Abstract:
Research related to balance and mobility in older adults has been conducted primarily in lab-based settings with individuals who are community-ambulators. Much less information about balance has been collected from residents of Long Term Care (LTC) facilities, even though they are at greater risk of falls than those who live in the community. The aims of this study Determine feasibility of using technology-based measures of mobility in LTC facilities, and Assess relationships between measures of frailty with standing balance.

Methods: 29 subjects independently living in long-term care facilities participated in the study (8M/21F, 87±6 years). An accelerometer placed on the back of the subjects at waist level measured sway in the medial-lateral (ML) directions. Subjects performed a test consisting of 4 different standing conditions designed to alter the sensory feedback by having subjects stand on level and foam surfaces with eyes open and closed for 30s. The root-mean-square (RMS) of sway in ML direction was calculated. To validate the procedures, non-parametric stat were used to test for the effects of test condition. Fried's phenotype of frailty was used to assess frailty.

Results: ML sway increased significantly as the balance conditions became more difficult due to alteration of sensory feedback (p < 0.001),or reducing the base of support (p < 0.001). ML sway during eyes open on foam condition increased significantly between frail and prefrail (p=0.020) , frail and nonfrail (p=0.014). Conclusion:Sway increased as the testing conditions became difficult, providing face validity to the accelerometry measurements in the LTC population, also sway increased with frail people.Significance:Sway measurement may serve as a useful biomarker for future mobility problems.

Submission Category: Candidates for clinical or research doctorates and master's-level students
Abstract:
Study: Studies examining the relationship between muscle variables and bone strength are lacking. The purpose is to explore the relationship between muscle mass, strength, and power, and measures of skeletal size, density, and strength.
Methods: Using data from the Osteoporotic Fractures in Men (MrOS) study, we studied the association between appendicular lean mass (ALM), grip strength and leg power, and peripheral and central quantitative computed tomography parameters (QCT) in 3,245 older men. ALM, grip strength, and leg power were measured by dual-energy X-ray absorptiometry (DXA), jamar dynamometer, and the Nottingham Power Rig respectively. Information on the geometry and strength parameters of the femoral neck and spine was obtained using central QCT. The bone parameters of the radius and tibia were obtained using peripheral QCT. An age and a multivariate model including age, race, site, current height, and BMI were conducted. Data was presented as least squares means. For the multivariate model, percent differences between the lowest and highest quartiles were reported.
Results: ALM was associated with central and pQCT parameters: percent differences ranged between 1.9% and 39.9%. Grip strength was associated with spine, radius, and tibia parameters: percent differences ranged between 2.6% and 24.2%. Leg power was associated with radius and tibia parameters: percent differences ranged between 3.1% an 14.6%.
Conclusions: In older men, ALM, grip strength, and leg power were associated with all the pQCT parameters that were previously related to non-spine fracture. ALM had a stronger association with bone parameters compared to muscle strength and power.
Significance: Diagnosing and preventing sarcopenia may be important in preventing bone deterioration.

Submission Category: Candidates for clinical or research doctorates and master's-level students
Kristen Conn, PharmD Candidate
3457 Ward Street, Pittsburgh, PA 15213
814-688-5072
kmc125@pitt.edu

Department: School of Pharmacy
Affiliation: UPMC Shadyside - Senior Care Institute

Undergraduate: Bachelor of Science in Pharmaceutical Sciences, University of Pittsburgh
Graduate:
Medical School:
PhD:

Current Position: Student

Research Interest Areas: Care Transitions, Health Disparities

Research Support Sources: None

Research Title: Quality Improvement of Transitions of Care Follow-up Process

Project Authors: Kristen Conn, PharmD Candidate; Hetvie Kaashyap, PharmD Candidate; Christine M. Ruby, PharmD, BCPS, FASCP

Abstract:

Purpose
Transition of care (TOC), defined by the National Transitions of Care Coalition, is the movement of patients between healthcare providers or sites. This point can be a dangerous time due to multiple revisions in care. Lack of appropriate follow-up can lead to patient/caregiver confusion about the care plan, adverse drug events, and hospital readmissions. The purpose of this QI project was to collect information to improve the TOC follow-up process at Senior Care.

Methods
This project, approved by the QI subcommittee, was conducted at the UPMC Senior Care Institute (SCI), a collaborative care site comprised of physicians, a pharmacist, nurses, and other healthcare staff. Patients with a primary care physician at SCI discharged from any UPMC hospital to home between December 1 and December 19, 2014 were included. Medical records were reviewed for TOC follow-up and 30-day readmission status.

Results
Of those screened, 13 (11 female/2 male) patients met inclusion criteria. These patients (mean age 83.4 years; range 70-93) were discharged from one of 6 UPMC hospitals, with less than half discharged from UPMC Shadyside (SHY). Of the four TOC calls made, three were discharged from SHY. Patients were prescribed on average 2.54 new medications (range 0-7); with only one of two patients prescribed 7 new medications receiving a call. Patients were on an average of 10.54 scheduled and 2.0 PRN medications, respectively. Four of the 13 had a 30-day readmission to a UPMC hospital.

Conclusions
Identified areas for improvement include better tracking of discharges from UPMC facilities other than SHY and improved rates of calls made to patients prescribed multiple new medications. These results will be discussed with the SCI healthcare team during a monthly QI meeting.

Submission Category: Candidates for clinical or research doctorates and master's-level students
Mini Jacob, MBBS, MD
130 North Bellefield Avenue #556, Pittsburgh, PA 15213
412-996-8778
mej49@pitt.edu

**Department:** Epidemiology/Graduate School of Public Health
**Affiliation:** Department of Epidemiology, Graduate School of Public health, University of Pittsburgh

**Undergraduate:** Christian Medical College, Vellore, India  
**Graduate:** Christian Medical College, Vellore, India  
**Medical School:** Christian Medical College Vellore, India  
**PhD:**

**Current Position:** Graduate Student Researcher

**Research Interest Areas:** Morbidity at the end of life

**Research Support Sources:** CHS All Stars Research grant, PI Anne B.Newman

**Research Title:** Can Late-life Lifestyles influence End-of-life Morbidity

**Project Authors:** Mini E. Jacob, Robert M. Boudreau, Jason L. Sanders, Diane Ives, Alice M. Arnold, Janice C. Zgibor, Mary Ganguli, Steven M. Albert, Anne B. Newman

**Abstract:**

**Background**
While there is strong scientific evidence that a healthy lifestyle among adults can delay the onset of disease and disability, it is not clear whether a late-life lifestyle can continue to impact future morbidity. In this study, we tested whether lifestyle factors among older adults could impact hospital days at the end of life, after accounting for the accumulated chronic disease burden.

**Methods**
We examined data from 3780 participants who died in the Cardiovascular Health Study. Lifestyle factors (alcohol consumption, smoking, body mass index, physical activity in kilocalories, blocks walked per week, exercise intensity, body mass index, diet, social networks) were measured at baseline. Hospital records were extracted to confirm self-reported hospitalizations. Total hospital days in the last five years before death was calculated. Ordinal logistic regression models were used to test the association between lifestyle factors and quintiles of hospital days, adjusting for confounders.

**Results**
Lifestyle factors were strongly associated with hospital days in bi-variate analyses; the effects were attenuated after adjusting for baseline health status. Factors which were independently associated included alcohol consumption (1-6 alcoholic drinks/week - 22% lower odds), current smoking (34% higher odds), obesity (28% higher odds) and a higher social network score (16% higher odds for 0 point increase).

**Conclusions**
Our findings suggest that lifestyle factors late in life, particularly alcohol consumption, smoking, obesity and social networks can influence hospital stay at the end of life, after accounting for the disease burden. Lifestyle interventions like smoking cessation and obesity prevention may reduce end-of-life morbidity.

**Submission Category:** Candidates for clinical or research doctorates and master's-level students
Heejung Jang, MSW  
2117 Cathedral of Learning  
573-424-1858  
HEJ10@pitt.edu

**Department:** School of Social Work  
**Affiliation:** University of Pittsburgh

**Undergraduate:** Ewha Womans University  
**Graduate:** Washington University in St. Louis  
**Medical School:**  
**PhD:**

**Current Position:** Doctoral Student

**Research Interest Areas:** Productive Aging

**Research Support Sources:** none

**Research Title:** What Buffers Unexpected Events? An Examination of Psychological Well-being in Older Adult Volunteers Who Recently Experienced Role Loss

**Project Authors:** Fengyan Tang, PhD

**Abstract:**  
Purpose: This study examined the relationship between role loss and psychological well-being among middle-aged and old-aged volunteers during one academic year. Additionally, we examined if first-time volunteering moderated the relationship between role loss and psychological well-being. We also investigated the extent to which social support, measured by social contact and social isolation moderated the relationship.  
Method: The sample was composed of 354 volunteers aged 50 and over from the Experience Corps® (EC) programs. Analysis of covariance (ANCOVA) was used to estimate the associations of role loss—due to the death of a family member or a friend, volunteer experience, and social support with psychological well-being measured by positive affect and negative affect.  
Results: Among volunteers who experienced death of a close one, new volunteers showed significant changes in positive affect compared to experienced volunteers. Social support was negatively associated with negative affect for volunteers who experienced the death of a family member compared to volunteers who did not experience.  
Conclusions and Significance: Volunteering increases social engagement and may help buffer the negative effects of role loss, especially among new volunteers.

**Submission Category:** Candidates for clinical or research doctorates and master's-level students
Abstract:
Study: Transition of care (TOC), as per The Joint Commission, is the movement of patients from one health care provider or setting to another. Ensuring patient safety during TOC requires accurate capture of the multiple medication changes made. Lack of communication and miscommunication between health care providers and patients have been identified as TOC issues which lead to complications such as medication discrepancies, hospital readmissions, and adverse drug events (ADEs). Often with complex medication regimens, numerous changes are difficult to track and record. Pharmacists and pharmacy students can play an important role in the documentation of these changes and the new medication regimen.

Methods: This project was conducted at the Senior Care Institute, an accredited Patient Centered Medical Home (PCMH) comprised of an interdisciplinary team of physicians, pharmacist, nurse practitioners, and other clinic staff who collaboratively manage the health of geriatric patients. As part of a Quality Improvement project, a medication tracking tool was developed to consistently follow and record medication changes of patients returning to the PCMH providers after hospitalization and/or skilled rehabilitation admissions.

Results: The medication tracking tool was developed and is currently being piloted by the clinical pharmacist and two doctoral level pharmacy students. Minor modifications have been made to improve the tool’s utility.

Conclusions/Significance: The development of the medication tracking tool has led to a more consistent approach for documenting ToC medication changes and identification of discrepancies. This tool will be used by all pharmacy students and residents on rotation at Senior Care and ultimately can be used by all health care providers in our PCMH.
Samannaaz Khoja, PT, MS  
Bridgeside Point 1, 100 Technology Drive, Suite 210, Pittsburgh, PA 15219  
412-383-6868  
ssk21@pitt.edu

**Department:** Physical Therapy, School of Health and Rehabilitation Science  
**Affiliation:** Department of Physical Therapy

**Undergraduate:**  
**Graduate:** University of Pittsburgh  
**Medical School:**  
**PhD:** Ongoing at University of Pittsburgh

**Current Position:** Staff (Health Professional 1)

**Research Interest Areas:** Arthritis, Skeletal Muscle Health, Physical Function and Physical Activity

**Research Support Sources:** K01-HD058035 -NIH

**Research Title:** Skeletal Muscle Fat and its Association with Physical Function and Physical Activity in Adults with Rheumatoid Arthritis

**Project Authors:** Khoja Samannaaz S., Goodpaster Bret H., Piva Sara R.

**Abstract:**
This study investigated the association of skeletal muscle fat with physical function and physical activity in adults with Rheumatoid arthritis (RA). Methods: Cross-sectional, secondary analysis of baseline data from a study in adults with RA. Skeletal muscle fat was obtained from computed tomography imaging of the mid-thigh region, and quantified as the average quadriceps muscle attenuation (MA); higher MA values represent greater muscle density and thus, lower fat content. Physical function was measured by quadriceps maximum isometric strength, single leg stance time, and time taken to rise from a chair rise (five times), ascend one flight of stairs, and walk 4 meters. Physical Activity (PA) was captured with the SenseWear Armband (BodyMedia Inc), and time spent in moderate PA over 7 days was calculated. Associations of MA with physical function and PA were assessed with bivariate correlations, and hierarchical regression models controlling for BMI, quadriceps strength and area. Results: Sample (N = 60) was 82% female, mean age and BMI of 59 ± 10 years and 31.2 ± 7.2 kg/m2, with RA duration of 15 ± 10 years and moderate disease severity (mean DAS-28 score 4 ± 1.3). MA was inversely correlated with stair ascend time, and 4-meter walk; and directly correlated with time spent in PA and single leg stance. After adjusting for BMI, quadriceps strength and area, MA continued to contribute significantly to stair ascend time, single leg stance and PA. Conclusion: Higher skeletal muscle fat predicts lower physical function and PA, even after accounting for body size, muscle strength and area. The mechanism by which skeletal muscle fat affects physical function is not clear, and further investigation of muscle properties in RA beyond its size and torque production is warranted.

**Submission Category:** Candidates for clinical or research doctorates and master's-level students
Samannaaz Khoja, PT, MS
Bridgeside Point 1, 100 Technology Drive, Suite 210, Pittsburgh, PA 15219
412-383-6868
ssk21@pitt.edu

Department: Physical Therapy, School of Health and Rehabilitation Science
Affiliation: Department of Physical Therapy

Undergraduate:
Graduate: University of Pittsburgh
Medical School:
PhD: Ongoing at University of Pittsburgh

Current Position: Staff (Health Professional 1)

Research Interest Areas: Arthritis, Skeletal muscle health, Physical Activity and Physical Function

Research Support Sources: Pepper Center (P30-AG024827), Rehabilitation Institute, University of Pittsburgh, and K01-HD058035 -NIH

Research Title: Physical Activity in Adults with Arthritis and its contribution to Health Outcomes

Project Authors: Khoja, Samannaaz S.; Almeida, Gustavo J.; Wasko, Mary Chester M; Piva, Sara R.

Abstract:
The aim of the study was to characterize daily physical activity (PA) behavior at different intensities in adults with arthritis and explore the relationship between time spent in each intensity and markers of health. Methods: Cross-sectional design. Baseline PA data from 4 studies in arthritis were used: two in end-stage knee osteoarthritis after total knee replacement (TKA) and two in rheumatoid arthritis (RA). PA was measured by the SenseWear Armband (Bodymedia), and was worn for 7 days, 24 hrs/day. PA was characterized as time spent/day in sedentary, light, lifestyle, and moderate intensities, and number of 10-minute bouts in moderate activity/day. Multiple linear regression models (adjusted by gender and cohort) were used to determine the relationship between health markers and each PA intensity. Results: Sample (N: RA=98, TKA=66) consisted of older adults: 63±10 years; 77% female; overweight (median [Q25; Q75] BMI of 29 [25; 33]); with mild to moderate functional limitations. Subjects spent about 16 hours/day being sedentary, 3.3 hrs/day in light PA, and 2 hrs/day in lifestyle PA. Subjects spent about 35min/day in moderate PA, with an average of only three 10-minute bouts/week. Regression analyses showed that sedentary behavior negatively affected health, and was associated with higher insulin resistance, systolic blood pressure and BMI, and lower physical function. In contrast, light, lifestyle and moderate PA were associated with lower insulin resistance, systolic blood pressure and BMI, and higher physical function. Conclusion: Adults with arthritis are sedentary and mostly active within light-to-lifestyle activities. Light-to-lifestyle PA showed favorable associations with health markers which were similar or higher in magnitude when compared to moderate PA.

Submission Category: Candidates for clinical or research doctorates and master's-level students
Study: The mechanisms that underlie the role aging has on an organism’s ability to fight off an infection are unclear. To better understand this, C. elegans was employed as a model system. In this study, proteomics techniques were used to understand age-related response after exposure to Pseudomonas aeruginosa.

Methods: Twenty thousand C. elegans were grown on E. coli (control, OP50) and exposed to P. aeruginosa strain PA01 on Day 1 or Day 5 of adulthood for 18 hours. Protein from two biological cohorts were extracted and digested with trypsin. The resulting peptides were quantified with isobaric tags and analyzed by using strong cation exchange/reverse-phase liquid chromatography–mass spectrometry.

Results: Young and aged control worms had average lifespans of ~18 and ~20 days, respectively. Upon exposure to PA01, the average lifespans decreased to ~9 and ~10 days. Most notably, young worms started to die 3 days after PA01 exposure, whereas aged worms began to immediately die after PA01 exposure. Eight hundred ninety-seven unique proteins were identified. Proteins involved in metabolism, development, responding to stress, and transport were differentially-expressed. Overall results from this work will be presented.

Conclusions: Upon PA01 exposure, young and aged worms began to die at different days; however, after the fifth day of the lifespan study, the rates of death between these age groups were similar. Using bottom-up proteomics techniques, 55 differentially-expressed proteins were detected. To better understand the role of each protein in host-response to pathogen, future studies should be performed.

Significance: This study provides insight into how aging influences C. elegans’ response to the pathogen, Pseudomonas aeruginosa.

**Submission Category:** Candidates for clinical or research doctorates and master's-level students
Brittney Lange-Maia, MPH  
228 38th St.  
412-370-4093  
bsl14@pitt.edu

**Department:** Graduate School of Public Health  
**Affiliation:** Department of Epidemiology

**Undergraduate:** Indiana University Purdue University Indianapolis  
**Graduate:** MPH, University of Pittsburgh  
**Medical School:**  
**PhD:** In Progress, University of Pittsburgh

**Current Position:** PhD Candidate

**Research Interest Areas:** Epidemiology

**Research Support Sources:** Funded by an NIA T-32 Aging Training Grant

**Research Title:** Sensorimotor Peripheral Nerve Functioning and the Longitudinal Relationship with Endurance Walking in the Health, Aging, and Body Composition Study

**Project Authors:** Brittney Lange-Maia, Anne Newman, Jane Cauley, Robert Boudreau, John Jakicic, Nancy Glynn, Tamra Harris, Eleanor Simonsick, Elsa Strotmeyer

**Abstract:**  
Study Purpose: Lower extremity peripheral nerve deficits affect gait speed and lower extremity function. We aimed to determine whether lower extremity peripheral nerve deficits are associated with reduced walking endurance in older adults.  
Methods: Community dwelling older adults enrolled in Health Aging and Body Composition Study underwent peripheral nerve function testing in 2000/01 (n=2393; age 76.5 ± 2.9 years; 48.2% male; 38.2% black). Nerve conduction amplitude and velocity were measured at the peroneal motor nerve. Sensory nerve function was measured using vibration detection threshold and monofilament testing at the big toe. Clinically meaningful cut points were used to define poor nerve function. The long distance corridor walk (LDCW) was administered in 2000/01 and every two years for 6 years to assess endurance walking over time.  
Results: In separate fully adjusted linear mixed models, poor vibration threshold (>130 microns) 10g and 1.4g monofilament insensitivity were each associated with slower LDCW completion time (16.0, 14.1, and 6.7, seconds slower, respectively, p<0.05 for each). Poor motor amplitude (<1mV), poor vibration perception threshold, and 10-g monofilament insensitivity were related to a greater slowing/year (4.7, 4.3, and 4.3 additional seconds/year, respectively, p<0.05), though motor amplitude was not associated with initial completion time.  
Conclusion: Poorer peripheral nerve function is related to slower endurance walking and greater rate of slowing over time. Peripheral nerve dysfunction should be appreciated as a risk factor in the disablement pathway.  
Significance: Strategies to reduce peripheral nerve function impairments may help older adults to maintain walking endurance, an important factor in preserving independence.

**Submission Category:** Candidates for clinical or research doctorates and master's-level students
Rehana Leak, MS, PhD
407 Mellon Hall, Duquesne University, 600 Forbes Ave, Pittsburgh, PA 15282
412-396-4734
leakr@duq.edu

**Department:** Division of Pharmaceutical Sciences, Duquesne University  
**Affiliation:** Adjunct Assistant Professor at the University of Pittsburgh

**Undergraduate:** Barnard College  
**Graduate:** University of Pittsburgh  
**Medical School:**  
**PhD:** Neuroscience

**Current Position:** Assistant Professor of Pharmacology

**Research Interest Areas:** Neuropharmacology

**Research Support Sources:** Hillman Foundation

**Research Title:** Impact of age-related and proteotoxic stress on heat shock protein defenses in the neo- and allocortex of the telencephalic edifice

**Project Authors:** Posimo JM, Gleixner AM, Broeren MT, Weiland NL, Brodsky JL, Wipf P, and Leak RK

**Abstract:**  
The neocortex is less vulnerable to inclusions in Alzheimer’s and Parkinson’s disease than the allocortex. The reason underlying this difference is not known. We hypothesized that the neocortex is less vulnerable to protein misfolding stress (proteotoxicity) than the allocortex and that it has superior heat shock protein (Hsp) defenses after cellular insults in vitro and age-related stress in vivo. Hsps help refold or degrade misfolded proteins and improve cellular survival. Primary neocortical neurons were less vulnerable to proteasome inhibitors such as MG132 than allocortical neurons harvested from the entorhinal cortex, piriform cortex, and hippocampus. This topographical difference was not seen in astrocytes. MG132 increased ubiquitinated protein levels and suppressed proteasome activity in allocortical neurons more than neocortical neurons, suggesting that allocortex was under greater protein misfolding stress. However, neocortical cells upregulated fewer Hsps than allocortical cells, suggesting that chaperone defenses were lower in neocortex. Inhibition of Hsp70 activity exacerbated MG132 toxicity more in allocortex than in neocortex, demonstrating that allocortex needs to rely more on Hsp70 defenses. Increasing Hsp70 activity was only protective in neocortex, supporting the notion that Hsp70 molecules were already maximally engaged in allocortex. Hsp70 expression was increased in middle-aged animals in both neo- and allocortex in vivo. However, Hsp90 and the co-chaperone CHIP were expressed at higher levels in neocortex in the oldest animals. Taken together, these findings suggest that the neo- and allocortex differ in their reliance on Hsp defenses, probably as a result of varying degrees of stress under conditions of proteotoxic injury and natural aging.

**Submission Category:** Candidates for clinical or research doctorates and master's-level students
Mengchi Li  
415 Victoria Building, 3500 Victoria Street, Pittsburgh, PA 15261  
412-961-4774  
mel120@pitt.edu  

**Department:** University of Pittsburgh School of Nursing  
**Affiliation:** Health and Community Systems  

**Undergraduate:** current undergraduate  
**Graduate:**  
**Medical School:**  
**PhD:**  

**Current Position:** Undergraduate Research Mentorship Program  

**Research Interest Areas:** Caregiver burden  

**Research Support Sources:** School of Nursing Research Mentorship Program  

**Research Title:** Associations Between Quality of Life and Burden in Informal Caregivers of People with Memory Loss  

**Project Authors:** Mengchi Li, Lisa K. Tamres, Jennifer H. Lingler, Judith A. Erlen  

**Abstract:**  
Study: There are many people living in the community with memory loss who are cared for by friends and family. This caregiving can be a burden impacting the quality of life for these informal caregivers. This study examines health-related quality of life (HR-QOL) and caregiver burden in caregivers of community dwelling people with memory loss.  
Methods: This is a secondary analysis of baseline data from a randomized controlled trial providing a medication management intervention to the caregivers. Burden was measured by estimated caregiving hours (Vigilance Scale) and the Revised Memory and Problem Behavior Checklist (RMPBC) which measures severity and frequency of 3 problem areas: depression, disruption, and memory. HR-QOL was measured using physical and mental component summary scales of the Medical Outcomes Study Short-Form Health Survey (MOS-SF-36).  
Results: 82 caregivers with complete data were 71% female, 87% white, and 57% spouses. Mean age=67. HR-QOL physical component averaged 44.3 (SD=12.6) and mental component averaged 46.2 (SD=13.1). There were no significant associations between the HR-QOL physical component and burden. There were significant associations between the HR-QOL mental component and frequency of depression problems (r=-.291, p=.011), depression problem severity (r=-.276, p=.050), frequency of disruption problems (r=-.245, p=0.030), and disruption problem severity (r=-.296, p=.030).  
Conclusions: Caregivers’ HR-QOL was negatively associated with burden, specifically when the patient had disruptive or depressive problems. The burdens of caregiving time, and of patients’ memory problems are not associated with HR-QOL in this sample.  
Significance: Addressing the patient’s disruptive and depression problems may help improve the caregiver’s quality of life.  

**Submission Category:** Candidates for clinical or research doctorates and master’s-level students
Sifat Maria, MPharm
410 Mellon Hall, 600 Forbes Avenue, Duquesne University, Pittsburgh, PA-15282
412-396-4296
marias@duq.edu

**Department:** Division of Pharmaceutical Science  
**Affiliation:** Duquesne University

**Undergraduate:** University of Dhaka, Bangladesh  
**Graduate:** University of Dhaka, Bangladesh  
**Medical School:**  
**PhD:** Duquesne University

**Current Position:** Graduate Student in PhD

**Research Interest Areas:** Pharmacology

**Research Support Sources:** Duquesne University translational research grant

**Research Title:** Mechanisms underlying the effect of melatonin, strontium citrate, vitamin D3 and vitamin K2 on bone marrow stem cells and peripheral blood monocytes

**Project Authors:** Sifat Maria, Dr. Mark Swanson, Dr. Holly Lassila, Christine O’Neil, Dr. Paula A. Witt-Enderby

**Abstract:**
Bone remodeling system preserves the integrity of bone by balancing the formation and activities of two vital bone cells, bone-forming osteoblasts and bone-resorbing osteoclasts. Shifting of this equilibrium system towards osteoclastic bone resorption leads to osteoporosis and major fractures. In fact, the prevalence of osteopenia is much higher than osteoporosis and highly linked with recurrence of fractures. Therefore necessitating the development of safe and effective treatment therapies that will not only prevent bone loss but will also enhances new bone growth, in order to reverse osteopenic condition back to normal. A clinical trial, Melatonin-micronutrients Osteopenia Treatment Study (MOTS), was designed to assess the efficacy of a combination of bone tropic agents: melatonin, strontium citrate, vitamin D3 and vitamin K2 (MSDK) on bone health and quality of life in post-menopausal osteopenic women. One aspect of this translational study examined the mechanisms underlying MSDK’s effects on bone-forming osteoblasts and bone-resorbing osteoclasts using a novel co-culture system containing human bone marrow stem cells (hMSCs) and human peripheral blood monocytes (hPBMCs). Using a novel treatment paradigm that closely mimics the in vivo condition, hMSC/hPBMC co-cultures were exposed to vehicle or MSDK in osteogenic (OS+) or growth medium (OS-) for 21 days. These effects of MSDK on osteoblast differentiation and osteoclast differentiation were measured by alizarin red or TRAP staining, respectively. Co-cultures grown in OS+/MSDK exposure enhanced osteoblast differentiation but inhibited osteoclast differentiation when compared to cells grown in OS-/MSDK. To identify potential signaling mechanisms underlying MSDK’s action, osteoprotegerin (OPG) and RANKL levels were measured.

**Submission Category:** Candidates for clinical or research doctorates and master's-level students
Mary Winger, MPH  
130 N Bellefield Avenue, Room 511, Pittsburgh, PA 15213  
412-383-1511  
mew122@pitt.edu

**Department:** Epidemiology/University of Pittsburgh Graduate School of Public Health  
**Affiliation:** University of Pittsburgh Graduate School of Public Health Department of Epidemiology, Pittsburgh, PA, United States

**Undergraduate:** BS, Biostatistics, The Pennsylvania State University  
**Graduate:** MPH, Epidemiology, University of Pittsburgh  
**Medical School:**  
**PhD:**

**Current Position:** Graduate Student Researcher

**Research Interest Areas:** Lower extremity power related to disability and physical function decline

**Research Support Sources:** NIH/NIA R01 AG028050 (PI: Strotmeyer ES)

**Research Title:** Correlations Between Task-Based Power and Leg Press Power and Strength Measures in DECOS

**Project Authors:** Mary Winger, MPH, Paolo Caserotti, PhD, Rachel Ward, PhD, MPH, Robert Boudreau, PhD, Tamara Harris, MD, MS, Elsa Strotmeyer, PhD, MPH

**Abstract:**  
Task-based leg power measured under weight-bearing conditions requires appropriate postural control and may better predict functional ability than leg press power/strength (externally applied force). Because multiple power/strength measures are rarely done simultaneously, these correlations are unknown. Pearson correlations (adjusting for age, sex, race, height and stratified by sex) between force plate power (chair rise; jump) and leg press power (Nottingham; Keiser)/strength (Keiser) measures were classified as weak (r<0.4), moderate (r=0.4-0.6) or strong (r>0.6) (all p<0.05) for N=47 DECOS participants (age=78.9±5.8 years; 53% women). Chair rise power/kg had moderate correlations with Nottingham power/kg (r=0.60) (strong for women) and Keiser strength/kg (r=0.46) (weak for men) and strong correlation with Keiser power/kg (r=0.70). Jump power/kg had moderate correlation with Nottingham power/kg (r=0.58) (weak for men) and strong correlations with Keiser strength/kg (r=0.65) (moderate for men) and Keiser power/kg (r=0.75). Task-based power measures may be alternates for leg press strength/power measures in older adults.

**Submission Category:** Candidates for clinical or research doctorates and master's-level students
Michael Zigmond, PhD
Department of Neurology
412-580-0564
zigmond@pitt.edu

**Department:** Neurology  
**Affiliation:** University of Pittsburgh

**Undergraduate:** Carnegie Institute of Technology  
**Graduate:** University of Chicago  
**Medical School:** N/A  
**PhD:** University of Chicago

**Current Position:** Professor of Neurology, Neurobiology, Psychiatry

**Research Interest Areas:** Neurodegenerative disease and aging

**Research Support Sources:** NINDS; Aging Institute

**Research Title:** Does Housing in an Enriched Environment Promote Healthy Aging Detectable by Peripheral Biomarkers?  
Studies in Older Laboratory Animals

**Project Authors:** Sandra Castro, Juliann Jaumotte, Richard Smeyne, Donna Korol, Fabrisia Ambrosio, Abbe de Vallejo, Judy Cameron, Lori Newman, Kaitlyn Cole, Kaylin Barr

**Abstract:**
The sedentary and impoverished lifestyle that typically characterizes individuals within our modern society may play a critical role in the motor, cognitive, and emotional decline that often occurs during advanced years. Clinical and animal studies suggest that physical activity and an enriching environment can reduce these behavioral impairments and promote resilience. Furthermore, this appears to be associated with changes in the brain that facilitate healthy brain aging. Ongoing and planned studies in our laboratories are documenting the impact of various forms of exercise and/or enrichment on the behavior of older rats and carefully examining the associated neurobiological and metabolic changes in various brain regions and peripheral organs. The current study examines 24-month old Fischer/Brown Norway rats housed 6 per large cage (1m W x 1m D x 0.6m H) for 4 months in an enriched environment that includes running wheels, toys, and objects on which to climb. Our results are being compared to those from comparable animals housed singly in standard “shoebox” cage for the same period. We are examining spontaneous motor activity and employing behavioral tests, as well as a variety of postmortem analyses using biochemical, molecular, and histological methods. In addition, we are determining whether environmental enrichment leads to changes in more readily obtainable specimens, such as blood, that might serve as biomarkers of functional improvements in clinical studies. If so, this would permit the tracking of improved behavioral and brain health in individuals participating in exercise programs and may also serve as a motivation for continued exercise. Our hope is to identify potential ‘healthy brain biomarkers’ in this pilot study and then to measure these in the accomp

**Submission Category:** Candidates for clinical or research doctorates and master's-level students
Colleen Culley, PharmD
3708 Fifth Avenue, Suite 300
412-647-1713
culleycm@upmc.edu

**Department:** Department of Pharmacy and Therapeutics  
**Affiliation:** University of Pittsburgh School of Pharmacy

**Undergraduate:** Butler University  
**Graduate:** Butler University  
**Medical School:**  
**PhD:**

**Current Position:** Associate Professor

**Research Interest Areas:** Adverse event detection and management

**Research Support Sources:** None

**Research Title:** Using a Clinical Surveillance System to Detect Drug-Associated Hypoglycemia in Nursing Home Residents

**Project Authors:** Colleen M. Culley, PharmD; Subashan Perera, PhD; Zachary A. Marcum, PharmD, PhD; Sandra L. Kane-Gill, PharmD, MS; Steven M. Handler, MD, PhD

**Abstract:**

Study/Methods: Hypoglycemia is a common adverse drug event (ADE) frequently associated with temporary harm in the nursing home (NH) setting. Reports from the Office of the Inspector General and the U.S. Department of Health and Human Services recommend the need for increased surveillance of drug-associated hypoglycemia events. The objective of this study was to test if a clinical surveillance system could be used to detect drug-associated hypoglycemia events and determine their incidence in NH residents. A retrospective review of computer-generated alerts detecting potential drug-associated hypoglycemia in residents with glucose = 70 mg/dL and ordered a medication(s) associated with hypoglycemia over a 6-month period in 4 UPMC NHs were included in the analysis. Descriptive statistics were used to summarize all variables per numbers of alerts and per distinct residents where appropriate. Additional calculations included the time to drug-associated hypoglycemic event alert from date of admission and frequency of events associated with post-acute/short-stay (= 35 days) admissions.

Results: A total of 772 alerts involving 141 unique residents were detected. Ninety (63.8%) residents had a glucose = 55 mg/dL, and 42 (29.8%) had a glucose = 40 mg/dL alert. Insulin orders were associated with 762 (98.7%) alerts. Overall incidence of drug-associated hypoglycemia events was 9.5 per 1000 resident-days.

Conclusions/Significance: Hypoglycemia can be detected using a clinical surveillance system. Our evaluation found a high incidence of drug-associated hypoglycemia in a general NH population. Future studies are needed to determine the potential benefits of use of a surveillance system in real-time detection and management of hypoglycemia in the NH.

**Submission Category:** Clinical practitioners doing quality or practice improvement (Clinicians, administrators, etc...)
Abstract:
Study: The Cardiovascular Health Study Cognition Study (CHS-CS) is a longitudinal cohort study that acquired structural and perfusion MRIs of 195 elderly volunteers from 2002 through 2010. Cerebral blood flow (CBF) differences between subjects classified with normal cognition, mild cognitive impairment (MCI), and Alzheimer’s Disease (AD) were previously reported. The study also acquired T1 maps and arterial velocities in the internal carotids (ICs). The aim of this study was to determine if there is a correlation between cognitive status, time to progression to dementia, and the imaging biomarkers (CBF, T1, and internal carotid arteries velocities and pulsatility).

Methods: Subjects were scanned on a GE 1.5 T MRI at least once during 2002-2009. Perfusion MRI was performed using continuous arterial spin labeling. Arterial blood velocities were measured with phase contrast CINE. Saturation recovery T1 maps were acquired with (T1sat) and without (T1) off-resonance RF saturation.

Results: From a cross-sectional analysis of 163 scans (67 NCs, 40 ADs, and 56 MCIs), global gray matter CBF differences were observed between groups with MCIs having the highest CBF. MCIs also had the highest mean IC velocity although this was not statistically significant. The fractional difference between T1 and T1sat was significantly lower in the white matter of MCIs.

Conclusions: Our global CBF findings support earlier findings of hyperperfusion in AD pathology brain regions in slow converters and MCIs. T1sat in our MCIs and ADs mirrored other T1? studies in dementia.

Significance: By identifying and combining biomarkers from group analyses, it may be possible to identify an individual’s risk and rate of progression using MRI and provide appropriate intervention as treatments become available.

Submission Category: Clinical practitioners doing quality or practice improvement (Clinicians, administrators, etc...
Depression in late life is common and is a risk factor for suicide as well as increased morbidity and non-suicide related mortality. Although seen frequently in primary care, it remains under-diagnosed and under-treated. It is further complicated due to factors such as comorbidities, clinical presentation, adverse drug effects, drug interactions, and psychosocial factors (Lill, 2015). Collaborative depression care management has been initiated as a quality improvement initiative at UPMC Benedum Geriatric Center (BGC), a Level 3 National Center for Quality Assurance (NCQA) accredited Patient Centered Medical Home (PCMH). The Depression Care Protocol developed at BGC is based on the PROSPECT trials and utilizes the internal medicine nurse practitioner as the depression care manager. We report here our initial 10 month experience utilizing this protocol.

Methods: Based on the PROSPECT and IMPACT (Unutzer et al., 2002, p. 2836) studies, we developed a Depression Care Protocol. The role of the certified registered nurse practitioner is to provide, in collaboration with the primary care physician, ongoing assessment of the patient, provide the patient and family psycho-education about depression, as well as brief psychotherapy and to guide the patient’s treatment based on the treatment algorithm. After presenting the protocol to all primary care providers at BGC, any patient who presented with new depression or with exacerbation of depressive symptoms requiring a changed in dosage or medication change could be referred to the protocol. The protocol was initiated on 04/01/2014. We will report in the poster the results of uptake of the depression protocol in 10 months of initiation as well as physician feedback survey results regarding perceived effectiveness and barriers.
Jocelyn Hart, MD  
3811 O’Hara St. Pittsburgh, PA 15213  
412-586-9103  
hartja@upmc.edu

**Department:** Department of Psychiatry  
**Affiliation:** Western Psychiatric Institute & Clinic, University of Pittsburgh School of Medicine

**Undergraduate:** The Ohio State University  
**Graduate:**  
**Medical School:** The University of Toledo College of Medicine  
**PhD:**

**Current Position:** Child & Adolescent Psychiatry Fellow, WPIC

**Research Interest Areas:** Quality Improvement

**Research Support Sources:** None

**Research Title:** Medication error rates during psychiatric-to-medical transfers for inpatient geriatric patients

**Project Authors:** Jocelyn Hart MD and Lalith K. Solai MD

**Abstract:**

Study: Medication errors happen more frequently when care is transferred, leading to increased morbidity and mortality. The goal of this project was to identify and minimize medication errors during the transfer process from inpatient psychiatric to medical units. The hypothesis was that medication errors can be reduced during transferred with targeted interventions, including initiation of an electronic medical record (EMR).

Methods: Medications ordered on the medical units were compared to discharge medication lists from the psychiatric unit for each patient transferred in the 9.5 months preceding transition to EMR at WPIC on January 15, 2013. Similar data was collected starting one year post-EMR, spanning January-December 2014. Educational interventions targeted issues that were deemed relevant to error rates throughout the study period.

Results: The pre-EMR medication error rate was 3.88 per patient. The post-EMR rate was 1.94 errors per patient for the first 2 quarters of 2014, but increased to 4.34 errors per patient for the final 2 quarters of 2014.

Conclusions: EMR initiation appeared to facilitate a reduction in medication error rates. However, there was an increase in errors corresponding to the start date of new trainees, suggesting that the established methods of education were insufficient in acclimatizing new trainees to the EMR system, thus limiting its effectiveness.

Significance: Medication errors occur during transfers of care, and educational and system interventions affect their frequency. Targeted interventions can reduce these errors.

**Submission Category:** Clinical practitioners doing quality or practice improvement (Clinicians, administrators, etc...)
Abstract:
BACKGROUND: An important lifestyle behavior that is linked to improved brain function is physical activity, with the majority of evidence based on traditional forms of structure exercise. There is evidence that intermittent periods of physical activity (e.g., multiple shorter periods of activity) may improve engagement and adherence. However, it is unclear whether brain and cognitive function can be improved or sustained with this pattern of physical activity. METHODS: Older adults (N=30) will be recruited to participate in a 24 week intervention with randomization to one of two intervention conditions: 1) intermittent physical activity (INT-PA), 2) standard care control that includes light physical activity (CONTROL). INT-PA will receive a behavioral program to promote physical activity, with INT-PA prescribed physical activity performed in an intermittent manner (e.g., 3 10-minute sessions per day) and tailored activity videos delivered on a tablet. CONTROL will be prescribed light intensity physical activity (stretching, etc.). Eligibility criteria include 65 to 74 years of age (N=20) or 75 to 85 years of age (N=10) with less than 12 years of education, and participation in <60 minutes per week of structured physical activity. Outcome measures will be assessed at 0 and 24 weeks and include MRI/fMRI, a neuropsychological battery, biomarkers of brain health, measures of cardiovascular health, measures of physical activity and sedentary behavior, and a variety of behavioral and psychosocial measures. SIGNIFICANCE: If it is shown that intermittent physical activity is effective for improving brain structure and function as well as cognitive function, this will provide valuable clinical information that can influence physical activity prescription for older adults.
Annette Kline, RN
600 Grant St, 41st Floor, Pittsburgh PA
412-454-6225
klineal@upmc.edu

Department: Health Plan
Affiliation: Medical Management

Undergraduate: n/a
Graduate: n/a
Medical School: n/a
PhD: n/a

Current Position: Director, Medical Management

Research Interest Areas: Transitions

Research Support Sources: Transitions

Research Title: Impact of Payor Based Post Discharge Calls on the Geriatrics Population

Project Authors: Annette Kline and Donna Fogle

Abstract:
Objective: To evaluate the impact of the UPMC Health Plan Redesigned post discharge program on the Geriatric population. The program was Redesigned in an effort to assist members with transitions back to home and to prevent avoidable readmissions. The program focused on members with the greatest risk of readmission, those >= age 65, the case manager with the greatest probability of engaging with the member, and asking the right questions. The program utilizes mostly RNs to make the transitions calls covering 8 main areas

Outcomes Pre and Post Redesign:
Readmission to acute inpatient or observation was 2.4 % points lower in the post-redesign period (p=0.0001). Readmission to acute inpatient was 1.95 % points lower in the post-redesign period (p=0.0004). Additionally, the overall 5 day-follow up appointment post discharge increased pre to post redesign from 56% to 58% (p=0.054).

Post Redesign Findings:
The overall readmission rate to acute inpatient or observation was 6.05 % points lower in the assessed population (p<0.0001). The readmission rate to acute inpatient was 5.22 % points lower in the assessed population (p<0.0001). The overall readmission rate in members assessed by clinical staff was non-significantly lower than members assessed by non-clinical staff. Readmission rates to acute inpatient or observation was 1.84 %points lower in the groups assessed by clinical staff ( p=0.34). Readmission rate to acute inpatient was 0.86 % points lower in the groups assessed by clinical staff ( p=0.61). With 14% reduction on readmission rate, it is estimated that 20 readmissions have been avoided and yields 6.4 ROI in six month period after the redesign implementation.

Submission Category: Clinical practitioners doing quality or practice improvement (Clinicians, administrators, etc...
Melissa Knox, BS  
415 Victoria Building  
412-383-5118  
mlk42@pitt.edu

Department: University of Pittsburgh  
Affiliation: School of Nursing

Undergraduate: University of Pittsburgh  
Graduate:  
Medical School:  
PhD:

Current Position: Research Specialist  
Research Interest Areas: Older adults  
Research Support Sources: NINR

Research Title: PERSISTENCE OF MEDICATION-ADMINISTRATION ERRORS AMONG INFORMAL CAREGIVERS OF OLDER ADULTS WITH MEMORY LOSS

Project Authors: Knox, M.L., Devlin, M.G., Tamres, L.K., Lingler, J.H., Erlen, J.A.

Abstract:
Study
This secondary analysis examines the frequency and persistence of medication errors in a sample of 43 informal caregivers administering medications to community-dwelling older adults with memory loss.  
Methods
The sample includes data from the control group of a randomized clinical trial. Medication errors were identified via an investigator-developed medication deficiency checklist (MDC) collected 4 time points over a 6-month period. Using interview format with the caregiver, the MDC identifies which of 15 potential problems have occurred recently. Problem persistence was measured by the same problem occurring at both baseline and 6-month follow up for an individual.  
Results
Problems identified most frequently at baseline include patient forgot to take (53%), losing pills (49%), and wrong time (47%); at follow-up these problems decreased to 30%, 44%, and 19% respectively. Problems that persisted include patient forgot to take (re-occurring for 52% of those reporting the problem at baseline), losing pills (57%), uncooperative patient (50%), and chewing capsules (50%). Wrong time was less persistent with 25% continuing to report the problem.  
Conclusions
Some medication errors may be persistent. The 4 problems that persisted most were patient-related. The 1 problem that was caregiver-related (wrong time) was less likely to persist. This may be due to repeated administration of the MDC throughout the study increasing caregiver awareness.  
Significance
Informal caregivers managing a patient’s medications may benefit from regular assessment of individual medication-related problems. This assessment will allow caregivers to address issues they can directly correct and identify patient-related problems that will likely persist. These may be areas for future intervention.

Submission Category: Clinical practitioners doing quality or practice improvement (Clinicians, administrators, etc...
Palliative care and advance care planning can benefit residents of long-term care facilities, including those whose conditions are not imminently life-limiting and for whom hospice is inappropriate. Using evidence based practices for palliative care and communication at end-of-life, this project developed and implemented an educational program to improve skills of direct care staff in six nursing facilities in a midsize Midwestern city to promote a practice change of completing advance care planning conversations with residents, documenting these conversations, and routinely utilizing advance care planning forms and orders. Using a train-the-trainer model, project staff did initial trainings in each facility utilizing multiple educational strategies; then, staff development personnel completed training of all staff over a 6 month period and integrated the training for new hires. Evaluation of staff behavior change was done through chart reviews of 20 randomly selected charts per facility carried out at baseline (prior to training implementation) and 6 and 12 months after training was implemented. Chart review recorded information about medical orders, presence of advance care planning forms, documentation of advance care conversations, and inclusion of goals in the care plan. Advance care planning conversations and documentation of them increased steadily and significantly at 6 and 12 months. This project suggests that training of nursing home staff can alter the frequency with which advance care planning conversations take place and are documented. More needs to be done to translate these larger goals into daily care.
Tracy Polak, CRNP, MSN
UMPC Health Plan - USX, 600 Grant Street, Pittsburgh, PA 15219, 14th Floor
412-454-5700
polaktm@upmc.edu

Department: UPMC Insurance Services Division
Affiliation: UPMC Health Plan

Undergraduate: BSN - Kent State University
Graduate: MSN - Kent State University
Medical School:
PhD:

Current Position: Director, Geriatric Programs

Research Interest Areas: Transitional Care, Geriatric Rehab

Research Support Sources: none

Research Title: Enhanced Care Program for Transitional Care to Home upon Acute Care or SNF Discharge: A Quality Improvement Study

Project Authors: Namita Ahuja, MD; Denise Stahl, MSN, ACHPN; Penny Milanovich, RN,MSN, MBA, FACHE; Dennis L. Wickline, RN, BS, BSN; Tracy Polak, CRNP, MSN

Abstract:
Study A care transition represents a vulnerable time for older adults, especially those experiencing cognitive or functional impairment, multiple conditions, or lack of caregiver support. Integrated, home-based care management has been shown to improve quality of care and reduce acute care utilization. The Home Transitions Program is designed to reduce poor post-discharge outcomes. An effort between UPMC’s Insurance Services Division, Visiting Nurse Association, and Palliative and Supportive Institute which includes interventions beyond traditional home health for patients at moderate to high risk for readmission from a hospital or SNF discharge. Components of the enhanced program include clinical triggers to recognize early changes, prompt CRNP, RN, and SW home visits, pharmacist, Medical Director review, and direct PCP communication. Duration of the intervention is typically 30 - 60 days post discharge. Methods Members were identified by transition coordinator, post-acute liaison, PCP, and SNFs. Matched control to Home Transitions was based upon the last digit of the policy number. Exclusions included living outside the catchment area or not meeting clinical criteria. Results From September 2014 - February 2015, there were 1,316 referrals. Of those, 637 were randomized. Outcome metrics include 30-day readmission and cost of readmission. Facility readmission includes inpatient, observation, SNF, or rehab admissions. Preliminary results: 25.4% of discharges randomized to Home Transitions were readmitted within 30 days, a difference of 6.9 % compared to 32.3% in usual care. Conclusion Enhanced in-home functional, social, and caregiver support reduces 30-day readmission and unplanned care. Significance Home Transitions supports the Triple Aim concept

Submission Category: Clinical practitioners doing quality or practice improvement (Clinicians, administrators, etc...
Barbara Usher, RN, PhD, GCNS-BC, AHPN
UPMC Montefiore, Suite 933W, 200 Lothrop St., Pittsburgh, PA 15213
412-802-6278
usherbm@upmc.edu

**Department:** Palliative and Supportive Institute;  
**Affiliation:** UPMC- Presbyterian hospital, & GEC

**Undergraduate:** Indiana University of Pittsburgh  
**Graduate:** MS in Adult Nursing, Penn State  
**Medical School:**  
**PhD:** in Nursing Management, Penn State

**Current Position:** Programmatic Nurse Specialist

**Research Interest Areas:** Palliative Care; Pain and symptom management, nursing care at EOL, Geriatrics

**Research Support Sources:** Bureau of Health Professions (BHPr), Health and Human Services (DHHS) under the cooperative agreement UB4HP19199 "Geriatric Education Center of PA"

**Research Title:** Evaluating a Pain Reporting and Management Plan for Confused and Non-verbal Long Term Care Residents

**Project Authors:** John G. Hennon EdD; Colleen J Dunwoody MS; Betty Robison MSN; Elizabeth A. Mulvaney MSW; Kathryn Lanz RN, DNP; Julie N Klinger MA, Richard Schulz PhD

**Abstract:**  
Nationally, quality improvement initiatives are being undertaken to address pain management in long term care (LTC). New federal regulations are also in place to improve resident pain management outcomes, however gaps remain and little is known about how to effectively design and implement a program for assessing, managing and communicating about pain for confused and non-verbal Long Term Care Residents. Previous research indicates that pain is under assessed and under treated and that those who are non-verbal and those who suffer dementia are more susceptible to under-treatment of pain because they can't verbally express their pain management needs. Barriers to effective pain management also include resident, family and staff counterproductive beliefs about pain in addition to education gaps regarding pain management. We developed an evidence based practice initiative to teaching LTC nurses and Registered Care Technicians (RCTs) from 10 LTC facilities in the Midwest region how to identify, assess, treat, and report pain in non-verbal and confused residents. The train-the-trainer model was used to educate staff development champions and support them with their work at each site. Tools introduced for use included: Stop and Watch, PAIN-AD, CALM, the Analgesic Trial and CHAT. Chart reviews were conducted pre and 6 months post the intervention to assess whether changes in documentation of: pain, its aggravating and relieving factors, as well as pharmacological and non-pharmacological Treatments for pain were in evidence. Follow-up at 12 months will be conducted to assess retention of learning over time and guide permanent system change.

**Submission Category:** Clinical practitioners doing quality or practice improvement (Clinicians, administrators, etc...)

High sedentary behavior (SED), or sitting with low energy expenditure, has been linked to lower physical function, disability, and mortality. Engagement in moderate-to-vigorous physical activity (MVPA) is inversely related to the same outcomes, but it is unclear whether targeting decreased SED or increased MVPA would be more beneficial in older adults.

Methods: Inactive older adults (n=38, 29% male, age: 68 ± 7 yrs) were randomized to a 12-week intervention targeting either decreased SED or increased MVPA with weekly in-person/telephone consultations and self-monitoring via an activity monitor + smartphone app. Objective MVPA and low-intensity activity (=1.5 METs), self-reported MVPA and SED, physical function (400m walk test, Short Physical Performance Battery (SBBP)), and quality of life (QoL) by the SF-36 were assessed at baseline and 12 weeks.

Results: All assessments and 92% of intervention contacts were completed. Objective MVPA increased in the MVPA group (41±22 to 116±20 min/wk, p<0.001) but not the SED group (86±20 to 79±21 min/wk, p=0.78). Self-reported MVPA increased in both the MVPA (209±45 to 356±75 min/wk, p=0.03) and SED (242±271 to 429±297 min/wk, p=0.008) groups. Neither objective low-intensity activity nor self-reported SED changed in either group (all p>0.05). The SPPB improved for the SED group (10.9±1.1 to 11.6±0.6, p=0.02) but not the MVPA group (11.1±0.9 to 11.3±0.8, p=0.39). The 400m walk time was unchanged (p>0.05). Self-reported energy/fatigue improved in both groups (p=0.02) and pain improved in only the SED group (p=0.01).

Conclusions: Targeting decreased SED improved physical function and pain while targeting increased MVPA did not, encouraging further study of longer interventions to decrease SED in older adults.
Abstract:
Age remains the most common demographic risk factor in breast cancer. The underlying cellular signaling mechanisms responsible for the age-associated rise in disease incidence have not yet been determined. Our current studies elucidate age-related changes in the extracellular signal-regulated kinase 5 (ERK5) member of the mitogen-activated protein kinase (MAPK) family in a breast cancer model. Further, the role of the ERK5 pathway in breast cancer cell migration and invasion was examined.

The MMTV-neu transgenic mouse model, which spontaneously develops mammary tumors, was utilized to assess changes in the ERK5 pathway with age through western blot and immunohistochemical analysis. The murine tumor-derived MMC cell line and human triple-negative MDA-MB-231 cell line were employed to assess the effect of pharmacological inhibitors of the ERK5 pathway on cell migration and invasion.

The expression and activation of ERK5 significantly increased with age in tumor tissue, while no changes were observed in adjacent normal mammary tissue. Pharmacological inhibition of ERK5 reduced cell migration in the MMC and MDA-MB-231 cell lines. Furthermore, ERK5 inhibition in these cells resulted in decreased cell invasion.

To our knowledge, this is the first report of age-associated changes in ERK5 activation in a model of breast cancer. The patterns of expression and activation indicate a potential benefit of individual tailoring of pharmaceutical interventions based on patient age and suggest the important role of the novel protein kinase, ERK5, in cell invasion and migration. A better understanding of the ERK5 cascade in breast cancer with age may lead to the development of therapies with reduced toxicity and increased efficacy in a fragile population.
Rami Namas, MD
W940 Biomedical Sciences Tower, 200 Lothrop Street, Pittsburgh, PA, 15213
412-980-7892
namasra2@upmc.edu

Department: Surgery
Affiliation: University of Pittsburgh

Undergraduate:
Graduate:
Medical School:
PhD:

Current Position: Assistant Professor

Research Interest Areas: Acute Inflammation in Trauma and Sepsis

Research Support Sources: NIH

Research Title: Analysis of Principal Drivers and Dynamic Networks of Systemic Inflammation Suggests Complex Interaction between Age and Injury Severity

Project Authors: Rami A. Namas, Othman Abdul-Malak, Qi Mi, Khalid Almahmoud, Akram Zaaqoq, Derek Barclay, Andrew B. Peitzman, Timothy R. Billiar, Yoram Vodovotz

Abstract:
Background: Both age and injury severity are associated with dysregulation of post-trauma inflammation. Using data-driven modeling, we sought to elucidate principal drivers and dynamic networks of the post-traumatic inflammatory response across age and injury severity in blunt trauma patients.

Methods: From a cohort of 472 blunt trauma survivors, and after excluding 8 patients with incomplete datasets, we identified three subcohorts based on age distribution: Young (18-37 y.o.), Middle-aged (38-60 y.o.), and Old (>60 y.o.). These subcohorts were generated using supervised K-mean clustering (MATLAB™) and their demographic characteristics were as follows: Young (146 patients: males [M]/females [F] 108/38; age 26±0.4; injury severity score [ISS] 23±1); Middle-aged (184 patients: M/F 107/77; age 49±0.5; ISS 19±0.8) and Old (134 patients: M/F 84/50; age 72±0.7; ISS 17±0.7). Three samples within the first 24 h and then from days 1 to 7 post-injury were obtained from all patients. Twenty-three plasma inflammatory cytokines/chemokines were assayed using Luminex™. Two-Way ANOVA was used to compare groups. Principal Component Analysis (PCA) and Dynamic Bayesian Networks (DBN) were utilized to identify inflammatory drivers and networks, respectively.

Results: The Young group had significantly higher ISS and days on ventilator when compared to Middle-aged and Old. To exclude the confounding factor of ISS among age groups, we stratified age groups based on injury severity (Mild, Moderate, and Severe ISS). There was no difference in clinical outcomes among age groups in the Mild and Moderate groups. In severe ISS, Old and Middle-aged patients had significantly longer hospital length of stay, while the Old group stayed longer on mechanical ventilation vs. Young. Plasma IL-5, IL-7,

Submission Category: Junior Faculty
Mijung Park, PHD, MSN, MPH, RN
Victo 421
412-624-9647
parkm@pitt.edu

**Department:** Department of Health and Community Systems/School of Nursing  
**Affiliation:** School of Nursing

**Undergraduate:** Ewha Woman's University (this is not typo)  
**Graduate:** University of Washington; Ewha Woman's University  
**Medical School:**  
**PhD:** University of California, San Francisco

**Current Position:** Assistant Professor

**Research Interest Areas:** Family-Centered health care model for older adults with complex health issues

**Research Support Sources:** Aging Institute Seed Grant

**Research Title:** Feasibility and Acceptability of Adding Family Components to Evidence-Based Collaborative Care Model for Older Adults with Depression and Chronic Medi

**Project Authors:** Mijung Park, PhD MPH RN; Charles F. Reynolds III, MD

**Abstract:**

Study: The purpose of this study was to elucidate challenges and opportunities for engaging family caregivers in the delivery of evidence-based collaborative depression care program to older adults with multiple medical and psychosocial comorbidities.

Methods: We conducted 40 in-depth, face-to-face interviews with key stakeholders (older adults with depression and medical conditions, their family caregivers, and health care providers).

Results: Participants have identified five major challenges for successfully managing their own health. 1) Managing polypharmacy; 2) Organizing care among multiple family caregivers. In such cases, older adults reported feeling “torn” because they felt pressured to take a side. 3) Communicating with multiple healthcare providers. 4) Achieving balance between “care” and “independence.” While the majority of older adults enjoyed help from family, they also valued their independence. 5) Dealing with insurance and other financial issues posed challenges because they added layers of complexity to chronic disease self-management activities.

Conclusions: Because of the multi-layered nature of chronic disease self-management, multi-component interventions are needed for older adults with complex health issues and their family caregivers.

Significance: Older adults with depression and multiple medical conditions are among the most complex patients. They are also at great risk for poor health outcomes. Thus, there are urgent needs to develop an intervention for this vulnerable population. Our study have generated clinically meaningful; patient- and family-centered information about areas where such interventions may target to optimize patient- and family caregiver’s collective ability to self-manage their complex health issue.

**Submission Category:** Junior Faculty
Objectives: To examine the influence of a strategy training intervention on performance of daily activities among older adults who have Mild Cognitive Impairments (MCI). We aim to slow the decline in performance of daily activities for individuals who are at-risk for dementia due to MCI.

Methods: Older adults adjudicated with MCI (>60 years) are randomized to strategy training or enhanced-usual care (anticipated n=50). Strategy training is a standardized intervention that we adapted to provide older adults with MCI the opportunity to enhance performance of daily activities. The intervention requires older adults to set goals in daily activities, and it teaches them a strategy that they can then apply to meet their goals. The ten sessions are conducted in the home with a licensed occupational therapist.

Anticipated Results: We predict that individuals in the strategy training intervention will demonstrate lower rates of decline in performance of cognitively-focused daily activities than those who receive enhanced-usual care over 12 months.

Conclusions/Significance: Approximately 16% of older adults have MCI, and these older adults are at high risk of developing dementia. Slowing the decline to dementia could have a significant impact on individual, familial, and societal levels. To date, however, there is no intervention has been effective at slowing or reversing the decline to dementia. Strategy training may slow the trajectory of decline, because it has been successful in other populations with cognitive deficits. This is the first study to examine the feasibility and preliminary efficacy of a strategy training intervention for individuals with MCI. If effective, strategy training could have large public health significance.
Abstract:
Associations between neighborhood socioeconomic status (nSES) and cognitive function have been demonstrated independent of individual demographic, health, and socioeconomic characteristics. However, the research to date has been almost exclusively cross-sectional and the mechanisms have not been explored. 3595 participants in the Cardiovascular Health Study were geocoded to their Census block group and underwent 1.5T magnetic resonance imaging in 1992/3 (mean age=74.8 years, 58.2% female, 15.7% black). A summary score characterized nSES from 1990 Census data (six measures of wealth, education, and occupation). General cognitive status was assessed by the Modified Mini Mental Exam (3MS) and speed of processing by the Digit Symbol Substitution Test (DSST). White matter hyperintensities (WMH) were defined by a visual rating of =3. Linear mixed effects models stratified by race tested associations of race-specific nSES tertiles with 3MS, DSST, and WMH. Models were adjusted for demographic, cardiovascular, and individual SES variables (education, income, and lifetime occupational status) and accounted for geographic clustering. In fully adjusted models, higher nSES was associated with higher 3MS scores in blacks (mean difference between highest and lowest tertiles nSES =2.4 points; p=0.004) and whites (mean difference=0.7 points; p=0.02) at baseline, but there were no associations between nSES and declines in 3MS over time. nSES was not associated with DSST or WMH in either race. Adjustment for WMH did not attenuate the association of nSES with 3MS. nSES differences in cognition differ by race and by cognitive domain and are not explained by differences in WMH. Further, differences are only evident at baseline, suggesting divergence earlier in life.
Mental health problems are more common among individuals eligible for Medicare and Medicaid than among Medicare-only beneficiaries. Given the complexity of their needs and the services required to coordinate their care, it is possible that the prevalence of serious mental illness is especially high among dual eligible individuals. The purpose of this study is to describe a population-level record of psychiatric diagnoses, determined by claims that were rendered for Medicaid mental health consumers. Participants included 2098 adults aged 65-99 years who had at least one mental health service claim in Allegheny County, Pittsburgh, PA in 2012, about 1% of county residents aged 65+. The claims represent adults who did not have traditional health insurance or maintained Medicaid status while covered by Medicare at the time they received mental health care. Participants’ average age was 73 years and most (75%) had one mental health service episode over 12 months. The sample was racially diverse (54% White, 19% Black) and primarily women (67%). The most common DSM-IV-defined psychiatric diagnoses were major depressive disorder (24%), schizophrenia/schizoaffective disorder (18%), and bipolar disorder (8%). Although prevalent during late life, dementia diagnoses were low (2%). Several diagnoses were deferred on Axis II (18%) due to unspecified causes. The remaining diagnoses included a range of illnesses including adjustment disorder, substance abuse disorder, and personality disorder, among others. Men had significantly more schizophrenia/schizoaffective disorders than women, and women had significantly more major depressive and bipolar disorders than men. Discussion will focus on how to address the health care needs of this high-need, high-cost population.
Abstract:
Background: Balance impairment is a known risk factor for falls in the elderly. Emerging evidence suggests that sleepiness resulting from acute sleep deprivation affects postural balance, but the impact of insomnia and related daytime sleepiness on postural balance and falls is not known. We examined the impact of self-reported daytime sleepiness on performance based balance measures and self-reported balance confidence in community-dwelling elderly.

Method: Cross-sectional secondary analysis was performed of an observational cohort study designed to develop and refine measures of balance and mobility in community-dwelling older adults. Gait and balance were assessed using performance-based measures obtained from GaitMat II including gait speed, double support time, step width, variability of stance time and step time. In addition, narrow walk, stepping over obstacles, and timed standing balance tests including tandem and unilateral stance time were also obtained. Activities-Specific Balance Confidence (ABC) Scale was also included as a self-reported measure. Daytime sleepiness was assessed as Epworth Sleepiness Scale of >9 points. Impact of medication use, specifically use of psychotropics and sedative/hypnotics was also assessed

Results: Data from 120 healthy, community-dwelling older adults mean age 78.2 ± 5.9 years with an average gait speed of 1.07 ± 0.26 m/s was analyzed. Overall, 45% had daytime sleepiness and 16% used psychotropics/hypnotics. Two-way ANOVA of medication use and daytime sleepiness showed no significant interaction effects; medication use was not significantly associated with gait/balance; and those with daytime sleepiness had 0.11 m/s slower gait speed, 0.02 seconds greater double support time, 0.02 meters wider step width, 0.01 m increased ste

Submission Category: Junior Faculty
Many people with aphasia resulting from stroke have unmet communication needs that may be met through instruction in the use of nonverbal modalities (e.g., gesturing, drawing). Unmet communication needs can result in reduced quality of life and significantly affect communication related to medical care.

The purpose of this single-participant, multiple baseline design study was to examine an intensive multimodal intervention for chronic aphasia. Multimodal Communication Training (MCT) differs from traditional interventions because it teaches multiple communication modalities for a single concept in an integrated manner, thus linking the nonverbal representations to the linguistic system and potentially facilitating automaticity of switching among modalities. Specifically, MCT aims to increase successful initial use of nonverbal modalities and to improve switching among modalities to repair communication breakdowns.

Three people with chronic aphasia completed 10 three-hour MCT sessions across a two-week period. Participant one demonstrated increased initial nonverbal modality use and switching to repair breakdowns. Participant two showed limited success using nonverbal modalities initially or for repair. Participant three already used some nonverbal modalities, but following MCT increased the variety of modalities used and used modalities more effectively to repair communication breakdowns. These differences may relate to pre-stroke behavioral characteristics, executive function impairments, semantic impairments, or individual responses to brain damage. This initial investigation provides information for clinicians and researchers about how best to design multimodal interventions for people with aphasia and potential candidacy factors requiring further investigation.
Marta Bueno, PhD
E1200-24B Biomedical Science Tower, 200 Lothrop Street
412-624-2132
mbueno@pitt.edu

Department: Vascular Medicine Institute
Affiliation: University of Pittsburgh

Undergraduate:
Graduate:
Medical School:
PhD:

Current Position: Research Associate

Research Interest Areas: Age susceptibility to lung fibrosis

Research Support Sources: VMI

Research Title: Mitochondria Homeostasis Plays a Key Role in the Age-related Susceptibility to Lung Epithelial Injury and Fibrosis

Project Authors: Marta Bueno, Yen-Chu Lai, Yair Romero, Judith Brands, Claudette St. Croix, Mauricio Rojas, Sruti Shiva, Charleen T Chu and Ana L Mora.

Abstract:
Rationale: Aging is associated with increased susceptibility to lung pathologies. The prevalence of idiopathic pulmonary fibrosis (IPF) has been found to increase with age. While familial disease has been related to disordered telomerase activity and mutations of SPC, the effects of advancing age and lung epithelium dysfunction and fibrosis remains unclear.
Methods: Lung fibrosis and mitochondria function, morphology and dynamics were analyzed in alveolar epithelial cell type II (AECII) of patients with IPF, aging mice and mice deficient in PINK1 (PTEN-induced putative kinase 1).
Results: We found that AECII in IPF lung have marked accumulation of dysmorphic and dysfunctional mitochondria. These mitochondrial abnormalities were recapitulated in normal mice with advancing age and ER stress stimulation. We found that impaired mitochondria in IPF and aging lungs were associated with low expression of the PINK1. Knockdown of PINK1 expression in lung epithelial cells resulted in mitochondria depolarization, and expression of pro-fibrotic factors. Moreover, young mice deficient in PINK1 develop similar dysmorphic dysfunctional mitochondria in the AECII and are highly vulnerable to apoptosis and development of lung fibrosis.
Conclusion: Our data indicates that PINK1 deficiency and the subsequent swollen mitochondria dysfunction in the presence of ER stress causes defective mitophagy and promotion of fibrosis in the aging lung.

Submission Category: Post-doc (resident physicians, fellows and those who have completed a clinical or research doctorate)
Background: Atrial fibrillation (AF) is a major problem in elderly patients and AF has been strongly associated with atrial fibrosis. Therefore, the antifibrotic hormone relaxin (RLX) was studied as a novel therapy for AF and age related fibrosis.
Methods: 24 month old rats (“aged rats”) were treated for 2 weeks with control or RLX. Hearts were tested for AF vulnerability and optically mapped to analyze atrial electrophysiology. Atrial tissue was also analyzed by RT-PCR, microscopy and patch clamping.
Results: Aged rats had significant atrial fibrosis and were highly susceptible to inducible AF. In contrast, RLX treated rats had reversal of atrial fibrosis and did not have inducible AF. Optical mapping data demonstrated that RLX treatment suppressed AF by improving conduction velocity. RLX decreased collagen deposition and the expression of the profibrotic mRNA transcripts for TGF-β, MMP-2 and collagen I/III. Independent of antifibrotic actions, RLX treatment increased Na+ current density (INa) by the upregulation of voltage dependent Na+ channels.
Conclusion: RLX treatment suppressed AF in aged rat hearts by increasing conduction velocity via a combination of reversal of atrial fibrosis and by increasing INa. This study provides evidence that RLX may provide a novel therapy to manage AF in humans by reversing fibrosis and by modulating cardiac ionic currents.
Significance: To date, no therapies for AF are capable of reversing atrial fibrosis, which plays a significant role in the development of AF. RLX, an antifibrotic hormone is capable of reversing atrial fibrosis and suppressing AF in aged rat hearts. Therefore, RLX, which is currently being studied in human heart failure, may also be a potentially novel therapy for AF.
Tanja Krainz, PhD  
219 Parkman Avenue  
412-265-8159  
tak100@pitt.edu

**Department:** Department of Chemistry  
**Affiliation:** Department of Chemistry

**Undergraduate:**  
**Graduate:**  
**Medical School:** University of Queensland  
**PhD:** University of Queensland

**Current Position:** Postdoctoral Research Associate

**Research Interest Areas:** Organic Chemistry

**Research Support Sources:** 0046549-00 (Aging Institute); 2U19AI068021 (NIH)

**Research Title:** Improvement of Memory Functions in Rodent Models of Accelerating Aging

**Project Authors:** Tanja Krainz, Laura Niedernhofer, Hulya Bayir, Peter Wipf

**Abstract:**  
The effect of mitochondria-targeting antioxidant XJB-5-131 in cognitive decline will be tested. Methods: Ercc1-/- mice were developed to mimic human progeria and were chronically treated with 2mg/kg XJB, IP, 3 x per week beginning at 5 weeks of age. Also, the effects of XJB on cardiac resistance to ischemia-reperfusion(IR)-induced oxidative stress in aged rats were tested. Male adult rats (5 months old), and aged (29 months old) F344/BN rats were randomly assigned to the following groups: adult (A), adult plus XJB (AX), aged (O), and aged plus XJB (OX). XJB was administered 3 x per week (3mg/kg body weight, IP) for 4 weeks. Cardiac function was continuously monitored in excised hearts using the Langendorff technique for 30 minutes, followed by 20 min of global ischemia, and 60 min of reperfusion. Results: The age of onset of degenerative symptoms characteristic of ERCC-XPF deficient mice was recorded and a significant delay in neurodegenerative symptoms was observed. Decreased neurodegeneration in the cerebellum of mice treated with XJB was confirmed and neurodegeneration was determined by immunostaining for glial acidic fibrillary protein (GFAP; brown staining). Furthermore, we also evaluated the effect of XJB on cardiac resistance to IR-induced oxidative stress in aged rats. Post-ischemic recovery of aged hearts was improved by XJB, exhibiting a greater left ventricular developed pressure (LVDP) than untreated rats. In addition, JC-1 fluorescence labelling demonstrated that pre-treatment of cultured H9c2 cells with 10 µM XJB significantly attenuates the H2O2 induced depolarization. Conclusion: XJB significantly delays neurodegenerative symptoms in Ercc1 mice and exerts cardioprotective effects and improved post-ischemic recovery of cardiac function in aged animals.

**Submission Category:** Post-doc (resident physicians, fellows and those who have completed a clinical or research doctorate)
Jennifer Naples, PharmD, BCPS  
3471 5th Ave, Suite 500, Kaufmann Medical Building  
412-864-2082  
jennifer.naples@pitt.edu

**Department:** Department of Geriatrics  
**Affiliation:** School of Medicine, University of Pittsburgh

**Undergraduate:** BS in Psychology, Davidson College, Davidson, NC  
**Graduate:** PharmD, Jefferson School of Pharmacy, Philadelphia, PA  
**Medical School:**  
**PhD:**

**Current Position:** Post-doctoral Fellow, Geriatric Pharmacotherapy

**Research Interest Areas:** Potentially Inappropriate Medications in Aging

**Research Support Sources:** T32-AG021885

**Research Title:** Concordance Among Anticholinergic Burden Scales

**Project Authors:** Naples JG, Marcum ZA, Perera S, Gray SL, Newman AB, Simonsick EM, Yaffe K, Shorr RI, Hanlon JT

**Abstract:**  
Study: There is no gold standard to assess potential anticholinergic burden of medications. The objective of this study was to evaluate concordance among multiple anticholinergic scales.  
Methods: This was a cross-sectional secondary analysis of self-reported baseline medication data for 3,055 community-dwelling older adults in Pittsburgh, PA, and Memphis, TN, aged 70-79 from the Health, Aging, and Body Composition (Health ABC) study. Any use, weighted scores (total scores 0, 1-2, >2), and summated standard daily dosage (participant daily dose divided by minimum effective dose then summed across agents) were calculated using five anticholinergic measures (Anticholinergic Drug Scale [ADS], Anticholinergic Cognitive Burden [ACB] Scale, Anticholinergic Risk Scale [ARS], Drug Burden Index anticholinergic component [DBI-ACh], and Summated Anticholinergic Medications Scale [SAMS]). Concordance was evaluated with kappa statistics and Spearman rank correlations.  
Results: Any anticholinergic use was 43% for the ADS, 51% for the ACB, 23% for the ARS, 29% for the DBI-ACh, and 16% for the SAMS. Pairwise kappa statistics ranged from 0.33 to 0.68. Similarly, weighted kappa statistics ranged from 0.54 to 0.70 among the three scales using weighted scores to create categorical variables (ADS, ARS, and ACB). Spearman rank correlation between the DBI-ACh and SAMS summated standard daily dosage was 0.50.  
Conclusions/Significance: Only poor to moderate concordance was found among the five anticholinergic scales. Future research is needed to examine how these differences in measurement impact their predictive validity with respect to clinically relevant outcomes, such as cognitive impairment.

**Submission Category:** Post-doc (resident physicians, fellows and those who have completed a clinical or research doctorate)
Abstract:
Study: Depression symptoms are common following coronary artery bypass graft (CABG) surgery and predict poorer clinical outcomes. The NHLBI-funded-Bypassing the Blues (BtB) Trial was the first study to test the impact of a “collaborative care” strategy for treating depression following an acute cardiac event on various endpoints. While the study showed improvements in quality of life and health care costs, the impact of co-morbid depression and its treatment on post-CABG mortality is presently unknown.
Methods: BtB enrolled 453 post-CABG patients from 7 Pittsburgh-area hospitals (3/04-9/07). 302 had depression and were randomized to either the intervention (n=150) or usual care control (n=152); 151 were nondepressed controls. We reviewed electronic health records, the Social Security Death Index, Ancestry.com, and made telephone calls to family members, PCPs, and other secondary contacts to determine vital status through 9/30/14 (follow-up range: 7-10.5 years).
Results: Sociodemographic and clinical characteristics of the BtB study cohort was similar by baseline depression and intervention status. To date, we confirmed vital status on 91% (402/440) and identified 124 deaths (28%) as of 9/30/14. Depressed post-CABG patients experienced higher all-cause mortality vs. those non-depressed (35% vs. 24%; P=0.03), a finding also observed among males (38% vs. 24%; P=0.03) but not females (29% vs. 23%; P=NS). However, all-cause mortality was similar by intervention status.
Conclusions/Significance: Post-CABG depression is associated with increased mortality following surgery, particularly among men. While we did not observe a differential mortality risk with depression treatment, we will present updated determination of vital status and Kaplan-Meier analyses at the conference.
Marci Lee Nilsen, PhD, RN
364A Victoria Building
412-648-3027
mlf981@pitt.edu

**Department:** School of Nursing  
**Affiliation:** Acute and Tertiary Care

**Undergraduate:** University of Pittsburgh  
**Graduate:** University of Pittsburgh  
**Medical School:**  
**PhD:** University of Pittsburgh

**Current Position:** Claire M. Fagin Postdoctoral Fellow

**Research Interest Areas:** Caregiving and Technology

**Research Support Sources:** Claire M. Fagin Fellowship

**Research Title:** Technology to Support Family Caregiving: Acceptance and Willingness to Pay

**Project Authors:** Marci Lee Nilsen, Yun Jiang, Annette DeVito Dabbs, Judith Matthews, Karen L. Courtney, Scott Beach, Richard Schulz

**Abstract:**
Recent data from a national web-based survey of 512 family caregivers were used to examine caregiver characteristics that influenced their likelihood of use and willingness to pay for personal and community-based technologies. This poster focuses on caregivers’ acceptance and willingness to pay for mobile devices to track care recipients’ health and provide decision support for health management. Caregivers were adults (18-64 years) caring for parents (79%), spouses (10%), or other relatives (11%) with a variety of health conditions. Ordinal logistic regression showed higher acceptance rates for mobile devices among caregivers with the following characteristics: African American (p<.001), Hispanic (p=0.04), dealing with conditions other than Alzheimer’s disease (p<.001), have positive technology attitudes (p<.001), searching the internet for caregiving information (“sometimes” p=.046; “often” p=.009), currently utilizing commercially-available caregiving technologies (p=.003). Linear regression showed significant associations between willingness to pay higher amounts out-of-pocket for mobile devices and the following caregiver characteristics: income (“$20,000-$29,999” p=.035, “$75,000-$99,999” p=0.038), currently utilizing commercially-available caregiving technologies (p<.001), searching the internet for caregiving information (“sometimes” p=.008; “often” p=.037). Thirty-five percent of caregivers were not willing to pay anything out of pocket, whereas 65% of caregivers were willing to pay a median of $25 per month. Patterns of results for health kiosks and wearable camera systems were similar. Although acceptance of these technologies is relatively high, particularly among current technology users, willingness to pay may be a formidable obstacle to adoption.

**Submission Category:** Post-doc (resident physicians, fellows and those who have completed a clinical or research doctorate)
Adam Santanasto, PhD, MPH
130 N. Bellefield Ave, Pittsburgh, PA 15213
610-905-6424
ajs51@pitt.edu

Department: Epidemiology/Graduate School of Public Health
Affiliation: University of Pittsburgh

Undergraduate: University of Pittsburgh
Graduate: University of Pittsburgh
Medical School:
PhD: University of Pittsburgh

Current Position: Post-Doctoral Scholar

Research Interest Areas: Body Composition, Mitochondrial function, fatigability, physical function and disability

Research Support Sources: NIH/NIA T32 (T32-AG-000181)

Research Title: The Effect of Long Term Physical Activity versus Health Education on Grip Strength, Gait Speed, Chair-Rise Time and Balance in LIFE Study

Project Authors: Adam J. Santanasto1, Nancy W. Glynn, Laura Lovato, Steven N. Blair, Elsa S. Strotmeyer, Bret H. Goodpaster, Marco Pahor, Anne B. Newman

Abstract:
The Lifestyle Interventions and Independence for Elders (LIFE) Study, a randomized controlled trial of 1635 older adults, showed that the rate of mobility disability was reduced with physical activity (PA) compared with successful aging health education (SA). To better understand aspects of performance possibly contributing to this benefit, we evaluated intervention effects on grip strength, the Short Physical Performance Battery (SPPB: score 0-12) and its components (usual gait-speed, balance and chair-rise scores (each 0-4)). Mixed effects models were used to compare intervention effects at 6-, 12- 24- and 36-months. Enrolled participants were sedentary with SPPB <10 (mean 7.4 ± 1.6), age 78.9 ± 5.2 years and 67.2% were women. Total SPPB score was higher in PA vs. SA across all follow-up times (p=0.042), with the most pronounced effects observed during the first year (6-months: 8.5 ± 0.1 vs. 8.2 ± 0.1, 12-months: 8.3 ± 0.1 vs. 8.1 ± 0.1). Balance score was higher in PA vs. SA at 6-months (3.03 ± 0.03 vs. 2.91 ± 0.03, p=0.01) but similar at all other follow-up times (overall p=0.12). Similarly, chair-rise score was higher in PA vs. SA across all follow-ups (p<0.001). No differences in gait-speed (overall p=0.78) or grip-strength (overall p=0.62) were observed at any follow-up time. In conclusion, lower extremity performance improved in both groups from baseline, but significantly more in the PA group, especially in chair-rise score. This suggests that better lower extremity muscle function may be important in the prevention of mobility disability.

Submission Category: Post-doc (resident physicians, fellows and those who have completed a clinical or research doctorate)
Numerous studies have documented the health benefits of volunteerism; however, most have focused on the benefits of volunteerism measured at only one point in time. Few studies have explored the role of long-term participation in volunteer activities as a predictor of health outcomes. In the current study, we explored how sustained commitment to volunteer activities might be prospectively associated with functional limitations and evaluated potential psychological mediators. Participants were 9,772 individuals who participated in the Health and Retirement Study (a population-based longitudinal study of U.S. adults over the age of 50) and who had no difficulties with 5 activities of daily living (ADLs) or 5 instrumental activities of daily living (IADLs) at baseline (2004). Sustained volunteerism was measured at baseline by summing the number of waves in which participants reported any volunteer work in the most recent 4 HRS waves. Multiple logistic regression was used to assess risk of developing any ADLs or IADLs at 4-year follow-up. All analyses controlled for baseline health status and demographic variables. For each increase in the number of waves of volunteer work, participants had a 7% and 6% decreased risk of difficulties with IADLs and ADLs, respectively, over the 4-year follow-up. Neither sex nor age moderated the association between sustained volunteerism and difficulties with ADLs/IADLs. These findings suggest that long-term volunteering may improve psychological well-being and, consequently, decrease risk of functional limitations among mid and late-life adults.