP membership in order to assess the interests and requests regarding where members would like to see this committee focus our efforts. Thank you to those of you that participated! It seems that consult agreements, including APRNs' ability to refer under consult, are a key topic of interest. Other topics requested include medical marijuana and drug pricing transparency. It is also clear that those that completed the survey would like to see this committee work on developing position statements for these important issues.

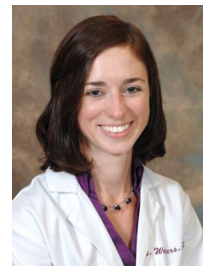
As an example of recent legislative activity in Ohio impacting pharmacy practice, Governor Mike DeWine signed SB 57 on 7/30/19, authorizing the sale of CBD. This also removed hemp-derived cannabidiol from Ohio's controlled substance list. Of note, the law requires that the THC content is no more than 0.3%.

Our committee plans to continue to meet quarterly to assess progress and plan our next steps. We are excited to be starting to think about logistics for the next Advocacy Forum, which will be held in Fall of 2020. Thank you again to our committee mem-

bers for your interest and involvement. Please let us know if you are interested in joining our committee!

Katie Simmons [Katelyn.Simmons@va.gov](mailto:Katelyn.Simmons@va.gov)

Geralyn Waters [Geralyn.Waters@UCHealth.com](mailto:Geralyn.Waters@UCHealth.com)



## Communications Committee Update

Thank you to all the individuals that submitted articles for the fall newsletter. Thank you to Anna Bondar, Kelsey Fink, Katie Kish, Stacey Preston, and GERALYN WATERS for reviewing the fall newsletter article submissions. If you are interested in writing an article or helping to review articles for future OCCP newsletters, please contact Sandra Axtell (saxtell@ccf.org), or submit an article via our website (occpweb.org). We are looking for a clinical pearl and a new drug update for the spring newsletter. Requirements include 500 words maximum, clinically relevant topic, and at least one author is an OCCP member.

The communications committee has resident and preceptor spotlights featuring one resident and one preceptor a quarter on the OCCP Facebook/Instagram page and newsletter. If you would like to nominate a resident or preceptor for this feature, submission information is available on the OCCP Facebook page or website.

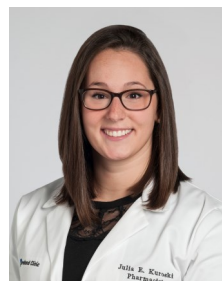
Be sure to follow us on social media to stay up to date with all OCCP activities!

Facebook: Ohio College of Clinical Pharmacy

Instagram: \_OCCP

Twitter: @OCCP\_clinical

Julia Kuroski and Sandra Axtell



## Steering Committee Update

The Steering Committee sent out a membership survey over the summer. Thank you to all members who completed the survey! The survey aimed to assess two main things: 1) the meeting location change to Columbus for the spring 2019 meeting and 2) committee involvement.

In order to increase OCCP's presence throughout the state, the organization has sought to move meeting locations from Northeast Ohio. Based on the results of the survey, this change was overall well received by the membership. We will continue to pursue a different meeting location for spring 2020 and look forward to continuing to grow OCCP's membership in the state. The steering committee will be working to identify our spring 2020 meeting location and initiatives to increase involvement in OCCP throughout the state. Stay tuned for updates on this meeting!

The steering committee and executive board was also seeking feedback with the membership survey on how to improve our committees. In the upcoming months, we will be working to develop processes on providing information on committees and the time involved to our membership. We are also working to identify methods to hold the most effective meetings moving forward. Look forward to updates on our committees at our fall meeting and in the future!

Lastly, the chair of the steering committee has been an interim role for the past few years. This interim role has been fulfilled by the President-Elect. In the future, this role will no longer be an interim position for the President-Elect. At the time of elections, the President-Elect will assume the chair position of the steering committee for a one year term. This allows the individual to become familiar with the inner workings of the organization, in preparation for the role of President.

Sarah Petite



## Student Chapter Update

### University of Findlay

#### Pharmal

- Our chapter will be hosting our annual “pharmal” which is a formal organized for pharmacy students, faculty, and alumni held in the fall.

#### White Coat Pin Fundraiser

- We will sell mortar and pestle pins as well as pill bottle pins during the white coat ceremony for P3 students. This is perfect to make their new white coat look fancy!

#### Ornament Fundraiser

- Before Christmas break, our chapter will use empty pill capsules of all colors and put them in clear ornament bulbs decorated with UF writing and sell them to the college of pharmacy! These make great Christmas gifts.



Pictured left to right is Lorin (President), Tecca (Secretary) and Lauren (Previous President)

UF-SCCP will be hosting our annual “Pharmal” which is a formal for pharmacy students, faculty, and alumni on Friday, September 27<sup>th</sup>. We will also have a fundraiser on the evening of September 6<sup>th</sup> where we will sell pins at the White Coat Ceremony for P3 students! I will be speaking to P1 students this upcoming week to hopefully recruit some new members, and we are also in the process of planning for our first meeting, which will be held in the next couple of weeks.

- President- Lorin Wise (P5)
- Vice President- Mercedes Snyder (P4)
- Treasurer- Kayla Ekers (P5)
- Secretary- Tecca Ringler (P4)
- Fundraising Chair: Katherine Arnes (P4)
- Community Service Chair: Megan LoFaso (P4)
- Student Liason: Hirva Bhatt (P4)
- Membership Chair: Makayla Light (P2)
- Professional Development Chair: Celina Lugo (P4)
- Communications Chair: Bucky (P4)

## Student Chapter Update

### University of Cincinnati

I am happy to say that I have some new plans for the organization this upcoming semester. We will bring back our UC pre-pharmacy student mentoring program, we are teaming up with SSHP to host a mock residency interview session for students, holding a hygiene drive for the Center for Respite Care, hosting a health education session at the Center for Respite care, hosting a CV/ Letter of intent workshop and more.



#### Executive Board

- President : Christina Afshari
- Vice President: Dan Mosher
- President Elect: Lin Alhennawai
- Treasurer: Kelsey Byers
- Secretary: Arthur McMahan
- Fundraising Chair : Chantell Cantrell
- Service Chair: Priyanka Patel
- Social Chair: Lauren Reinhard
- Tribunal Representative: Graham Klein

## Student Chapter Update Cedarville University

Our chapter is very excited for this coming semester. We will be holding a chapter meeting with the new faculty members at our school to get to know them and hear their perspectives on pharmacy. In October we hope to have one of our professors do a renal case with us to go along with what the P2s are learning in their renal module. In late October a couple of our members will be going to ACCP's national meeting to compete in the clinical skills competition! Throughout the semester we will be working on putting together a field trip or two for our pediatrics PRN and a color run for Autism Awareness Month in the spring. We would also like to collaborate with our school undergraduate pharmacy org and hold an event where we work with them in learning to work through journal articles.



Chapter meetings this semester will include hearing from new faculty members and working through a clinical case!



2019-2020 Executive Board



Some of our members will be competing in the clinical research challenge in October.



We are planning a color run for Autism Awareness month this spring.

## Student Chapter Update University of Toledo

The University of Toledo College of Pharmacy and Pharmaceutical Sciences (UTCPPS) SCCP chapter continued old traditions while introducing new ideas in what was a fun and eventful spring semester. Starting in January, the UTCPPS SCCP chapter held its third annual Hygiene Kit Drive, in conjunction with Phi Lambda Sigma and the Cosmetic Chemist Society. We also added a supplemental "coin wars event" to help support the hygiene kit drive. As a result of these efforts, the chapter was able to pack over 300 hygiene kits which were distributed on The University of Toledo's Medical Mission Trips to Central America.



The UTCPPS SCCP chapter also had a strong presence in the community as well. Events such as brown bag medication reviews with the Northwood Block Watch Group and the Golden Eagles Senior Group allowed chapter members to advocate for medication safety. These events were led by the chapter's advisor, Julie A. Murphy, PharmD, FASHP, FCCP, BCPS, who discussed the importance of safe medication use and answered questions along with our chapter members.

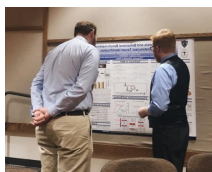


In March, during Poison Prevention Week, chapter members travelled to a local elementary school to discuss with preschool-

University of Toledo Update continued from page 6



ers what a “poison” is and the importance of asking an adult before tasting anything. The chapter held its second annual “Are you Smarter Than a P1” event in the spring semester. The event grew from last year with teams participating from P1, P2, and P3 classes. This event was carried out gameshow style, with questions based around the P1 curriculum. Not only was this a fun way for students to review curriculum material, it also raised over \$300 for the Medical Mission Trips. Thank you to Cassandra Welsh for organizing the event and to Vincent Mauro, PharmD, FCCP for hosting.



In April, the chapter hosted the sixth annual Student Research Symposium. Exclusive to the College of Pharmacy and Pharmaceutical Sciences, this symposium provides student researchers an opportunity to showcase their research. Ten students presented posters, while six students completed a platform presentation. Thank you to our keynote speaker for the event, F. Scott Hall, PhD.



We are very proud of our ACCP Clinical Research Challenge Team for finishing as one of the top 8 teams in the country! The team consisted of Elizabeth

Bennett (team captain), Brittany Curran, Courtney Mackzum, and Kyla Dunning (alternate).



We look forward to seeing our ACCP Clinical Pharmacy Challenge team compete this fall in the national competition. Team members are: Rachel DiNino (captain), Kyle Bergen, Ethan Rausch, Katelyn Dulger (alternate), and Maureen Hickey (alternate). Good luck!

As the spring semester came to a close, a new Executive Board was elected to serve for 2019-2020. Congratulations to Ryan Strausbaugh (President-Elect), Katie Matousek (Secretary), Megan Gal- le (Programming Coordinator), Emily Gonzales (Historian), Kuan Sturgill (Treasurer), and Brittany Curran (President). The new Executive Board hopes to carry on all the hard work of the 2018-19 Executive Board and continue to improve the chapter this coming year.



The Fall 2019 semester will be an exciting one, as SCCP will have the opportunity to interact with incoming student pharmacists at the P1 orientation cookout. Following this event, UTSCCP will once again be hosting the 6<sup>th</sup> Annual Trivia Night on September 27th to raise money for the Community Care Clinic, a multidisciplinary, student-run, free health clinic that serves the uninsured and underinsured citizens in Northwest Ohio. We are looking forward to another great year where we can engage our members and support their personal and professional development!

## Student Chapter Update

### Northeast Ohio Medical University

#### FALL COMMUNITY SERVICE

- Participation in various events for American Pharmacist Month on campus
- Immunization Clinics
- Medication packing for the Honduras Mission Trip
- Volunteering at [MedWish](#)
  - Members assisted in packing medical devices and medications for underserved populations

#### PROFESSIONAL DEVELOPMENT OPPORTUNITIES

- Student Led Presentations
  - October: Fall Journal Club
  - November: ACLS Certification Course
  - November: Arrhythmias Topic Discussion
  - February: Spring Journal Club
  - March: Nephrology Topic Discussion

#### CHAPTER MEETING SCHEDULE

- September: Pharmacy Residency Overview - Dr. Jackie Boyle
- October: Internal Medicine Jeopardy - Dr. Liz and Austin Fredrickson
- November: Resident and APPE Panel - Residents TBD

#### NAMCS RESEARCH PROJECT

- Evaluating the prescribing trends of antihyperlipidemic therapy in patients who qualify for high-intensity statin therapy before and after 2013 AHA/ACC Guidelines
- Results were presented at the ACCP Global Conference
- Manuscript is currently under review by the American Heart Journal

**Thrombolytics for intermediate-risk pulmonary embolism**

Amber Ooley, PharmD, PGY-2 Critical Care Pharmacy Resident, Cleveland Clinic Hillcrest Hospital  
Melissa Smith, PharmD, BCCCP, Clinical Specialist Critical Care, Cleveland Clinic Hillcrest Hospital

**Introduction**

Patients presenting with signs and symptoms of pulmonary embolism (PE) must be quickly assessed for hemodynamic instability in order to make efficient and appropriate treatment decisions. The clearest benefit of immediate thrombolytic therapy is seen in those who are hemodynamically unstable defined as circulatory shock and/or severe right ventricular dysfunction, in order to quickly restore lung perfusion and relieve afterload on the right ventricle (RV). For PE with hemodynamic instability, or “massive” PE, the recommended (“conventional”) dosing of alteplase (tPA) is 100 mg as an IV infusion over 2 hours, or 50 mg IV push in instances of cardiopulmonary arrest.<sup>1,2</sup> The use of tPA is controversial in patients with intermediate-risk, or “submassive” PE; that is, hemodynamically stable patients who present with either evidence of RV strain and/or elevated cardiac biomarkers. Use of thrombolytics in these cases may be considered on an individual basis. The 2016 CHEST and 2014 ESC guidelines recommend the use of thrombolytics in submassive PE as rescue therapy only in cases of hemodynamic decompensation or other signs of clinical deterioration.<sup>1,2</sup> The PEITHO trial, which examined up-front systemic thrombolytic therapy in intermediate-risk PE, found that patients receiving weight-based tenecteplase had reduced mortality (OR, 0.44; 95% CI, 0.23-0.87); but increased rates of major bleeding and stroke within 7 days, particularly in patients older than 75 (OR 20.38, 95% CI, 2.69-154.53).<sup>3</sup> Additionally, a 2014 meta-analysis found decreased all-cause mortality (OR, 0.48; 95% CI, 0.25-0.92) but an increased rate of major bleeding with thrombolytics over anticoagulants alone in intermediate-risk PE (OR, 3.19; 95% CI, 2.07-4.92). Notably, the rates of major bleeding in patients < 65 years of age were not statistically significant.<sup>4</sup>

**Clinical Evidence**

Since tPA demonstrates a dose-dependent risk of bleeding, using lower doses of tPA for PE may be safer and minimize risk of bleeding whilst still achieving reperfusion; however, the potential role of “half-dose” (50 mg) tPA, remains hypothetical, particularly in submassive PE. Recent literature has compared systemic half-dose tPA to the conventional dose. Only one meta-analysis has shown that half-dose tPA has significantly overall lower rates of major bleeding.<sup>5</sup> Interestingly, a randomized controlled trial by Wang et al found significantly less bleeding only in patients weighing < 65 kg with the 50 mg dose; overall bleeding rates were not statistically significant between groups.<sup>7</sup> Aside from these, no other identified studies specifically comparing half-dose versus conventional dose have shown statistically significant overall differences in efficacy, major bleeding, or mortality.<sup>6-9</sup> Of note, one retrospective database review found that the use of 50 mg tPA was associated with significantly high-

er incidences of treatment escalation and increased healthcare costs.<sup>6</sup> Finally, all analyses to date have included patients with massive and/or submassive PE; there are no studies focusing on half-dose tPA for submassive PE, specifically.

**Conclusion**

Overall, there is a lack of evidence to recommend the use of thrombolytic therapy, including half-dose tPA, for submassive PE. The use and dosing of thrombolytics in these patients should be considered on a case-by-case basis and/or reserved for cases of clinical deterioration.

**References**

1. Konstantinides SV, Torbicki A, Agnelli G et al. 2014 ESC guidelines on the diagnosis and management of acute pulmonary embolism. *Eur Heart J*. 2014; 35:3033-80.
2. Kearon C, Akl EA, Ornelas J et al. Antithrombotic therapy for VTE disease. *CHEST*. 2016; 149:315-52.
3. Meyer G, Vicaut E, Danays T et al. Fibrinolysis for patients with intermediate-risk pulmonary embolism. *N Engl J Med*. 2014; 370:1402-11.
4. Chatterjee S, Chakraborty A, Weinberg I et al. Thrombolysis for pulmonary embolism and risk of all-cause mortality, major bleeding, and intracranial hemorrhage: a meta-analysis. *JAMA*. 2014; 311:2414-21.
5. Zhang Z, Zhai ZG, Liang LR, Liu FF, Yang YH, Wang C. Lower dosage of recombinant tissue-type plasminogen activator (rt-PA) in the treatment of acute pulmonary embolism: A systematic review and meta-analysis. *Thromb Res*. 2014;133(3):357-363.
6. Kiser TH, Burnham EL, Clark B, et al. Half-dose versus full-dose alteplase for treatment of pulmonary embolism. *Crit Care Med*. 2018;46(10):1617-1625.
7. Wang C, Zhai Z, Yang Y, et al; China Venous Thromboembolism (VTE) Study Group: Efficacy and safety of low dose recombinant tissue-type plasminogen activator for the treatment of acute pulmonary thromboembolism: A randomized, multicenter, controlled trial. *Chest*. 2010;137:254-262.
8. Goldhaber SZ, Agnelli G, Levine MN; The Bolus Alteplase Pulmonary Embolism Group. Reduced dose bolus alteplase vs conventional alteplase infusion for pulmonary embolism thrombolysis. An international multicenter randomized trial. *Chest*. 1994;106(3):718-724.
9. Sors H, Pacouret G, Azarian R, Meyer G, Charbonnier B, Simonneau G. Hemodynamic effects of bolus vs 2-h infusion of alteplase in acute massive pulmonary embolism. A randomized controlled multicenter trial. *Chest* 1994;106:712-7



### **Baloxavir marboxil (Xofluza™) for Treatment of Influenza**

Lauren Williams, PharmD, Cleveland Clinic Akron General

Katherine Knudsen, PharmD, Cleveland Clinic Lutheran Hospital

Brandi Posten, PharmD, Cleveland Clinic Wooster Community Hospital

Andrea Pallotta, PharmD, BCPS, BCIDP, AAHIVP, Cleveland Clinic Main Campus/Medina

#### **Introduction**

Baloxavir marboxil (Xofluza™) was approved by the U.S. Food and Drug Administration on October 24, 2018, making it the newest medication approved for the treatment of influenza in patients 12 years of age or older.<sup>1</sup> It is approved for use in patients presenting with an influenza infection within 48 hours of symptom onset. Before this approval, oseltamivir (Tamiflu®) was the most commonly used oral agent with this indication.<sup>2</sup>

Oseltamivir and other neuraminidase inhibitors prevent the release of viral progeny throughout the body, where endonuclease inhibitors such as baloxavir marboxil prevent viral gene transcription.<sup>1</sup> Baloxavir has activity against influenza A and B, including strains previously resistant to standards of therapy. It is available as a single, weight-based, oral tablet therapy pack of either 40 mg (40-80 kg) or 80 mg (> 80 kg). A course of therapy for baloxavir is roughly \$180 compared to oseltamivir at about \$155 for a five-day course.<sup>3</sup>

#### **Clinical Evidence**

Two randomized, double-blind, controlled trials conducted by Hayden and colleagues demonstrated that the median time to alleviation of symptoms was shorter in the baloxavir group at 53.7 hours compared to placebo at 80.2 hours and similar to the oseltamivir group at 53.8 hours. Inclusion criteria included fever (axillary temperature,  $\geq 38.0^{\circ}\text{C}$ ), at least one systemic symptom, at least one respiratory symptom of at least moderate severity, and symptom duration of no more than 48 hours. Acetaminophen was the only symptomatic therapy allowed for use. The use of antiviral agents for the treatment of influenza or antibiotics were prohibited in the study except for treatment of suspected bacterial infections after enrollment.<sup>4</sup>

#### **Conclusion**

Baloxavir marboxil is a prodrug that is metabolized to baloxavir via UGT1A3 and CYP3A4. Although it is not recommended for use in pregnant women or children less than 12 years, baloxavir is an appealing alternative to oseltamivir in the treatment of influenza due to its single dose regimen and the lack of renal dose adjustments. Limitations to the use of baloxavir include lack of efficacy data for use in patients presenting after 48 hours of symptom onset and in patients who were excluded from clinical trials, such as the immunocompromised and patients older than 65 years of age. Additionally, accurate diagnosis of influenza infection is important to consider prior to prescribing baloxavir to prevent unnecessary therapy

for non-influenza viruses and minimize development of resistance.

#### **Patient counseling information**<sup>1,4</sup>

The most common adverse effects of baloxavir include nausea and diarrhea. Due to the risk of binding with calcium-containing beverages, polyvalent cations, and multivitamins, co-administration with these agents should be avoided. Recommendations for dose separation of these agents to minimize the interaction have not been established as this has not yet been investigated. Antivirals should be avoided 48 hours prior to and 2 weeks after administration of live attenuated influenza vaccine due to risk of decreasing vaccine effectiveness.

#### **References**

1. Xofluza [package insert]. Osaka, Japan: Shinogi & Co. Ltd. 2018.
2. Centers for Disease Control and Prevention – National Center for Health Statistics – Influenza Antiviral Drug Baloxavir Marboxil. [https://www.cdc.gov/flu/treatment/baloxavir-marboxil.htm?CDC\\_AA\\_refVal=https%3A%2F%2Fwww.cdc.gov%2Fflu%2Fabout%2Fqa%2Fbaloxavir-marboxil.htm](https://www.cdc.gov/flu/treatment/baloxavir-marboxil.htm?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fflu%2Fabout%2Fqa%2Fbaloxavir-marboxil.htm). July 3, 2019.
3. Lexicomp Online, Lexi-Drugs Online, Hudson, Ohio: Wolters Kluwer Clinical Drug Information, Inc.; August 3, 2019.
4. Hayden FG, Sugaya N, Hirotsu N, et al; Baloxavir Marboxil Investigators Group. Baloxavir marboxil for uncomplicated influenza in adults and adolescents. *N Engl J Med.* 2018;379(10):913-923. Supplement available at: <https://www.nejm.org/doi/full/10.1056/NEJMoa1716197>. Accessed February 20, 2018.