

American College of Clinical Pharmacy Adult Medicine PRN Newsletter

VOLUME 9, ISSUE 2

FALL 2014

Message from the Chair: Rolee Das, Pharm.D., BCPS

As I look back on this past year serving as Chair of the Adult Medicine PRN, what strikes me the most is how well the officers, committee chairs, and members work together to coordinate our various initiatives. I must give a special thanks to our Chair-Elect, Jacqueline Olin, Secretary/Treasurer Diane Rhee, and past Chair Jessica Starr, for their hard work and assistance throughout the year. I would also like to thank the committee chairs, Carmen Smith, Jessica Wallace, Katie Buehler, Renee Holder, and Catherine Lewis. There are many successful projects that the various committees have worked on, and this would not be possible without the dedication of our members. Thank you!

We had an excellent Annual Meeting experience this year in Austin Texas! The hard work of the programming committee was highlighted as the Adult Medicine PRN Focus Session titled "Beyond Acute Coronary Syndromes: Additional Indications for Dual Antiplatelet Therapy and Considerations for Use" took place. This program focused on the precise indications for antiplatelet therapy, and strategies for preventing complications from treatment, and included presentation by Joel Marrs, Julie Sease, and Ragini Bhakta. Thank you very much to the programming committee, chaired by Jacqueline Olin, and to our speakers for the valuable presentations.

During the PRN Business Meeting and Networking Forum, the Adult PRN had the opportunity to recognize our new fellows and various award recipients. Congratulations to Craig D. Cox, Joel C. Marrs, Rocsanna Namdar, Jacqueline L. Olin, Jessica A. Starr, and Sheila M. Wilhelm for receiving this honor, recognizing their contribution to ACCP and excellence in clinical pharmacy and research. The meeting also included presentations by our Resident Travel Award recipient Brittany Good, and our Student Award recipient Elizabeth Moore. The Nominations Committee had the opportunity to present the Mentoring Award, which was given to Abigail Yancey this year. Thank you to both the Nominations and Training and Travel Committee for coordinating these awards, and allowing our members to be recognized.

Adult Medicine PRN Members presented over 109 posters at the Annual Meeting. The Walk-Rounds committee and volunteers identified and visited these posters, and will be awarding a 'Best Poster' recognition later this year.

With a membership over 1100, it is remarkable to me that we have such well coordinated initiatives, lead by these committees and leaders. The area where we would like to see more involvement is in the nominations of our members for ACCP and Adult Medicine PRN awards. We will have the opportunity later this year to submit nominations for ACCP elected offices and for ACCP awards. During the late winter we will be asking for nominations for PRN awards. Please stay tuned for these announcements and consider nominating a colleague!

In looking back, my involvement with the PRN began the minute I volunteered for a committee and working with this group has been one of the most valua-

Inside this issue:

Inhaled Insulin	2
PGY1 Internal Med Model	4
Pneumococcal Vaccines	5
Hepatitis C	7
Transitions of Care	9-10
Hydrocodone Alternatives	11
Member Accomplishments	14
Walk Rounds	16

Upcoming Meetings:

- ACCP Updates in Therapeutics 2015: April 10-14, Rosemont IL
- 2015 ACCP Global Conference on Clinical Pharmacy: October 17-21, San Francisco
- 2016 ACCP Annual Meeting: October 23-26, Hollywood, FL



Message from the Chair, cont.

ble experiences in my career. It has been a pleasure serving as your Chair and I look forward to continuing to work with you in the years to come!

Inhaled Insulin: Just Another Diabetic Medication?

Corrie Lowe Malphrus, Pharm.D., Shawna King, Pharm.D., BCPS

Diabetes remains prevalent with 29.1 million Americans or 9.3% of the population having diabetes in 2012.¹ Insulin is a key treatment for both Type 1 and Type 2 diabetes; nonetheless, patient reluctance to administer injections remains a major obstacle for successful insulin therapy and glycemic control. Obstacles to patient adherence include fear of pain from injection, anxiety, and inconvenience.² Inhaled insulin provides an alternative route of administration for patients, which may aid in overcoming these obstacles.

Inhaled insulin failed as a therapeutic option in the 1920s primarily due to low bioavailability issues.² Enhanced pharmacokinetic and pharmacodynamics properties of inhaled insulin have been under investigation for the past several decades. Pulmonary delivery of insulin has many advantages when compared to other investigated modes of delivery, including transdermal, ocular, nasal, oral, buccal, and rectal. The lungs provide a large surface area for absorption and allows for a rapid onset of action via the thin alveolar-capillary barrier. One of the most essential factors in inhaled insulin delivery is particle size. A particle size of 1 to 3 micrometers in diameter is required for enhancing absorption as larger particles are swallowed or exhaled. Exubera was the first dry powder inhaled insulin to be approved by the FDA and U.S. regulatory system in 2006.³ However, the product was removed from the market in 2007 after poor acceptance and disappointing sales.² Primary disadvantages of Exubera included: a bulky delivery device (about the size of a flashlight) and required weekly device cleaning. Investigation of other inhaled insulins, including the dry powder formulation AIR and the liquid formulation AERx, concluded after Exubera was removed from market. Recently, the FDA approved a new inhaled insulin, Afrezza also known as Technosphere insulin (TI).

Technosphere insulin (TI) is recombinant human insulin formulated as an inhalation powder to be absorbed in Technosphere particles.^{2,4} The particles are formed with an excipient, fumaryl diketopiperazine powder (FDKP) that acts as a carrier. The particles dissolve once inhaled into the lung and are rapidly absorbed into the circulation. The majority of the dose spreads to the lungs (60%) with the remainder is dispersed to the oropharynx (30%) and stomach (10%). Afrezza is available in pre-made single use cartridges and is used with the device Gen2, a thumb sized inhaler. This product is considered a rapid-acting insulin reaching a maximum concentration at 15 minutes making it comparable to subcutaneous insulin products and providing a unique formulation option for diabetics.

The efficacy and safety of Afrezza was exhibited in a double-blind, placebo-controlled, randomized trial comparing TI to an inhaled Technosphere placebo that were added to oral antidiabetic agents in insulin-naïve Type 2 diabetes.² The study enrolled 18 to 80 year old patients that were on stable treatment for at least 3 months with an HbA1c ranging from 6.6% to 10.5%. The HbA1c decreased 0.7% in TI

*29.1 million Americans
had diabetes in 2012*

Inhaled Insulin, cont.

group as compared to 0.3% in the placebo group after 12 weeks ($p = 0.003$). The TI group lowered postprandial glucose readings by 56% compared to baseline. Side effects reported in this study were a non-significant decrease from baseline in FEV₁ in both groups, hypoglycemia and cough. Rosenstock et al. conducted a 52-week randomized, open-label, parallel group study comparing basal glargine plus TI to aspart 70/30 insulin BID in Type 2 diabetics.⁵ Baseline HbA1c ranged from 7-11%. Basal insulin with prandial inhaled insulin was non-inferior to the aspart 70/30 insulin decreasing the HbA1c by 0.68% and 0.76%, respectively. The inhaled insulin group noted significantly lower weight gain as compared to the aspart 70/30 regimen as well as fewer episodes of hypoglycemia. Cough was prevalent in the inhaled insulin group, but there were no significant differences in FEV₁. Other studies in Type 1 and Type 2 diabetes have shown similar outcomes including lower incidences of hypoglycemia and increased cough.

Afrezza is indicated for Type 1 and Type 2 diabetics as a pre-prandial insulin.⁶ It is not recommended to manage patients with diabetic ketoacidosis (DKA) or those who smoke. There is also a black box warning for the drug emphasizing acute bronchospasm. It is contraindicated during hypoglycemic episodes and in patients with asthma, chronic obstructive pulmonary disease (COPD), or chronic lung infection. It is recommended that lung function be assessed at baseline, 6 months, and annually thereafter as Afrezza has shown to decrease lung function. Afrezza is formulated as 4 or 8 unit insulin cartridges that should be taken at the beginning of a meal. Like other types of insulin, Afrezza should be refrigerated and may be left at room temperature for up to 10 days. Inhalers should also be discarded after 15 days of use.


Afrezza is a newly marketed inhaled insulin that provides a unique delivery method of insulin and may be beneficial in Type 1 or Type 2 diabetics unwilling to administer insulin injections.

References:

- Statistics about diabetes: data from the *National Diabetes Statistics Report, 2014*. American Diabetes Association. [updated Aug 20, 2014, cited Aug 26, 2014]. Available from <http://www.diabetes.org/diabetes-basics/statistics/>
- Cavaiola TS, Edelman S. Inhaled insulin: a breath of fresh air? A review of inhaled insulin. *Clinical Therapeutics*. 2014; DOI: 10.1016/j.clinthera.2014.06.025.
- NewsFlash: Inhaled insulin Afrezza gets FDA approval. [updated June 29, 2014, cited August 26, 2014]. Available from www.diabetesmine.com.
- Rosenstock J, Bergenstal R, Delfronzo RA, et al. Efficacy and safety of Technosphere inhaled insulin compared with Technosphere powder placebo in insulin-naïve type 2 diabetes suboptimally controlled with oral agents. *Diabetes Care*. 2008;31:2177-2182.
- Rosenstock J, Lorber DL, Gnudi L, et al. Prandial inhaled insulin plus basal glargine versus twice daily biphasic insulin for type 2 diabetes: a multicenter randomized trial. *Lancet*. 2010;375:2244-2253.
- Traynor K. Inhaled insulin product approved. *Am J Health-Syst Pharm*. 2014;71:1238.



Afrezza is indicated for Type 1 and Type 2 diabetics as a pre-prandial insulin.



Post Graduate Year 1 Pharmacy Residency: Internal Medicine Model University of Rochester Medical Center Linda E. Thomas, Pharm.D.

National quality and safety organizations as well as professional associations, such as the American College of Clinical Pharmacy (ACCP) or The Society of Critical Care Medicine (SCCM), view clinical pharmacists as being integral members of an interprofessional healthcare team, views which have also been expressed by the Joint Commission of Pharmacy Practitioners. Furthermore, there is increased emphasis to transform the traditional role of the clinical pharmacist in the acute care setting serving in the capacity of a 'unit-based' clinical pharmacist to a 'service-based' model. The latter approach is focused on having clinical pharmacists collaborating directly with members of multidisciplinary teams to proactively develop and optimize a patient-centered pharmacotherapy plan using evidence-based medicine while allowing the continuum of care from the time of admission to the point of discharge – a challenging task when utilizing the unit-based concept.

Although both models offer advantages and disadvantages, the post graduate year 1 (PGY1) pharmacy residency at University of Rochester Medical Center is reflective of the service-based clinical pharmacy practice. The residency class of 2011 – 2012 was the first to have completed this model, previous to which the site had followed the traditional model of residents completing 1 month rotations in various clinical areas during the year. Presently, with 10 months of concentrated clinical time, the residents focus on internal medicine for 7 months with the remaining 3 months dedicated to elective time of which one must be in an ICU setting (2 months are committed to other residency related tasks such as orientation, pharmacy practice, etc.). Two residents round with two general medicine hospital teams (while the 3rd resident is on an elective rotation) longitudinally under the supervision of an attending pharmacist, a role shared between the clinical-staff and clinical specialists – most of whom have obtained board certification in their area of practice. As outlined in the ACCP Commentary by the 2010 Task Force on Acute Care Practice Model, it positions a clinical pharmacist, or in this case, the resident, to follow a particular 'patient-type,' allowing specialization in an area of practice, from the time of admission to the point of discharge, focusing on patient-specific care outcomes. Additionally, the residents are charged with responsibilities that would be typical of any other PGY1 pharmacy residency program during their time on service, including admission medication reconciliation, discharge medication teaching, drug information services, educational activities, as well as pharmacokinetic consults, and order verification.

At the time when the residency model was initially reformed to reflect a service-based concept, patients were geographically located primarily on one general medicine unit allowing the pharmacy residents to establish excellent working relationships not only with the team they were rounding with, but also with the unit staff members (such as nursing, patient care technicians, among others). Since then, the patients have been dispersed throughout the hospital, for various reasons, making the collaboration with one primary unit more challenging. Despite this, however, the medical residents and unit staff have come to expect regular pharmacy presence on these units, seeking out the pharmacy residents directly to address ongoing issues, which is more cumbersome to accomplish with one decentralized pharmacist cover-

*Clinical pharmacists are
integral members of the
interprofessional
healthcare team*

Internal Medicine Model, cont.

ing a multitude of units, or in the traditional residency model where residents service various clinical areas monthly. As the provision of healthcare evolves towards team-based care, with clinical pharmacists considered vital members of those teams and held accountable to provide comprehensive pharmaceutical care, it will be crucial to reexamine the traditional models of residency in order to properly train and prepare future clinical pharmacists to reflect the changes within the discipline.

References:

Haas CE, Eckel S, Arif S, et al. American College of Clinical Pharmacy Commentary: Acute Care Clinical Pharmacy Practice: Unit- versus Service-Based Models. *Pharmacotherapy*.2012;32(2):e35–e44.



Pneumococcal Vaccines: A Review of Recent Literature

Megan E. Kunka, Pharm.D.

The burden of pneumococcal disease (encompassing pneumonia, bacteremia, and meningitis) is still a major cause of illness and death in the United States, particularly among the elderly population. An estimated 350,000-650,000 hospitalizations occur due to community-acquired pneumonia (CAP) in patients 65 years of age or older in the United States each year, with the predominant pathogen being *Streptococcus pneumoniae*.⁴ Estimates from the year 2010 indicate nearly 40,000 cases of invasive pneumococcal disease (IPD) occurred in the United States, correlating to 4,000 deaths. IPD involves pneumococcal bacteremia and meningitis. However, pneumococcal disease can be prevented with vaccination. Recent literature has suggested a change in the pneumococcal vaccine recommendations.

The two types of pneumococcal vaccines include Pneumococcal Polysaccharide Vaccine (PPSV23/Pneumovax 23®) which contains 23 serotypes and Pneumococcal Conjugate Vaccine (PCV13/Prevnar 13®) which contains 13 serotypes.¹ First licensed in 1983, the 23-valent vaccine is a polysaccharide vaccine composed of purified preparations of pneumococcal capsular polysaccharide. The 23 serotypes account for approximately 90% of all prevalent pneumonia serotypes in Western countries. PPSV23 elicits a T-cell independent immune response; therefore, B cells are stimulated without the assistance of T-helper cells. The majority of healthy adults are able to form antibodies against the 23 serotypes within two to three weeks following vaccination; however, older adults and patients with chronic illnesses or who are immunocompromised may not respond at all. As a result, in the overall population, the PPSV23 vaccine is 60-70% effective. Despite the potential 30-40% failure rate, the PPSV23 vaccine has been recommended for all adults 65 years of age and older and adults aged 19-64 years with underlying medical conditions (asthma, cigarette smoking). Additionally, immunocompromised patients 2 years of age and older should be vaccinated with PPSV23. Patients who have received PPSV23 before age 65 should receive another vaccine at age 65, if at least 5 years have passed since previous dose.

Prior to the PCV13 vaccine, the 7-valent Pneumococcal Conjugate Vaccine (PCV7) was utilized in children beginning in 2000.^{1,4} A study funded by the CDC indicated that routine PCV7 administration in children reduced PCV7-serotype IPD in adults of all race, age, and PPSV23 indication strata, with a decline in most strata by up to 65% (range: 82-97%).⁴ Incidence of non-PCV7 IPD was still disproportionately higher in the adult populations

“An estimated 350,000-650,000 hospitalizations occur due to community-acquired pneumonia (CAP) in patients 65 years of age or older in the United States each year.”



Pneumococcal Vaccines, cont.

identified to receive PPSV23 vaccine. The PCV13 vaccine was approved in 2010 and replaced the PCV7 vaccine.

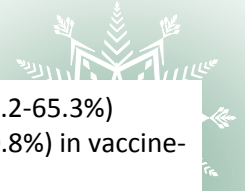
The PCV13 vaccine protects against pneumococcal serotypes 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, and 23F.¹ Serotype 6A is unique to the PCV13 vaccine, which is not contained in PPSV23 vaccine. PCV13 comprises the seven serotypes that were included in the previously manufactured PCV7 vaccine; however, it also includes six additional serotypes which are conjugated to a nontoxic diphtheria toxin (CRM197). PCV13 elicits a T-cell dependent immune response; therefore, protein carrier-specific T-cells provide signals needed for a B-cell response. This vaccine is greater than 90% effective at preventing invasive disease by all serotypes, particularly in infants and young children, even those with high-risk medical conditions. PCV13 has been recommended for children 2-59 months of age (doses at 2, 4, and 6 months, with booster at 12-15 months). In 2011, the Food and Drug Administration (FDA) approved PCV13 as a single dose in patients 50 years of age or older for the prevention of pneumonia and invasive pneumococcal disease.^{1,4} In 2012, the ACIP expanded the PCV13 vaccination recommendations to include a single dose of PCV13 in all adults with immunocompromising conditions, in addition to the PPSV23 vaccine.

Published as a news release in the American Academy of Family Physicians (AAFP) News in August 2014 were the results of the CDC's Advisory Committee on Immunization Practices (ACIP) meeting which reviewed pneumococcal vaccines in older adults.² Based upon this meeting, the recommendation is for adults age 65 years or older, who have not previously received a pneumococcal vaccine, to receive a dose of Pneumococcal Conjugate Vaccine (PCV13/Pneumovax 13®). A dose of Pneumococcal Polysaccharide Vaccine (PPSV23/Pneumovax 23®) is recommended in these patients 6-12 months after PCV13 vaccination. For patients that have previously received the PPSV23 vaccine, the PCV13 vaccine should be received at least one year after the PPSV23 vaccine. If multiple PPSV23 vaccinations are recommended, the PPSV23 vaccine should be given 6-12 months after PCV13 vaccine and at least five years after previous PPSV23 vaccination.

The above recommendations were derived from the Community-Acquired Pneumonia Immunization Trial in Adults (CAPiTA) study, which was a randomized, parallel-group, placebo-controlled trial conducted in the Netherlands in which almost 85,000 community-dwelling patients aged 65 years or older were given the PCV13 vaccine or placebo.³ Patients were randomized in a one-to-one allocation to receive PCV13 vaccine or placebo vaccine. Of note, administration of influenza vaccine was performed in study patients. As the Netherlands Health Council recommended the PPSV23 vaccine to a small subset of high-risk patients, a large group of adults aged 65 years or older had never received the PPSV23 vaccine, which was the rationale for the study setting. Patients were excluded if they had previous vaccination with any pneumococcal vaccine, resided in a long-term care facility, had allergies/contraindications to receiving the vaccine, or were immunocompromised.

The primary objective was occurrence of vaccine-serotype specific community-acquired pneumonia.³ With the unified and computerized healthcare system in the Netherlands, study patients who were admitted to the hospital or were treated as outpatients for pneumonia were able to be captured. Episodes of CAP involved three criteria: clinical definition of CAP, independent interpretation of chest radiograph consistent with pneumonia, and determination of *Streptococcus pneumoniae* serotype. The results indicated that patients receiving the PCV13 vaccine had 45.6% effica-

“Practitioners must stay abreast to future updates, as more studies will be conducted reviewing pneumococcal disease prevalence pre- and post-routine use of both PCV13 and PPSV23 in adults aged 65 years and older.”



Pneumococcal Vaccine, cont.

cy (95% CI: 21.8-62.5%) against vaccine-type pneumococcal pneumonia, 45.0% efficacy (95% CI: 14.2-65.3%) against vaccine-type non-bacteremic pneumococcal pneumonia, and 75% efficacy (95% CI: 41.4-90.8%) in vaccine-type IPD in patients 65 years of age and older.⁵

Immunogenicity studies have indicated an equivalent, if not more robust, immune response in patients receiving the PCV13 vaccine as compared to the PPSV23 vaccine.⁵ Furthermore, a better immune response was seen in patients who received the PCV13 vaccine first, followed by the PPSV23 vaccine, as compared to patients receiving the PPSV23 vaccine, then the PCV13 vaccine. Adverse effects are similar between the PCV13 and PPSV23 vaccines.

The full results of the CAPiTA study have yet to be formally published, however. Limitations to these recent recommendations are that it was industry-sponsored, no patients received the PPSV23 vaccine, all patients were from the Netherlands, and the results were compared to placebo vaccine. Another barrier is Medicare only pays for one dose of pneumococcal vaccine for patients older than 65 years. The out-of-pocket cost for the PCV13 vaccine is \$135-\$150.

This new ACIP recommendation has been recently published in *Morbidity and Mortality Weekly Report* (MMWR), providing validation to the above recommendations.² Practitioners must stay abreast to future updates, as more studies will be conducted reviewing pneumococcal disease prevalence pre- and post- routine use of both PCV13 and PPSV23 in adults aged 65 years and older.

References:

1. Centers for Disease Control and Prevention, May 2012. Pneumococcal disease: epidemiology and prevention of vaccine-preventable disease. The Pink Book, 12th ed. Available at: <http://www.cdc.gov/vaccines>.
2. Crawford C. American Academy of Family Physicians. Aug 27, 2014. ACIP recommends routine PCV13 immunization for adults 65 and older. Available at: <http://www.aafp.org/news>.
3. Hak E, Grobbee DE, Sanders EAM, et al. Rationale and design of CAPITA: a RCT of 13-valent conjugated pneumococcal vaccine efficacy among older adults. *Neth J Med*. 2008;66(9):378-382.
4. Muhammad RD, Oza-Frank R, Zell E, et al. Epidemiology of invasive pneumococcal disease among high-risk adults since the introduction of pneumococcal conjugate vaccine for children. *Clin Infect Dis*. 2013;56(5):e59-67.
5. Tomczyk S, Bennett NM, Stoecker C, et al. Use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine among adults aged ≥65 years: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 19 Sep 2014;63(37):822-825.

Hepatitis C: Updates in Therapeutic Management of Genotype I Infections

Jennifer Andres, Pharm.D., BCPS

Many advances in hepatitis C treatment have been made since 2011. Interferon and ribavirin for 48 weeks, previously the mainstay of hepatitis C genotype 1 therapy, have yielded way for more potent and patient friendly agents. Boceprevir and telaprevir were FDA approved in 2011. These agents changed treatment guidelines significantly with the implementation of a triple-therapy treatment algorithm and the possibility of a shortened duration of treatment with a positive response. At the end of 2013, simeprevir and sofosbuvir were approved for use in the United States. Simeprevir and sofosbuvir have increased the response rate of regimens such as boceprevir or telaprevir and have resulted in even shorter treatment durations. Additionally, they have less adverse drug reactions, drug interactions, and less intrusive dosing regimens as compared to boceprevir and telaprevir. A major limitation of newly approved agents is their cost, with sofosbuvir approximately \$84,000 for a treatment course.

Hepatitis C, cont.

Drug Information: Simeprevir and Sofosbuvir^{1,2,3,4}

	Simeprevir (Olysio™)	Sofosbuvir (Sovaldi®)
Class	Protease Inhibitor	Polymerase Inhibitor
Absorption	Increases with food	Not affected by food
Metabolism	3A4 substrate	Hepatic
Half life	41 hours (hepatitis C)	0.4 hours (hepatitis C)
Excretion	Feces and urine	Urine
Drug-Drug Interactions	Substrate of 3A4, P-gp, SLCO1B1 Inhibits 1A2, P-gp, SLCO1B1	Substrate of P-gp
Adverse Events of Note	Derm: Skin rash, pruritis, photosensitivity Hepatic: Increased serum bilirubin	Well tolerated Likely due to other components (RBV/PEG) of treatment
Dosing	150 mg PO daily	400 mg PO daily
Adjustments	None for renal/hepatic impairment	None for renal/hepatic impairment
Other Information	Sulfonamide moiety Increased risk of adverse effects in East Asian population Test for Q80K variant (indicative of decreased response)	Prodrug (converted via intracellular metabolism) Active moiety cleared renally Pregnancy category B (X in combination with interferon/ribavirin)

“Guidelines are updated frequently as new agents gain approval and treatment continues to evolve.”

The American Association for the Study of Liver Disease and the Infectious Disease Society of America have published collaborative guidelines for the diagnosis of and treatment for hepatitis C.⁵ First-line treatment for treatment-naïve patients with genotype 1 include the combination of sofosbuvir, weight-based ribavirin, and peginterferon for 12 weeks. Interferon can be replaced with simeprevir in patients that are ineligible for interferon.⁵ Recommendations are also provided for use of sofosbuvir and simeprevir in treatment-experienced patients. Boceprevir and telaprevir should not be used.⁵ Guidelines are updated frequently as new agents gain approval and treatment continues to evolve; additional interferon-free regimens with new drugs may be approved by 2015.

References:

- Olysio [package insert]. Titusville, NJ: Janssen Therapeutics; December 2013.
- Fried MW, Buti M, Dore GJ, et al. Once-daily simeprevir (TMC435) with pegylated interferon and ribavirin in treatment-naïve genotype 1 hepatitis C: The randomized PILLAR study. *Hepatology*. 2013;58(6):1918-1929.
- Sovaldi [package insert]. Foster City; Gilead Sciences; December 2013.
- Lawitz E, Mangia A, Wyles D, et al. Sofosbuvir for previously untreated chronic hepatitis c infection. *N Engl J Med* 2013;368(20):1878-1887.
- American Association for the Study of Liver Diseases. Recommendations for Testing, Managing, and Treating Hepatitis C. Available at: www.hcvguidelines.org. Accessed 15 August 2014.

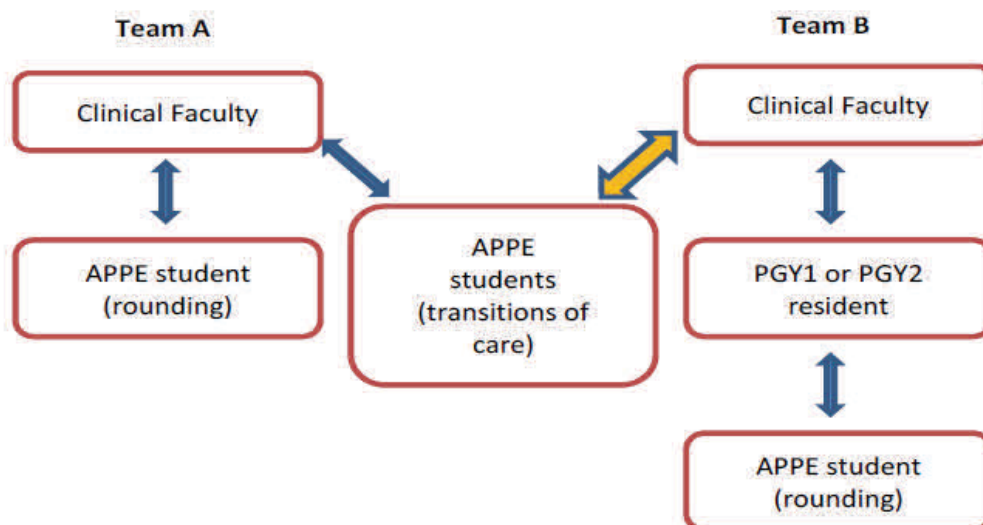
Implementing a Layered Learning Model with a Focus on Transitions of Care

Nicole L. Metzger, Pharm.D., BCPS, Melissa Chesson, Pharm.D., BCPS



In 2009, Mercer University College of Pharmacy (COP) and Emory Healthcare formalized their partnership with a joint initiative. As a result, an increased number of pharmacy students were assigned to Emory University Hospital for introductory pharmacy practice experiences (IPPE) and advanced pharmacy practice experiences (APPE), and the hospital's pharmacy residency program expanded. Two full-time Mercer University COP faculty members have internal medicine practice sites at Emory University Hospital and provide clinical pharmacy services to the 6G nursing unit. The faculty members are responsible for routinely precepting APPE students, PGY1 residents, and the PGY2 internal medicine resident. Historically, APPE students rounded with the medical team and identified medication-related problems, provided patient education, and answered drug information questions. In order to accommodate the increased student volume, both faculty members were assigned four APPE students during the majority of the nine rotation blocks throughout the academic year. To expand clinical pharmacy services and reduce issues with space constraints during rounds, the faculty developed a hybrid medicine experience where each student splits his time between the roles of rounding student and transitions of care student. The rounding student works up his assigned patients, identifies medication-related problems, implements evidence-based medicine, and communicates with the medical team during rounds. The transitions of care student conducts medication histories and reconciles the medications for each patient admitted to the unit, provides discharge education for high risk patients, and assists the medical team in procuring expensive medications for patients at discharge. The students spend the first week of the five week block orienting to both roles under the supervision of faculty and residents; afterwards, each student functions in his respective role for two weeks and then the students switch. To streamline communication and improve efficiency, faculty members implemented a layered learning approach to the rotation. There are two medicine teaching teams on the unit (team A and team B). One clinical faculty member rounds with a pharmacy student on team A, and a pharmacy resident (PGY1 or PGY2) rounds with team B and a second pharmacy student. The other clinical faculty member supervises the two transitions of care students and oversees the pharmacy resident (**Figure 1**). Patient care on the unit has improved as a result of the increased number of pharmacy learners. Currently, every patient receives a pharmacy verification of the admission medication history.

Preliminary results from an interim data analysis show that 95% of the patients on the unit had at least one medication discrepancy and the average number of medication discrepancies was 7 per patient. The layered learning model with an increased focus on transitions of care has increased student and resident training capacity on the unit and has improved the quality of pharmacy services provided to the patients.





Medication Challenges in Transition to Post-Acute Care

Amy Myers, Pharm.D., BCPS, Erin Neal, Pharm.D., BCPS

Patients transferring from the hospital to post-acute care (PAC) are at risk for medication errors and discrepancies at many junctures.^{1,2} At discharge many clinicians do not realize the vulnerability of this population and the need for heightened attention to their discharge orders, including evaluating the appropriateness of medications for the PAC stay and provision of plans for monitoring and titration. The perception of many clinicians is that the patient will receive immediate care by a physician upon arrival to the PAC. In reality, Medicare only requires that a PAC patient be seen once every 30 days and notably, there is no formal requirement for patient assessment during the admission period.³ During this 30-day period, it is possible that medication errors, medication discrepancies, and medications that require active monitoring or titration could go unaddressed.

The receiving team at the PAC facility is faced with complex medication reconciliation tasks as they transcribe orders from the discharging hospital. There are typically multiple contradictory medication lists to sort through and these lists rarely include a prospective plan for managing medications.⁴ A preliminary list may be sent during the initial referral, and then once the patient is accepted, another more-current list of hospital medications may be sent to assist the facility in preparing for the patient's arrival. At the time of transfer, several additional lists will be included in the formal paperwork including, at a minimum, a list within the discharge summary that provides a historical account of the patient's hospital stay and a list of medications to be ordered at the PAC (e.g., transfer orders). The ambiguous and often conflicting information provided forces medical assistants or RNs at the PAC to discern which medications should actually be ordered.

Another challenge is that many medications require active modification throughout the stay at the PAC facility. For example, postsurgical orthopedic VTE prophylaxis is typically continued for 14-35 days depending on the indication and the provider's preference. If the duration is not included in the transfer orders, over or under treatment could result. Home medications are often held at hospital admission and discharge due to the patient's acute illness and may need to be restarted when the patient's acute condition resolves. For example, home diuretics may have been held due to acute kidney injury and failure to restart when appropriate could lead to fluid overload, and potentially readmission to the hospital.

Further, chronic medications such as antidepressants, antihypertensives, and oral antidiabetes drugs may have been held during the inpatient stay and will need to be restarted at the PAC. The indication for inpatient protocol orders, such as sliding scale insulin or stress ulcer prophylaxis, should be re-evaluated across the continuum of care to prevent erroneous continuation. Other medications, such as warfarin or pain medications, require active titration to achieve therapeutic targets and to avoid adverse effects.

These issues highlight the need for improved communications from the discharging institution to the PAC. Effective transition interventions which include medication reconciliation can reduce readmissions by up to 25%.⁵ Unfortunately, patients discharged to post-acute care (PAC) are often excluded from these interventions de-

“Patients transferring to post-acute care can benefit significantly from medication reconciliation and medication monitoring plans from a clinical pharmacist.”

Medication Challenges, cont.



spite the fact that this population experiences a 30-day re-hospitalization rate of 19-24%.⁶ Patients transferring to post-acute care can benefit significantly from medication reconciliation and medication monitoring plans from a clinical pharmacist.

References

1. Tija J, Bonner A, Briesacher BA, McGee S, Terrill E, Miller K. Medication discrepancies upon hospital to skilled nursing facility transitions. *J Gen Intern Med.* 2009;24(5):630-635.
2. Boockvar K, Fishman E, Kyriacou CK, Monias A, Gavi S, Cortes T. Adverse drug events due to discontinuations in drug use and dose changes in patients transferred between acute and long-term care facilities. *Arch Intern Med.* 2004;164(5):545-550.
3. "CMS & Joint Commission Requirements for Physician Visits." Accessed 17 Sept. 2014. Available at: <http://www.ama-assn.org/advocacy/physicianvisits/physicianvisits.pdf>.
4. Desai R, Williams CE, Greene SB, Pierson S, Hansen RA. Medication errors during patient transitions into nursing homes: characteristics and association with patient harm. *Am J Geriatr Pharmacother.* 2011;9(6):413-422.
5. Phillips CO, Wright SM, Kern DE, et al. Comprehensive discharge planning with post discharge support for older patients with congestive heart failure: a meta-analysis. *JAMA.* 2004;291:1358-1367.
6. Mor V, Intrator O, Feng Z, Grabowski DC. The revolving door of rehospitalization from skilled nursing facilities. *Health Affairs.* 2010;29(1):57-64.

Therapeutic Alternatives to Newly Rescheduled Hydrocodone Combination Products

Brian L. Winbigler, MBA, Pharm.D., Wendy M. Gabriel, Pharm.D., BCPS

Treatment of pain is multifaceted and there exist a wide array of both pharmacologic and non-pharmacologic treatment modalities. Even though there are multiple options for drug therapy, opioids are commonly prescribed, with 259 million prescriptions for pain medications written in 2012.¹ Accidental deaths are also rising, with 46 deaths in the United States each day from complications associated with prescription pain medication use. Hydrocodone-containing products (HCPs) are the most prescribed opioid drug in the United States with 137 million prescriptions written in 2013.² HCPs are effective, readily available, and as schedule III can be prescribed via fax or phone call with up to six refills in a five month period.³ However, in the DEA's ongoing effort to curb prescription drug abuse, HCPs will be rescheduled from schedule III to schedule II, effective October 6th, 2014.²

Hydrocodone alone has been listed as a schedule II since enactment of the Controlled Substance Act in 1971, but products that combined hydrocodone with specified amounts of nonnarcotic ingredients were granted schedule III status.² The new rule places all HCPs in schedule II and therefore no prescriptions for HCPs written on or after October 6, 2014 can be refilled. The Federal Register reports that those prescriptions written prior to October 6th, 2014 with authorized refills may be dispensed before April 8th, 2015.² The new rule does not limit the amount of HCPs a practitioner can prescribe and he/she may write multiple prescriptions for the same drug on the same day as long as the combined amount does not exceed a 90-day supply. During the transition, pharmacists will be important in educating providers to new protocols for HCPs as well as providing therapeutic alternatives should a provider not want to prescribe a schedule II medication.

The World Health Organization recommends the selection of a non-opioid medication for the initial management of pain which includes acetaminophen (APAP) and NSAIDs.⁴ Pain etiology and individual patient characteristics can help stratify available non-narcotic treatment options. APAP and NSAIDs are considered first-line treatments for mild to moderate pain. Anticonvulsants and antidepressants can be used as adjuvant medications to help down regulate pain transmission and manage psychological manifestations of pain.⁵ Gamma-aminobutyric acid (GABA) inhibitors and sodium channel blockers attenuate hyperactive neuronal states and affect neurons that modulate and trans-



Hydrocodone Products, cont.

mit pain. Meta-analysis data on pharmacotherapy of chronic pain consistently demonstrate that gabapentin decreases chronic pain by 50% in patients with neuropathies.⁵ Carbamazepine has also been shown to reduce pain scores in patients with trigeminal neuralgia and diabetic neuropathy. Although the exact mechanism is unknown selective serotonin reuptake inhibitors and tricyclic antidepressants relieve pain and also improve perceived pain intensity. Although literature shows that these treatments are effective, many patients still require opioid products in addition to these therapies.

Both tramadol and codeine combination products are practical alternatives to HCPs. Neither are schedule II products (codeine combined with APAP) and both are dosed with directions similar to those of HCPs with patients taking 1-2 tablets by mouth every 4-6 hours as needed. Tramadol, a schedule IV narcotic, is a novel agent that inhibits both transmission and perception of pain.⁶ It is a centrally acting opioid that also inhibits norepinephrine and serotonin reuptake. Tramadol is transformed by CYP2D6 to the active metabolite and therefore genetic polymorphisms can alter a patient's response to the medication. Tramadol/APAP efficacy has been established for moderate to severe pain in patients with musculoskeletal pain, diabetic peripheral neuropathy, migraine, and post-operative pain⁶. A randomized trial published in 2007 compared tramadol/APAP 37.5/325 mg (two tablets) to hydrocodone/APAP 7.5/650 mg in patients with ankle sprain.⁷ The study concluded that tramadol/APAP was non-inferior to HCPs in pain relief and pain intensity difference. There was no statistical difference in the incidence of side effects between the groups. Tramadol should be used cautiously in patients with uncontrolled epilepsy and those with exposure to other serotonergic medications.

Codeine is an opioid agonist and has established efficacy as an antitussive and for treatment of mild to moderate pain.⁸ As a pro-drug, codeine has minimal intrinsic analgesic activity and requires *O*-demethylation via CYP2D6 to form the active metabolite, morphine.⁹ Only 10% of codeine is converted to morphine and will have an analgesic effect.⁸ Ninety percent of codeine is converted to analgesically inactive metabolites; however these metabolites will act as an antitussive and cause side effects such as nausea and constipation. These side effects are often dose limiting. Analgesic effect is reduced in patients who are poor metabolizers or taking CYP2D6 inhibitors.^{8,9} It is estimated that 6-10% of Caucasians, 2% Asians, and 1% of Middle Easterners are poor metabolizers.⁸ The use of codeine also possesses the threat of respiratory depression and opioid intoxication in those patients who carry genetic duplication of CYP2D6.⁹

Typical codeine doses used for pain are between 30-90 mg. Studies have demonstrated that hydrocodone 10 mg is equipotent to codeine 60 mg and oxycodone 10 mg is equipotent to 100 mg codeine.¹⁰ Results from a double blind evaluation of postoperative dental pain demonstrated that single-dose hydrocodone/APAP (7.5 mg/300 mg) was superior to single-dose codeine/APAP (30 mg/300 mg) at achieving both total pain relief and 50% relief; however these may not represent equianalgesic doses for true comparison.¹¹ A study with 121 subjects being treated for chronic pain due to cancer showed no difference in pain relief when comparing those taking codeine/APAP (30 mg/500 mg) and those taking hydrocodone/APAP (5 mg/500 mg).¹² There was no statistical difference in side effect profile between the medication therapies.

Tramadol and codeine combination products have similar efficacy when compared to one another.¹³ A 2001 study compared tramadol/APAP (37.5 mg/325 mg)

Hydrocodone Products, cont.



and codeine/APAP (30 mg/300 mg) efficacy in 459 patients for the treatment of lower back pain and osteoarthritis. The authors found no difference between therapies when comparing pain relief, changes in pain intensity, compliance, or mean dosage. Codeine/APAP was associated with more constipation (21% vs 11%, $p < 0.01$) and somnolence (24% vs 17%, $p = 0.05$).

Many non-pharmacologic treatments exist (thermotherapy, cryotherapy, ultrasound, diathermy, laser, magnet therapy) but are not strongly supported in clinical trials.⁵ Both codeine and tramadol combination products serve as therapeutic alternative to HCPs. The ability to prescribe these products with refills may increase their use and practitioners may also see increasing use of adjunctive medications.

References

1. Centers for Disease Control and Prevention 2014. Opioid Painkiller Prescribing. Accessed at: <http://www.cdc.gov/vitalsigns/opioid-prescribing/index.html>.
2. US Food and Drug Administration 2014. Federal Register Announcement: Federal Register/Vol. 79, No. 1653/Friday, August 22, 2014/Rule and Regulations/pp. 49661-49682."
3. Reiss BS, Hall GD. Guide to Federal Pharmacy Law 8th edition. Apothecary Press, 2013.
4. Blondell RD, Azadfard M, Wisniewski AM. Pharmacologic therapy for acute pain. *Am Fam Physician*. 2013;87(11):766-772.
5. Uhl RL, Roberts TT, Papaliouds DN, Muligan MT, Dubin AH. Management of chronic musculoskeletal pain. *J Am Acad Orthop Surg*. 2014;22:101-110.
6. Dhillon S. Tramadol/Paracetamol fixed-dose combination. *Clin Drug Investig*. 2010;30(10):711-738.
7. Hewitt DJ, Todd KH, Xiang J, Jordan DM, Rosenthal NR. Tramadol/Acetaminophen or Hydrocodone/Acetaminophen for the treatment of ankle sprain: A randomized, placebo-controlled trial. *Ann Emerg Med*. 2007;49:468-480.
8. Vallejo R, Barkin RL, Wang VC. Pharmacology of opioids in the treatment of chronic pain syndromes. *Pain Physician*. 2011;14:E343-360.
9. Kleine-Brueggene M, Musshoff F, Stuber F, Stamer UM. Pharmacogenetics in palliative care. *Forensic Science International*. 2010;203:63-70.
10. Phero JC, Becker D. Rational use of analgesic combinations. *Dent Clin N Am*. 2002;46:691-705.
11. Forbes JA, Bates JA, Edquist IA, Burchfield WH, Smith FG. Evaluation of two opioid-acetaminophen combinations and placebo in postoperative oral surgery pain. *Pharmacotherapy*. 1994;14(2):139-146.
12. Rodriguez RF, Castillo JM, Castillo MP et al. Codeine/Acetaminophen and Hydrocodone/Acetaminophen Combination Tablets for the Management of Chronic Cancer Pain in Adults: A 23-Day, Prospective, Double-Blind, Randomized, Parallel-Group Study. *Clin Ther*. 2007;29(4):581.
13. Mullican WS, Lacy JR. Tramadol/Acetaminophen combination tablets and codeine/acetaminophen combination capsules for the management of chronic pain: A comparative trial. *Clin Ther*. 2001;23(9):1429.



Your PRN Officers

Outgoing, 2013-2014

Rolee Das, Chair

Jacky Olin, Chair-Elect

Diane Rhee, Secretary/Treasurer

Incoming, 2014-2015

Jacky Olin, Chair

Sarah Anderson, Chair-Elect

Kurt Wargo, Secretary/Treasurer

Member Accomplishments



Congratulations to all of our members on your great accomplishments. Keep them coming!

- ◆ Jennifer H. Austin, Pharm.D., BCPS; Clinical Pharmacist Specialist, Internal Medicine, PGY-2 Internal Medicine Residency Program Director, University of Chicago Medicine
 - * 2014 recipient of the Adult Medicine PRN Practitioner Registration Award
- ◆ Melissa Butler, Pharm.D., MPH, PhD, BCPS, Head of Population Health, The Argus Group
 - * Schmittziel JA, Raebel MA, Dyer W, Xu S, Goodrich GK, Schroeder EB, Segal JB, O'Connor PJ, Nichols GA, Lawrence JM, Kirchner HL, Karter AJ, Lafata JE, **Butler MG**, Steiner JF. Prescription medication burden in patients with newly diagnosed diabetes: A SURveillance, PREvention, and ManagEment of Diabetes Mellitus (SUPREME-DM) Study. *J Am Pharm Assoc.* 2014 May 23:e251-e259 [Epub ahead of print]
 - * Raebel MA, Ellis JL, Schroeder EB, Xu S, O'Connor PJ, Segal JB, **Butler MG**, Schmittziel JA, Kirchner HL, Goodrich GK, Lawrence JM, Steiner JF. Intensification of antihyperglycemic therapy among patients with incident diabetes: A SURveillance PREvention and ManagEment of Diabetes Mellitus (SUPREME-DM) Study. *Pharmacoepidemiol Drug Saf.* 2014 Jul;23(7):699-710.
 - * Schmittziel JA, Dyer W, Uratsu C, Magid D, O'Conner PJ, Beck A, **Butler MG**, Ho M, Vasquez-Benitz G, Adams AS. Initial persistence with antihypertensive therapies is associated with depression treatment persistence, but not depression. *J Clin Hypertens.* 2014 Jun;16(6):412-417.
 - * Xu S, Schroeder EB, Shetterly S, Goodrich GK, O'Connor PJ, Steiner JF, Schmittziel JA, Desai J, Pathak RD, Neugebauer R, **Butler MG**, Kirchner L, Raebel MA. Accuracy of hemoglobin A1c imputation using fasting plasma glucose in diabetes research using electronic health records data. *Stat Optim Inf Comput.* 2014;2(2):93-104.
 - * Murphy MV, Du D, Hua W, **Butler MG**, Davis RL, Johnson L, Nakasato C, Nordin JD, Ramesh M, Schum M, von Worley A, Zinderman C, Platt R, Klompas M. The utility of claims data for anterior cruciate ligament infection surveillance. *Infect Control Hosp Epidemiol.* 2014;35(6):652-659.
 - * Li L, Vollmer WM, **Butler MG**, Wu P, Kharbanda EO, Wu AC. A comparison of confounding adjustment methods for asthma controller medication effectiveness assessment. *Am J Epidemiol.* 2014;179(5):648-659.
- ◆ Kelly Holcomb, Pharm.D., Clinical Pharmacy Specialist - Internal Medicine, Florida Hospital Orlando
 - * Invited to present an oral presentation of abstract entitled "Survey of Antibiotic Utilization for Treatment of *Mycobacterium abscessus* Infection Amongst Cystic Fibrosis Accredited Care Centers" at the 2014 North American CF Conference held this October in Atlanta.
- ◆ Joel C. Marrs, Pharm.D., FNLA, BCPS (AQ Cardiology), BCACP, CLS; Associate Professor, Skaggs School of Pharmacy and Pharmaceutical Sciences, Department of Clinical Pharmacy, University of Colorado Anschutz Medical Campus
 - * Promoted to Associate Professor at the University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences
 - * New ACCP Fellow

Member Accomplishments, cont.



- ◆ Amy Pennington Myers, Pharm.D., BCPS; Internal Medicine Clinical Pharmacist, Vanderbilt University Medical Center
 - * Mixon AS, **Myers AP**, Leak CL, Jacobsen JM, Cawthon C, Goggins KM, Nwosu S, Schildcrout JS, Schnelle JF, Speroff T, Kripalani S. Characteristics associated with post-discharge medication errors. *Mayo Clinic Proceedings*. 2014;89(8):1042–1051.
- ◆ Beth H. Resman-Targoff, Pharm.D., FCCP Clinical Professor, University of Oklahoma College of Pharmacy
 - * Gave a talk on March 28: "Individualizing Rheumatoid Arthritis Therapy", American Pharmacists Association Annual Meeting and Exposition, Orlando, FL. It was one of 11 sessions selected by APhA for videotaping for use as a home study offering.
- ◆ Diane Rhee, Pharm.D.; Associate Professor of Pharmacy Practice, Roseman University of Health Sciences
 - * Invited to present a talk titled "Inhaled Antibiotics in the Non-Cystic Fibrosis Adult Population – How Should We Use Them?" at the 2014 California Society of Health-System Pharmacists Seminar meeting held this October in San Francisco
- ◆ Elizabeth Sebranek-Evans, Pharm.D., BCPS, CGP; Associate Professor of Pharmacy Practice, Roseman University of Health Sciences
 - * Invited to present two talks: "Lytes Done Right: Safe Use of Fluids and Electrolytes" and "PK, PD, and FAQ: Effects of Bariatric Surgery on Nutrient and Drug Disposition" at the 2014 California Society of Health-System Pharmacists Seminar meeting held this October in San Francisco
- ◆ Sharon See, Pharm.D., BCPS Associate Clinical Professor, St. John's University College of Pharmacy and Health Sciences Clinical Faculty, Beth Israel Residency in Urban Family Medicine
 - * **See S**, Conry J. Flip My Class! A faculty development demonstration of a flipped classroom. *Currents in Pharmacy Teaching and Learning*. 2014;6:585-588.
 - * Named the 2015 Chair of the BPS Specialty Council on Pharmacotherapy
- ◆ Grant E. Sklar, Pharm.D., BCPS Associate Professor, Department of Pharmacy, National University of Singapore Senior Principal Clinical Pharmacist (General Medicine), Department of Pharmacy, National University Hospital
 - * Promoted to Senior Principal Clinical Pharmacist, Department of Pharmacy, National University Hospital, Singapore. Previously was Principal Clinical Pharmacist
- ◆ Diana Sobieraj, Pharm.D.; Assistant Professor, University of Connecticut School of Pharmacy
 - * Hagstrom K, Nailor M, Lindberg M, Hobbs L, **Sobieraj DM**. Association of potentially inappropriate medication use in the elderly and hospital-related outcomes. *J Am Geriatr Soc*. 2014 [in press].
 - * Kang N, **Sobieraj DM**. Indirect treatment comparison of new oral anticoagulants for the treatment of venous thromboembolism. *Thromb Res*. 2014;133:1145-1151.
 - * Kohn CG, Coleman CI, White CM, Sidovar MF, **Sobieraj DM**. Mobility, walking and physical activity in persons with multiple sclerosis. *Curr Med Res Opin*. 2014 [e-pub ahead of print].



Walk Rounds Committee and Adult Medicine PRN Discuss Research with Members

Catherine Lewis, Pharm.D., CACP, BCPS

The Adult Medicine PRN Walk Rounds Committee along with PRN member volunteers identified and rounded on each PRN member poster during the Annual Meeting. There were a total of 109 member posters at this year's meeting. The team talked to PRN members as well as residents and students about their research, shared ideas, and networked. During this time, posters were also reviewed on originality, methods, results and presentation and a Top 5 Adult Med PRN poster list was compiled. Thanks to all of our members for continuing to share their initiatives and to all of our Walk Rounds volunteers.

1. **Sarah Petite, Pharm.D.**, Jodie Fink, Pharm.D., BCPS, Jennifer Sekeres, Pharm.D., BCPS (AQ-ID); Department of Pharmacy, Cleveland Clinic, Cleveland, OH. *Evaluation of the cytomegalovirus prophylaxis regimen in high- and moderate-risk heart transplant recipients at Cleveland Clinic.*
2. Sarah Vest, PharmD, Diana Wells, PharmD, BCPS, **Amber Hutchison, PharmD, BCPS**, Christine Cicci, PharmD, BCPS, **Jennie Swearngen, PharmD, BCPS**; (1)East Alabama Medical Center, Opelika, AL; (2)Harrison School of Pharmacy, Auburn University, Auburn, AL. *Incidence of enteral nutrition intolerance in critically ill patients receiving vasopressor therapy.*
3. Erin McCreary, Pharm.D. Candidate, **Kurt Wargo, PharmD**; (1)Auburn University Harrison School of Pharmacy, AL; (2)Auburn University Harrison School of Pharmacy, AL. *Vancomycin combined with clindamycin for the treatment of acute bacterial skin and skin structure infections.*
4. Yee Ming Lee, Pharm.D., Katarzyna Drozda, Pharm.D., Jinger Hoop, MD, Julio D. Duarte, Pharm.D., Ph.D, **Edith A. Nutescu, Pharm.D**, MS, Larisa Cavallari, Pharm.D.; (1)University of Illinois at Chicago, College of Pharmacy, Chicago, IL; (2)Department of Psychiatry, University of Illinois at Chicago, Chicago, IL; (3)Department of Pharmacotherapy and Translational Research, University of Florida, FL. *Barriers to implementing pharmacogenetic testing in an urban population.*
5. **Jennie Broders, PharmD, BCPS**, Priscilla Ko, PharmD, Frank D'Amico, PhD3; (1)UPMC St. Margaret Family Medicine Residency Program, UPMC St. Margaret, Pittsburgh, PA; (2)UPMC St. Margaret, Pittsburgh, PA; (3)UPMC St. Margaret. *UPMC St. Margaret COPD Free Medication Program: Impact on 30-Day Readmission Rate and Pharmacoeconomic Utility.*

Thanks to all of our members for continuing to share their initiatives and to all of our Walk Rounds volunteers. We look forward to seeing you next year in San Francisco!

CONGRATULATIONS TO OUR NEW ACCP FELLOWS!!

Craig D. Cox
Joel C. Marrs
Rocsanna Namdar
Jacqueline L. Olin
Jessica A. Starr
Sheila M. Wilhelm



2013-2014 Newsletter Committee

Diane Rhee (Chair)
Amanda Wojtusik
Amber Hutchinson
Angela Shogbon
Beth Resman-Targoff
Bradley Wagner
Corrie Low
David Lourwood
Erin Hennessey
Hope Campbell
Lydia Newson
Mickala Thompson
Ryan Dull
Scott Wilkie
Shawna King
Suzanne Wortman
Wendy Gabriel

*Thank you to all our
members who
contributed to the Fall
Newsletter!!*