FOR STUDENTS, BY STUDENTS

STUDENT NETWORK

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ACCP STUNEWS

Student Chapter Spotlight:

Temple University School of Pharmacy

Lauren Schmidt, Pharm.D. Candidate 2017

In February 2015, the student chapter of the American College of Clinical Pharmacy at the Temple University School of Pharmacy (SCCP-TUSP) was named an official organization by the school and national body. During our first academic year, our student membership nearly tripled in size from 27 to 75 current members. Throughout this time, our organization has focused on extending the field of clinical pharmacy to our members and student body as a whole. During the fall and spring semesters, we hosted a variety of events, such as shadowing various clinical specialists at Temple University Hospital, attending case and journal club presentations hosted by PGY-1 residents, attending professional development workshops on the topics of interview and effective presentation skills, attending student case presentations on topics of hyperglycemic crisis, overdoses, and critical care, as well as participated in a variety of opportunities involving counseling and disease state management to the community.

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Clinical Case

Vignette: A 58-year-old man presents to the emergency department after recently being diagnosed with small cell lung cancer (SCLC). The patient admits to severe fatigue, decrease in appetite, lack of fluid intake, and some disorientation and confusion in the past 3 days. The patient did receive cycle 2 of his chemotherapy regimen 5 days ago consisting of etoposide/cisplatin. **Past Medical History**: Chronic obstructive pulmonary disease (COPD); hypertension; type 2 diabetes mellitus; seasonal allergies. **Social History**: (-) alcohol, 20 pack/year tobacco history. **Current Medications**: Hydrochlorothiazide 25 mg daily; metformin 500 mg twice daily; loratadine 10 mg daily. **Allergies**: No known drug allergies. **Vital Signs**: Blood pressure 95/78 mm Hg; heart rate 115 beats/minute; temperature 37°C (98.7°F); height 172.7 cm; weight 60 kg. **Lab Values**: Sodium 142 mEq/L (142 mmol/L); potassium 3.7 mEq/L (3.7 mmol/L); chloride 107 mEq/L (107 mmol/L); bicarbonate 21 mmol/L (21 mmol/L); blood urea nitrogen 42 mg/dL (15 mmol/L); serum creatinine 1.3 mg/dL (114.92 micromoles/L); calcium 15 mg/dL (3.75 mmol/L); albumin 1.8 g/dL (18 g/L). **Procedure Data**: Chest x-ray: Large tumor protruding into superior vena cava. **Other Data**: Physical examination reveals jugular venous distention (JVD) and facial plethora

Question 1: What is this patient's corrected calcium?
Question 2: How would you classify his hypercalcemia?
Question 3: What is the best initial recommendation for treating this patient's hypercalcemia of malignancy?
Question 4: The treatment team wants to add zoledronic acid therapy to this regimen. Given this patient's renal function, what dose of IV zoledronic should be recommended?
Question 5: After further workup, physical examination, and evaluation of diagnostic tests, this patient is found to have superior vena cava syndrome. What treatment is most appropriate?

For additional case questions and answers, click here.

Student Chapter Spotlight (continued)

In October, four of our student members attended the ACCP Global Conference in San Francisco, CA, where we attended several segments from the "Emerge from the Crowd: How to Become a Standout Residency Candidate" lecture series. Because we thought the *Curriculum Vitae Writing Workshop* was so beneficial, we sought to recreate the event at TUSP in the spring. In February, we hosted a CV/Resume Roundtable Review event to the student body. Since many students look forward to the spring to apply for internships/jobs or prepare for rotations, our fundamental purpose in developing this event was to provide attendees with advice on ways to improve their current resume and how to turn a resume into a CV. At the beginning of the event, we put together a presentation on various formatting tips and ways to deliver an effective CV, as well as questioned various professionals in the industry, corporate, hospital, and retail settings on what they look for in a candidate's CV. With the help of six faculty members, our roundtable event encouraged student-student and faculty-student feedback, allowing older students to be paired with younger students and faculty to give their personal insight. Our event was a huge success! With nearly 80 students in attendance, we received feedback on how valuable comments from the student and faculty were in helping them prepare for their future endeavors. Certainly, this event would not have been possible without the help from our participating faculty; we would especially like to thank Drs. Christina Rose, Neela Bhajandas, Jason Gallagher, Craig Whitman, Jacqueline Theodorou, and Lawrence Carey for their participation.

Clinical Spotlight:

Roshni S. Patel, Pharm.D., BCPS

Assistant Professor of Pharmacy Practice

Jefferson College of Pharmacy, Thomas Jefferson University

Interviewed by Amanda Gibson, Pharm.D. Candidate 2016

What is your current role at your primary site of practice? My current position includes a combination of both academia and clinical practice. In regards to the latter, I work at an outpatient Internal Medicine clinic in Philadelphia, PA where I provide chronic disease state management for patients with diabetes, hypertension, dyslipidemia, and conditions that require anticoagulation. Certain patients are referred to the PharmD service following recent transitions of care and others for medication therapy management. At the clinic, I also precept IPPE and APPE pharmacy students and work closely with medical residents. As such, we have ample opportunities for interprofessional education and collaboration, including weekly conferences on topics related to primary care and quality improvement projects.

How do you stay current in your field? With the extensive amount of primary literature available, I need an efficient process for keeping up-to-date on new information. I highly rely on the table of contents for journal subscriptions to help focus my attention on what is relevant to my practice. Quickly reviewing article titles for each issue allows me to identify select readings that I must dedicate time to interpret. Professional pharmacy organizations also help keep me current through emails and educational programing, and I use ambulatory care pharmacy practice networks, such as iForumRX, to stay abreast of controversial conversations.

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Clinical Spotlight (continued)

How did you get involved in ACCP and how has ACCP been important in your professional development? I first became involved with ACCP as a PGY-1 resident, looking to enhance my clinical skill set. Over time, I found my niche within the ambulatory care PRN, where I was afforded the opportunity to network and collaborate with clinicians who had similar interests and shared my passion for service. I've served on several PRN committees, including the advocacy, education, and membership committees, and each brought a new perspective to allow me to continue to develop my leadership skills. I have used the annual meeting to showcase my research in the past and the Update in Therapeutics meeting to prepare me to obtain by BCPS certification. Finally, I frequently turn to the PRN listserv to communicate with other ambulatory care pharmacy practice clinicians - whether it is a clinical question or an inquiry on a new practice model, the supportive PRN family is always willing to share their expertise.

What is your advice for students related to ACCP and clinical pharmacy? I would advise students to know how to interpret primary literature! Having a strong foundation in evidence-based medicine will ultimately allow practitioners to stay up-to-date in a field that is constantly changing. Understanding which trials are clinically meaningful (and which are not) will help you determine if new information has the potential to be practice changing. I would also encourage others to use ACCP's resources to help achieve their professional goals. The Academies, prep courses and webinars are a good place to start!

New Drug Update: Sacubitril and Valsartan (ENTRESTO)

Autumn Walkerly, Pharm.D. Candidate 2019
Northeast Ohio Medical University
Reviewed by Mate Soric, Pharm.D., BCPS

Introduction

ENTRESTO was approved by the US FDA in August 2015, after being granted fast track designation and expedited review through the FDA's priority review program.[1] ENTRESTO is indicated to reduce the risk of cardiovascular death and hospitalizations in patients with New York Heart Association Class II-IV heart failure with reduced ejection fraction (HFrEF).[2] ENTRESTO is a combination of the neprilysin inhibitor sacubitril and angiotensin II receptor blocker (ARB) valsartan, and is a potential replacement for the current recommended therapy of angiotensin converting enzyme inhibitors (ACEi's) or ARB's in HFrEF.

Pharmacology

Upon oral administration, ENTRESTO dissociates into sacubitril and valsartan. Sacubitril is a novel prodrug readily converted to its active metabolite, sacubitrilat, which inhibits the neutral endopeptidase neprilysin.[3] Neprilysin is physiologically responsible for degrading endogenous natriuretic peptides, such as atrial natriuretic peptide (ANP) and brain natriuretic peptide (BNP), which play a key role in fluid balance. Both ANP and BNP are released from cardiac tissue in response to increased atrial pressure and ventricular filling pressure caused by fluid overload, a hallmark characteristic of heart failure (HF).[4] In these conditions, ANP and BNP activity is typically elevated and produce a host of vasoactive substances including bradykinin and angiotensin II. Neprilysin blocks the breakdown of these substances consequently causing diuresis, vasodilation, and natiuresis, and reducing the volume of blood the heart has to pump.

Valsartan is a selective angiotensin type-1 receptor antagonist that inhibits the vasoconstrictive effects of angiotensin II in the renin-angiotensin-aldosterone system (RAAS), another key regulatory system in fluid balance.[2] This system initially helps compensate for hypovolemia in HFrEF, however over-activity leads to further myocardial damage, impairing output

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Attending ACCP's "Emerge from the Crowd: How to Become a Standout Residency Candidate"

An interview with Kaci Foster, Pharm.D. Candidate 2017
By Sarah Darby, Pharm.D. Candidate 2018
The University of Tennessee College of Pharmacy

Why did you decide to attend "Emerge from the Crowd?"
I decided to attend this program because I intend to do a residency after graduation and I wanted expert advice on how to be the best candidate that I can be! Also, the program was held by ACCP and in Phoenix, Arizona. What more could you ask for?

Give a quick rundown of the meeting's daily activities and events.
Workshops included: writing a letter of intent, minimizing financial debt, managing finances as a new practitioner, navigating the final year of pharmacy school and the residency application process, residency roundtables, maximizing experiential education, and interviewing skills.

What opportunities are available for networking?
Something I found very interesting about this meeting was that only 25-30 students attended! This was quite a shock for me since I'm used to going to other national meetings with so many students; however, the smaller number of participants allowed me to make better connections with the students. Talking to the speakers and getting one-on-one advice was very easy. Midwestern University also hosted a small student-networking event at the hotel after a long first day of workshops.

What is the most important thing you learned from the weekend?
Everything! This program taught me so much about the application process through Phorcas, how to interview well, and how to manage my finances while being a resident (while finally paying on my student debt). It's really hard to narrow it down to one specific thing. Overall, the entire weekend was one of the most invaluable experiences that I have had during my pharmacy school career!

What was your favorite workshop from the weekend and why?
My favorite workshop was definitely the "Navigating the Final Year of Pharmacy School and the Residency Application Process". This session was jam-packed with useful pearls about having a timeline for the final year of school that includes doing great on APPEs, writing a letter of intent (with plenty of time for several people to review it), going to ASHP, planning for the required money to apply through Phorcas, and more. Tamara Malm, Pharm.D. MPH, BCPS, who is currently on faculty at the University of Saint Joseph, facilitated this workshop. She was incredibly personable and made the workshop unforgettable.

What advice would you give to students who are interested in attending next year?
Bring business cards, and be ready to network! The smaller setting really facilitated quality networking that I am sure will be useful down the road.

How has being involved with ACCP helped shape your career goals?
ACCP has provided me with great opportunities to get a glimpse as to what clinical pharmacists do every day and how to become one of them! The whole organization is dedicated to helping students better themselves so that they can be outstanding practitioners one day, and I am truly thankful to be associated with them.

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New Drug Update (continued)

in the progression of the disease. The natriuretic system is counter-regulatory to the RAAS in which ANP and BNP decrease the production of renin, therefore inhibiting the downstream vasoconstricting effects of angiotensin. Cornerstone HFrEF therapy has included ACEi's and ARB's which also inhibit the RAAS, however the increase in angiotensin production by renin results in the counter-regulatory action of the natriuretic peptide system.[5] Therefore, sacubitril-valsartan effectively re-equilibrates the functions of these two systems.

PARADIGM-HF Trial

The safety and effectiveness of sacubitril-valsartan was determined in a clinical trial of sacubitril-valsartan vs. enalapril (ACEi) sponsored by Novartis.[3] Participants were eligible if they had an ejection fraction <40%, NYHA Class II-IV HF, and specified BNP concentrations. A majority of patients were class II (70%) and 24% were class III HF.[3] The protocol was designed to include a single-blind run-in with enalapril, and then a single-blind run-in with sacubitril-valsartan to determine the tolerance of screened patients to each drug. Patients with no unacceptable side effects were then randomized to double-blind treatment to receive either 10mg of enalapril twice daily or 200mg of sacubitril-valsartan twice daily. Most patients enrolled in the trial had been on ACEi or ARB therapy in the past, 78% and 22% respectively.[3] Baseline characteristics showed no significant differences between the two groups. The mean age was 63.8 years, EF was 29%, roughly 21% of the population was female, and 66% were Caucasian.[3]

The study found statistically significant evidence that sacubitril-valsartan reduced the composite primary outcome of hospitalization for HF or death from cardiovascular causes by 20% when compared to enalapril.[3,4] The median follow-up was 27 months. In that time, in order to prevent one primary event, 21 patients would need to be treated and to prevent one death from cardiovascular causes, 32 patients would need to be treated. Overall, fewer patients in the sacubitril-valsartan group dropped out of the study due to adverse events. Observed symptomatic hypotension was higher in the sacubitril-valsartan group than in the enalapril group (14% vs. 9.2).[3] Previous studies have shown enalapril to reduce mortality compared with placebo, which further supports the clinical significance of the PARADIGM-HF superiority trial of sacubitril-valsartan in reducing the risk of cardiovascular death and hospitalization and the proposed suggestion that ACEi's and ARB's should be replaced with sacubitril-valsartan.[6,7,8] The PARADIGM-HF trial provides strong evidence that dual inhibition of the RAAS system and neprilysin improves outcomes in patients with chronic HFrEF.

Dosing and Clinical Considerations

ENTRESTO is available as a film-coated tablet for oral administration in three strengths: 24mg/26mg, 49/51mg, and 97/103mg (sacubitril/valsartan). Initiation of treatment should begin with the 49/51mg twice daily, and doubled within 2-4 weeks as tolerated. The recommended maintenance dose is 97/103mg (sacubitril/valsartan) twice daily.[2] Patients with severe renal impairment, and/or moderate hepatic impairment, and those who have not taken or have taken a low dose of an ACEi or ARB (≤10mg enalapril, ≤160mg of valsartan, or therapeutic equivalent) in the past should be given a starting dose of 24/26mg twice daily that is doubled every 2-4 weeks to the target dose of 97/103mg as tolerated. Sacubitril-valsartan is contraindicated in patients with a history of angioedema related to ACEi or ARB use, concomitant use with other ACEi's and in patient with diabetes using ACEi's in combination with aliskiren.[2] Since sacubitril-valsartan acts on renal regulatory systems, patient renal function and potassium levels should be monitored closely. Sacubitril-valsartan should be used with caution in patients on NSAIDs (due to the risk of renal impairment) or lithium (due to the increased risk of lithium toxicity).

In animal studies, sacubitril-valsartan caused injury and death to a developing fetus.[2] Therapy should be discontinued immediately in pregnant or lactating women and sacubitril-valsartan should not be prescribed to these patients. No pharmacokinetic differences have been established in patients over the age of 65 and no dose adjustment is necessary in patients with mild to moderate renal impairment or mild hepatic impairment.[2] To avoid the risk of angioedema due to overlap in ACEi and sacubitril therapy, sacubitril-valsartan should not be taken within 36-hours of an ACEi.

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New Drug Update (continued)

Heart failure costs the United States an estimated $32 billion each year and is one of the nation's leading causes of death.[9] Sacubitril-valsartan is a promising contender in the treatment of HFrEF that has demonstrated clinical value in reducing HF hospitalizations and death. An update to the ACC/AHA/HFSA guidelines strongly recommends, with a B-R level of evidence, the use of an angiotensin receptor-neprilysin inhibitor (ANRI) in patients with prior or current symptoms of HFrEF.[10] The guidelines previously supported the use of ACEi's or ARB's in adjunct with beta-blockers and aldosterone antagonists and now support the use of ANRI's as a replacement for ACEi or ARB therapy in patients with NYHA Class II-III HFrEF.[5,10] Post-marketing surveillance and further research will be essential to improve the quality of evidence supporting the use of sacubitril-valsartan as a first line treatment for HFrEF.

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Congratulations to the 2016 Clinical Research Challenge Winners:

Oregon State University College of Pharmacy!

Look for a special feature on the winning team in the August 2016 edition of ACCP StuNews.

And join us for our next Student Chapter Challenge:

If you had the opportunity to advocate for pharmacy, what story would you tell your legislator?

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