ACCP Student Chapter Forum
Saturday, October 7: 9:45 a.m. – 11:45 a.m.
Attend this open forum for student chapter officers, faculty and student liaisons, and anyone else interested in learning more about ACCP student chapters. This session will facilitate an open discussion and review student chapter formation, achievements, successes, and challenges with the aim of spreading and sharing ideas and strategies between student chapters. Join us as we recognize the winners of the ACCP Student Chapter of the Year Award.

ACCP Clinical Pharmacy Challenge
Quarterfinal round: Saturday, October 7: 9:45 a.m. – 12:30 p.m.
Semifinal round: Sunday, October 8: 4:30 p.m. – 5:45 p.m.
Final round: Monday, October 9: 10:45 a.m. – 11:30 a.m.
Join fellow attendees for the 2017 ACCP Clinical Pharmacy Challenge as national student teams compete in the quarterfinal, semifinal, and final round competitions. Teams will face off in a quiz bowl-type format, answering questions in three distinct categories – Trivia/Lightning, Clinical Case, and Jeopardy-style. An expert panel of clinical pharmacy practitioners and educators has developed and reviewed the item content used in each segment. For a listing of teams who participated and advanced through each round of competition click here.

Emerge from the Crowd: How to Become a Standout Residency Candidate
Saturday, October 7: 1:00 p.m. – 6:30 p.m.
Learn from experts in the field of clinical pharmacy about the steps you can take now to rise above the competition when applying for a residency. You will gain insight on how to interview well, write an effective letter of intent, and navigate the entire residency application process. You will also have the opportunity to participate in a special roundtable session facilitated by current pharmacy residents and fellows. Sit down with these clinicians to ask questions and acquire their perspectives on everything from applying and interviewing for residencies to excelling within the daily demands of residency. See details

Continued on page 5
Student Chapter Spotlight: Temple University School of Pharmacy (TUSP)-SCCP- Clinical Specialty Initiative

Brendan Mangan Pharm.D. Candidate 2018

Every student has different clinical interests and career goals. The mission of ACCP is to drive clinical pharmacy through various channels in order to promote excellence in practice, research, and education. It is our duty as a student chapter to afford students the opportunity to be hands-on and gain leadership skills, while continuing to advocate to and educate the student body. With this in mind, we created the Clinical Specialty Initiative. The goal of this initiative is to allow students with specific interests to hold a leadership position in their desired field. During the pilot year of this initiative, we began with four clinical specialties- ambulatory care, critical care, infectious diseases, and oncology. Each clinical specialty consists of a P3 chair and P2 co-chair who will assume the chair position during their P3 year.

During the course of the academic year, each initiative was responsible for holding events pertaining to their clinical specialty such as poster events, case presentations, and guest speakers. In November, the ambulatory care, critical care, and infectious diseases initiatives held a large poster event at Temple University Hospital (TUH), each group presented posters on topics relating to their specialties. The posters included: Cold vs Flu, COPD Flares, and Pneumonia. The oncology initiative held a separate event in honor of lung cancer awareness month, and presented a poster identifying risk factors and symptoms of lung cancer, in addition to lifestyle changes to decrease cancer risk. The ambulatory care initiative presented a patient case “Warfarin Toxicity” to students and faculty, in which they discussed the diagnosis and treatment of warfarin toxicity in an outpatient setting. Later in the year, the infectious diseases initiative was published in StuNews, detailing the need for an antibiotic to combat carbapenem-resistant Enterobacteriaceae (CRE). At the end of the academic year, each specialty worked with a corresponding clinical specialist on an educational program and presented to the organization detailing the training, career options, responsibilities, and impact on patient care for each specialty.

This initiative has greatly expanded our outreach and has allowed us to educate students and patients on a larger variety of topics. In building upon the success of this year, we are currently looking to expand by including additional clinical specialties. Overall, the Clinical Specialty Initiative has allowed our chapter to better connect with our members, providing them with leadership, clinical, and professional development opportunities in their interest areas and strengthening our chapter and the mission of ACCP at Temple University School of Pharmacy.

Clinical Spotlight: Christina M. Madison, Pharm.D., BCACP, AAHIVP
Associate Professor, Roseman University of Health Sciences School of Pharmacy
Clinical Pharmacy Faculty, Southern Nevada Health District and University Medical Center of Southern Nevada

Interviewed by: Quynh Nhu Doan, Pharm. D. Candidate 2018 – Roseman University of Health Sciences School of Pharmacy

1. What is your involvement with ACCP/SCCP?

My involvement with ACCP started when I was a resident. This organization has been what I considered my “professional home.” Of all the organizations I am involved with, I would consider ACCP my primary one. This is where I seek all of my information regarding education, credentialing, and ultimately information for our student chapter. I’ve been the advisor for the student chapter since 2008/2009. In 2013, our SCCP chapter became one of the first to be nationally recognized as a student chapter. Additionally, I was the Chair for Women’s Health PRN, and I have also assisted with annual national meeting planning as well as with a few ACCP’s publications.

Continued on page 6
**New Drug Update: Bezlotoxumab: A Monoclonal Antibody for the Prevention of Clostridium difficile Recurrence**

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*Clostridium difficile* is a Gram positive anaerobic bacillus that causes a toxin-mediated disease. *C. difficile* was responsible for 453,000 infections and 29,300 deaths within the United States in 2011.\(^1\) *C. difficile* infection is usually associated with the use of antibiotics, particularly aminopenicillins, cephalosporins, clindamycin, and fluoroquinolones, as they are known to disrupt normal colonic flora, allowing colonization of *C. difficile* to occur.\(^2\) Once *C. difficile* is present, it may release two toxins (A & B) which lead to colitis and diarrhea. Toxin A is an enterotoxin associated with mucosal injury and intestinal fluid secretion, whereas toxin B is a nonenterotoxic cytotoxin that can cause more potent damage to human colonic mucosa than toxin A. According to the Centers of Disease Control and Prevention (CDC), in 2011, about 500,000 infections were estimated to be caused by *C. difficile*, and about 83,000 of the patients experienced at least one recurrence of *Clostridium difficile* infection.\(^3\) Risk factors for *Clostridium difficile* recurrence include advanced age, history of surgery, immunocompromising conditions/medications, infection with the B1/NAP1/027 strain, and poor quality-of-health index.\(^2\) Bezlotoxumab was approved by the FDA on October 21, 2016 to reduce the recurrence of *Clostridium difficile* infection in patients 18 years and older who have been treated with antibiotics and are considered to be at high risk for *C. difficile* recurrence.\(^4\) Bezlotoxumab was approved as adjunct therapy with standard of care antibiotics (i.e. metronidazole, vancomycin or fidaxomicin) in the treatment of *C. difficile* infection and has shown to lead to a significant reduction in the rate of recurrence.\(^4\)

**Mechanism of Action:** Bezlotoxumab is a human monoclonal antibody that binds to *C. difficile* toxin B and neutralizes its effects.\(^4\)

**Clinical Trials:** In two double-blind, randomized, placebo-controlled, phase 3 trials, MODIFY I and MODIFY II, 2655 participants receiving oral standard of care antibiotics were assessed for *C. difficile* recurrence using four arms: bezlotoxumab (10 mg per kilogram of body weight), actoxumab, actoxumab plus bezlotoxumab, and placebo.\(^5\) *C. difficile* recurrence rates were significantly lower in the bezlotoxumab arm compared to the placebo arm, while the actoxumab arm was discontinued due to lack of efficacy. In MODIFY I, rates of recurrence were 17% with the bezlotoxumab arm versus 28% with the placebo arm (95% CI [-15.9 to -4.3], P<0.001). Likewise, in MODIFY II the rates of recurrence were 15% in the bezlotoxumab arm versus 26% in the placebo arm (95% CI, [-16.4 to -5.1], P<0.001). The rates of initial clinical cure were similar with both bezlotoxumab and placebo at 80%; however the rates of sustained cure were greater with bezlotoxumab at 64% versus placebo at 54%.

**Most important risks/adverse events:** Heart failure was more common in bezlotoxumab treated patients compared to placebo.\(^6\) Heart failure was found to primarily occur in patients with underlying congestive heart failure. During the 12-week study period, 12.7% of patients with a history of congestive heart failure who received bezlotoxumab and 4.8% of patients who received placebo, experienced signs and symptoms of heart failure. Furthermore, within both trials, one patient discontinued bezlotoxumab due to development of a ventricular tachyarrhythmia that occurred 30 minutes after the start of infusion.

**Most common adverse events:** The following are the most common adverse events reported with bezlotoxumab: nausea (7%), diarrhea (6%), headache (5%), pyrexia (5%) and vomiting (4%).\(^5\)

**Advantages:** Bezlotoxumab given as a single intravenous injection helps reduce the risk of *C. difficile* recurrence for up to 12 weeks. This is particularly beneficial in patients who are at high risk for *C. difficile* recurrence because bezlotoxumab...
showed an 11% lower rate of recurrent infection in MODIFY I and 10% in MODIFY II, compared to placebo, when used in addition to current standard of care antibiotics for *C. difficile* infection. Thus, approximately 10 patients need to be treated with bezlotoxumab in order to prevent recurrence compared to placebo. In addition, bezlotoxumab can be administered in patients with renal and/or hepatic impairment as there were no clinically meaningful differences in terms of exposure of bezlotoxumab between patients with normal or impaired renal/hepatic function. In regards to immunogenicity, all patients tested negative for treatment-emergent anti-bezlotoxumab antibodies.

**Disadvantages:** The 12-week study period in MODIFY I and II was not long enough to show the efficacy and safety of bezlotoxumab in a long term setting, especially since many patients may have recurrence well after 12 weeks. In addition, patients with underlying congestive heart failure may not be able to receive bezlotoxumab depending on whether the benefit of such a medication outweighs the risk. Furthermore, bezlotoxumab comes at a high cost at an average wholesale price per package (40ml) of $4560.00 which must be taken into consideration when evaluating cost versus benefit. Given the significant cost associated with this therapy, future studies with long term data should be conducted to determine the populations who may most greatly benefit.

**Usual Dosage:** Bezlotoxumab is administered as a single dose intravenous infusion of 10 mg/kg over 60 minutes. Bezlotoxumab must be diluted prior to intravenous infusion.

**Available Products:** Injection: 1,000 mg/40 mL (25 mg/mL) solution in a single-dose vial

**References:**
2017 Annual Meeting Student Programming (Continued)

ACCP Professional Placement Forum  
(formerly the Residency and Fellowship Forum)  
**Sunday, October 8:** 8:00 a.m. – 9:30 a.m., 10:00 a.m. – 11:30 a.m., and 1:30 p.m. – 3:00 p.m.

Held exclusively at the ACCP Annual Meeting, the Professional Placement Forum offers students, residents and postgraduate trainees a chance to jump-start their search for a position. Likewise, preceptors and employers can get a head start on finding the right candidates for their institutions and practice sites. Participants must be registered for no less than a 1-day registration for Sunday, October 8, of the Annual Meeting to be eligible to attend the forum. See details

Clinical Pharmacy Career Path Roundtables  
**Sunday, October 8:** 2:15 p.m. – 4:15 p.m.

Join fellow attendees for this dynamic session with insights on career pathways and opportunities within the clinical pharmacy profession. Interact directly with clinical pharmacists in over 15 specialty practice areas and discover a variety of unique career opportunities. See details

Minimizing Debt and Managing Your Finances as a New Practitioner  
**Sunday, October 8:** 4:30 p.m. – 6:30 p.m.  
(open to students, residents, fellows, and new practitioners)

The financial debt incurred during pharmacy school and the residency application process is unavoidable for most students.

At this session, learn how to minimize and manage your financial debt during your residency and early career. Then discover how to balance the overwhelming financial priorities such as debt repayment, retirement savings, and large purchases (e.g., a new home, car) to achieve your long-term financial goals. See details

Your First Real Job: Research, Evaluate, Negotiate  
**Monday, October 9:** 8:30 a.m. – 10:30 a.m.  
(open to students, residents, fellows, and new practitioners)

There is no matching service for finding your first real job. At this session, learn how to find and research positions for residency-trained practitioners, evaluate the different components of each position, and determine what is negotiable. See details
Clinical Spotlight
(Continued)

2. How has ACCP/SCCP been important in your professional development?

ACCP has been instrumental in my professional development. A majority of the contacts and networking that I have had with other faculty members and/or professionals in my area of interests as well as in the PRN has been extremely helpful. The organization has been helping to focus on my specialty area and furthered my desire to become board certified. ACCP also enhances my ability to obtain opportunities to collaborate with other practitioners in other states and to seek leadership positions.

SCCP has been extremely fulfilling for me both personally and professionally. The student chapter is not only an opportunity to assist my students in their professional development and growth; it is also a way for me to give back to the profession by advancing the training and ultimately the achievement of post graduate education for my students. Many of my students are now managers and residency directors, which makes me extremely happy and proud. My biggest success is when my students can surpass what I have been doing myself.

3. How would you describe your practice sites?

My practice site is extremely unique. I am at a public health department and my focus is mainly on communicable diseases. The thought process of having a pharmacist involved in public health is somewhat of a rarity. With that, I have had some opportunities to cultivate some of what I would consider “unique” roles in pharmacy. I have been developing clinical services that would once have been considered “outside of the scope.” I have one of the only pharmacist-led Tuberculosis (TB) clinics in the country. I am also the only pharmacist in the state of Nevada with a collaborative practice agreement that has been approved by the State Board of Pharmacy.

For me, it has been very rewarding to give back to the community, but the fact that I have the ability to impact an unmet need is the most enjoyable part of my job. The areas that I specifically engage in are sexual health which includes HIV and STDs, immunization for both children and adults, TB (infection and control of those exposed), women’s health (family planning and contraception), and disaster preparedness (mass vaccinations and mass prophylaxis).

4. How would you describe your week at work?

Eventful! A majority of my patients are immigrants and refugees with both language and cultural barriers so I make sure my students are always culturally competent. I have designated days in several specific clinics. Mondays are usually prep days for me. Tuesdays are for my TB clinics for latent cases, while Wednesdays are for my active cases of TB and immunizations. Thursdays are for sexual health and HIV. Fridays are my catch-up days (topic discussions and projects with students on rotations).

I go out to the community to give talks to senior groups, involve myself in coalition meetings, and provide services to the underserved population, and I also have my teaching responsibilities. I would not choose any of the above over the other because they work together symbiotically in ways that make them irreplaceable. My week is never boring!

5. What advice would you give to students pursuing careers in clinical pharmacy?

The number one thing that I recommend to students would be to keep an open mind, because you never know where you would end up. I will give myself as an example, when I was in pharmacy school I was “anti-inpatient care.” “Hospital? No, thank you!”

When I was completing my residency, I asked for the minimum requirements for ambulatory care. “Six weeks? Sign me up for six weeks and that’s it! Diabetes? Hypertension? No, thank you! Stab me in the eye!”

You never know where you will end up, because those foundations that I got as a resident allowed me to be moldable, adaptable, and basically capable of taking on any position that came my way. I have held pretty much every job in pharmacy other than consulting pharmacy; I worked in managed care, hospital, academia, and now public health and clinics. Keep an open mind! Once you find the thing that you love, do every single possible thing to make sure that is the thing you will be doing on a daily basis.

Another piece of advice I want to give students is that the position you take right out of pharmacy school is not likely to be the one you will have forever. If you are not satisfied with your initial position do not be afraid to make a change. It can be challenging, but it is often more important to recognize what you do not like and take a bold step forward.
**Clinical Case**

History of Present Illness: A 40-year-old woman (height 162.5 cm, weight 60 kg) with newly diagnosed ovarian cancer comes to the clinic for pain management. She has a metastasis on her pelvis that is causing 8/10 pain. Her pain goal is 5/10. Her Eastern Cooperative Oncology Group (ECOG) performance status is 0, and she wants to pursue aggressive treatment. Medical History: Mild asthma, generalized anxiety disorder, and deep venous thrombosis diagnosed last month. Social History: 1–2 glasses of wine per week. Never smoked or used illegal drugs. Married with four adopted children, ages 15, 12, 10, and 8. Current Medications: Albuterol HFA (hydrofluoroalkane) inhaler 1 or 2 puffs four times a day as needed for shortness of breath x 10 years (uses once or twice daily on 2 or 3 days of the week); loratadine 10 mg daily x 10 years; paroxetine 20 mg daily x 5 years; warfarin 2.5 mg on Monday, Wednesday, Friday, and 5 mg on other days. (Goal INR 2–3) x 1 month. Allergies: None known. Vital Signs: Blood pressure 140/80 mm Hg; heart rate 86 beats/minute; respiratory rate 20 breaths/minute; Temp 98.4°F (36.9°C).

**Question 1**
The oncologist prescribes oxycodone 10 mg four times a day as needed for pain. The patient is worried about becoming constipated while taking this medication. What should the pharmacist tell her about opioid-induced constipation (OIC)?
1. Exercise if she can and stay hydrated to help mitigate constipation.
2. A tolerance to constipation will develop eventually.
3. Laxatives or stool softeners are not needed until constipation occurs.
4. Concomitant therapy with methylnaltrexone should be started.

**Question 2**
The oncologist plans to give the patient six cycles of carboplatin and paclitaxel. She is concerned about the possibility of neuropathic pain with this combination and asks for recommendations on preventing chemotherapy-induced peripheral neuropathy (CIPN). What recommendation should be made?
1. Amifostine prevents CIPN but may decrease treatment efficacy.
2. Oxycodone will treat CIPN, so no further therapies are needed.
3. This regimen does not cause CIPN, so no further therapies are needed.
4. Venlafaxine may be effective for the prevention of CIPN.

**Question 3**
After four cycles of chemotherapy, the patient has lost 10 kg (22 lb) and reports feeling depressed. She has lost weight because she has no appetite, which is upsetting because she wants to eat dinner with her family as often as she can. What is the best appetite-stimulating strategy for her?
1. Dexamethasone 8 mg twice daily
2. Megestrol acetate 800 mg daily
3. Mirtazapine 15 mg at bedtime
4. Olanzapine 10 mg daily

**Question 4**
In addition to decreased appetite, the patient has grade 3 neuropathic pain. Which is the best initial adjuvant analgesic therapy for this patient?
1. Amitriptyline 50 mg daily
2. Gabapentin 300 mg at bedtime
3. Duloxetine 30 mg daily
4. Pregabalin 150 mg three times daily

**Question 5**
The patient completes paclitaxel/carboplatin but relapses 3 months later. After two cycles of salvage chemotherapy with liposomal doxorubicin and bevacizumab, she is admitted with a malignant bowel obstruction. Her ECOG performance status is 3; she cannot take oral medications, and she wants to discontinue aggressive treatment. Her life expectancy is 4–6 weeks. Which intervention is least likely to improve her quality of life?
1. Converting oral medications to other routes of administration
2. Octreotide 100 mcg subcutaneously three times daily
3. Scopolamine 1.5 mg transdermal patch every 72 hours
4. Total parenteral nutrition

For additional case question and answers, click here.

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