

UNIVERSITY OF PITTSBURGH  
SCHOOL OF PHARMACY



**RESIDENT RESEARCH**  
**2003-2004**

The University of Pittsburgh School of Pharmacy values our partnerships with Eckerd Health Services, the University of Pittsburgh Medical Center, and the VA Healthcare System. It is through these partnerships that the Residency program has grown in national reputation.

Eckerd Health Services (EHS), one of the nation's largest pharmacy chain-based prescription benefit management firms, offers an opportunity to practice in a dynamic PBM environment and gain a clinical and administrative perspective in managing pharmacy benefit plans for a wide variety of clients.

University of Pittsburgh Medical Center (UPMC) is ranked among the top sixteen of the "America's Best Hospitals" according to the 2001 US News and World Report rankings and is one of the leading integrated health care delivery systems in western Pennsylvania.

The VA Pittsburgh Healthcare System (VAMC) has a 128 bed tertiary care facility that serves as the referral center for other VA hospitals in Pennsylvania and West Virginia, and provides a wide range of inpatient and outpatient services.

# MESSAGE FROM THE DEAN

PATRICIA D. KROBOTH, PHD

Dear Members of the Resident Class of 2004,

I extend my sincere congratulations to each of you. As individuals, you have distinguished yourselves among pharmacy practitioners by choosing residency training. Further, you have placed yourselves among an elite few who have completed a school of pharmacy-based residency program. You have learned not only the basics of practice, but elements of teaching and research that have prepared you for your careers. You have had the best of two worlds because the school's partners -- UPMC, The VA Healthcare System, and Eckerd -- have provided the environments that have enriched your residency experiences and learning.

You are distinguished for other reasons. As the school's 14th class of residents, you are our largest class to date with the greatest geographic diversity: your class of 14 residents entered our program from 6 states and 10 schools of pharmacy.

Finally, you have another distinction, the impact of which you have not yet begun to realize. Your commitment to those evening research sessions was an investment that I believe will eventually bring you distinction. During your career, you will be faced routinely with clinically important questions. You have the foundation upon which to build answers --- and to become tomorrow's leaders.

Each of you has just become an alumnus of our school of pharmacy and forever a part of our community. Congratulations, good luck , and keep in touch!

## SCHOOL MISSION AND VISION

The School of Pharmacy is dedicated to maximizing human health and well-being by preparing pharmacists to be life-long learners, by providing pharmaceutical care, by developing innovative practice models, and by advancing science through cutting-edge research.

The School of Pharmacy is committed to achieving and maintaining national recognition for excellence in education, in research, and in promoting the safe, effective and science-based use of medicines and other interventions to mitigate disease and enhance the vitality and quality of human life.

# RESEARCH AND THE PHARMACY RESIDENCY PROGRAM

DENNIS SWANSON, MS

ROBERT J. WEBER, MS, FASHP

This publication describes the results of the Pharmacy Practice and Specialty Residents' research for 2003-2004. Importantly, their work represents countless hours of commitment to learning, reading, writing and analyzing their research. The School of Pharmacy resident research program consists of a comprehensive course that combines didactic and group learning to teach the fundamentals of research. During this series, the residents were certified in research fundamentals through the University of Pittsburgh, developed skills in clarifying their research idea, presented their ideas and methods as a group learning process, presented their project in abstract form at various professional meetings, and prepared their project for peer-review publication.

We would like to take this opportunity to publicly recognize Dr. Randy Smith for his commitment to this year's Residency research program. He showed patience and respect for the residents, and was always there to lend a helping hand. We would be remiss not to mention the fine secretarial support of Cheri Hill and Kathleen Woodburn. The data management skills and effort of Melissa Saul were invaluable and we thank her for her efforts. Finally, we have the best residents because we have the best faculty, and I would like to thank them for their ongoing commitment to the success of the residency program.

## 2003-2004 RESIDENTS

Stefanie Conley	Oncology, UPMC Presbyterian Shadyside
Shelby Corman	Drug Information, UPMC Presbyterian Shadyside
Brianne Fairchild	Pharmacy Practice, VA Pittsburgh Healthcare System
Erika Felix-Getzik	Cardiology, UPMC Presbyterian Shadyside
Jonathan Ference	Family Practice, UPMC St. Margaret's
Ashley Jenkins	Pharmacy Practice, VA Pittsburgh Healthcare System
Paul Juang	Pharmacy Practice, UPMC Presbyterian Shadyside
Michael Korczynski	Pharmacy Practice, VA Pittsburgh Healthcare System
Julie Legal	Pharmacy Benefits Management, EHS
Ditina Raval	Pharmacy Practice, UPMC Presbyterian Shadyside
Christina Schober	Primary Care, UPMC Presbyterian Shadyside
Brian Watson	Critical Care, UPMC Presbyterian Shadyside
Beth Wise	Oncology, UPMC Presbyterian Shadyside
Kristin Zerumsky	Pharmacy Practice, UPMC Presbyterian Shadyside



**STEFANIE L. CONLEY, PHARM D**  
ONCOLOGY RESIDENT  
UPMC PRESBYTERIAN SHADYSIDE

Stefanie received her BS in Pharmacy from Purdue University in West Lafayette, Indiana in 1994. After five years as a hospital pharmacist in Bloomington, Indiana, she returned to Purdue University to pursue the Doctor of Pharmacy degree, which she completed in 2000. Prior to beginning her residency with UPMC, Dr. Conley was a Clinical Coordinator with Tallahassee Memorial Hospital in Florida. She is a member of the American Society of Health-System Pharmacists and the Pennsylvania Society of Health-System Pharmacists. Her primary interest is in the area of oncology pharmacy and after completion of this residency, she hopes to become board certified in this field and will be pursuing a clinical pharmacist resident position in oncology.

FACULTY MENTOR: ROWENA SCHWARTZ, PHARM D

## Short-term Corticosteroid Therapy (STCST) In The Patient With Cancer: Impact On Blood Glucose

Conley SL, Schwartz RN; University of Pittsburgh Medical Center and University of Pittsburgh School of Pharmacy, Pittsburgh, Pennsylvania

**CLINICAL RELEVANCE:** Corticosteroids (CS) are used in the prevention/management of chemotherapy-induced nausea/vomiting and as anticancer agents. The objective of this study was to determine the effect of STCST on blood glucose (BG) in patients with cancer and to evaluate if patients required more than once daily BG monitoring during STCST.

**METHODS:** A retrospective review of 100 patients who received CS (>1 and ≤7 days) as anti-emetic/anticancer agents was performed. Patients were included if they had a BG prior to STCST and at least one during therapy. Patients were excluded: steroid therapy >7 days, documented infection, hypoglycemic agents, diagnosis of diabetes mellitus, or planned stem cell transplant. Data collected: age, gender, height/weight, CS regimen, number of BG during therapy, glucoses, insulin use, cultures obtained, and medications. Steroid regimens were converted to dexamethasone dose equivalence for comparison. Statistical significance was determined using the chi-square test of association.

**RESULTS:** To obtain the predetermined 100 charts eligible for evaluation, 150 patient charts were reviewed. Of the 100 patients 31(31%) were ≥65 years and 69(69%) were <65 years. Forty-seven percent had a body mass index (BMI) ≥27kg/m<sup>2</sup> and 53(53%) had a BMI<27kg/m<sup>2</sup>. CS were used as anti-emetics in 68(68%) patients, and 32(32%) as a treatment. Dexamethasone ≤10mg daily was administered to 63(63%) patients and 37(37%) patients received dexamethasone >10mg daily. Sixty-one patients had a 24-hour continuous infusion (CI) of dextrose. Thirteen patients (13%) received insulin for elevated BG. All patients had a BG prior to initiation of therapy. The majority of patients (60%) had a daily BG. Twenty-eight (28%) had >1 BG daily, and 12% of the patients did not have a daily BG. The majority of patients (72%) did not have a BG≥200mg/dL. Twenty-eight patients (28%) had at least one BG≥200mg/dL. Ten (33%) patients ≥65 years had a BG≥200mg/dL compared to 18(26%) patients <65 years (p=NS). Fourteen (30%) patients with a BMI≥27kg/m<sup>2</sup> had a BG≥200mg/dL while 14(26%) patients with a BMI<27kg/m<sup>2</sup> had a BG<200mg/dL (p=NS). Of the 61 patients with a 24-hour CI of dextrose, 22(36%) had a BG≥200mg/dL compared to 6(15%) who were not receiving a CI of dextrose (p<0.05). When evaluating patients receiving different CS equivalent dosing regimens, 12(19%) patients receiving dexamethasone equivalence of ≤10mg daily had a BG≥200mg/dL compared to 16(43%) patients receiving dexamethasone >10mg daily (p<0.05).

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** Two risk factors were associated with a statistically significant increased risk for hyperglycemia: dexamethasone dose equivalent therapy of >10mg daily and CI of dextrose. Patients with either of these risk factors should have daily BG monitoring. There does not appear to be excessive BG monitoring in patients receiving STCST with cancer.



**SHELBY L. CORMAN, PHARM D**  
DRUG INFORMATION RESIDENT  
UPMC PRESBYTERIAN SHADYSIDE

Shelby received her PharmD degree, Summa cum Laude, from the University of Pittsburgh School of Pharmacy in 2002. Following graduation, she pursued an advanced degree for one year before accepting a specialty residency in Drug Information. Dr. Corman's practice interests are in off-label use of medications, literature evaluation, and scientific writing. Her research interests include clinical outcomes and study design. As a reflection of these interests, her residency has included elective rotations in clinical research and publishing. After finishing her residency, Dr. Corman hopes to work in scientific writing or pharmaceutical research.

FACULTY MENTOR: KIM COLEY, PHARM D



## **Effect Of Long-term Tacrolimus Immunosuppression On Renal Function In Liver Transplant Recipients**

Corman SL, Coley KC, Schonder KE; University of Pittsburgh Medical Center and University of Pittsburgh School of Pharmacy, Pittsburgh, Pennsylvania

**CLINICAL RELEVANCE:** Up to 40% of liver transplant patients receiving immunosuppressive therapy with tacrolimus develop acute nephrotoxicity due to the agent's propensity to reduce renal blood flow and renal tubular function. While tacrolimus-associated acute renal failure has been well-described, the effect of prolonged administration of tacrolimus on renal function has not been characterized in the liver transplant population. This study is being performed to evaluate the prevalence of chronic kidney disease in patients on long-term tacrolimus immunosuppression following liver transplant. In addition, data collected will be used to identify factors which may predispose patients to renal failure.

**METHODS:** This is a retrospective medical records review which includes patients who received first liver transplants between January 1, 1996 and December 31, 2000 and who have taken tacrolimus for at least three years. Patients must have received the transplant at age 18 or older and have no subsequent transplants. Those being treated with dialysis at the time of transplant or receiving multiorgan transplants were excluded. The primary outcome variable is renal failure, defined as glomerular filtration rate (GFR), using the Modification of Diet in Renal Disease equation, of less than 60 ml/min/1.73 m<sup>2</sup>. Other outcome variables include: patient demographics, presence of diabetes or hypertension, alanine aminotransferase, aspartate aminotransferase, and tacrolimus levels. Descriptive statistics will be used to determine the prevalence of renal failure after various durations of treatment. A Cox hazards model will be used to identify significant predictors of renal failure.

**RESULTS:** No results are reportable at this time, as data collection is in progress.

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** The implications of the findings of this research will be determined after complete analysis of data collected.



**BRIANNE R. FAIRCHILD, PHARM D**  
PHARMACY PRACTICE RESIDENT  
VA PITTSBURGH HEALTHCARE SYSTEM

Brianne grew up in a small, beautiful town in West Virginia of about 3,500 people known as Summersville. Her hometown is located just 45 miles north of Beckley on US route 19 and is also known as the “speed trap” of West Virginia. She graduated from West Virginia University in May 2003 with a Doctor of Pharmacy degree and she is currently residing in Washington, PA with her husband.

Dr. Fairchild was attracted to the VA Healthcare System for her pharmacy practice residency because of its focus on ambulatory care and her interest in geriatrics and diabetes. The VA provides opportunities to further explore these specialty areas that she was exposed to during her clinical clerkships. Also, she feels that it is a privilege and honor to serve the veterans of this country during this time of national tension. Dr. Fairchild will be moving to North Carolina after graduation and will pursue a clinical position in pharmacy.

FACULTY MENTOR: REBECCA ROMAN, PHARM D

## **Development Of Diabetes And Lipid Abnormalities Among Veterans Affairs Patients Treated With Antipsychotics**

Fairchild B, Roman R, Aspinall S, Conigliaro J; Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, Pennsylvania

**CLINICAL RELEVANCE:** An association between atypical antipsychotics and diabetes has been suggested by the results of previous studies. Most did not consider other risk factors for diabetes such as obesity, family history, and co-morbidities. In addition, recent studies have not examined the effect of the atypicals on triglycerides. The objective of this study is to compare the development of diabetes and lipid abnormalities among VAPHS patients treated with atypical (i.e., clozapine, olanzapine, quetiapine, risperidone, ziprasidone) versus typical (i.e., haloperidol, perphenazine, fluphenazine) antipsychotics while adjusting for relevant covariates.

**METHODS:** All adults who had a new outpatient prescription for the antipsychotics under study between January 1, 2001 and December 31, 2002 were eligible for inclusion. Patients with diabetes, defined by the presence of antidiabetic medications prior to antipsychotic medication use, were excluded. Using the electronic medical record and pharmacy database, we collected data on the following covariates: age, sex, race, ethnicity, weight, height, family history, relevant co-morbidities that may have an influence on the metabolism of glucose, measurements of blood glucose and lipids, daily dose of antipsychotic, indication for antipsychotic therapy, glucose increasing medications, and lipid increasing medications. Cox regression will be used to determine whether there is an association between antipsychotic class and the outcomes of interest after controlling for any confounders identified through univariable analyses. The start of an antidiabetic medication within one year of initiating antipsychotic therapy and the start of drug therapy or modification in the current regimen for hypercholesterolemia, within one year of initiating antipsychotic therapy, will be reported as the outcomes.

**RESULTS:** To date, 140 of the 1,696 patients who met inclusion criteria have been reviewed. Development of diabetes and lipid abnormalities occurred in seven (5%) and 14 (10%) patients, respectively, and all were on atypical antipsychotics.

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** Preliminarily, our findings appear to support the results of previous studies. Patients started on atypical antipsychotic therapy should be monitored for the development of diabetes, as well as for the development of lipid abnormalities. A future initiative includes developing VAPHS guidelines for monitoring patients when prescribing atypical antipsychotics.

**PRESENTED:** 23<sup>rd</sup> Annual Eastern States Conference for Pharmacy Residents and Preceptors, Baltimore, Maryland.



## ERIKA FELIX-GETZIK, PHARM.D

CARDIOLOGY RESIDENT  
UPMC PRESBYTERIAN SHADYSIDE

Erika is from Punxsutawney, a very small town located in central Pennsylvania. Her mother, a pediatric nurse, fostered an interest in becoming a health professional. She investigated careers in physical therapy and nursing, but was intrigued by the pharmacy profession. As a pharmacy student, Dr. Felix-Getzik worked as an intern at the Medicine Shoppe Pharmacy in DuBois, PA and at Magee Women's Hospital in Oakland. In 2002, she graduated with a Doctor of Pharmacy degree from the University of Pittsburgh. Upon graduation, she entered into a pharmacy practice residency program at Tufts-New England Medical Center in Boston, MA. She had the opportunity to experience different aspects of pharmacy during her year in Boston. She rotated through Cardiology, Infectious Disease, Ambulatory Care, Administration, GI, SICU, General Medicine and Pediatrics. Along with her pharmacy experience, she was exposed to many different people and cultures, which helped her grow not only as a pharmacist, but also as an individual. During this year at UPMC, Dr. Felix-Getzik further developed her clinical skills, participate in a research project, and had an impact on the education of the students in the pharmacy program at Pitt. Dr. Felix-Getzik has accepted a position as Assistant Professor and Clinical Cardiology Specialist at the Massachusetts College of Pharmacy.

FACULTY MENTOR: AMY SEYBERT, PHARM.D

## **Frequency Of Suboptimal HDL-C Levels In Statin Treated Patients With Unstable Angina At The University Of Pittsburgh Medical Center**

Felix-Getzik E, Seybert A, Edmundowicz D, Kane-Gill S; University of Pittsburgh Medical Center and University of Pittsburgh Schools of Pharmacy & Medicine, Pittsburgh, Pennsylvania

**CLINICAL RELEVANCE:** Epidemiological studies have shown (high-density lipoprotein cholesterol) HDL-C is an independent risk factor for coronary heart disease (CHD), and data currently indicates that a 1% decrease in HDL-C leads to a 2-3% increase in CHD risk. It has been hypothesized that HDL-C may directly act in the atherogenic process, correlate with other atherogenic factors, and/or be a sign of insulin resistance. HDL-C levels  $\geq 60$  mg/dL have been found to be cardioprotective, while HDL-C levels  $< 40$  mg/dL have been found to be atherogenic. The National Cholesterol Education Program (NCEP) has currently set the goal HDL-C level at  $\geq 40$  mg/dL. The purpose of this study is to quantify the proportion of admissions to the University of Pittsburgh Medical Center-Oakland campus (UPMC) with unstable angina (UA) who are being optimally treated with statins for low-density lipoprotein cholesterol (LDL-C), but have sub-optimal HDL-C.

**METHODS:** 1139 patients with UA were identified retrospectively from June 30, 2001 to June 30, 2003 at UPMC. These patients were being optimally treated with statins for LDL-C, but had sub-optimal HDL-C. The hypothesis was that at least 30% of patients on statins admitted with UA will present with an HDL-C  $< 40$  mg/dL and an LDL-C  $< 100$  mg/dL. Patients were identified via the Medical Archival Retrieval System (MARS) of the University of Pittsburgh. Additionally, electronic chart review was performed to verify patient eligibility and to collect data from the history and physical, emergency department evaluation, and discharge summary. Data collected in addition to lipid levels included: patient demographics, co-morbidities, laboratory values, and discharge disposition.

**RESULTS:** Pending

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** Pending



## JONATHAN D. FERENCE, PHARM.D

FAMILY PRACTICE RESIDENT  
UPMC ST. MARGARET

Originally from Lancaster, PA, Jon is a 2003 graduate of the Nesbitt School of Pharmacy at Wilkes University, Wilkes-Barre, PA. Dr. Ference first became interested in ambulatory care and family medicine during his clinical ambulatory care rotation and decided on a residency position at UPMC St. Margaret due to its emphasis on physician-pharmacist collaboration in the areas of family medicine and teaching. Over the course of his residency, Dr. Ference has actively participated in the Faculty Development Fellowship program at UPMC St. Margaret, presented at PSHP and the Society of Teachers of Family Medicine Conferences, published a review article, taught medical students, pharmacy students, and physician residents while conducting his own patient care activities focused on medication management and diabetes education. Dr. Ference has become an integral part of the UPMC St. Margaret team participating in all levels of patient care including the ICU and inpatient teaching services. Dr. Ference will be bringing his enthusiasm for patient care and teaching with him as he embarks on his first faculty position as a Clinical Assistant Professor at the University of Oklahoma-Tulsa, College of Pharmacy.

FACULTY MENTOR: STEVEN WILSON MD

## **Metformin Treatment For Overweight Or Obese Adults: A Meta-analysis**

Ference J, Last A, Levri K, Slaymaker I, Yeh, J, Wilson S, D'Amico F; University of Pittsburgh Medical Center and University of Pittsburgh Schools of Pharmacy & Medicine, Pittsburgh, Pennsylvania.

**CLINICAL RELEVANCE:** Obesity is a major public health concern in the United States. Over 60% of adults are overweight or obese. Obesity was associated with 400,000 deaths in 2002 and is expected to surpass tobacco abuse as the number one actual cause of death by the year 2005. There are many treatment options for overweight and obese adults: behavioral strategies, FDA-approved medications, and bariatric surgery. This study evaluated the effectiveness of metformin at decreasing body mass index (BMI), weight and/or waist-to-hip ratio in overweight or obese adults.

**METHODS:** MEDLINE, EMBASE, AMED, IPA, the Cochrane Library, ACP Journal Club, DARE, CCTR and Pre-Medline were searched electronically using the search terms: metformin or Glucophage or biguanide or diguanide and obese/obese therapy or weight/weight loss or body fat or diet/diet therapy or overweight or fitness. Reference lists were searched and authors contacted for further articles. Predefined inclusion criteria were obese or overweight by BMI  $\geq$  25 or waist-to-hip ratio  $>0.8$ , metformin use and age  $\geq$  18. Exclusion criteria were predefined as: Diabetes, Polycystic Ovary Syndrome (PCOS), Human Immunodeficiency virus (HIV) and concomitant antipsychotic medications. Articles were assessed for quality by multiple authors and scored independently by 2 authors using the Jadad scale. The standardized mean differences in the outcomes were pooled for each study.

**RESULTS:** Fifty-seven potentially relevant studies were initially identified. Forty-seven studies were excluded because they did not meet the inclusion/exclusion criteria. Ten studies were eligible for meta-analysis and data was available for BMI, waist-to-hip ratio and weight, both pre and post-treatment. Results for change in BMI were pooled from four studies with the standardized mean difference  $-0.13$  [ $-1.91, 1.65$  95% CI]. Changes in waist-to-hip-ratio data were pooled from three studies with the standardized mean difference  $-0.73$  [ $-1.88, 0.41$  95% CI]. Change in weight data was pooled from four studies with a standardized mean difference of  $-1.96$  [ $-3.26, -0.66$  95% CI].

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** Based on results from this meta-analysis, metformin is useful for weight loss, but does not significantly affect the BMI or waist-to-hip ratio in otherwise healthy adults. In the face of this data clinicians should be instituting clinically proven weight loss techniques in their patients.

**PRESENTED:** Society of Teachers of Family Medicine Annual Spring Conference, Toronto, California



## ASHLEY R. JENKINS, PHARM D

PHARMACY PRACTICE RESIDENT  
VA PITTSBURGH HEALTHCARE SYSTEM

Ashley is originally from Huntington, West Virginia, located in the south-western section of the state. She thoroughly enjoys camping, hiking and mountain biking. She has recently decided to attempt learning the game of golf, but this might prove to be a major feat. She attended West Virginia University, where she graduated with her PharmD in May 2003. She is currently living in Allison Park with her fiancé, Michael Miller.

Dr. Jenkins decided early to pursue a residency because she wanted to expand on the knowledge she gained at WVU. She discovered the wonderful opportunities of the VA system after having several rotations at the Huntington VA. When she met the representatives of the Pittsburgh VA at the Mid-Year Meeting in Atlanta, she knew that it would be a great match.

During her residency, Dr. Jenkins accomplished many things such as becoming a confident practitioner and gaining relationships that will last throughout her career as a pharmacist. Dr. Jenkins has accepted a Clinical Management Pharmacist position with Eckerd Health Services.

FACULTY MENTOR: LAUREN TRILLI, PHARM D



## **Assessment Of Glucocorticoid-induced Osteoporosis Prevention**

Jenkins, AR, Trilli L, Good CB; VA Pittsburgh Healthcare System and University of Pittsburgh School of Pharmacy, Pittsburgh, Pennsylvania

**CLINICAL RELEVANCE:** Glucocorticoid steroids are one of the most common offenders of drug-related OP and the American College of Rheumatology (ACR) has developed recommendations for the prevention of glucocorticoid-induced osteoporosis (GIOP). This study was performed to determine if patients receiving long-term glucocorticoids within the VA Pittsburgh Healthcare System (VAPHS) are getting appropriate osteoporosis prophylaxis.

**METHODS:** Using the electronic medical records, we retrospectively collected data on patients who received a prescription equivalent to at least 5mg/day of prednisone, for  $\geq 90$  days between July 1, 2003 and October 30, 2003. The medication profiles of the patients were reviewed for concurrent prescriptions of calcium, vitamin D, and alendronate/risedronate. Records were also reviewed to determine if a bone mineral density (BMD) result has been documented. Overall results were analyzed based on appropriate osteoporosis prophylaxis and type of medical service providing the patients' care. Appropriate GIOP prophylaxis was defined as treatment with calcium, vitamin D with or without a bisphosphonate based on BMD records. Therapy was also deemed appropriate if the patient was receiving all three therapies without documentation of a BMD. Inappropriate therapy was defined as patients that received monotherapy with calcium, vitamin D or a bisphosphonate, or if BMD records were indicative of osteoporosis/osteopenia and the patient was not treated with a bisphosphonate.

**RESULTS:** 200 consecutive patient charts were reviewed. Only 64 (32%) patients have documentation of a BMD result. Appropriate GIOP prophylaxis, as defined above, was found in only 44 (22%) patients. Of the 156 patients that did not receive appropriate GIOP prophylaxis, an additional 32 (21%) patients were receiving calcium and vitamin D without evaluation of BMD. Also, an additional 18 (11%) of the patients not receiving appropriate prophylaxis were receiving a bisphosphonate without calcium or vitamin D. The current trend is that patients followed by rheumatology are more likely to receive appropriate GIOP prophylaxis. Rheumatology was the primary provider for 50 patients, and 22 (44%) were receiving appropriate prophylaxis. Primary care was responsible for 111 patients, of which only 17 (15%) were receiving GIOP prophylaxis.

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** VAPHS patients receiving long-term steroid treatment are receiving suboptimal GIOP prophylaxis, calcium and vitamin D. Patients seen by rheumatology were more likely to be evaluated for osteoporosis and prescribed the appropriate prophylactic measures. As a result of the study, a computerized clinical reminder will be developed to alert prescribers of the patients GIOP risks and simultaneously allow calcium, vitamin D, a bisphosphonate and/or a DEXA scan to be ordered while ordering the glucocorticoid.

**PRESENTED:** The 23<sup>rd</sup> Annual Eastern States Conference for Pharmacy Residents and Preceptors, Baltimore, Maryland.



**PAUL JUANG, PHARM D**  
PHARMACY PRACTICE RESIDENT  
UPMC PRESBYTERIAN SHADYSIDE

Paul is originally from Brooklyn, NY and received his PharmD from the State University of New York at Buffalo School of Pharmacy and Pharmaceutical Sciences in May 2003. Currently, his interest lies in the field of infectious disease and critical care. He was attracted to UPMC Health System due to its extensive number of opportunities available in the area of critical care and infectious disease. In particular, UPMC is the home of the Antibiotic Management Program by which pharmacists take part in the appropriate use of antibiotics within the hospital. In addition, the extensive amount of time that preceptors spend to aid in his development as a clinician was an attractive feature. In searching for a residency program, DR. Juang was quite interested in gaining experience in teaching. The residency program offers its residents the unique title of clinical instructor whereby residents have the ability to conduct didactic lectures and precept students. Dr. Juang has accepted a Critical Care Specialty Residency position at the University of Colorado Health Sciences Center School of Pharmacy.

FACULTY MENTOR: SUSAN SKLEDAR MPH

## **Clinical Outcomes Of Intravenous Gamma Globulin In Refractory Clostridium Difficile Infection**

Juang P, Skledar S, Branch R, Paterson D, Vergis E; University of Pittsburgh School of Pharmacy and University of Pittsburgh Medical Center, Pittsburgh, PA.

**CLINICAL RELEVANCE:** Refractory Clostridium difficile enterocolitis is a serious opportunistic infection causing morbidity in the form of life-saving colectomy and/or death from overwhelming infection. Intravenous gamma globulin (IVIG) has been suggested to prevent surgery and/or death in patients presenting with this condition. We compared the clinical outcomes of patients treated with IVIG for refractory C. difficile infection to outcomes of refractory patients treated with standard C. difficile therapy.

**METHODS:** Patients with a positive C. difficile toxin titre with refractory disease (as determined by disease severity scoring and continued C. difficile diarrhea) were retrospectively selected from an inpatient archived electronic data repository, encompassing the period of July 1, 2001-July 31, 2003. IVIG-treated patients were identified and matched, using a Propensity Score Analysis, with patients who continued to receive standard therapy resulting in two comparable groups for analysis. Standard therapy included oral metronidazole, intravenous metronidazole, oral vancomycin or vancomycin enema. The number of life-saving colectomies, colectomies with C. difficile-related deaths and/or C. difficile-related death occurring during the hospital stay when the refractory infection was diagnosed were recorded for patients in these two groups. The incidence of these outcomes was compared between the two groups using the McNemar's Test to determine significant differences.

**RESULTS:** Four hundred and six patients were identified with positive C. difficile toxin and refractory disease. Seventy-nine patients who matched the severity score with eighteen patients who received IVIG were matched with sixty-one patients who continued to receive standard therapy. No significant difference was observed in the baseline characteristic between groups. There was no statistical difference in colectomies, C. difficile-related death and colectomies with C. difficile-related deaths ( $P=1.00$ ,  $1.00$ ,  $0.739$ , respectively) between groups. There was also no statistical difference in the length of stay between groups (25.1 days for IVIG group vs. 32.9 days for the standard therapy group,  $P=0.570$ ).

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** No difference was observed with use of IVIG in addition to standard therapy in the outcomes of patients with refractory C. difficile colitis. There was a trend for lower length of stay with the use of IVIG but this result was not significant. Based on the results and the small population of the study, the use of IVIG in refractory C. difficile colitis remains controversial.

**PRESENTED:** The 23<sup>rd</sup> Annual Eastern States Conference for Pharmacy Residents and Preceptors, Baltimore, Maryland



## MICHAEL KORCZYNSKI, PHARM D

PHARMACY PRACTICE RESIDENT  
VA PITTSBURGH HEALTHCARE SYSTEM

Mike graduated in May of 2001 with a PharmD from Duquesne University. Following graduation he was given the unique opportunity to work as a clinical pharmacist with Kaiser Permanente in Falls Church, Virginia. From July of 2001 until June of 2003 he worked as a clinical/staff pharmacist in their pharmacist-run ambulatory care clinics, specifically the Cholesterol Management and Anticoagulation Clinics. While working for Kaiser he developed a strong interest in ambulatory care and decided to pursue a residency to expand his overall knowledge base, and experience the unique ambulatory care opportunities the VA Pittsburgh Healthcare System (VAPHS) had to offer. During his residency at the VAPHS he decided to focus his residency experience on their pharmacy-run Primary Care Clinic and rounding with the internal medicine teams. His research interests as a resident focused on the pharmacologic management of congestive heart failure (CHF).

Dr. Korczynski's specific areas of interests include: diabetes management, management of CHF, cholesterol management, anticoagulation, and hypertension management. Dr. Korczynski is happily married to his wife Megan, a physical therapist, and lives in Pittsburgh's historic Southside. Dr. He has accepted a position as an Internal Medicine Pharmacist with Allegheny General Hospital in Pittsburgh Pennsylvania.

FACULTY MENTOR: MATTHEW KRUSZEWSKI, PHARM D

## **Assesment Of Adherence To Pharmacologic Guidelines For The Management Of Heart Failure Patients In a VA Population**

Korczynski M, Kruszewski M, Crawford M, Good CB, Aspinall S; Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, Pennsylvania.

**CLINICAL RELEVANCE:** Heart Failure (HF) exacerbation is one of the most common admission diagnoses at many hospitals in the United States. Based on evidence from various clinical trials, adherence to clinical guidelines established for the treatment of HF by the American Heart Association (AHA), American College of Cardiology (ACC), and Department of Veteran's Affairs (VA/DOD) is of paramount importance to optimize patient care. Although current VA/DOD clinical guidelines are well established, HF patients often are not treated in accordance with these guidelines. A nationwide VA study published in 2003 showed that only 58% of respondents were very aware of VA/DOD HF guidelines.

**METHODS:** Electronic medical records of 200 patients with a diagnosis of HF or cardiomyopathy at the Veterans Affairs Pittsburgh Healthcare System (VAPHS) from October 1, 2002 and October 1, 2004 were reviewed. Demographic, pharmacotherapeutic, exacerbation, and laboratory data was collected from the electronic medical record. The VA/DoD guideline was used to assess pharmacologic management of HF in these patients. Based on the review of this data patients were classified into one of three categories: optimal pharmacotherapy, sub-optimal pharmacotherapy, and possibly harmful pharmacotherapy. Patients were also evaluated for their eligibility to receive low-dose spironolactone therapy per treatment criteria established within the VA/DoD guideline.

**RESULTS:** One hundred and fifty-seven patients (78.5%) met the criteria for optimal pharmacotherapy, 30 (15%) for sub-optimal pharmacotherapy, and 13 (6.5%) for possibly harmful pharmacotherapy. Of the 113 patients possibly eligible for treatment with low-dose spironolactone therapy, only 21 (19%) received treatment. Patients in the optimal pharmacotherapy group experienced the most exacerbations (88), compared to those in the sub-optimal (6) and possibly harmful categories (7).

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** Most patients at the VAPHS are receiving optimal pharmacotherapy. However, these patients also experienced the most exacerbations. This could be due to many factors; small sample size, poor documentation, more advanced HF in these patients, failure to receive target doses of HF medications, non-compliance with medications and diet, patients with multiple exacerbations, and a majority of the patients reviewed fit into this category. A small number of patients were treated with possibly harmful pharmacotherapy. Only 19% of patients possibly eligible for low-dose spironolactone therapy were receiving treatment. This is an area of concern due to the mortality benefit associated with spironolactone use in these patients and the small number of patients that need to be treated to see this benefit.

**PRESENTED:** The 23<sup>rd</sup> Annual Eastern States Conference for Pharmacy Residents and Preceptors, Baltimore, Maryland



## JULIE D. LEGAL, PHARM D

PHARMACY BENEFIT MANAGEMENT RESIDENT  
ECKERD HEALTH SERVICES

Julie is a graduate of the University of Pittsburgh School of Pharmacy, where she received a Doctor of Pharmacy degree in April 2003. During her education, Dr. Legal interned at Giant Eagle Pharmacy, a chain-based retail pharmacy. Dr. Legal's managed care experience began through her involvement in the Academy of Managed Care Pharmacy and continued as she completed a clinical rotation in managed care. Currently, Dr. Legal is a clinical pharmacy resident at Eckerd Health Services (EHS), a chain-based pharmacy benefits management company. Clinical activities that Dr. Legal is responsible for include reviewing prior authorizations and plan design appeal requests as well as assisting in retrospective drug utilization review (DUR). She is also involved in many areas of clinical communication such as developing clinical newsletters for members, maintaining updates on medications that are in the pipeline and that require special distribution, and managing a monthly health information web page on the EHS website. In addition, Sr. Legal participates as a clinical pharmacist in the EHS Patient Care program, a disease state management program aimed towards patients with chronic conditions and on multiple medications. Other responsibilities include teaching at the University of Pittsburgh School of Pharmacy and precepting Doctor of Pharmacy students on rotation at EHS. Upon completion of her residency, Dr. Legal will continue to work at EHS as a clinical management pharmacist. In her new position, she will be supporting Clinical Services' daily operations in the areas of prior authorization, disease management, drug utilization review (DUR) and specialty pharmacy. Dr. Legal will participate in the development of clinical initiatives that support clients needs and will also use her clinical knowledge and experience to support various EHS departments.

FACULTY MENTOR: SINA CARLSON, PHARM D

## **Analysis Of Outpatient Prescribing Patterns Of Tegaserod (Zelnorm®)**

Legal JD, Carlson SS, Peng CC, Good CB, Glassman PA; EHS, Pittsburgh, Pennsylvania

**CLINICAL RELEVANCE:** It is estimated by the American Medical Association (AMA) that 40% of prescriptions are issued for unlabeled use. Tegaserod is a 5-HT<sub>4</sub> agonist that was approved in July 2002 for the short-term treatment of constipation-predominant irritable bowel syndrome (IBS) in women over the age of 18. Because the rate of unlabeled prescribing is relatively high and because the indication for tegaserod is very narrow, tegaserod has a great potential to be used for unlabeled indications. The objective of this retrospective, quality assurance study is to study the outpatient prescribing patterns of tegaserod.

**METHODS:** All initial requests for tegaserod submitted during the one-year study period, from September 1, 2002 to August 31, 2003, were included in this study. Exclusion criteria included: members not able to be identified (n=31), appeals (n=118), and duplicate requests (n=260). Each request was evaluated for patient demographics, specifically sex and age, the indication for use as reported by the prescribing physician, physician specialty, and the date of request. The indications were categorized into four separate categories as (Category 1) FDA Approved indication, (Category 2) Non FDA Approved indication with literature support, (Category 3) Non FDA Approved indication, with suggestive supporting evidence in medical literature and (Category 4) Non-FDA approved indication with no medical literature support.

**RESULTS:** A total of 1841 tegaserod requests were included in this study. Of these requests, 36.4% were for unlabeled indications and 63.6% were prescribed for the FDA approved indication. Among the total requests, 10.7% fit into category 2, 15.7% were in category 3, and 10% were in category 4. The categorization of indications was based on a literature search that revealed 3 randomized, double-blind, controlled clinical trials, 1 open-label trial, 4 review articles, and 3 unpublished articles. The percentage of requests in each category remained consistent throughout the one-year study period. There was a statistically significant difference between the prescribing patterns of GI specialists and non-GI specialists ( $P < 0.001$ ). In general, non-GI specialists had a higher rate of prescribing tegaserod than GI specialists.

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** The rate of unlabeled prescribing of tegaserod is consistent with AMA's estimation. Additionally, approximately 70% of the unlabeled indications found in this study have limited or no supportive evidence (categories 3 and 4). In general, tegaserod is prescribed for unlabeled uses more frequently among non-GI specialists. Finally, the prescribing patterns remained consistent over the one-year study period despite the availability of additional literature and evidence. Currently, EHS covers tegaserod with a prior authorization, with approvals for coverage for the FDA approved indication as well as unlabeled indications with adequate supportive evidence. Based on the results of this study, which demonstrate the high rate of inappropriate prescribing, coverage of tegaserod will remain unchanged at this time.

**PRESENTED:** Academy of Managed Care Pharmacy 16<sup>th</sup> Annual Meeting.



**DITINA DINKER RAVAL, PHARM D**  
PHARMACY PRACTICE RESIDENT  
UPMC PRESBYTERIAN SHADYSIDE

Ditina completed her PharmD at the University of Maryland, School of Pharmacy in May 2003. By the middle of her first year in Pharmacy School, she had decided that she wanted to pursue a career in clinical pharmacy and one of the first steps in attaining that was to consider doing a residency upon completion of school. She became interested in the program at UPMC for a variety of reasons. Dr. Raval really liked the integrated health system setting where she could master a broader clinical skill set and knowledge base for a wide patient population. Since she is also interested in teaching, this residency program was the only one that she felt truly offered the structure and a variety of teaching opportunities that matched her interests. Upon completion of her pharmacy practice residency program at the University of Pittsburgh Medical Center, Dr. Raval will be a Primary Care specialty pharmacy resident at the National Institutes of Health.

FACULTY MENTOR: AMY CALABRESE DONIHI, PHARM D



## **Retrospective Evaluation Of Corticosteroid-related Hyperglycemia In Hospitalized Patients**

Raval DD, Donihi AC, Korytkowski MT, DeVita MA; University of Pittsburgh Medical Center and University of Pittsburgh Schools of Pharmacy & Medicine, Pittsburgh, Pennsylvania

**CLINICAL RELEVANCE:** Hyperglycemia is among the many side effects of corticosteroid therapy. Though hyperglycemia may contribute to complications and prolonged hospitalization, the frequency and management of steroid-related hyperglycemia is poorly documented. This study was performed to determine the incidence of hyperglycemia associated with high dose corticosteroid therapy ( $\geq 40$  mg per day of prednisone) on the Internal Medicine units of a tertiary care medical center and to identify factors that may contribute to corticosteroid-related hyperglycemia.

**METHODS:** All patients having pharmacy charge codes for an oral or parenteral CS considered as “high dose” ( $\geq 40$  mg prednisone equivalent) between June 01, 2003 and June 30, 2003 were identified using the hospital’s financial data repository, Medical Archival Systems, Inc (MARS). Patients were excluded if 1) they received less than two days of high dose CS therapy, or 2) fewer than four blood glucose (BG) assessments were performed following initiation of the high dose CS therapy.

**RESULTS:** Thirty-eight (38) patients met the evaluation criteria, 29 (76%) of whom experienced hyperglycemia (BG  $\geq 200$  mg/dL). Of 453 total blood glucose (BG) measurements obtained, 37% were greater than 200 mg/dL. Patients with multiple episodes of hyperglycemia during steroid therapy were compared with those patients experiencing  $\leq 1$  episode. Demographics and frequency of blood glucose monitoring did not differ statistically between the two groups. On average, patients’ glucose was monitored 1.76 times per day. However, patients experiencing  $>1$  episode of hyperglycemia had longer hospital and medicine floor lengths of stay than their counterparts (19 days and 9.4 days vs. 10 days and 5 days,  $p=0.016$ ,  $p=0.004$ , respectively). Patients experiencing multiple episodes of hyperglycemia received more days of steroids than the other group (7.48 days vs. 3.92 days,  $p = 0.011$ ) and were also more likely to have received steroids prior to admission (48% vs 8%;  $p=0.015$ ).

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** These results indicate that a majority of patients receiving high dose steroids exhibit hyperglycemia and that those with a longer duration of therapy, longer length of stay and a history of recent steroid use, are at a higher risk for developing hyperglycemia.

**PRESENTED:** The 23<sup>rd</sup> Annual Eastern States Conference for Pharmacy Residents and Preceptors, Baltimore, Maryland.



## CHRISTINA SCHOBER, PHARM D

PRIMARY CARE RESIDENT  
UPMC PRESBYTERIAN SHADYSIDE

Christina graduated with her PharmD from the Philadelphia College of Pharmacy (PCP), University of the Sciences in Philadelphia and she attributes her pursuit of a residency to the strong mentorship from some of the faculty at PCP. Last year she completed her pharmacy practice residency here at the UPMC where, through a plethora of varied experiences, she was able to recognize her passion for general medicine and ambulatory care. This prompted her desire for additional training and she has stayed on at UPMC as this year's Primary Care Specialty Resident, which is a new residency program at this institution. Dr. Schober was attracted by the extensive and varied expertise of the faculty, especially the ambulatory care faculty. The UPMC offers many different clinical experiences including transplant, family medicine, underserved populations, and a new diabetic care clinic, to name a few. In addition, a sense of autonomy is created by serving as the primary preceptor for pharmacy students on their clinical rotations as well as through responsibility for didactic lectures within the school of pharmacy. Her research focus this year, evaluated the effectiveness of a new cholesterol medication in the outpatient transplant population with both Michael Shullo, PharmD and Kristine Schonder, PharmD. Dr. Schober has accepted a position as a Clinical Pharmacist at Harbor Hospital in Baltimore, Maryland.

FACULTY MENTOR: MICHAEL SHULLO, PHARM D

## **An Observational Pilot Study Of Ezetimibe's Impact On Tacrolimus Based Immunosuppressed Transplant Recipients**

Schober CE, Shullo MA, Schonder K, Cadaret LM, Shapiro R; University of Pittsburgh Medical Center and University of Pittsburgh Schools of Pharmacy & Medicine, Pittsburgh, Pennsylvania

**CLINICAL RELEVANCE:** Ezetimibe (Zetia®) has not been evaluated for concurrent use with HMG CoA reductase inhibitors in transplant patients receiving tacrolimus, other than unpublished anecdotal experiences. An observational, pilot study is being conducted at our University-affiliated transplant clinics to evaluate the clinical effect of ezetimibe in reducing LDL cholesterol in tacrolimus based immunosuppressed transplant patients. Secondary aims included monitoring adverse events and to assess the potential impact of ezetimibe therapy on pharmacokinetic measures of tacrolimus.

**METHODS:** All transplant patients, 18 years of age or older concurrently taking tacrolimus, ezetimibe, and HMG CoA reductase inhibitor with suboptimal LDL levels, will be prospectively enrolled. Information collected will include: demographical information, all concurrent medication and doses, and labs: AST/ALT, serum creatinine, tacrolimus levels, and lipid panel.

**RESULTS:** To date, four cardiac transplant patients have been enrolled. Lab data is available for two patients concurrently on pravastatin, 40mg and 10mg, eliciting LDL reductions of 47% and 12% respectively, with the 47% reduction meeting LDL goal. The safety and monitoring profiles show one patient had a clinically significant change in SCr, but was not contributable to ezetimibe initiation. Additionally, tacrolimus levels and dosing was not altered in one patient, clinically decreased in another, and remained elevated in a third following an initial dose reduction. Both required additional dose interventions and data is not available in the fourth patient. No other adverse events have been reported.

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** Preliminary data would suggest that ezetimibe's addition to tacrolimus and HMG CoA reductase inhibitor regimens could significantly decrease LDL and lipid panel levels, meeting guideline requirements without increase adverse events. However, additional data is required to determine ezetimibe impact on tacrolimus levels and dosing. Our observations will provide a direct feedback to clinicians about the role of prescribing ezetimibe to treat hyperlipidemia in transplant patients.



**BRIAN D. WATSON, PHARM D**  
CRITICAL CARE RESIDENT  
UPMC PRESBYTERIAN SHADYSIDE

Brian was raised on a ranch outside of Severy, Kansas. He received his Bachelor of Science in Pharmacy from the University of Kansas in May of 1998. After graduation from college, he worked as a staff pharmacist at Walgreen's Drug Stores and accepted a promotion to pharmacy manager. In order to quench his thirst for knowledge and professional growth, he acquired his Doctor of Pharmacy degree and is now in residency training. Dr. Watson chose University of Pittsburgh's Critical Care program because of its solid reputation and the number of critical care opportunities offered by the program. Dr. Watson's professional interests include critical care, cardiology and infectious disease. For his personal interests, he enjoys sports, running, watching movies, and traveling.

Dr. Watson will join Allegheny General Hospital here in Pittsburgh as an ICU Clinical Pharmacist.

FACULTY MENTOR: EMILY CASTELLI, PHARM D

## **Oxandrolone Effects On Serum Prealbumin In Critically Ill Surgical Patients**

Watson BD, Castelli EE, Ochoa JB, Nickleach J; University of Pittsburgh School of Pharmacy and University of Pittsburgh Medical Center, Pittsburgh, PA

**CLINICAL REVELANCE:** Critically ill surgical patients are at risk for hypermetabolism. The primary purpose of this study was to determine the effect of oxandrolone on metabolic status using prealbumin as a measure. Increases in prealbumin are early laboratory indicators of nutritional and metabolic status and correlate with patient outcomes.

**METHODS:** This retrospective study compared the mean prealbumin changes between an oxandrolone treatment group and a no treatment group. Patients on oxandrolone for at least 7 days, admitted to a University of Pittsburgh Medical Center intensive care unit (ICU) between January 2000 and June 2003 and 2 prealbumin levels were identified from an electronic data repository. Patients' history and physical, progress notes and discharge summaries were reviewed to identify surgical and trauma patients. Transplant patients were excluded. Patients were matched to a no treatment group by ICU, age, and length of stay. Average drug dose, duration of therapy and mean change in prealbumin were determined. The primary outcome was increase in prealbumin levels. Statistical analysis was performed with ANCOVA.

**RESULTS:** Fifteen patients met the treatment group criteria. The daily dose (Mean  $\pm$  SD) of oxandrolone was  $7.6 \pm 2.7$  mg. The duration of therapy (Mean  $\pm$  SD) was  $26.4 \pm 13.2$  days. The oxandrolone group experienced an increase in prealbumin (Mean  $\pm$  SD) of  $5.7 \pm 7.1$  mg/dL. However, when compared to the mean change of prealbumin in the no treatment group ( $n = 24$ ,  $7.1 \pm 9.6$  mg/dL), the increase was not significant ( $p = 0.386$ ).

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** These results question oxandrolone use in reversing hypermetabolism in critically ill surgical/trauma patients. A prospective, randomized trial may be needed to make a definitive confirmation.

**PRESENTED:** The 23<sup>rd</sup> Annual Eastern States Conference for Pharmacy Residents and Preceptors, Baltimore, Maryland.



**BETH WISE, PHARM D**  
ONCOLOGY RESIDENT  
UPMC PRESBYTERIAN SHADYSIDE

Beth grew up in Smithfield, PA, a small town about one hour south of Pittsburgh. She received her PharmD from Duquesne University in 2002. She then completed a residency in pharmacy practice at Charleston Area Medical Center, located in Charleston, West Virginia. After completing this residency, Dr. Wise hopes to have developed the skills to become an independent practitioner in oncology pharmacy. She would like to attain a position as a clinical specialist in oncology and an affiliation with a school of pharmacy. In the future, Dr. Wise is interested in exploring academic and research arenas.

Dr. Wise has accepted a position as a Oncology Clinical Pharmacist with Wake Forest University Baptist Hospital in Winston-Salem, North Carolina.

FACULTY MENTOR: ROWENA SCHWARTZ, PHARM D

## **Evaluation Of Nausea And Vomiting Associated With High-dose Aldesleukin Therapy**

Wise BA, Schwartz RN; University of Pittsburgh Medical Center and University of Pittsburgh School of Pharmacy, Pittsburgh, Pennsylvania

**CLINICAL RELEVANCE:** Aldesleukin is a recombinant form of human interleukin-2 that is used in the treatment of metastatic melanoma and renal cell carcinoma. The published incidence of nausea and vomiting in patients receiving high-dose aldesleukin ranges from 16 – 89%. Despite the high rate of nausea and vomiting in these patients, few studies describe this adverse effect. In addition, no clinical guidelines exist that address the management of nausea and vomiting with biologic agents such as aldesleukin. The primary objective of this project was to evaluate nausea and/or vomiting in patients being treated with aldesleukin for metastatic melanoma and renal cell carcinoma. This project will serve as a foundation for future investigations exploring alternative strategies and alternative antiemetics for the prevention and/or management of aldesleukin induced nausea and vomiting (AINV).

**METHODS:** A retrospective chart review of 50 patients was done to determine the frequency of nausea and vomiting in patients receiving the initial cycle of high-dose aldesleukin. All patients received scheduled prochlorperazine during aldesleukin therapy. Breakthrough AINV was managed with oral prochlorperazine and/or intravenous haloperidol. Patients were not permitted to receive corticosteroids for AINV. Data collected include age, sex, diagnosis, number of aldesleukin doses administered, episodes of nausea, episodes of vomiting, and number of rescue antiemetic doses required. Statistical significance was determined using the chi-square test of association.

**RESULTS:** Despite scheduled antiemetics, 82% of the 50 patients receiving high-dose aldesleukin developed nausea or vomiting. AINV occurred in 96% of patients with melanoma and 68% of patients with renal cell carcinoma ( $p < .05$ ). AINV occurred in 87% of male patients and 74% of female patients ( $p = NS$ ). AINV occurred in 87% of patients under the age of 46, 86% of patients between the ages of 46 to 59, and 69% of patients over the age of 59 ( $p = NS$ ). AINV occurred in 94% of patients who received greater than 9 aldesleukin doses, 77% of patients who received 7 – 9 aldesleukin doses, and 73% of patients who received less than 7 aldesleukin doses ( $p = NS$ ).

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** AINV in patients receiving high-dose aldesleukin therapy appears to occur more frequently in patients with melanoma versus renal cell carcinoma, patients who are male, younger patients, and patients who receive more aldesleukin doses. The only statistically significant difference demonstrated for AINV was between melanoma and renal cell carcinoma. Investigation of new strategies and/or classes of antiemetic agents for the prevention and treatment of nausea and vomiting in patients receiving high-dose aldesleukin therapy is warranted.



**KRISTIN ZERUMSKY, PHARM D**  
PHARMACY PRACTICE RESIDENT  
UPMC PRESBYTERIAN SHADYSIDE

Kristin has lived in Philadelphia, PA her entire life up until this past year. From the age of 12, she knew that she wanted to be a pharmacist and planned to attend Philadelphia College of Pharmacy. She graduated from the Philadelphia College of Pharmacy with her PharmD in May 2003. Dr. Zerumsky chose the UPMC residency program for many different reasons. Primarily she was attracted to this residency for its strong reputation of both the pharmacy practice residency program and the institution itself. The association with the University of Pittsburgh School of Pharmacy was another attracting attribute of the program, since she has the desire to one day to attain an adjunct faculty position at a pharmacy school. She also has a strong interest in cardiology and ambulatory care and this program offers great opportunities in each of these aspects. Dr. Zerumsky will be continuing her residency training at UPMC as a Cardiology Specialty Resident.

FACULTY MENTOR: KAREN STEINMETZ, PHARM D



## **Pharmacist Detection Of Potential Peripheral Arterial Disease Using A Hand-held Doppler**

Zerumsky K, Steinmetz K, HandlerS, Rodriguez E; University of Pittsburgh School of Pharmacy and University of Pittsburgh Medical Center, Pittsburgh, PA

**CLINICAL RELEVANCE:** Peripheral arterial disease (PAD) is often unrecognized and may indicate more serious vascular and cardiac disease. Furthermore, assessment of for PAD using vascular Doppler techniques is not routinely done, which has been shown to be 98% sensitive and 99% specific for detecting the disease. The purpose of this study was to evaluate pharmacists' impact on detecting PAD in patients at risk using a hand-held Doppler.

**METHODS:** Patients greater than 55 years old without a documented history of PAD were enrolled after signing informed consent. Pharmacists routinely conducted a survey to assess risk, implemented the San Diego Claudication Survey and performed a Doppler exam to calculate an ABI. An ABI of  $\leq 0.9$  and/or reporting of symptoms are suggestive of possible PAD. Diagnosis was confirmed by a physician. Results of the ABI were documented for all patients; patients with suspected PAD were either referred for further evaluation, initiated on treatment, or had no change in therapy due to current medication regimen.

**RESULTS:** Results report that 34 patients have been screened. PAD was diagnosed in six patients (17.6 %) of these patients, treatment was initiated in two and one was referred to a vascular specialist.

**CONCLUSIONS AND CLINICAL IMPLICATIONS:** A pharmacist initiated program detected PAD in patients who would not have been routinely screened, thus providing an additional tool identify significant health risk factors and provide optimal medication management.

**PRESENTED:** The 23<sup>rd</sup> Annual Eastern States Conference for Pharmacy Residents and Preceptors, Baltimore, Maryland.

UNIVERSITY OF PITTSBURGH  
SCHOOL OF PHARMACY  
DEPARTMENT OF PHARMACY AND THERAPEUTICS  
PHARMACY RESIDENT PROGRAM  
KATHLEEN WOODBURN  
304 SCAIFE HALL  
200 LOTHROP ST.  
PITTSBURGH, PA 15213  
[WWW.PHARMACY.PITT.EDU/PROGRAMS/RXRESIDENCY](http://WWW.PHARMACY.PITT.EDU/PROGRAMS/RXRESIDENCY)  
[WOODBURNKM@UPMC.EDU](mailto:WOODBURNKM@UPMC.EDU)

© University of Pittsburgh, School of Pharmacy, 2004

The University of Pittsburgh is an affirmative action, equal opportunity institution.