19th Annual Forum on Aging

Sponsored by
The Sealy Center on Aging in collaboration with Research Services

October 22, 2015
5:00p.m. to 7:00p.m.
Levin Hall Dining Room

Web Site: http://www.utmb.edu/scoa
Dear Forum on Aging Attendees:

On behalf of the Sealy Center on Aging and the Department of Research Services, I would like to thank you for being a part of the 19th Annual Forum on Aging poster session. This is one of the events that we look forward to most during the year, as it provides an opportunity for researchers from all backgrounds and levels of expertise to share their aging-related work.

The major purpose of the forum is to inform gerontology researchers, in particular, and the UTMB community, in general, of the types of research on aging going on at UTMB and of the resources available from the Sealy Center on Aging. This year, we are proud to say we have posters from teams of investigators encompassing all UTMB Schools here to showcase their research.

Again this year, we’d like to extend a special “thank you” to Sigma Xi for sponsoring the postdoctoral awards. Best of luck to all the students and postdoctoral fellows who have submitted a poster for this event.

Thank you for joining us, and we hope you enjoy this evening as much as we do.

Sincerely,

Elena Volpi, MD, PhD
Director, Sealy Center on Aging
TABLE OF CONTENTS

Poster Index by First Author/Board Number Index………………. I

Poster Presentation Abstracts…………………………………….. II

Programs & Services/Award Winners ................................. III

* Manuscript Office
* Geriatric Medicine Fellowship Program
* MSTAR Program (2010-2015)
* Research Services
* UTMB Aging-Related Grant Funding
* Forum on Aging Award Winners (2001-2014)
* Lefeber Scholar Award Winners
<table>
<thead>
<tr>
<th>Presenting Author Index</th>
<th>Abstract/Board Number follows author’s name</th>
</tr>
</thead>
<tbody>
<tr>
<td>* = Student poster</td>
<td></td>
</tr>
<tr>
<td>** = Post-doctoral poster</td>
<td></td>
</tr>
<tr>
<td>Al Snih, Soham ................................... 64</td>
<td></td>
</tr>
<tr>
<td>Ali, Syed Rywan ................................... 33*</td>
<td></td>
</tr>
<tr>
<td>Alshammari, Musaad A ................................ 34*</td>
<td></td>
</tr>
<tr>
<td>Alshammari, Tahani K ................................ 35*</td>
<td></td>
</tr>
<tr>
<td>Arentson-Lantz, Emily 66, 67 .....................</td>
<td></td>
</tr>
<tr>
<td>Asghar, Rabia .................................... 44**</td>
<td></td>
</tr>
<tr>
<td>Behnia, Faranak ................................... 49, 50**</td>
<td></td>
</tr>
<tr>
<td>Borack, Michael ................................... 43**</td>
<td></td>
</tr>
<tr>
<td>Briley, David .................................... 36*</td>
<td></td>
</tr>
<tr>
<td>Cantu, Daniel V .................................... 29*</td>
<td></td>
</tr>
<tr>
<td>Chapman, Summer .................................. 4</td>
<td></td>
</tr>
<tr>
<td>Comerota, Michele ................................. 37*</td>
<td></td>
</tr>
<tr>
<td>Deer, Rachel R 45, 46** ............................</td>
<td></td>
</tr>
<tr>
<td>Downer, Brian .................................... 41**</td>
<td></td>
</tr>
<tr>
<td>Dudek, Emily .................................... 22*</td>
<td></td>
</tr>
<tr>
<td>Dutta, Eryn Hart .................................. 56</td>
<td></td>
</tr>
<tr>
<td>Eschbach, Karl .................................... 8, 9</td>
<td></td>
</tr>
<tr>
<td>Erpelding, Nicole Kay ............................. 13*</td>
<td></td>
</tr>
<tr>
<td>Fang, Xiao .................................... 26, 27*</td>
<td></td>
</tr>
<tr>
<td>Fisher, Steve R .................................... 59</td>
<td></td>
</tr>
<tr>
<td>Galvan, Elfego .................................... 51**</td>
<td></td>
</tr>
<tr>
<td>Garach, Prajesh .................................... 57</td>
<td></td>
</tr>
<tr>
<td>Gerson, Julia E .................................... 38*</td>
<td></td>
</tr>
<tr>
<td>Graber, Ted G 52, 53** .............................</td>
<td></td>
</tr>
<tr>
<td>Gonzalez-Gonzalez, Cesar .......................... 65</td>
<td></td>
</tr>
<tr>
<td>Goodlett, Shawn .................................. 5</td>
<td></td>
</tr>
<tr>
<td>Guerrero, Cesar A .................................. 68</td>
<td></td>
</tr>
<tr>
<td>Ivash, Catherine .................................. 60</td>
<td></td>
</tr>
<tr>
<td>James, Colleen Rose ................................ 61</td>
<td></td>
</tr>
<tr>
<td>Jana, Kyu ........................................... 62</td>
<td></td>
</tr>
<tr>
<td>Krishnan, Balaji .................................. 58</td>
<td></td>
</tr>
<tr>
<td>Krishnan, Shilpa ................................... 42**</td>
<td></td>
</tr>
<tr>
<td>Kulkarni, Kshitija A ................................ 23*</td>
<td></td>
</tr>
<tr>
<td>Kumar, Amit 24, 25* ................................</td>
<td></td>
</tr>
<tr>
<td>Kuo, Yong-Fang ................................. 12</td>
<td></td>
</tr>
<tr>
<td>Lewis, Zakkoyya H ................................. 14*</td>
<td></td>
</tr>
<tr>
<td>Loresto, Figaro L .................................. 19*</td>
<td></td>
</tr>
<tr>
<td>Marino, Claudia ................................... 39*</td>
<td></td>
</tr>
<tr>
<td>Marshall, Sharon F 47** ...........................</td>
<td></td>
</tr>
<tr>
<td>Middleton, Addie 48** .............................</td>
<td></td>
</tr>
<tr>
<td>Moran, Jacob 28* ..................................</td>
<td></td>
</tr>
<tr>
<td>Nenov, Miroslav N 54** .............................</td>
<td></td>
</tr>
<tr>
<td>Nilson, Ashley 40* ................................</td>
<td></td>
</tr>
<tr>
<td>Ottenbacher, Kenneth ............................. 1</td>
<td></td>
</tr>
<tr>
<td>Paddon-Jones, Doug ................................. 6</td>
<td></td>
</tr>
<tr>
<td>Peniche, Alex 55** ................................</td>
<td></td>
</tr>
<tr>
<td>Prochaska, John D ................................. 7</td>
<td></td>
</tr>
<tr>
<td>Randolph, Amanda C 20* ............................</td>
<td></td>
</tr>
<tr>
<td>Rhodes, Avery 21* ................................</td>
<td></td>
</tr>
<tr>
<td>Saenz, Joseph L 15* ................................</td>
<td></td>
</tr>
<tr>
<td>Sheller, Samantha 30, 31, 32* .....................</td>
<td></td>
</tr>
<tr>
<td>Vickers, Benjamin 16, 17* ..........................</td>
<td></td>
</tr>
<tr>
<td>Volpi, Elena 2, 3 ................................</td>
<td></td>
</tr>
<tr>
<td>Welsh, Rodney 63 ...................................</td>
<td></td>
</tr>
<tr>
<td>Wong, Rebeca 10, 11 ................................</td>
<td></td>
</tr>
<tr>
<td>Zaiontz, Russell Gordon 18* ........................</td>
<td></td>
</tr>
</tbody>
</table>
The Center for Large Data Research and Data Sharing in Rehabilitation is an extension of the previously funded (R24), Center for Rehabilitation Research using Large Datasets (CRRLD). The CRRLD was funded in 2010 to build scientific capacity among rehabilitation scientists in research using large healthcare and administrative datasets. The new Center will continue to build scientific capacity in large data research by focusing on education and learning experiences designed to promote collaborative research through our successful pilot studies and visiting scholar programs. The mission of the new (P2C) Center will expand to include an important focus on data sharing and archiving information from completed rehabilitation research studies. This new focus addresses recent federal requirements for sharing information and data from research studies supported by government funding. The requirement will result in datasets becoming available for secondary data analysis by rehabilitation and disability investigators.

The P2C Center involves a consortium of investigators from the University of Texas Medical Branch, Cornell University, and the University of Michigan. The transformed P2C Center will develop education and training programs, facilitate interdisciplinary collaboration, and support pilot studies. Each of these components will include activities and learning experiences involving the Center’s two focus areas:

- Developing research capacity in the design, analyses and interpretation of large data, and
- Creating an infrastructure to support archiving and sharing information from completed rehabilitation research studies in order to make them available for secondary data analyses.

The new center will expand our successful Rehabilitation Data Directory with the creation of an archiving and data sharing portal. The portal will provide access to archived datasets along with information and learning opportunities related to data sharing. The P2C Center will build scientific capacity in important new areas related to health care reform and large data research that will advance rehabilitation science and practice.
CLAUDE D. PEPPER OLDER AMERICANS INDEPENDENCE CENTER (OAIC)

Dr. Elena Volpi, Department of Internal Medicine, Sealy Center on Aging

The UTMB Pepper Center is currently comprised by five cores led by senior investigators of the Sealy Center on Aging: the Leadership Administrative Core, led by Drs. Elena Volpi and James Goodwin; the Research Career Development Core/KL2 Program, led by Drs. Kenneth Ottenbacher, Rebeca Wong and James Goodwin; the Pilot/Exploratory Studies Core, led by Drs. Melinda Sheffield-Moore and Kyriakos Markides; the Clinical Research Resource Core, led by Drs. Elena Volpi, Douglas Paddon-Jones and Gulshan Sharma; the Metabolism and Biology Resource Core, led by Drs. Blake Rasmussen and Labros Sidossis; and the Biostatistics and Data Management Resource Core, led by Drs. Kristopher Jennings and Yong-Fang Kuo.

The Center has been continuously funded since 2000. From the very beginning, we have nurtured a multidisciplinary translational research culture to fulfill our mission, which is to improve physical function and independence in older adults. Central to this mission is the career development and training of the next generation of leaders in geriatric research.

Our scientific focus has evolved over the years from a narrow interest in the mechanisms of sarcopenia to the translation of our findings in much needed patient-centered interventions to improve physical function and independence. This evolution derives not only from the natural progression of our research from basic discoveries to healthy humans and from healthy humans to patients, but also from a deliberate effort of the OAIC leadership to promote and support collaborations between scientists in muscle aging and investigators in population health and outcomes research on aging and rehabilitation. This second line of research has always been present from the beginning of our OAIC, but was conducted in parallel with muscle research. The intersection of these two lines has accelerated the development of new research foci. An example is the rapid development of patient-centered outcomes research in the elderly, which culminated with the funding of a large infrastructure grant and, more recently, with our participation in the trans-Pepper patient-centered multicenter clinical trial on fall prevention.
CLAUDE D. PEPPER OLDER AMERICANS INDEPENDENCE CENTER: THE SEALY CENTER ON AGING VOLUNTEER REGISTRY

Dr. Elena Volpi, Department of Internal Medicine, Sealy Center on Aging
Ms. Roxana Hirst, Sealy Center on Aging
Ms. Eloisa Martinez, Sealy Center on Aging

The Volunteer Registry specifically recruits elderly volunteers aged 60 and over interested in participating in research on muscle function, fitness, and health and well-being of older persons. The focus of the UTMB Pepper Center is to examine the effect of exercise, nutrition and hormonal therapy on muscle strength and function in the elderly. In addition, recent studies have measured changes in metabolism related to diabetes and insulin resistance in the elderly. The benefits of being a Pepper volunteer is free extensive lab work up along with comprehensive screenings for heart disease and some types of cancer. Results from screening tests are shared with personal physicians if desired. Also, volunteers receive a free newsletter and health information. Volunteers have the opportunity to help other seniors have a better quality of life though scientific discoveries. There are currently 538 volunteers available to any UTMB researcher (including students). Socio-demographic and health information obtained by a questionnaire is stored in a database managed by the OAIC. Currently, there is no charge to use the registry nor do subjects require compensation. The registry was formed to facilitate research on aging by helping recruit subjects and by disseminating information about research projects through mailing lists, newsletters, and presentations.
STRATEGIES TO REDUCE INJURIES AND DEVELOP CONFIDENCE IN ELDERS

Ms. Summer Chapman, Sealy Center on Aging

Approximately one in three older Americans falls each year and 20-30% of those who fall suffer moderate to severe injuries such as lacerations, hip fractures, or head trauma. The problem is important particularly among those 75 years or older when the incidence of falls rises dramatically. Among older adults, falls are the leading cause of both fatal and nonfatal injuries. In 2010, 2.3 million nonfatal fall injuries were treated in emergency departments and more than 662,000 of these patients were hospitalized, numbers that will rise with the aging of baby boomers. In addition, many who fall do not sustain injuries but develop fear of falling, which may result in self-limiting their activities, leading to reduced mobility with loss of physical fitness further increasing their risk of falling.

The STRIDE Study is a multi-site randomized clinical trial to determine the effectiveness of an evidence-based, multifactorial patient-centered intervention to reduce the risk of serious fall injuries among non-institutionalized older persons. The project is a collaboration among investigators, patients, and other key stakeholders from the 14 Claude D. Pepper Older Americans Independence Centers (OAICs) and 10 healthcare systems where patients will be recruited. The OAIC investigators bring decades of research experience in developing, implementing, and testing interventions to treat and prevent complex geriatrics conditions, including falls. The patients and stakeholders bring their unique personal perspective of how falls and fall injuries affect their lives, the difficulties they face in adhering to interventions, what outcomes are important to them, and what attributes of the interventions render them feasible, scalable, and sustainable. The clinical sites bring participants, clinical environments, and expertise in patient-centered research and implementation.

Clinical Trial Sites:
- University of Texas Medical Branch, Galveston, Texas
- Essentia Health, Duluth, Minnesota
- HealthCare Partners, Torrance, California
- Johns Hopkins Medicine, Baltimore, Maryland
- Mount Sinai Health System, New York, New York
- Partners HealthCare, Waltham, Massachusetts
- Reliant Medical Group, Worcester, Massachusetts
- University of Iowa Health Alliance, Iowa City, Iowa
- University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania
- University of Michigan, Ann Arbor, Michigan

STRIDE is supported by NIA/PCORI award U01AG048270.
GERIATRIC RESEARCH ON THE ACUTE CARE FOR ELDERS (ACE) UNIT

Ms. Shawn M. Goodlett, Sealy Center on Aging
Ms. Roxana M. Hirst, Sealy Center on Aging
Dr. Rachel R. Deer, Sealy Center on Aging

The Acute Care for Elders (ACE) unit, which opened in October 2000, is a 20-bed unit for geriatric patients. The ACE unit utilizes an interdisciplinary approach to patient care with trained geriatric teams. The unit has geriatric certified nurses and patient care technicians. Patients receive hospital care in a more home-like setting. ACE rooms have carpeting, soft lighting, comfortable furniture, and a sleeper couch to accommodate overnight family visitors. The common areas feature a fish tank, piano, and area for group activities.

Geriatric research is crucial to the advancement of translational research and evidence-based practice. The vision of ACE unit research is to make the ACE unit nationally renowned for interdisciplinary translational programs. To work towards this vision, the research objectives are to better understand the health experience of a diverse group of older patients hospitalized with an acute illness and identify those older patients vulnerable to further health declines.

Currently, there are two major studies ongoing on the unit. The first study aims to test the feasibility and efficacy of exercise, nutrition, and testosterone interventions to improve physical function in elderly adults after discharge from the hospital. The second study aims to determine the prevalence of malnutrition and sarcopenia at hospital admission in older adults. With the information collected, our interdisciplinary team of investigators has the potential to provide important scientific information on the health and health outcomes of hospitalized older patients.
PHYSICAL ACTIVITY AND FUNCTIONAL RECOVERY LABORATORY

Dr. Doug Paddon-Jones, Department of Nutrition and Metabolism
Dr. Blake Rasmussen, Department of Nutrition and Metabolism
Dr. Kenneth Ottenbacher, Division of Rehabilitation Sciences
Ms. Jessica Spahn, Department of Nutrition and Metabolism
Dr. Emily Arentson-Lantz, Department of Nutrition and Metabolism

Overview: The Physical Activity and Functional Recovery Lab is a core facility of the Center for Recovery, Physical Activity & Nutrition. Located in the School of Health Professions, the space contains exercise equipment that can be utilized for translational and clinical research in physical activity, exercise and fitness training, and rehabilitation and recovery for muscle health.

Equipment includes:
- Modern resistance exercise machines
- Free weights
- Various cardiovascular equipment
- Parvo Medics True One 2400 Metabolic Cart
  - Capabilities
    - Resting Metabolic Rate
    - Maximal Oxygen Consumption
    - 12 Lead EKG Monitoring

Research Focus: Current research studies using the space examine mechanisms associated with muscle function including:
- Protein synthesis
- Muscle Metabolism
- Cell Signaling
- Role of amino acids and exercise associated with muscle growth and regeneration

Purpose: These research efforts assist in the quantification and evaluation of rehabilitation outcomes. Continuing to expand the network of research laboratories that use the space will provide opportunities for collaboration and integration of research information and activities in muscle biology, motor control, and applied physiology, with basic rehabilitation practice.
UTMB PCOR STAKEHOLDER ENGAGEMENT RESOURCE

Dr. John D. Prochaska, Preventive Medicine and Community Health
Mr. Raul Laureano, Sealy Center on Aging

A key feature of patient-centered outcomes research (PCOR) is stakeholder engagement in the research process. The Patient Centered Outcomes Research Institute notes that “meaningful involvement of patients, caregivers, clinicians, and other healthcare stakeholders throughout the research process—from topic selection through design and conduct of research to dissemination of results.” Stakeholder engagement provides critical insight into the research process leading to more inclusive, transparent, and effective translation and dissemination of findings across the spectrum of research stakeholders on a continuous process towards policy and practice. Engaging a diverse range of stakeholders, while critical to the PCOR research process, can be challenging. The Stakeholder Engagement Resource serves to support and enhance stakeholder engagement in PCOR-related research activities at UTMB. The Stakeholder Engagement Resource is currently building relationships with organizations locally and across the broader Houston-Galveston region that have access to older population patients, caregivers, advocates, and broader stakeholders. In addition, relationships with clinical and policy stakeholders are continuing to be built. Services for researchers interested in increasing stakeholder engagement in their PCOR projects at UTMB include consultation on identification of stakeholders, opportunities to network with potential stakeholders, and support developing metrics for evaluating and documenting engagement efforts. The long-term goal of the PCOR Stakeholder Engagement Resource seeks to achieve the UTMB PCOR Center’s mission to transform UTMB into a center of rigorous, high quality, comparative effectiveness research (CER) and patient-centered outcomes research (PCOR), focused on healthcare decision-making facing older individuals, their providers, and the health systems providing their care.
THE GEOGRAPHY OF CANCER CARE IN TEXAS

Dr. Karl Eschbach, Preventive Medicine and Community Health
Ms. Roxann Grover, Division of Rehabilitation Sciences, Sealy Center on Aging
Ms. Carol Trono, Texas AHEC East, for the CERCIT Investigators

The size and diversity Texas in population, land area, economic base, settlement densities, and local health care markets present substantial challenges to the delivery of cancer care throughout the state.

The CERCIT dissemination core is producing a report and online resource mapping population, economic and health care characteristics of diverse geographic areas in Texas that are relevant to the delivery of cancer care to the state’s population. Maps show population distribution by age and ethnicity, the distribution of primary care physicians, cancer specialists and comprehensive cancers by county. We also present county data on how cancer screening rates, incidence, stage at diagnosis, survival and cancer mortality varies in different areas of the state. As an example, of the state’s 254 counties, only 59 counties has a cancer specialist (medical, surgical or radiation oncologist) practicing in the county. More than 7 million Texans live in a county without an accredited comprehensive cancer center. Screening rates and stage at diagnosis vary sharply in different regions in the state. The maps allow the reader to quickly appreciate some of the challenges in delivering comprehensive cancer care to all Texans.
MORTALITY IN A LONGITUDINAL COHORT OF OLDER MEXICAN AMERICANS: EFFECTS OF VARIATION OF SOCIAL ENVIRONMENT ON RISK OF MORTALITY IN A SETTLED IMMIGRANT POPULATION

Dr. Karl Eschbach, Preventive Medicine and Community Health
Dr. Nai-Wei Chen, Office of Biostatistics
Mr. Lawrence J. Panas, Preventive Medicine and Community Health
Mr. Benjamin Vickers, Preventive Medicine and Community Health
Dr. Kyriakos S. Markides, Preventive Medicine and Community Health

Background. Social epidemiologists pay increasing attention to place effects on health and mortality. Populations in different social environments frequently have sharply different schedules of age-sex specific mortality, adjusting for individual characteristics. Place differentials in mortality adjusted for composition tend to be stable over time. Migration highlights place effects on health by distributing immigrating populations and their descendants over different settings. In particular, Mexican populations moving to the United States settled in environments that were extremely diverse in a number of dimensions, including degree of urbanization, industrial composition of the economic base, employment-to-population ratios, cost-of-living, ethnic segregation and ethnic isolation. We seek to understand how these variables have influenced the patterns of mortality in an older Mexican American population of immigrants and their descendants.

Data. We use data from the Hispanic Established Population for Epidemiological Studies of the Elderly. This is a longitudinal cohort of 3,942 older Mexican Americans who were at least age 65 when screened for enrollment in 1993/4 or at least 75 years old when screened for enrollment in a second cohort, established in 2004. Subsequent to enrollment, mortality has been ascertained through both active follow-up through 7 subsequent interview waves, and by linkage to the National Death Index, a database of mortality records maintained by the U.S. Centers for Disease Control and Prevention. Using the National Death Index, vital status has been ascertained through December 31, 2014. The cohort has had in aggregate nearly 43,000 person-years of exposure to the risk of mortality through this date.

Analysis. Using data from the first 7 years of the study (1993-2000) we had reported Cox proportional hazard models showing lower mortality in small areas (census tracts) with higher concentration of persons of Mexican American origin, and higher mortality in areas with a higher concentration of poverty (Eschbach et al American J Public Health, 2004). In the current research with 20 years of follow-up, we take a broader approach. First, we consider effects at several levels of aggregation, including administrative state, metropolitan areas and labor market areas, county, as well as census tract. Second, we consider a broader set of measures of economic opportunity as potential correlates of mortality in each region, in keeping with recent work highlighting regional differences in employment opportunities as determinants of social and health outcomes. Third, we investigate a variety of strategies for addressing spatial autocorrelation, included nested multilevel survival models as well as spatial lag models. Fourth, we identify a richer set of measures of individual characteristics including occupational experiences and living arrangements as confounding and mediating influences on mortality.
THE MEXICAN HEALTH AND AGING STUDY (MHAS)

Dr. Rebeca Wong, Preventive Medicine and Community Health, Sealy Center on Aging

The Mexican Health and Aging Study (MHAS) started as a longitudinal prospective study of Mexican aging with a national sample of persons aged 50 and older (n=15,186), using study protocols and survey instruments that were highly comparable to the U.S. Health and Retirement Study. Emphasis areas are the study of aging in a mixed infectious-chronic epidemiological regime; assessment of the quality of self-report; the continuous Mexico-U.S. migration and its consequences for aging; the impact of a recent health sector reform in Mexico; health and economic conditions in early life and their consequences in old age; and mortality. The data enables enhanced research on aging and related population changes: of physical and mental health and disability, health behaviors and health care use, family support, aging and the life course, wealth, income, labor and retirement, migration and old age, and mortality, in a developing country aging fast with limited institutional support for individuals in old age. In addition, the data enables cross-period and cross-cohort analyses of health and aging, and is highly comparable with other similar studies in developed and developing countries, in particular the United States, enhancing the study of aging and health with a cross-national perspective.

The third wave of the study was fielded in Fall 2012, which involved re-contacting the follow-up sample and adding new sample, for a total of n=21,371 study subjects distributed throughout Mexico. Objective markers (height, weight, other anthropometric measures; grip strength, walking speed, and a blood sample) were obtained from a sub-sample of approximately 2,000 subjects. The fourth wave fieldwork will begin in October 2015. For more details, see the study website: www.MHASweb.org.

The MHAS is partly supported by the National Institutes of Health/National Institute on Aging (R01AG018016, R. Wong, PI). Institutions collaborating in the study are the University of Texas Medical Branch (UTMB), the University of Wisconsin, the Instituto Nacional de Estadística y Geografía (INEGI, Mexico), the Instituto Nacional de Geriatría (INGER, Mexico), and the Instituto Nacional de Salud Pública (INSP, Mexico).
WORLD HEALTH ORGANIZATION/PAN AMERICAN HEALTH ORGANIZATION (WHO/PAHO) COLLABORATING CENTER ON AGING AND HEALTH

Dr. Rebeca Wong, Preventive Medicine and Community Health, Sealy Center on Aging

The WHO/PAHO Collaborating Center on Aging and Health, as part of the Sealy Center on Aging, is committed to expand research and training programs on the health of older adults throughout Latin America since 2007. This mission is accomplished by equipping countries with population data, proven best-practice tools, knowledge solutions, and expertise, and by activating networks and partnerships that catalyze and sustain positive change. The purposes of the WHO/PAHO Collaborating Centers are:

1) To serve as an internationally recognized and leading center for research on aging in Latin America;

2) To collaborate with World Health Organization (WHO) and Pan American Health Organization (PAHO) in identifying institutions in Mexico, the Caribbean and Latin America willing to establish and enhance formal research collaborations and pursue opportunities for clinical and scientific training with a focus on older adults;

3) To support a faculty exchange program with partner institutions whereby faculty spend 3 to 12 months learning and applying research and scientific methods to the study of older Latino adults. Upon returning to their origin institutions, the scholars continue collaborations with the UTMB research groups;

4) To establish training opportunities in aging research for doctoral students and postdoctoral fellows from Mexico, the Caribbean and Latin America;

5) To establish clinical fellowship experiences for physicians, nurses and other health care professionals from partner institutions in geriatric medicine and health care; and

6) To cooperate and collaborate with WHO and PAHO on the translation and dissemination of research findings on older adults through conferences, workshops, publications, and electronic media to improve clinical practices, refine educational curricula, and impact public policy.

For more details, please visit the WHO/PAHO Collaborating Center website at: http://www.utmb.edu/scoa/whopaho/
12

Program - Table

STATISTICAL HELP IS AVAILABLE, OFFICE OF BIOSTATISTICS

Dr. Yong-Fang Kuo, Office of Biostatistics

Faculty members: J. Baillargeon N. Chen K. Jennings D. Jupiter H. Ju Y. Kuo (director) H. Spratt A. Tan D. D. Zhang Staff: D. Adhikari C. Andersen G. Baillargeon W. Chan S. Li Y. Lin W. Zhang J. Zhou The Office of Biostatistics (OBIOS) provides statistical support services to all UTMB faculty, staff and students. The areas of expertise include design support, database management and data analysis. Design support services include power calculations, sample size determinations, and identification of appropriate methods to minimize experimental error. Data management services include development of project specific systems for data acquisition, scheduling and modification, while data analysis services focus on the application of appropriate methods to allow valid statistical inferences. In addition, through long-term collaboration between a UTMB researcher and a member of the OBIOS, adaption and development on quantitative research can be conducted to maximize the information obtained from biomedical data. The OBIOS is the point of contact for various software packages, including SAS® (a statistical application with extensive data management capabilities), nQuery Advisor® (a statistical application for sample size calculation and power analyses), ArcGIS (a mapping and spatial analysis program) and TreeAge (a visual modeling tool for building and analyzing decision trees for cost-effectiveness analyses). The OBIOS maintains the United Health Group insurance claims database (Clininformatics DataMart), which contains the medical and pharmacy claims for approximately 56 million enrollees. This database offers numerous opportunities for researchers who are interested in population studies. The OBIOS also provides Biostatistics, Epidemiology and Research Design (BERD) support to the Clinical Translational Science Award (CTSA).
ROLE OF OCCUPATIONAL THERAPY IN DIABETES MANAGEMENT FOR LOW SES COMMUNITY DWELLERS

Ms. Nicole Kay Erpelding, Department of Occupational Therapy
Dr. Karen Aranha, Department of Occupational Therapy

Diabetes Mellitus Type-2 has become a pervasive burden on the U.S. healthcare system with the most predominant populations being low SES communities, ethnic minorities, and individuals 60 years and older. Mortality due to diabetes is highly correlated with an education below 12th grade and a low income (Saydah & Lochner, 2010). A multi-disciplinary team approach with the inclusion of rehabilitation professionals in addressing the ill effects of diabetes has been favored, however occupational therapists (OTs) have not been utilized (Ontario Technology Assessment Series, 2009). The OT skill set that includes behavioral intervention to promote lifestyle changes can complement the frequently used medical teams consisting of nurses, doctors, dietitians and pharmacists. The purpose of this literature review was to identify the role occupational therapy could play in addressing diabetes management with low SES community dwellers. Methods included a literature search of Cochrane, Google Scholar, and PubMed was conducted. Findings suggest that OTs utilizing a biopsychosocial framework can use behavioral intervention to address diabetes management with low SES community dwellers. Using this framework, OTs could bridge clients’ real life practices with goals of the multi-disciplinary medical team. This literature search has helped identify a niche for OTs to be involved in diabetes management within the community of Galveston at Saint Vincent’s Student Clinic. Saint Vincent’s provides healthcare services to over 800 underserved individuals a year, of which approximately 19 percent are diabetic, 21 percent are overweight, and 50 percent are obese. The UTMB Community Health Program is currently providing education and subsidized prescriptions for this population. Recommendations include expanding the diabetes management team to include UTMB OT students to improve diabetes outcomes by addressing behavioral management.
THE ROLE OF PHYSICAL ACTIVITY AND PHYSICAL FUNCTION ON THE RISK OF FALLS IN OLDER MEXICAN AMERICANS

Ms. Zakkoyya H. Lewis, Division of Rehabilitation Sciences
Dr. Kyriakos S. Markides, Preventive Medicine and Community Health
Dr. Kenneth Ottenbacher, Division of Rehabilitation Sciences
Dr. Soham Al Snih, Division of Rehabilitation Sciences

We investigated the relationship between physical activity and physical function on the risk of falls over time in a cohort of Mexican American adults aged 75 and older from the Hispanic Established Population for the Epidemiologic Study of the Elderly (H-EPESE). Participants were divided into four groups according to the level of physical activity and physical function: low physical activity and low physical function (n=453); low physical activity and high physical function (n=54); high physical activity and low physical function (n=307); and high physical activity and high physical function (n=197). Using generalized linear equation estimation, we showed that participants with high physical activity and low physical function had a greater fall risk, overtime, followed by the high physical activity and high physical function group. Participants seldom took part in activities that improve physical function. To prevent falls, modifications to physical activity should be made for older Mexican Americans.
Minority Health/Health Disparities - Student

FACETS OF SOCIOECONOMIC POSITION AND THE ONSET AND PROGRESSION OF FUNCTIONAL LIMITATION IN MEXICO

Mr. Joseph L. Saenz, Preventive Medicine and Community Health
Dr. Rebeca Wong, Preventive Medicine and Community Health, Sealy Center on Aging

Background: Research in the United States has found education to predict functional limitation onset while income predicts functional limitation progression. We extend this framework to Mexico, a developing country, to examine these relationships among older Mexican adults.

Method: We use the Mexican Health and Aging Study 2001-2012 (age 50+, n=13,340). Functional limitation is assessed using Nagi and Activities of Daily Living scales. Functional limitation onset and progression are modeled using multinomial regressions.

Preliminary Results: Education and wealth predicted functional limitation onset (among those without existing functional limitation). Education and income predicted functional limitation progression (among those with existing functional limitation). For both functional limitation onset and progression, education was a stronger predictor than income and wealth.

Discussion: In Mexico, the lower educated seem more likely to develop functional limitation and to deteriorate faster than the higher educated. Compared to developed societies, income and wealth seem to play a smaller role in disablement than education.
Minority Health/Health Disparities - Student

RELIGIOUS SERVICE ATTENDANCE AS A PREDICTOR OF 6-YEAR SURVIVAL IN ELDERLY MEXICAN AMERICANS WITH FIRST-INCIDENT ACUTE MYOCARDIAL INFARCTION

Mr. Benjamin Vickers, Preventive Medicine and Community Health

The benefits of religious service attendance, religious involvement, and religiosity/spirituality for mortality protection have been well documented. The present study assesses whether changes in religious service attendance after a first-incident myocardial infarction (M.I.) in elderly Mexican Americans predict survival over a six-year follow-up time. The study data are from the Hispanic Established Population for the Epidemiological Study of the Elderly (H-EPESE) multi-wave prospective cohort study. The study subjects were Mexican Americans living in the southwestern U.S. age 65 years or older at Wave 1 (1993/94). Given a first-incident M.I. between Waves 1 (1993/94) and 3 (1998/99), the study addresses how changes in religious service attendance from Wave 1 (1993/94) to Wave 4 (2000/01) compare to maintaining the same or no religious service attendance in a six-year survival study from Wave 4 (2000/01) to Wave 6 (2006/07). The analysis uses Kaplan-Meier survival curves, the log-rank test, and multivariable Cox Proportional Hazards models. Post-first-incident M.I. religious attendance frequency is a significant & robust predictor of mortality hazard and is not simply a proxy for health status. The general mortality hazard of a decrease in religious service attendance from before to after the first-incident M.I. is largely a proxy indicator for declines in health and functional statuses that impact the ability of subjects to continue their desired level of religious participation. Although not statistically significant, there appears in the data a greater mortality hazard for those who increase their religious service attendance from before to after a first-incident M.I. compared to those who maintained the same frequency of attendance, which may indicate a spiritual coping mechanism for those faced with a reduced life expectancy.
CAREGIVER INCOME MODIFICATION OF THE EFFECT OF HEALTH STATUS IN ELDERLY MEXICAN AMERICANS ON CAREGIVER DEPRESSIVE SYMPTOMS

Mr. Benjamin Vickers, Preventive Medicine and Community Health
Dr. Nai-Wei Chen, Preventive Medicine and Community Health
Dr. Brian Downer, Sealy Center on Aging
Dr. Kyriakos Markides, Preventive Medicine and Community Health

Previous research on depressive symptoms in caregivers of Mexican American elders has shown that despite the status of the care-receiver’s health, the income of the caregiver has a highly significant direct effect on his or her depressive symptoms and may modify the effect of care-receiver health on caregiver depressive symptoms. This study addresses how caregiver income modifies the role of the care-receiver’s health in predicting caregiver depressive symptoms and explores specific challenges in caregiving that contribute to this result. The subjects include 592 caregiver/care-receiver dyads from Wave 7 of the Hispanic Epidemiologic Study of the Elderly (HEPESE, 2010/2011). While perceived social stress mediates the role of Neuropsychiatric Inventory scores on caregiver depressive symptoms regardless of caregiver income, care-receiver physical, mental, and psychological functioning, as well as the burden of caregiving in terms of role, time, and financial obligation, are only associated with caregiver depressive symptoms in low-income caregivers.
INDEPENDENTLY-LIVING ELDERS’ EXPERIENCES UTILIZING THE HEALTHCARE SYSTEM: A CRITICAL ETHNOGRAPHY

Mr. Russell Gordon Zaiontz, School of Nursing
Dr. Carolyn Phillips, School of Nursing

Elders becoming eligible for Medicare are projected to double reaching 72.1 million by 2030 (U.S. Census Bureau, 2011). The healthcare system (HCS) is challenged to provide equitable, elder-specific, and cost-effective healthcare; these challenges may be magnified as elder numbers continue to grow. A knowledge gap exists regarding independently-living elders’ (ILE) healthcare utilization; this gap impedes options for improving elders’ healthcare. The purpose of the study was to explore independently-living elders’ healthcare experiences utilizing the healthcare system. The investigator employed a qualitative approach, critical ethnography (Thomas, 1993), to explore the research question, “What are independently-living elders’ experiences utilizing the healthcare system?” Twelve participants were recruited using purposeful and snowball sampling. Study data was collected using semi-structured interviews and field observations. Data analysis revealed that ILEs’ strong drive to maintain their own autonomy and their use of a wide repertoire of resources facilitated their interactions with and their utilization of the HCS. ILEs first must come to terms with their healthcare need, then decide from whom to seek care. ILEs expect healthcare providers to partner with them in the process of meeting their healthcare needs. ILEs’ access and utilization of the HCS can be constrained by individuals and procedures within the HCS. The study has implications for healthcare policy and providers; it also speaks to the National need to improve public health and to reduce healthcare costs.
SOCIAL NETWORK ANALYSIS TO EXAMINE PHYSICIAN USE OF MINIMALLY INVASIVE BREAST BIOPSY ON ELDERLY MEDICARE PATIENTS

Mr. Figaro L. Loresto, Preventive Medicine and Community Health
Mr. Deepak Adhikari, Department of Surgery
Dr. Hemalkumar Mehta, Department of Surgery
Dr. Taylor Riall, University of Arizona, Department of Surgery
Dr. Daniel Jupiter, Preventive Medicine and Community Health

Background: For patients with palpable breast masses, minimally invasive breast biopsy (MIBB) is the gold standard. MIBB offers several advantages over open biopsy including cost-effectiveness, lower rate of complications, and increased comfort. In 2009, the National Comprehensive Cancer Network established a target rate of 90% MIBB for breast biopsies; however, recent studies have demonstrated rates lower than the target. These studies showed that surgeon and facility variation in the use of MIBB was significant. Social Network Analysis is a methodology that can further explore these variations by looking at networks of physician relationships. We explore networks of physicians involved in breast cancer care and the relation of their network characteristics to MIBB rates.

Methods: Using 2010 Medicare data, we identified patients treated for breast cancer. Their physicians were identified, and a network was created using a shared patient model in which physicians are nodes and shared patients are ties. We analyzed the following metropolitan areas: Houston, Austin, and the Rio Grande Valley (RGV). Using the fast greedy algorithm that determines highly connected sub-networks of physicians, communities were created. We calculated network-level network characteristics such as density and centralization. Descriptive, bivariate, and regression analyses were conducted, to understand network impact on MIBB rate.

Results: Houston was the largest network of the three. Austin had the highest MIBB rate at 89%. There was a trend toward communities with higher centralization and density having lower rates of MIBB compared to those with lower centralization and density.

Conclusion: Previous network literature suggests that networks with high centralization and density resist diffusion of new ideas. This is echoed in our physician networks.
EFFECTS OF EXERCISE AND SUPPLEMENTATION ON PHYSICAL FUNCTION AND GLUCOSE METABOLISM IN OLDER ADULTS

Ms. Amanda C. Randolph, School of Medicine
Dr. Melissa M. Markofski, University of Houston, Health and Human Performance
Dr. Kyle L. Timmerman, Miami University, Department of Kinesiology and Health
Dr. Jared M. Dickinson, Arizona State University, School of Nutrition and Health Promotion Exercise Science and Health
Dr. Blake B. Rasmussen, Department of Nutrition and Metabolism
Dr. Elena Volpi, Department of Internal Medicine, Sealy Center on Aging

BACKGROUND: Sarcopenia contributes to frailty, disability, and dependence in older adults. Exercise and dietary amino acid supplementation may aid in sarcopenia prevention by enhancing insulin sensitivity. We hypothesize that the addition of essential amino acid supplementation to aerobic exercise would attenuate insulin resistance more than aerobic exercise alone. METHODS: Older adults were randomized into one of two groups for a six-month intervention: aerobic exercise with 15g of essential amino acid supplementation (EAA, n=13; age=71.17 ± 1.15y) or aerobic exercise with placebo (PLA, n=11; age=73.64 ± 1.38y). All subjects participated in supervised treadmill walking at 70% maximum heart rate 3d/wk. Supplement or placebo was double-blinded and ingested daily. Measures of muscle strength, physical function, aerobic fitness, and glucose tolerance were collected at baseline and 6 months. Changes in insulin resistance were calculated using the oral disposition index.

RESULTS: After six months, both groups increased (p<0.05) VO2peak (EAA=15.3 ± 4.1%, PLA=16.3 ± 4.2%) and fast walking speed (EAA=5.4 ± 1.1%, PLA=4.6 ± 1.7%). In contrast, only EAA increased (p<0.05) leg strength (EAA= 17.9 ± 6.4%, PLA= 11.6 ± 7.1%). Although preliminary (n=5 for each group), there was a larger improvement in insulin resistance for EAA (77.7%) versus PLA (30.2%) subjects. CONCLUSION: Aerobic exercise with EAA supplementation increases muscle function, while decreasing insulin resistance. This treatment is a possible option for reducing the risk of developing sarcopenia.

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THE ASSOCIATION OF FRUIT AND VEGETABLE CONSUMPTION AND HEALTH STATUS IN OLDER ADULTS

Ms. Avery Rhodes, School of Health Professions
Ms. Shawn Goodlett, Sealy Center on Aging
Dr. Rachel R. Deer, Sealy Center on Aging

Adequate fruit and vegetable intake, along with a low-fat diet, has been found to be beneficial in weight management, and a decreased risk in the development of certain chronic diseases, such as metabolic syndrome, cardiovascular disease, and type 2 diabetes. We hypothesized that elderly adults who consume more fruits and vegetables will have a better overall health status. Data for this project was pulled from a larger study assessing malnutrition and/or sarcopenia at hospital admission. Study participants were older adults (>65 years) admitted to the Acute Care for Elders (ACE) unit at the University of Texas Medical Branch. Patients were excluded if measures were not able to be taken within 72 hours of admission. The Rapid Eating and Activity Assessment Short Form (REAP-S) was used to quantify fruit and vegetable intake. The Charlson comorbidity index and number of prescriptions at discharge were used as determinants of health status. Preliminary data from this ongoing study indicate that individuals with adequate or above adequate intake of fruits and/or vegetables did not have lower comorbidity index or take less prescription drugs, and therefore were not typically healthier than those who consumed less than adequate intake. Surprisingly, the majority of our population consumed both inadequate fruit and vegetable intake, however, it was more common for individuals to consume adequate vegetables versus adequate fruit.
A REVIEW OF THE LITERATURE REGARDING THE USE OF MANUAL THERAPY (MT) TECHNIQUES AND THEIR EFFECTIVENESS ON IMPROVING POSTURE IN ADULTS

Ms. Emily Dudek, School of Health Professions
Dr. Lynne Hughes, School of Health Professions

Background: Hyperkyphosis of the upper spine is a condition that increases with age and leads to decreased pulmonary function, balance, and muscle strength. Numerous reviews have looked at the effect of therapeutic exercise, but few have examined the effects of MT on posture. Methods: Three electronic databases were searched. All of the studies published in English that have considered the effects of MT (including soft tissue mobilization and joint mobilizations) on posture were included in this review (7 randomized controlled trials, 5 case studies, and 1 preliminary trial). Results: Of the 7 randomized controlled trials, 2 studies utilized soft tissue mobilizations, 3 used joint mobilizations, and 2 used both techniques. 3 of the studies also combined MT with other techniques. Outcome measures included thoracic index, inclinometer or kyphometer readings, and goniometric measurements. All but one of the studies found MT to be effective for improving posture. Of the 5 case reports, each used a different MT approach, either joint mobilizations or myofascial release. 3 of the reports combined the MT with other types of treatment. Postural alignment was improved in all of the cases. Measured via photo, visual analysis, or goniometric measurements. The final study was a non-randomized preliminary study using an ATM2 machine to assist with joint mobilizations. Mobilizations were found effective by photographic analysis for improving posture. Conclusions: Of the 13 studies reviewed, 12 demonstrated an improvement in posture after treatment with MT techniques. This indicates that MT is a promising treatment for a condition that affects a large proportion of individuals as they age.
FALL PREVENTION TRAINING FOR OLDER ADULTS LIVING IN THE COMMUNITY

Ms. Kshitija A. Kulkarni, Preventive Medicine and Community Health
Dr. Catherine Cooksley, Preventive Medicine and Community Health
Dr. Michelle Sierpina, Osher Lifelong Learning Institute
Dr. Kristen Peek, Preventive Medicine and Community Health

Research has shown that falls can be detrimental event in the life of an older adult, and may result in decline in their functional capacity and independence. Falls often serve as the beginning of a downward spiral of cascading physical and psychological health events. Falls occurring in and around one’s home are the most common and cause the most serious injuries. Falls are a public health problem, which is largely preventable. Increasing awareness regarding fall hazards and other risk factors will enable older adults to live and function safely within their home environments. This will empower the individual and improve their health-related quality of life. On a larger scale this will serve to improve the health of the community and over time reduce healthcare burden and costs. A ‘fall prevention’ training seminar was developed based on evidence-based fall prevention resources including those from the Centers for Disease Control and Prevention (CDC). The seminar included a presentation, and an interactive review and dissemination of resources including the home environment safety checklist by the CDC and the contact information for local government and non-government agencies that provide in-home services for preventing falls. Four separate sessions of the training seminar were provided to the community-dwelling older adults of the Houston-Galveston area, at the Osher Lifelong Learning Institute (OLLI). The current phase (underway) involves a multi-level approach for fall prevention. Training seminars will be developed and provided to caregivers and healthcare providers of community-dwelling older adults in the Houston-Galveston area. The completed phase and the current phase of community preventive health and health promotion is part of research conducted at the Department of Preventive Medicine and Community Health, UTMB.
COMPARING COMORBIDITY INDICES TO PREDICT POST-ACUTE REHABILITATION OUTCOMES

Mr. Amit Kumar, Division of Rehabilitation Sciences
Dr. James Graham, Division of Rehabilitation Sciences
Dr. Linda Resnik, Brown University, Department of Health Services, Policy and Practice
Dr. Amol Karmarkar, Division of Rehabilitation Sciences
Dr. Alai Tan, Institute for Translational Sciences
Dr. Anne Deutsch, Northwestern University, Department of Physical Medicine and Rehabilitation
Dr. Kenneth Ottenbacher, Division of Rehabilitation Sciences

Objective: To compare the performance of five comorbidity indices in predicting discharge function and community discharge following inpatient rehabilitation.

Design: Retrospective study of Medicare beneficiaries with stroke, lower extremity fracture and joint replacement discharged from inpatient rehabilitation in 2011 (N=105,275). Self-care, mobility, cognition, combined function and discharge destination were the outcomes examined across the Charlson, Elixhauser, Tier, Functional Comorbidity Index, and Hierarchical Condition Category comorbidity indices using regression models and the C-statistic. The comorbidity indices were added individually to base regression models including age, gender, race/ethnicity, Medicare qualifying disability, dual eligibility, length of stay and admission functional status.

Results: Mean sample age was 79.3 years (SD = 7.6). Patients were 64.4% female, 84.6% non-Hispanic white, and 72.7% were discharged to the community. Total sample combined functional score was 59.6 (SD = 17.1) at IRF admission and 87.0 (SD = 21.6) at IRF discharge. Base models explained 63.9%, 30.4% and 52.5% of the variance (R²) in combined discharge functional scores for stroke, lower extremity joint replacement, and fracture, respectively. Variance explained for self-care, mobility, cognition and combined function increased by 0.2% to 3.3% across the five models in the three impairment categories. The C-statistics for community discharge increased by 1% to 1.8% across the five models.

Conclusion: The five comorbidity indices demonstrated non-significant associations with discharge function and community discharge following inpatient rehabilitation in a national sample of older patients with stroke, lower extremity fracture and joint replacement.
EVALUATING COMORBIDITY INDICES AS PREDICTORS OF 30-DAY READMISSION IN MEDICARE FEE-FOR-SERVICE BENEFICIARIES FOLLOWING INPATIENT REHABILITATION

Mr. Amit Kumar, Division of Rehabilitation Sciences  
Dr. Amol Karmarkar, Division of Rehabilitation Sciences  
Dr. James Graham, Division of Rehabilitation Sciences  
Dr. Linda Resnik, Brown University, Department of Health Services, Policy and Practice  
Dr. Alai Tan, Institute for Translational Sciences  
Dr. Anne Deutsch, Northwestern University, Department of Physical Medicine and Rehabilitation  
Dr. Kenneth Ottenbacher, Division of Rehabilitation Sciences

Objective: To evaluate the utility of five comorbidity indices in predicting 30-day hospital readmission following post-acute inpatient rehabilitation.

Study Design and Settings: Cohort study of data from Medicare beneficiaries with stroke, lower extremity fracture or joint replacement discharged from inpatient rehabilitation in 2011 (N=75,582). Study outcome was 30-day all cause readmission. Seven logistic regression models predicting 30-day readmission were constructed. The baseline model included age, gender, race/ethnicity, disability (Medicare eligible), dual eligibility (Medicare and Medicaid), length of stay, and diagnosis. Subsequent models included functional status and one of the following comorbidity indices: Tier, Charlson, Elixhauser, Functional Comorbidity Index (FCI) and the Hierarchical Condition Category (HCC). Models were compared using C-statistics.

Results: Mean age of study sample was 78.6 years (SD 7.4). Mean functional status was 85.9 (SD 20.2). Thirty-day readmission rate was 10.4%. Including functional status in the base model increased the C-statistic from 0.60 to 0.65 (5%). Adding Charlson, Tier or FCI to the model increased the C-statistic to 0.66 (1%). Adding Elixhauser and HCC to the model increased the C-statistic to 0.68 (3%).

Conclusions: Comorbidity indices added marginally to the ability to predict 30-day readmission. Research is needed to better understand the complex relationship between function and comorbidity in predicting readmission.
CONTINUED ANTIPLATELET THERAPY AND RISK OF BLEEDING FOR GI PROCEDURES: A SYSTEMATIC REVIEW

Ms. Xiao Fang, Preventive Medicine and Community Health
Dr. Jacques Baillargeon, Preventive Medicine and Community Health
Dr. Daniel Jupiter, Preventive Medicine and Community Health

Objective: Management of perioperative antiplatelet medication is quite challenging. Risk of intraoperative and postoperative bleeding in gastrointestinal (GI) surgery is significantly associated with perioperative use of antiplatelet. However, cessation of these drugs may be unsafe for patients who are required to maintain antiplatelet due to their cardiovascular conditions. The objective of this systematic review is to compare the risk of intraoperative or postoperative bleeding among patients who had GI surgery (for all GI procedures for which data are available) while on continuous antiplatelet (aspirin, clopidogrel, or dual therapy), to the risk among those not. Methods: Articles published between January 2000 and July 2015 were collected from the Medline Ovid and CINAHL. All GI procedures studied were included if the article met the inclusion criteria. The following key words were used for the search: clopidogrel, Plavix, aspirin, antiplatelet, bleeding, hemorrhage, and digestive system surgical procedures. Quality of the studies was assessed based on their study design. Results: Twenty-one studies were eligible for inclusion in the systematic review. Generally, five showed that risk of intraoperative bleeding or postoperative bleeding among patients who had GI surgery while on continuous antiplatelet therapy was higher compared to those not on therapy. The remaining 16 studies suggested that there was no statistically significant difference between the risks of bleeding in the continuous antiplatelet therapy group and group without antiplatelet. Conclusion: The bleeding risk associated with GI procedures in patients under antiplatelet therapy is not clinically significantly higher compared to patients with no antiplatelet or interrupted antiplatelet therapy.
SAFETY OF CONTINUED CLOPIDOGREL USE IN THE PREOPERATIVE COURSE OF GASTROINTESTINAL SURGERY

Ms. Xiao Fang, Preventive Medicine and Community Health
Dr. Hemalkumar Mehta, Department of Surgery
Mr. Deepak Adhikari, Department of Surgery
Dr. Daniel Jupiter, Preventive Medicine and Community Health
Dr. Taylor Riall, University of Arizona, Department of Surgery

Objective: Controversy remains as to the appropriate protocol for use of clopidogrel and other antiplatelet agents in the period leading up to gastrointestinal (GI) surgery. In this study of older adults undergoing GI surgery, we compared patients who received clopidogrel in the immediate preoperative period to a group not receiving the drug with regard to the risk of post-operative bleeding within one month after discharge. Methods: Using 100% Texas Medicare data we identified patients undergoing emergent GI surgery in the period 2006-2011. We identified those who were taking clopidogrel within seven days before surgery. Propensity score (PS) matching was used to control selection bias. Using conditional logistic regression, we compared the odds of bleeding events at one month (30 days) post-discharge between the two groups. Results: A total of 978 patients who underwent emergent GI surgery while treated with clopidogrel were matched 1:1 to a cohort of emergency GI surgery patients not treated with clopidogrel. After PS matching, unadjusted one month bleeding rates were statistically significantly higher in patients on clopidogrel (6.85% vs. 4.70%, p-value 0.04). In multivariable analyses—adjusting for hyperlipidemia (HLD), obesity, and surgery type—the odds-ratio for bleeding within 30 days following hospital discharge in those on exposed to clopidogrel compared to those not exposed to clopidogrel was 1.40 (95% confidence interval 0.92-2.11). Conclusions: The use of clopidogrel in older adults through the preoperative period of GI surgery does not significantly increase the odds of bleeding events in the month after surgery.
QUALITY IMPROVEMENT: GERIATRIC MEDICATION REVIEW

Mr. Jacob Moran, School of Medicine  
Dr. Elizabeth Jaramillo, Department of Geriatrics

BACKGROUND: Routine medication reviews can decrease the prevalence of adverse drug events and hospitalizations in the geriatric population. Barriers to performing medication reviews are caused by patients, physicians, caregivers, and clinic factors. METHODS: This was a case-controlled study using inpatients in the geriatric unit with discharge follow-up at a primary care clinic within the same healthcare system. Patients were grouped into an intervention group (those receiving a medication bag) and a control group (those receiving no bag). The aim of this study was to increase the number of times patients brought their medication bottles to PCP follow-ups. The intervention group was provided a medication bag. Both groups were asked to bring their medications to their hospital follow-up appointment. At the follow-up visit, clinic staff observed if patients in both groups brought their medications and what bag they used. RESULTS: There were 5 participants: 4 in the intervention group and 1 in the control group. In the intervention group, one patient received a bag and no patients brought their medications to follow-up. In the control group, one patient received a bag, but brought their medications in a personal bag. DISCUSSION: Statistical analysis was not performed due to small sample size. A thorough review of the methodology revealed poor follow-up due to inadequate communication and poor recruitment due to a lack of standardized discharge protocol. Related factors must be considered in determining the best approach to instituting medication reviews.
GENERATION OF NEUROTOXIC AMYLOID-B AND TAU OLIGOMERS VIA SONICATION

Mr. Daniel V. Cantu, Department of Neurology
Ms. Julia E Gerson, Department of Neurology
Mr. Marcos J Guerrero-Munoz, Department of Neurology
Ms. Urmi Sengupta, Department of Neurology
Dr. Rakez Kayed, Department of Neurology

Various experiments have proposed that fibrillary aggregates of tau and other amyloidogenic proteins are neurotoxic and result in numerous neurodegenerative diseases. However, methods used for these experiments usually involve sonication or extrusion through needles prior to experimentation. As a consequence, these methods may fragment large aggregates in the sample, producing a mixture of aggregated species rather than intact fibrils; therefore the results of these experiments may be reflective of other amyloidogenic species, such as oligomers and protofibrils. In order to investigate the effects of sonication on tau and amyloid-β (Aβ) aggregation, tau and Aβ fibrils were prepared and well-characterized, then sonicated and evaluated by Western blot and atomic force microscopy to identify the aggregated species present. We found that oligomeric tau and Aβ were present along with fibrils. These results indicate that methods involving sonication lead to impure fibril samples and should be analyzed with caution. Our results support previous studies showing that sonication of prion and Aβ fibrils leads to the formation of toxic, soluble aggregates. Here we show that the oligomeric forms of both proteins shown to be the most toxic species in disease form, though it is unclear precisely how sonication causes oligomer formation. Results from our lab suggest that these small toxic oligomers produced by sonication—rather than the stable fibrillar structures—are prion-like in nature, acting as seeds to induce the misfolding of tau and other amyloidogenic proteins.
PACKAGING OF ALARMIN, HMGB1, IN OXIDATIVE STRESS INDUCED AMNION CELL EXOSOMES: A SIGNAL FROM SENESCENT FETAL CELLS AT TERM

Ms. Samantha Sheller, Graduate School of Biomedical Sciences
Ms. Rheanna Urrabaz-Garza, Department of Obstetrics and Gynecology
Dr. George Saade, Department of Obstetrics and Gynecology
Dr. Ramkumar Menon, Department of Obstetrics and Gynecology

OBJECTIVE: Term labor is associated with increased oxidative stress (OS) induced cellular damages to intrauterine fetal tissues that are characteristics of senescence. Senescent fetal cells release the alarmin High Mobility Group Box (HMGB) 1 which, in a feedback loop, causes more damage to fetal cells. Our objective was to determine if HMGB1 to is delivered to neighboring intrauterine tissues via exosomes, 30-100 nm intercellular signaling vesicles, which can cause labor associated changes or act as feto-maternal signals of readiness of parturition. METHODS: Primary amnion epithelial cells (AECs) from normal, term, not in labor placentas were treated with cigarette smoke extract (OS inducer) or control for 24 hrs. Immunofluorescent staining and confocal microscopy was performed to co-localize exosomes carrying HMGB1 (Figure 1) using antibodies to CD9 exosome marker and HMGB1. The images were obtained using two different excitation lines (488 and 543) by sequential acquisition, and image processing and analysis was performed with Metamorph 7.2. A graphic of relative fluorescence intensity versus calibrated distance in micrometers along the linescan was plotted. RESULTS: OS caused translocation of HMGB1 from AEC nucleus to cytoplasm compared to control. This translocation was inhibited by the antioxidant N-acetyl cysteine (NAC). Linescan confirmed that co-localization of HMGB1 in exosomes was higher in the cytoplasm after CSE treatment compared to untreated AECs. CONCLUSION: Senescent amniotic cells produce HMGB1 that is packaged inside exosomes and can potentially escort off the cell together. This exosomal cargo, a proinflammatory damage associate molecular pattern protein, can act as a fetal signal at term and can function to cause labor associated changes in neighboring tissues.
CONTRACTILE GENE ACTIVATION OF MYOMETRIAL CELLS TREATED WITH AMNION EPITHELIAL CELL – DERIVED EXOSOMES

Ms. Samantha Sheller, Graduate School of Biomedical Sciences
Ms. Rheanna Urrabaz-Garza, Department of Obstetrics and Gynecology
Ms. Talar Kechichian, Department of Obstetrics and Gynecology
Dr. George Saade, Department of Obstetrics and Gynecology
Dr. Ramkumar Menon, Department of Obstetrics and Gynecology

OBJECTIVE: Our overall hypothesis is that oxidative stress at term causes fetal cell senescence with subsequent release of intercellular signaling through exosomes that can initiate myometrial activation. The specific objective of this study was to determine the response of myometrial cells treated with exosomes isolated from primary amnion epithelial cell (AEC) cultures under normal and oxidative conditions. METHODS: AECs were grown in media under standard conditions (control) or treated with cigarette smoke extract (CSE, OS inducer) for 24 hours. Exosomes were isolated using differential centrifugation and analyzed using Western blot and flow cytometry for CD81 and Nanog, exosome and amnion specific markers respectively. Myometrial cells were treated with exosomes from AEC grown under OS and normal conditions. Western blot and qRT-PCR analyses were performed to determine COX-2 and Connexin-43 expression (contractility genes) and NF-κB activation by RelA phosphorylation (inflammation). Statistical analysis was performed using Student t-test (significance: p < 0.05). RESULTS: Exosome marker CD81 and amnion cell marker Nanog seen in Western blots confirmed amnion origin of exosomes. Treatment of myocytes with exosomes from OS induced AEC significantly increased COX-2 and CX-43 (Figure 1A) expressions and activated NF-κB (RelA phosphorylation) (Figure 1B) compared to untreated myocytes. CONCLUSIONS: Signals carried by exosomes generated from OS induced term fetal cells cause myometrial contractile gene and pro-inflammatory transcription factor activation. Ongoing characterization of specific exosomal signals will determine the feto-maternal signaling that can initiate parturition at term.
ISOLATION AND CHARACTERIZATION OF AMNION EPITHELIAL CELL – DERIVED EXOSOMES

Ms. Samantha Sheller, Graduate School of Biomedical Sciences
Ms. Rheanna Urrabaz-Garza, Department of Obstetrics and Gynecology
Ms. Talar Kechichian, Department of Obstetrics and Gynecology
Dr. George Saade, Department of Obstetrics and Gynecology
Dr. Ramkuma Menon, Department of Obstetrics and Gynecology

OBJECTIVE: Exosomes are 30-100 nm intercellular vesicles produced by many cell types and carry cell specific messengers. We hypothesize that at term senescent amnion derived exosomes carry messages which can crosstalk between feto-maternal compartments to signal fetal tissue maturation (aging) and readiness for parturition. The objective of this study was to isolate exosomes from primary amnion epithelial cells (AEC) under standard and oxidative stress conditions and characterize the contents. METHODS: AECs from normal, term, not in labor placenta were grown in media under standard (control) conditions or treated with cigarette smoke extract (CSE, OS inducer) for 48 hours. Exosomes in culture media were isolated using differential ultra-centrifugation. Particle size and morphology were documented using transmission electron microscopy (TEM). Western blot, flow cytometry and PCR characterized exosome-specific markers (CD9, CD63 and CD81) and its contents (p38MAPK, HSC70, HSP70, and histone H3). Confocal microscopy was used to co-localize specific contents in exosomes. RESULTS: AEC derived exosomes were approximately 80 nm in size and had characteristic morphology. AEC exosomes demonstrate CD9, CD63 and CD81 and AEC marker Nanog. AEC exosomes also carry HSC70, p38MAPK, histone H3 and HSP70 regardless of culture conditions. CONCLUSIONS: To the best of our knowledge, this is the first documentation of the isolation and characterization of AEC-derived exosomes and their contents. Isolated exosomes from control and CSE AEC cultures were positive for exosome markers and amnion markers, confirming AEC origin. Presence of pro-senescence marker p38MAPK and packaging of histones, HSP70 and HSC70 in AEC exposed to OS suggest exosomes can carry fetal signals of cellular injury that can trigger labor associated changes in other intrauterine compartments.
IDENTIFICATION OF NEW DRUGGABLE POCKETS AT THE FGF14: VOLTAGE-GATED SODIUM CHANNEL 1.6 COMPLEX

Mr. Syed Rydwan Ali, Department of Pharmacology and Toxicology
Dr. Zhiqing Liu, Department of Pharmacology and Toxicology
Dr. Aditya Singh, Department of Pharmacology and Toxicology
Dr. Miroslav Nenov, Department of Pharmacology and Toxicology
Dr. Jia Zhou, Department of Pharmacology and Toxicology
Dr. Fernanda Laezza, Department of Pharmacology and Toxicology

Voltage-gated sodium (Nav) channels are responsible for the initiation and propagation of transient depolarizing currents that control neuronal excitability. Dysregulation of specific Nav channel isoforms is found across a wide range of brain disorders associated with motor and cognitive disabilities. Unfortunately, currently available drugs targeting Nav channels are directed against highly conserved domains of the protein and as such lack isoform specificity. The macromolecular complex of Nav channels is a source of less conserved protein-protein interaction (PPI) interfaces that represent a unique opportunity for the design of isoform-specific chemical leads against Nav channelopathies. The intracellular fibroblast growth factor 14, FGF14, is a biologically relevant component of the neuronal Nav channel complex controlling gating, stability and trafficking of native Nav channels. Through a monomeric interaction with the intracellular C-terminal tail of Nav channel α subunits, FGF14 binds and modulates the activity of Nav channels in an isoform-specific manner. Here, we have reconstituted the FGF14:Nav1.6 complex in live cells using the split-luciferase complementation assay (LCA) and through site-direct mutagenesis identified “hot-spots” at the FGF14 surface critical for binding to Nav1.6. By patch-clamp electrophysiology, we have further identified that Y158 and V160 located in the β8/9 of FGF14 are required to modulate Nav1.6-encoded current. Subsequently, we have designed short peptide fragments that targeted of β12-strand and β8-β9 loop of FGF14 and validated their in-cell activity as inhibitors of the FGF14:Nav1.6 complex. These breakthrough results identify the FGF14 β8-β9 as part of potential druggable pocket against the FGF14:Nav1.6 complex. Small peptides targeting this pocket might give rise to a new class of unconventional PPI-based allosteric modulators of Nav channels that could restore malfunction of neuronal excitability and plasticity.
GENETIC DELETION OF INTRACELLULAR FIBROBLAST GROWTH FACTOR 14 (FGF14) DISRUPTS TRANSITION OF LATE IMMATURE TO MATURE NEWLY BORN GRANULE NEURONS IN THE ADULT DENTATE GYRUS

Mr. Musaad A. Alshammari, Department of Pharmacology and Toxicology
Mrs. Tahani K. Alshammari, Department of Pharmacology and Toxicology
Mr. Federico Scala, Department of Pharmacology and Toxicology
Dr. Miroslav N. Nenov, Department of Pharmacology and Toxicology
Dr. Fernanda Laezza, Department of Pharmacology and Toxicology

Growing evidence indicates that adult neurogenesis, the production of mature neurons from progenitor cells in the adult mammalian brain, is linked to the etiology of neurodegenerative and psychiatric disorders. However, a complete understanding of the molecular elements at the base of adult neurogenesis remains elusive. Here, we provide evidence for a previously undescribed function of fibroblast growth factor 14 (FGF14), a brain disease-associated factor that controls neuronal excitability and synaptic plasticity, in regulating adult neurogenesis in the dentate gyrus (DG). Through a combination of BrdU incorporation studies and confocal imaging, we show that FGF14 is dynamically expressed in DG at various developing states of neural progenitors. Genetic deletion of Fgf14 in Fgf14−/− mice leads to a significant increase in the late immature and early mature population of doublecortin and calretinin positive neurons, while the number of early progenitor Sox2 positive stem cells and mature calbindin positive neurons remained constant. Caspase-3 activity is unaffected by deletion of Fgf14 ruling out reduced survival as a major cause of the deficit. Ongoing studies are evaluating the impact of Fgf14 genetic deletion in the functional integration of newly born neurons in the DG circuitry. Our results provide evidence for a novel signaling pathway associated with FGF14 expression controlling adult neurogenesis, providing insights into the biology of complex brain disorders.
The balance between excitation and inhibition in the brain is highly dependent on the functional integrity of gamma-aminobutyric acid (GABA)-releasing interneurons. Though these cells represent only ~20% of all neurons in the CNS, they exert a powerful activity in the brain by synchronizing principal neuron output. Studies indicate that aberrant function of GABAergic interneurons especially parvalbumin (PV) interneurons is strongly associated with cognitive deficits in psychiatric disorders. However, the mechanisms leading to GABAergic interneurons dysfunction in the brain disease context are not yet completely understood. Here, we show that fibroblast growth factor 14 (FGF14), a component of the voltage-gated Na+ channel complex and a regulator of the presynaptic neurotransmitter release machinery, plays a critical role in regulating structure and function of GABAergic interneurons. In Fgf14−/− animals we found that the total number of PV interneurons in the CA1 hippocampal region is reduced significantly and that these changes are associated with a reduction in the expression of synaptic GABAergic markers. These phenotypes coincide with alterations in the CA1 inhibitory tone, reduction of in vivo gamma frequency oscillations and working memory deficits. Bioinformatics analysis of schizophrenia transcriptomics reveals functional co-clustering of FGF14 and genes enriched within the GABAergic pathway along with correlative reduced expression of FGF14, glutamic acid decarboxylase 67 (GAD67) vesicular GABA transporter (VGAT) in the disease context. This study highlights a new potential role of FGF14 in regulating the excitation/inhibition tone in the filling knowledge gaps in mechanisms underlying cognitive dysfunction in neuropsychiatric disorders.
DIFFERENCE IN PREVALENCE OF NEUROGENIC MARKERS AND REGULATORY MIRNA IN NON-DEMENTED WITH ALZHEIMER’S NEUROPATHOLOGY

Mr. David Briley, Neuroscience and Cell Biology
Dr. Balaji Krishnan, Department of Neurology
Dr. Randall Woltjer, Oregon Health and Science University, Department of Neurology
Dr. Giulio Taglialatela, Department of Neurology
Dr. Maria Adelaide Micci, Department of Anesthesiology

The presence of cognitively intact individuals who display extensive neuropathology consistent with Alzheimer’s Disease appears to represent a unique population referred to as Non-Demented with Alzheimer’s Neuropathology (NDAN). To better understand this population with an extraordinary resistance to cognitive decline, we tested the hypothesis that preserved cognitive function is correlated with a greater degree of neurogenesis in the hippocampus.

Methods: Human tissue, representing AD, NDAN and age-matched healthy control were immunostained for markers affiliated with neurogenesis. Tiled images of the whole DG were collected and positive counts for each marker were evaluated, normalized to the total number of positive cells labeled by Hoechst. Laser-capture microdissection was performed on fresh-frozen tissue human tissue in order to exclusively extract the dentate gyrus and subgranular zone of the hippocampus. RNA was isolated and probed using qPCR for miRNA known to regulate neuronal precursor proliferation and maturation.

Results: NDAN subjects demonstrate, proportional to cellular population, increases in markers of neurogenesis in the DG compared to AD subjects. Compared with control subjects, NDAN subjects demonstrated a trend towards decreased expression of the miRNAs investigated, whereas AD subjects tended to show increases.

Conclusion: Our data show the number of progenitor cells in the hippocampus of NDAN subjects is greater than what is seen in AD patients, and that there is a potential epigenetic modulation that is involved in maintaining this increase, as demonstrated by the trends in miRNA expression.
NEAR INFRARED LIGHT TREATMENT REDUCES AMYLOID BETA OLIGOMER BINDING TO SYNAPSES IN A TRANSGENIC MOUSE MODEL OF ALZHEIMER DISEASE

Ms. Michele Comerota, Department of Neurology  
Dr. Giulio Taglialatela, Department of Neurology

The neuropathological characterization of Alzheimer’s disease includes deposits of aggregated amyloid beta (Aβ) and hyper-phosphorylated tau protein neurofibrillary tangles. The cognitive decline that is associated with AD is believed to be driven by the dysfunction of synapses due to the binding of small toxic Aβ oligomers on the post-synaptic density (PSD). Current treatment options for AD do not address the underlying causes of the disease, providing limited alleviation of symptoms. Near infrared (NIR, 600-1000 nm) light therapy has previously been used in pain management and to accelerate wound healing. Recent studies have suggested that the application of NIR light treatment can be expanded to include neurodegenerative disorders such as AD and Parkinson’s disease (PD). Notably, it has been reported that NIR light treatment on APP/PS-1 transgenic mice induced a reduction of amyloid β plaque load and improved memory function; however, the mechanism contributing to this effect remains unresolved. In the present study, we focused on mechanistic changes at the synaptosome after NIR light treatment that may lead to the restoration of cognitive integrity. Specifically, we investigated the susceptibility of amyloid β binding to the synaptosome and found that after a treatment with NIR at 670 nm (90 sec a day for 4 weeks), the amount of amyloid β was significantly reduced at synapses from various brain areas of 6 month old Tg2576 mice. This study provides evidence that NIR can effectively reduce the amount of damaging amyloid β at synapses, thus furthering light therapy as a viable treatment for AD.
TARGETING TAU TOXICITY WITH OLIGOMER-SPECIFIC ANTIBODIES IN PARKINSON’S AND OTHER SYNUCLEINOPATHIES

Ms. Julia E Gerson, Neuroscience and Cell Biology
Dr. Diana L Castillo, Department of Neurology
Ms. Urmi Sengupta, Department of Neurology
Ms. Natalie Henson, University of Texas, School of Undergraduate Studies
Ms. Ashley Nilson, Department of Neuroscience and Cell Biology
Dr. Rakez Kayed, Department of Neurology

Background: Parkinson’s disease (PD) is the second most common neurodegenerative disorder and with no effective treatments or preventative measures, its prevalence is growing. PD is characterized by cognitive and movement symptoms associated with a loss of dopaminergic neurons, synaptic dysfunction, and the presence of Lewy bodies comprised of α-synuclein. Evidence shows that smaller aggregates, oligomers, may be more toxic. Moreover, we have found that oligomeric α-synuclein coexists with tau protein in disease in a possible toxic synergy, implicating tau oligomers as a therapeutic target for synucleinopathies.

Objective: Evaluate the efficacy of a tau oligomer-specific antibody (TOMA) in a synucleinopathy mouse model.

Materials and Methods: We treated seven-month-old mice overexpressing A53T mutated α-synuclein intravenously with either TOMA, an antibody for all forms of tau—Tau-13, or a control IgG and wild-type mice with saline. We tested mice on a battery of behavioral tasks assessing memory and motor function. Following testing, half of the mice were sacrificed and tissue was collected for biochemical and immunological analysis. Remaining mice were aged to 12 months and tested again.

Results: A53T mice treated with TOMA were protected from cognitive and motor deficits, while treating with Tau-13 appeared to exacerbate the phenotype. We found decreased levels of toxic tau oligomers in the brains of TOMA-treated mice. Importantly, levels of dopamine were elevated in TOMA-treated mice, as well as the synaptic protein, Synapsin I.

Conclusion: Targeting tau oligomers is beneficial for a mouse model of synucleinopathy and may be a viable strategy for treating PD.
HSP60 AS A PROTECTIVE FACTOR AGAINST AMYLOID BETA MISFOLDING

Ms. Claudia Marino, Department of Neurology
Dr. Silvia Vilasi, National Research Council, Biophysics Institute
Dr. Rosa Passantino, National Research Council, Biophysics Institute
Dr. Maria Rosalia Mangione, National Research Council, Biophysics Institute
Dr. Francesco Cappello, BioNec Department, University of Palermo, IT
Dr. Donatella Bulone, National Research Council, Biophysics Institute
Dr. Pier Luigi San Biagio, National Research Council, Biophysics Institute
Dr. Giulio Taglialatela, Department of Neurology

An increasing aged population multiple risks factors facilitating neurodegenerative disorders make Alzheimer’s disease (AD) one of the most common cause of death worldwide. Even though the phenotype of AD is clinically well characterized, there are no therapies available. Nonetheless, a misbalance between protecting factors, due to normal aging, and neurotoxic agents seem to be well established. Particularly, there is evidence supporting the hypothesis that the aberrant cleavage of the Amyloid Precursor Protein (APP) by beta and gamma secretase is responsible for the formation of the neurotoxic amyloid beta peptide (Aβ) whose oligomers induce mitochondria dysfunction and neuronal death. Additionally, the aging related impairment of protective mechanisms, such as chaperones, seems to contribute to AD progression. Previous research suggests that chaperones, like Hsp60, are highly involved in triggering intracellular amyloid oligomers and in the prevention of neuronal damage. Our preliminary data suggest that Hsp60 is an effective inhibitor of Aβ misfolding and subsequent Aβ aggregation. Here we investigated the mechanism of Aβ/Hsp60 protein-protein interaction in a cellular model of APP overexpression that results in production of Aβ oligomers (7PA2 cells overexpressing the human APP751 variant) in which we further overexpressed Hsp60. We employed Western blotting, ELISA and immunocytochemistry to assay Aβ and Hsp60 in the whole cells and in sub-cellular and extracellular environments. Collectively, our results show that Hsp60 might be an effective inhibitor of Aβ neurotoxicity. The understanding of this biological mechanism could contribute to future AD therapies. Supported by: 1R01NS042890-01 (G.T.) and Mitchell Center for Neurodegenerative Diseases.
TAU OLIGOMERS AND INFLAMMATION IN ALZHEIMER’S DISEASE AND FRONTAL TEMPORAL LOBE DEMENTIA

Ms. Ashley Nicole Nilson, Department of Neuroscience and Cell biology
Ms. Kelsey English, School of Medicine
Ms. Julia Gerson, Neuroscience and Cell biology
Dr. Rakez Kayed, Department of Neurology

Inflammation plays a role in age-related diseases including tauopathies such as Alzheimer’s disease (AD) and Frontal Temporal Lobe dementia (FTLD). Neurodegenerative diseases exhibit inflammation and cell death before larger aggregates form. While amyloid-β has been well studied in relation to inflammation, tau and inflammation have been understudied. It is still debated as to whether inflammation leads to protein aggregation or if aggregation occurs first stimulating inflammation. Tau aggregates in tauopathies into large aggregates called neurofibrillary tangles. However, smaller soluble aggregates—oligomers—are formed prior to tangles. Evidence suggests that these oligomers are the most toxic species. Thus we decided to investigate a connection between tau oligomers and inflammation. Human frontal cortex samples from control and FTLD brains were sectioned. Immunofluorescent staining was performed using an oligomeric tau antibody with inflammation markers. Homogenates were also prepared for ELISA to determine differences in inflammatory protein levels. There was co-localization seen with tau and several of the inflammation markers. GFAP, an astrocyte marker, showed changes in number of cells and morphology. Tau oligomers co-localized with microglial and other inflammation markers. These preliminary results indicate oligomeric tau is associated with the inflammatory response in AD and FTLD subjects. Further investigation of this response to oligomeric tau could provide insight for developing treatments for AD and FTLD. Furthermore, oligomeric tau plays a role in many other neurodegenerative diseases which such as Parkinson’s disease. Anti-inflammatory drugs maybe important in the treatment of these diseases by decreasing the inflammation and cell death due to oligomeric tau.
THE EFFECT OF ADULT CHILDREN LIVING IN THE UNITED STATES ON THE LIKELIHOOD OF COGNITIVE IMPAIRMENT FOR OLDER PARENTS LIVING IN MEXICO

Dr. Brian Downer, Sealy Center on Aging
Dr. Cesar González-González, Sealy Center on Aging
Dr. Noreen Goldman, Princeton University, Demography and Public Affairs
Dr. Anne R Pebley, University of California Los Angeles, School of Public Health
Dr. Rebeca Wong, Preventive Medicine and Community Health, Sealy Center on Aging

Background: Older parents in Mexico who have an adult child living in the US are more likely to be in poor physical and mental health. These adverse health outcomes may contribute to an increased risk for cognitive impairment for older parents who live in Mexico. The objective of this study was to examine the relationship between having one or more adult children living in the United States and the likelihood of developing cognitive impairment among older parents living in Mexico. Methods: Data used was from the 2001 and 2012 Waves of the Mexican Health and Aging Study. The final sample included 2609 participants age >60 who had one or more adult children (age >15) and were not cognitively impaired in 2001. Participants were matched according to a propensity score that was estimated using a multivariate logistic regression model that included parental sociodemographic characteristics and migration history. The relationship between migration status and cognitive impairment was assessed using multivariate logistic regression models that controlled for demographic, health, and social characteristics of the older parents and for the demographic characteristics of adult children. Results: Having one or more adult children living in the U.S. was associated with lower socioeconomic status and higher depressive symptoms, but greater social engagement for older parents. There were no significant differences in the odds for cognitive impairment according to having one or more adult children living in the US. Conclusion: Having one or more adult children living in the US was associated with characteristics that increase and decrease the risk for cognitive impairment. This may contribute to the non-significant relationship between migration status of adult children and cognitive impairment for older parents.
MOBILITY PREFERENCES AMONG INDIVIDUALS WITH STROKE AND THEIR CAREGIVERS

Dr. Shilpa Krishnan, Division of Rehabilitation Sciences
Dr. Monique Pappadis, Division of Rehabilitation Sciences
Dr. Susan Weller, Preventive Medicine and Community Health
Ms. Marsja Stearnes, Sealy Center on Aging
Dr. Timothy Reistetter, Division of Rehabilitation Sciences

Background: Every year around 795,000 people in the United States suffer from stroke. Most of the individuals have residual effects that impair their mobility and around 40% of these individuals suffer at least one fall. The objective of this study is to understand the patient and caregiver outcome preferences related to mobility following stroke.

Methods: In-depth qualitative open ended interviews were conducted with 5 individuals with stroke who received rehabilitation from an inpatient rehabilitation facility (IRF) or skilled nursing facility (SNF) and 5 caregivers caring for individuals who received rehabilitation in an IRF or SNF. Mobility preferences of the individuals with stroke and caregivers from these interviews were synthesized.

Results: Out of the 5 individuals with stroke (ages=72.7 years, M=2, F=3), 3 of them received rehabilitation at SNFs and the rest in IRFs. All of them mentioned walking as their most important goal. Other important outcomes mentioned were: need for an assistive device such as a brace to improve walking, working on leg strength and mobility to walk independently without any compensatory movements. Of the 5 caregivers (ages=61.6 years, M=1, F=4), 3 of them were caring for individuals receiving rehabilitation in an IRF and the rest in a SNF. All of them wanted the individual for whom they were caring to be able to walk. Other caregivers' needs were: assistive devices such as walker and power wheelchair, home accommodations such as having a tilt bed or widened doors for the individuals with stroke to improve safety by preventing falls.

Discussion: It is important to consider both patient and caregiver preferences, to gain insight to their health outcome preferences related to mobility. Although walking is the most preferred outcome for both patients and caregivers, it is also important to consider home accommodations, prescribe appropriate assistive devices and work on strength and endurance to prevent falls.
EFFECT OF PROTEIN BLEND INGESTION ON MUSCLE TURNOVER IN AGING

Dr. Michael Borack, Division of Rehabilitation Sciences
Dr. Paul Reidy, Division of Rehabilitation Sciences
Mr. Syed Husaini, Sealy Center on Aging
Dr. Melissa Markofski, University of Houston, Health and Human Performance
Dr. Rachel Deer, Sealy Center on Aging
Ms. Abigail Richison, School of Medicine
Dr. Bradley Lambert, Methodist Research Institute
Dr. Kristofer Jennings, Office of Biostatistics
Dr. Elena Volpi, Department of Internal Medicine, Sealy Center on Aging
Dr. Blake Rasmussen, Department of Nutrition and Metabolism

Resistance exercise (RE) coupled with protein supplementation may overcome anabolic resistance and maximize muscle protein synthesis in older individuals. We hypothesized that ingestion of a protein blend comprised of whey, soy and casein would prolong aminoacidemia resulting in enhanced mTORC1 signaling and muscle protein net balance as compared to a single protein isolate following a bout of RE. This double blind randomized controlled trial studied nineteen men 55-75 years of age. The subjects consumed 30g of whey protein or protein blend (25% soy, 25% casein, and 50% whey) one hour following leg extension RE (8 sets of 10 repetitions at 70% 1RM). We measured amino acid concentrations in blood and muscle as well as basal and post-exercise muscle protein turnover using stable isotopic methods. In addition, skeletal muscle mTORC1 signaling was assessed via western blotting. Muscle biopsies from the vastus lateralis were collected at Rest (before RE) as well as at 1, 3 and 5hr post exercise to allow for comparisons between baseline, 0-2hr post protein ingestion (Early period), and 2-4hr post protein ingestion (Late period). Both groups showed similar amino acid profiles with increases from baseline extended 240 minutes post ingestion in the blood for valine, leucine and isoleucine (p<0.001). Blood phenylalanine was extended to 185 minutes for both groups (p<0.001). mTOR pathway activation was similarly elevated in both groups. Post exercise mixed-muscle protein synthesis was only elevated at two hours for the Whey group. Muscle protein breakdown was significantly reduced for the Whey group during the final hour of the treatment period as compared to baseline with Protein Blend showing a trend, p=0.077.
MUSCLE LIPID METABOLISM IN ELDERLY WOMEN: CURRENT UPDATE ON PEPPER PILOT PROJECT

Dr. Rabia Asghar, Department of Internal Medicine
Dr. Maria Chondronikola, Department of Surgery
Dr. Edgar L. Dillon, Department of Internal Medicine
Dr. William J. Durham, Department of Internal Medicine
Dr. Albert C. Chamberlain, Department of Internal Medicine
Dr. Craig Porter, Department of Surgery
Dr. Elena Volpi, Department of Internal Medicine, Sealy Center on Aging
Dr. Melinda Sheffield-Moore, Department of Internal Medicine
Dr. Nicola Abate, Department of Internal Medicine
Dr. Labros Sidossis, Department of Internal Medicine
Dr. Demidmaa Tuvdendorj, Department of Internal Medicine

Background: Aging is associated with sarcopenia, higher rates of type 2 diabetes (T2D) and atherosclerotic cardiovascular diseases (aCVDs); conditions that are predisposed by muscle insulin resistance (IR). We hypothesized that with aging skeletal muscle lipid fluxes are impaired, thus contributing to diminished muscle metabolic flexibility and higher rates of development of insulin resistance. Here we used stable isotope tracer approach to measure the intramuscular lipid fluxes in relation to development of insulin resistance. Methods and Results: We studied elderly (n=3, age 68±4 y) and young women (n=6, age 36±9 y) matched for BMI (26±1 for either groups, p=0.42). Glucose infusion rate (GIR) during hyperinsulinemic-euglycemic clamp was 33% lower in elderly women, although the difference did not reach statistical significance (Elderly vs. Young: 2.8±1 vs. 4.2±0.8, p=0.15). The intramuscular triglyceride (imTG) fractional synthesis rate (FSR) was 83% higher in elderly group (Elderly vs. Young: 0.09±0.03 vs. 0.05±0.02 %/hr), although the difference did not reach statistical significance, p = 0.11. A regression analysis demonstrated a tendency for an inverse relationship between imTG FSR and GIR (r=0.659, p=0.05) in the combined group (n=9). Conclusion: These data support our hypothesis that aging may result in an impaired intramuscular lipid fluxes, which may lead to the development of muscle insulin resistance and related conditions. This is the first clinical study to use the recently developed stable isotope tracer methods and models and our results demonstrate that these models can be safely used in humans to provide reliable data. Our future plans are to complete the current project and pursue it further to determine the mechanism of development of aging-related impaired muscle lipid metabolism and its impact on health in aging.
EFFECT OF EXERCISE, NUTRITION OR TESTOSTERONE INTERVENTIONS ON MUSCLE SIZE AND PHYSICAL FUNCTION 30 DAYS POST-DISCHARGE FROM THE ACUTE CARE FOR ELDERS (ACE) UNIT

Dr. Rachel R. Deer, Sealy Center on Aging
Ms. Shawn M. Goodlett, Sealy Center on Aging
Dr. Steve Fisher, Department of Physical Therapy
Dr. Jared M. Dickinson, Arizona State University, School of Nutrition and Health Promotion Exercise Science and Health
Dr. Elena Volpi, Department of Internal Medicine, Sealy Center on Aging

Acute hospitalization often leads to decreases in physical function and independence in older adults. The inability to regain function following discharge is a strong predictor of re-hospitalization and mortality. We have previously shown in healthy older adults that nutritional interventions, exercise, and anabolic steroids independently increase muscle size and function, thus represent promising therapeutic strategies. The goal of this pilot study was to test the feasibility of interventions (placebo supplement (P), nutrition supplement (N, whey protein), progressive in-home exercise + placebo (E+P), exercise + nutrition (E+N), or single testosterone injection (T)) to improve physical function in older adults following acute hospitalization. Subjects (>65 years) were recruited during hospitalization. Demographics, DEXA, and short physical performance battery (SPPB) were collected at discharge and 30 days after discharge. At 30-day testing, the proportion of subjects that exhibited an increase in appendicular lean mass (ALM) was higher in the intervention groups (50-80%) as compared to the placebo group (25%). The absolute ALM gain tended to be greater with interventions (P: 66.8g, N: 168.1g, E+P: 170.0g, E+N: 526.7g, T: 885.4g). Mean baseline SPPB score was 6.7. Interventions tended to enhance the SPPB score (P: 1.0, N: 3.0, E+P: 2.5, E+N: 3.0, T: 3.0) and the proportion of subjects with a clinically meaningful SPPB improvement (≥1 point) (P: 50%, N: 100%, E+P: 80%, E+N: 80%, T: 88%). These preliminary data (n=8-10/group), from an ongoing feasibility study, suggest that interventions after acute hospitalization are feasible and can improve muscle mass and physical function in older adults.
IMPROVEMENT IN TIMED UP AND GO MEASURES IN ACUTELY ILL OLDER ADULTS AFTER 1-MONTH OF POST-HOSPITALIZATION INTERVENTIONS

Dr. Rachel R. Deer, Sealy Center on Aging  
Ms. Shawn Goodlett, Sealy Center on Aging  
Dr. Steve Fisher, Department of Physical Therapy  
Dr. Jared M Dickinson, Arizona State University, School of Nutrition and Health Promotion Exercise Science and Health  
Dr. Elena Volpi, Department of Internal Medicine, Sealy Center on Aging

Older adults exhibit significant reductions in physical function and independence during an acute bout of hospitalization. The inability to regain function post-discharge strongly predicts re-hospitalization and mortality. We previously showed that nutritional interventions, exercise, and anabolic steroids, all independently increase muscle size and function, thus representing promising therapeutic strategies. Timed Up and Go (TUG), a test that employs balance and gait maneuvers used in everyday life, positively predicts the level of functional mobility in older adults. The goal of this pilot study was to test the feasibility of interventions (placebo, nutritional supplement (whey protein), in-home exercise + placebo, exercise + nutrition, or testosterone) to improve physical function following hospitalization. Subjects (>65y) were recruited during hospitalization. Demographics and TUG were collected at discharge and 1-month post-discharge. Mean baseline TUG was 17.5s (range: 8-50) with 4% of subjects unable to complete the test. Those with a history of falls tended to be slower (19.4 vs. 16.2) than those who had not fallen in the previous year. Time taken to complete TUG was 14.8s (range: 8-36) with no assistive device, 17.8s (12-27) with a cane, and 35.2s (20-59) with a walker. At 1-mo testing, 88% of subjects showed improvement, 5% had no change, and 7% showed deterioration. The nutritional intervention groups (N and E+N) tended to exhibit the greatest improvements at 1-mo. These preliminary data suggest that interventions after acute hospitalization are feasible and can improve physical function, as measured by TUG, in older adults.

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PHARMACOGENETIC TESTING: AN ANSWER TO THE 30-DAY READMISSIONS IN 65 YEARS AND OLDER RESIDENTS LIVING IN LONG-TERM CARE FACILITIES RECEIVING PSYCHOTROPIC MEDICATIONS

Dr. Sharon F. Marshall, School of Nursing

The growing population of adults 65 years and older in the United States has led to greater numbers of residents in LTC facilities with comorbid disease states, which in turn increased the complexity of drug regimens. Managing drug therapy in the elderly population is often problematic because there is a lack of evidence on which to base prescribing decisions. The purpose of this study was to reduce readmissions to the acute care setting in LTC residents aged 65 years and older who were taking psychotropic medications through pharmacogenetic testing (PGT). Pharmacogenetics, has the potential to improve health outcomes and reduce the cost of care for residents 65 years and older living in LTC facilities and receiving psychotropic medications. During a six-month period hospital readmissions of all the LTC residents receiving psychotropic medications and consented to PGT by buccal swab had been compared with that of those residents receiving psychotropic medications who were not PGT tested in one local LTC facility. The results were analyzed by the Fischer Exact test to determine whether there was any statistically significant difference between the two groups. Although the anticipated effect was not observed, the data collected could be useful as a pilot guiding future research to analyze the potential association between PGT and readmission. It could also be used to evaluate whether PGT affects ADR's (adverse drug reactions), polypharmacy, or pharmacy costs. To date there has been little integration of PGT into clinical practice in LTC facilities despite recommendations from regulatory bodies such as the FDA that residents be genotyped for specific biomarkers before a provider prescribes certain medications, including many antidepressants (Miller & O'Callaghan, 2013).
FUNCTIONAL STATUS AND COGNITION ARE ASSOCIATED WITH 30-DAY UNPLANNED REHOSPITALIZATION FOLLOWING POSTACUTE CARE

Dr. Addie Middleton, Division of Rehabilitation Sciences
Ms. Yu-Li Lin, Office of Biostatistics
Dr. Kenneth J. Ottenbacher, Division of Rehabilitation Sciences
Dr. James E. Graham, Division of Rehabilitation Sciences

Objective: To examine the associations between functional status and cognition and 30-day unplanned rehospitalization following discharge from postacute care rehabilitation. Design: Retrospective cohort study Setting: Inpatient rehabilitation facilities submitting claims and assessment data to the Centers for Medicare and Medicaid Services in 2012-2013. Participants: Medicare fee-for-service enrollees discharged from inpatient rehabilitation in 2012 and 2013 (N=502,715). The sample included community-dwelling older adults (age ≥65 years) admitted for initial rehabilitation immediately following an acute care stay who survived for 30 days following discharge. Main Outcome Measure: 30-day unplanned rehospitalization following postacute rehabilitation discharge Results: The 30-day unplanned rehospitalization rate was 16.6% (n=48,378). The functional status domains (self-care and mobility) and cognitive function were significant predictors of 30-day unplanned rehospitalization. Mobility (OR=3.09, 95% CI: 2.96-3.23) demonstrated a larger effect on rehospitalization risk in the overall sample than self-care or cognition (OR=2.08, 95% CI: 1.97-2.20 and OR=1.35, 95% CI: 1.27-1.4, respectively). In analyses stratifying by diagnostic category, self-care and mobility were associated with 30-day unplanned rehospitalization across all diagnostic categories, with mobility demonstrating a larger effect. ORs for mobility ranged from 2.73 (other conditions) to 4.61 (spinal cord dysfunction), and ORs for self-care ranged from 1.76 (other neurologic conditions) to 2.38 (musculoskeletal conditions). Cognition was not as consistent a predictor, but was associated with rehospitalization in central nervous system dysfunction and musculoskeletal conditions (OR=1.49, 95% CI: 1.38-1.61 and OR=1.22, 95% CI: 1.06-1.41, respectively). Conclusions and Relevance: Functional status is associated with 30-day unplanned rehospitalization among community-dwelling older adults admitted to inpatient rehabilitation. Further research is needed on the role of cognitive function in rehospitalization risk, especially among those with central nervous system dysfunction.
ANTIOXIDANT REDUCTION AND P38MAPK SIGNALING: MECHANISTIC ACTIVATORS OF FETAL MEMBRANE SENESCENCE

Dr. Faranak Behnia, Department of Obstetrics and Gynecology
Dr. Eryn Dutta, Department of Obstetrics and Gynecology
Dr. Christopher Dixon, Department of Obstetrics and Gynecology
Mrs. Talar Kechichian, Department of Obstetrics and Gynecology
Dr. George Saade, Department of Obstetrics and Gynecology
Dr. Ramkumar Menon, Department of Obstetrics and Gynecology

Objective: Term Labor is associated with oxidative stress (OS) induced fetal membrane senescence. Our objective was to test the hypothesis that term labor is associated with reduction in fetal membrane antioxidant status and activation of stress-associated signals (mitogen activated protein kinases [MAPK]). Study Design: Fetal membrane samples were collected from term patients not in labor (TNIL; n=11) and in labor (TL; n=9) after cesarean and vaginal deliveries respectively. Extracted proteins were subjected to multiplex assays for the following antioxidants: peroxiredoxin (PRX2), super oxide dismutase (SOD1 and 2), catalase (CAT), and thioredoxin (TRX1). Multiple phosphorylated MAPKs (ATF2, p90RSK, Hsp27, MEK, P-p38MAPK, Stat3, ERK1, JNK) and p53 were assayed using Bio-Plex Pro Cell Signaling MAPK Panel for semi-quantitative estimation of cell signaling markers. Median fluorescence intensities (MFI) were recorded in both assays and data were normalized to total protein concentrations. Analysis was performed using Student t-test and p ≤ 0.05 was considered significant. Results: Concentrations of PRX2, SOD1 and CAT were significantly lower in TL vs TNIL (p< 0.009, p<0.04, p<0.03 respectively). Increased phosphorylation of MEK and Hsp27 was seen in TNIL compared to TL (p=0.002 and p=0.05). Activation/Phosphorylation of ATF and p38MAPK was significantly increased in TL compared to TNIL (p=0.005 and p=0.001). Activation of p38MAPK in TL was confirmed with Western blot analysis. Conclusions: Term labor is associated with increased oxidant and decreased antioxidant function, resulting in activation of p38MAPK, a pro-senescence protein. Fetal membrane senescence at term does not involve p53 (pro-apoptotic factor) activation. Our findings confirm the role of membrane senescence as a mechanism for term labor.
SENESCENT FETAL CELLS MAY SIGNAL HUMAN PARTURITION

Dr. Faranak Behnia, Department of Obstetrics and Gynecology
Dr. George Saade, Department of Obstetrics and Gynecology
Dr. Ramkumar Menon, Department of Obstetrics and Gynecology

OBJECTIVE: During gestation, fetal membranes perform specific functions (immune, endocrine, structural and mechanical) to protect and support fetal growth. Longevity of membranes decreases at term through telomere dependent senescence. In this study, we report characteristics of senescent pathway and signals from term fetal membrane cells and their ability to cause contractile phenotype in myometrial cells. METHODS: Fetal membranes from spontaneous labor (TL) and not in labor (T NIL) at term were examined for: 1) changes in telomere length (PCR), 2) p16, p38MAPK and p53 activation (western blot and immunofluorescence [IF]) and 3) loss of nuclear envelop Lamin B (IF). Amniotic fluid samples were examined for: 1) HMGB1 (ELISA) and 2) amplifiable telomere fragments (PCR). Amnion epithelial cells from T NIL were exposed to cigarette smoke extract (CSE) and the above markers were measured. Contractile gene expressions (COX-2 and Connexin [CX]-43; qRT-PCR) and NF-KB (western blot) activation in myometrial cells in response to cell free fetal DNA telomere fragments (cff TF) and HMGB1 were documented. RESULTS: Histologic and biochemical markers of oxidative stress induced senescence were higher in membranes from TL compared to T NIL. Telomere length reduction in term labor was associated with increased telomere fragments in the AF. Findings in TL membranes were recapitulated in vitro in amnion cells from T NIL exposed to OS. DAMPs (HMGB1 and cff TF) increased COX-2 and CX-43 expression and caused NF-KB activation in myocytes. CONCLUSION: OS transitions biologically active term fetal membranes into a senescent phenotype causing release of DAMPs. DAMPs can transform myocytes into a contractile state. We postulate that signals from senescent fetal cells may initiate human parturition.
PROTECTING MUSCLE HEALTH IN AGING ADULTS DURING PHYSICAL INACTIVITY

Dr. Elfego Galvan, Division of Rehabilitation Sciences
Dr. Emily Arentson-Lantz, Department of Nutrition and Metabolism
Ms. Jessica Spahn, Department of Nutrition and Metabolism
Mrs. Sneha Nagamma, Department of Nutrition and Metabolism
Dr. Douglas Paddon-Jones, Department of Nutrition and Metabolism

Microgravity exposure results in loss of muscle mass and strength and parallels changes experienced by hospitalized adults. These deficits compromise muscular function and may negatively affect the response to emergency situations, mission productivity, and recovery of physical function upon musculoskeletal system reloading. In preparation for longer-duration endeavors to Mars and to concurrently address pressing healthcare concerns, it is critical to understand and optimize the efficiency of current countermeasures, such as nutrition and exercise. Our goal is the refinement of a mechanistically targeted, yet practical intervention (the essential amino acid, Leucine) to reduce the loss of muscle mass and function during bed rest. The project-specific goals are to determine the effect of physical inactivity on muscle mass and function in an aging population and to determine the effect of Leucine-supplemented meals on the regulation of muscle mass and function. We propose that supplementing meals with leucine (0.06 g/kg lean mass/meal; 3 meals/day) will independently (i.e., absence of exercise-countermeasures) reduce the deleterious effects of inactivity on skeletal muscle and facilitate recovery during rehabilitation. We will utilize our 7-day bed rest protocol to model skeletal muscle unloading that occurs during microgravity utilizing two clinically-relevant experimental groups: Bed Rest alone (CON=Muscle Loss); Bed Rest+countermeasure (LEU=Muscle Maintenance). We will evaluate the efficacy of leucine supplementation for preserving muscle mass and function at the functional, morphological, and metabolic levels. Preserving muscle and functional capacity during bed rest is clinically desirable. However, current nutrition interventions often fail when confronted with the realities of bed rest in clinical populations. This project has application for implementation on spaceflight missions and as an intervention for inactivity in older adults resulting from hospitalization and musculoskeletal injury.
AGE-ASSOCIATED DECLINES IN POWER AND CONTRACTILE VELOCITY INCREASED UNDER HEAVILY LOADED CONDITIONS

Dr. Ted G. Graber, Department of Nutrition and Metabolism
Dr. Jong-Hee Kim, University of Minnesota, Department of Physical Medicine
Dr. Robert W. Grange, Virginia Tech University, Department of Human Nutrition, Foods
Dr. Linda K. McLoon, University of Minnesota, Department of Ophthalmology
Dr. LaDora V. Thompson, University of Minnesota, Department of Physical Medicine

Defining the fundamentals of skeletal muscle physiology in animal models of aging is required, pre-clinically, to assess treatment strategies designed to improve age-related conditions such as sarcopenia or frailty. Power production by skeletal muscle is critical for dynamic movement, but has not been fully investigated across the mouse lifespan. In this study, we determined the effect of age on power production, and its determinants, contractile velocity and force output, in male C57BL/6 mice. We hypothesized that both velocity and force would decline with age, therefore reducing power. We also predicted age would diminish power more during concentric contractions against loads above 50% of peak isometric force (P0). P0 and contractile velocities at loads from 10-90%P0 were determined in vitro in the soleus and EDL muscles of adult, old and elderly mice, representing 100, 75 and 50% survival, respectively. Power curves were then derived from the force-velocity relationships. We found that power, velocity, and force all declined in an age-associated manner. Furthermore, there was an increased age-effect on both velocity and power during heavily loaded contractions. Thus, age-associated movement challenges during more difficult tasks in the elderly may be due, in part, to an accelerated deterioration of power production and contractile velocity under heavy loads, not just from reduced force output. Training regimens to improve contractile velocity throughout the load range in the elderly may synergistically benefit power output beyond simple strength training alone.
MYOREGULIN MRNA EXPRESSION IS DECREASED IN OLDER ADULTS AFTER ONE WEEK OF BEDREST

Dr. Ted G. Graber, Department of Nutrition and Metabolism  
Dr. Micah J. Drummond, University of Utah, Department of Physical Therapy  
Dr. Michael S. Borack, Department of Nutrition and Metabolism  
Dr. Elena Volpi, Department of Internal Medicine, Sealy Center on Aging  
Dr. Blake B. Rasmussen, Department of Nutrition and Metabolism

Skeletal muscle comprises approximately 40% of body mass, accounting for 80% of caloric expenditure during vigorous activity. Sarcopenia and disability contribute to diminished energy expenditure. However, altered thermogenesis may also play a role. Sarcolipin (SLN), in slow-twitch skeletal muscle and cardiac muscle, and myoregulin (MRL), in fast-twitch skeletal muscle, regulate the sarcoplasmic reticulum calcium ATPase (SERCA). These peptides uncouple Ca+2 pump action from ATP hydrolysis, consuming energy and creating heat. Sarcolipin may guard against diet-induced obesity, whereas the down-regulation of myoregulin has been proposed as a potential aerobic performance enhancer. We hypothesized that a catabolic state such as bedrest, would down-regulate mRNA expression of MRL and SLN, and that in highly anabolic conditions, such as resistance training, expression would be suppressed while the body restored energy balance. Older men (n=6, mean age 67.2±1.7) underwent 1 week of bedrest, and a second group (n=6, mean age 66±1.6) performed an acute bout of exercise (10 repetitions of leg extensions for 8 sets at 70% of 1-repetition maximum) followed by a protein supplement (30 grams). Vastus lateralis biopsies were performed pre and post interventions. We determined mRNA expression, with a 62% reduction in MRL (p=0.01) and no change in SLN post-bedrest, but the exercise/nutrition cohort had a 14% reduction in SLN (trend, p= 0.06), no change in MRL. We conclude that a short-term reduction in physical activity in older men results in a significant decrease in skeletal muscle myoregulin gene expression consistent with the hypothesis that myoregulin is involved in functional performance.
Control of neuronal excitability by glycogen synthase kinase 3 in the nucleus accumbens

Dr. Miroslav N. Nenov, Department of Pharmacology and Toxicology
Mr. Federico Scala, Università Cattolica
Ms. Elizabeth Crofton, Department of Pharmacology and Toxicology
Ms. Yafang Zhang, Department of Pharmacology and Toxicology
Mrs. Neli Panova, Department of Pharmacology and Toxicology
Dr. Thomas Green, Department of Pharmacology and Toxicology
Dr. Marcello D’Ascenzo, Università Cattolica
Dr. Fernanda Laezza, Department of Pharmacology and Toxicology

Susceptibility to psychiatric disorders is associated with gene and environment interactions that can predispose or protect individuals against these brain pathologies. Enriched environmental conditions (EC) can exert protective effects opposing maladaptive neuronal plasticity of the brain circuit that underlies these aberrant behaviors. Using unbiased transcriptomic analysis in the nucleus accumbens (NAc) of EC rats mRNAs coding for glycogen synthase kinase 3 (GSK3) and the voltage-gated Na⁺ channel Nav1.6 were identified as part of a protective genetic program against addiction and psychiatric disorders. Using in vivo Adeno-Associated Virus (AAV) vector expression for selective genetic silencing and acute brain slice patch-clamp electrophysiology, we found that silencing of either GSK3 or Nav1.6 with selective AAV short hairpins leads to a reduction in maximum firing frequency and increased in the action potential threshold. Accordingly, we show that application of GSK3 inhibitor CHIR99021 in medium spiny neurons in both the NAc core and shell significantly suppresses maximum firing frequency and reduces Na⁺ persistent currents compared to vehicle treated cells. In complementary studies in HEK293 cells stably expressing Nav1.6 channels, we show that either CHIR99021 or GSK3 inhibitor XIII induce a significant reduction of Na⁺ peak current density compared to control along with significant changes in the voltage-dependence of the channel activation and/or steady-state inactivation that are inhibitor-specific. Based on this evidence, we propose that changes in GSK3 and Nav1.6 expression might coordinate rewiring of the NAc with effects on depression-, anxiety- and addiction-related behaviors.
AGED MICE ARE UNABLE TO MOUNT AN EFFECTIVE GUT BARRIER AND INNATE RESPONSE TO CLOSTRIDIUM DIFFICILE

Dr. Alex Peniche, Department of Internal Medicine
Ms. Machesha Banks, Department of Internal Medicine
Dr. Sara Dann, Department of Internal Medicine

C. difficile is one of the most important causes of nosocomial infectious diarrhea in the U.S, and costs the healthcare system $3.2 billion/year. A major risk factor for developing C. difficile infection (CDI) is advanced age (>65 years), which also accounts for 93% of CDI-related deaths. It is unknown why CDI becomes more severe with age. In this work, we study the effects of aging on host defense comparing CDI in aged (12 months) and young (2 months) C57BL/6J mice. Three days after inoculation a higher percentage of aged mice exhibited signs of disease (weight loss, diarrhea and mortality) compared to young mice (p4-log higher compared to young mice (p= 0.023), as was bacteria translocation to extra-intestinal organs (p<0.05). Histological analysis of tissue from CDI-aged mice revealed epithelial damage with minor localized inflammation, whereas in younger mice more inflammatory infiltrate and minor epithelial alterations were present. Analysis of colon tissues revealed that in contrast to young mice, aged mice failed to upregulate IL-22, IL-23, IL-1β and IL-6 (p<0.05) after CDI. Expression of antimicrobial peptides (Slpi, SAA1, RegIIIβ and RegIIIγ), mucins (mucin 2, 3 and 13) and pro-survival transcription factors related to gut barrier function (orchestrated by IL-22) were also significantly increased in CDI-younger compared to CDI-aged mice (p<0.05). These results suggest that aging impairs the ability to control C. difficile colonization and barrier function which allows translocation of commensals that promote sepsis and death. Further studies are needed to evaluate IL-22 age-related changes after CDI, which may lead to develop new treatment strategies directed to reduce mortality in older adults.
SENESCENCE AND SENESCENCE ASSOCIATED INFLAMMATION DELINEATE PPROM AND SPONTANEOUS PRETERM BIRTH WITH INTACT MEMBRANES AS DISTINCT PHENOTYPES

Dr. Eryn Hart Dutta, Department of Obstetrics and Gynecology
Ms. Rheanna Urrabaz-Garza, Department of Obstetrics and Gynecology
Dr. George Saade, Department of Obstetrics and Gynecology
Dr. Brandie Taylor, Texas A&M, Epidemiology and Biostatistics
Dr. Faranak Behnia, Department of Obstetrics and Gynecology
Dr. Ramkumar Menon, Department of Obstetrics and Gynecology

Objective: Oxidative stress induced senescence activation is a hallmark of fetal membranes from early preterm premature rupture of membranes (pPROM) with distinct phenotypes developing through separate pathways compared to spontaneous preterm birth (PTB). Senescence is characterized by unique inflammatory signature called Senescence Associated Secretory Phenotype (SASP). Our objective was to characterize differences in senescence markers in fetal membranes and SASP markers in amniotic fluid (AF) between pPROM and PTB.

Study Design: AF and fetal membranes (n=20) were collected from early pPROM (n=17) and PTB (n=31). Markers of senescence, loss of nuclear membrane protein Lamin B and senescence associated beta-Galactosidase (SA-beta-Gal) were evaluated by immunostaining. The FAST™ protein microarray technology was used to analyze 14 SASP biomarkers. Statistical analysis was performed using Student t-test to compare Lamin B loss and SA-beta-Gal positive staining between pPROM and PTB. Wilcoxon-Mann-Whitney was used to examine differences in the distribution of SASP markers between pPROM and PTB AF samples.

Results: Fetal membrane cells with loss of lamin B were higher in pPROM vs PTB (p<.0001). SA-beta-Gal stained cells were also higher in pPROM compared to PTB (p<.0001). Median concentrations of four AF SASP markers (pPROM vs PTB) were different: sFas Ligand (149 vs 53 pg/ml; p=.0374), MMP-1 (86037 vs 54408 pg/ml; p=.0278), IL-6 (10238 vs 362 pg/ml; p=.0005), IL-8 (12704 vs 2743 pg/ml; p=.0111). Ten other markers were not different between pPROM and PTB.

Conclusion: These data further confirm association between senescence and SASP as a major pathophysiology in early pPROM but not in PTB. Dysregulated SASP markers suggest a more pro-inflammatory environment in pPROM compared to PTB. Preventive strategies may need to address each of these conditions separately.
THE OLIGOMERIZATION OF TAU IN THE VASCULATURE OF NEURODEGENERATIVE DISEASES

Dr. Prajesh Garach, Department of Neurology  
Dr. Kishan Patel, Houston Methodist Neurological Institute, Department of Neurology  
Dr. Dianna Castillo Carranza, Department of Neurology  
Mrs. Urmi Sengupta, Department of Neurology  
Dr. Rakez Kayed, Department of Neurology

Tauopathies are a class of neurodegenerative diseases associated with the pathological accumulation of tau protein. The pathology is mediated mainly by tau oligomers which are considered toxic. In addition to the protein misfolding that leads to accumulation of amyloid, alpha synuclein and tau, neurodegenerative diseases have a vascular component in their pathogenesis. A strong association between Alzheimer’s Disease (AD) and vascular dysfunction has been previously described. However, the relationship between tau oligomers and the cerebrovasculature in tauopathies has never been thoroughly investigated.

HYPOTHESIS: Tau accumulation in the vasculature plays a part in the pathogenesis of tauopathies including AD, Parkinson’s disease (PD) and Dementia with Lewy Bodies (DLB). We therefore evaluated the presence of tau oligomers in the cerebrovasculature of AD, PD and DLB confirmed cases as well as age-matched control and the AD mouse model, Tg2576, by immunohistochemistry and immunofluorescence. KEY FINDINGS: Our findings suggest that the toxic tau oligomers are present in the vasculature of the tauopathy brain but absent in the control brain. Overall the results shown herein suggest a role of potentially toxic tau oligomers in vascular and perivascular damage and suggest that they represent a potential drug target. CONCLUSIONS: Tau oligomers increase in an age-dependent manner in the brain vasculature of Tg2576 mice. We have evidence of the association of tau oligomers in the cerebrovasculature of human AD, PD and DLB patients. Our findings are supported by preliminary biochemical analysis of confirmed tauopathy cases.
REduced expression of phospholipase D (PLD) isoforms in the synaptosomal fractions of the frontal cortex from Alzheimer’s disease (AD) patients

Dr. Balaji Krishnan, Department of Neurology
Ms. Wen-Ru Zhang, Department of Neurology
Dr. Giulio Taglialatela, Department of Neurology

Alzheimer’s disease (AD), the most common and severe age-associated neurodegenerative dementia, currently affects one in every nine Americans >65 years of age and one in every three >85 years. There is currently no cure and the need to identify innovative targets for prevention and treatment are an urgent need. The accumulation of β-amyloid peptides (Aβ) at the synaptic level is an important mechanism that leads to the progression of cognitive decline, subsequent neuronal degradation and other hallmarks that characterize the loss of long-term memory mechanisms in the progression of AD. Recent studies from our group have demonstrated a role for phospholipase D (PLD) as a key signaling element in the maintenance of long-term memory. Interestingly, studies conducted by independent groups over the past decade have elucidated a role for different isoforms of mammalian PLD (PLD1 and PLD2) in negatively regulating Aβ production/accumulation using in-vitro approaches. In the present study, we demonstrate that PLD levels are significantly lower [PLD1: 0.020 ± 0.001 (Control) vs 0.016 ± 0.0005 (AD); PLD2: 0.151 ± 0.005 (Control) vs 0.120 ± 0.007 (AD), n=4-5, p<0.05] in the frontal cortex (synaptosomal fractions) of AD patients compared to age-match controls. Interestingly, this change is not reflected for PLD1 in the total homogenate fraction, while PLD2 is reduced [0.144 ± 0.008 (Control) vs 0.120 ± 0.009 (AD)]. Intriguingly, the phosphorylation states of the two isoforms do not show any significant change in the synaptosomal fractions. Taken together, these results suggest that PLD signaling, that is important for long-term memory, is altered in the synapses of AD patients.
Clinical Trial - Faculty Member

FALL RISK REDUCTION IN THE ELDERLY THROUGH THE PHYSICAL THERAPY MANAGEMENT OF INCONTINENCE: A PILOT STUDY

Dr. Steve R. Fisher, Department of Physical Therapy
Dr. Rebecca Galloway, Department of Physical Therapy
Dr. Janna McGaugh, Department of Physical Therapy
Dr. Carolyn Utsey, Department of Physical Therapy
Ms. Starr Stanich, Division of Rehabilitation Sciences

Background. In community-dwelling older women, the prevalence of urinary incontinence is estimated to be 30 to 50%. Urinary incontinence is a strong risk factor for a number of negative health outcomes in the elderly, including falls and fractures. Strengthening the pelvic floor muscles (PFM) and behavioral modification has shown some efficacy in the treatment of incontinence in the general population. In this pilot study an evidence based physical therapy intervention to reduce incontinence was used to investigate our hypothesis that physical therapy for incontinence also improves overall balance confidence and mobility in older women.

Methods. A multiple baseline quasiexperimental pre-post design was used. Ambulatory women 55 years and older referred to a Pelvic Health Center PT clinic with a Falls Efficacy Scale-International (FES-I) score suggestive of a concern for falling were eligible. FES-I was the primary outcome. Participants were assessed 1-2 weeks prior to the start of PT (baseline 1), the first day of PT (baseline 2), mid therapy course (weeks 3-4), and at the end of treatment (weeks 6-8). Licensed physical therapists provided the intervention as part of regular clinic care. Balance training and fall risk remediation was not part of the intervention. Preliminary results. Six women (mean age: 65±9.5 years) have been enrolled thus far. Scores were stable across the 2 baseline assessments. Following the intervention, FES-I improved markedly (mean decline: 10.0±7.3). Performance also improved on the Incontinence Impact Questionnaire, physical functioning, social participation, emotional distress, and step activity.

Conclusion. An evidenced based physical therapy program for incontinence also appears to improve balance confidence and mobility in older women.
DISCHARGE PREPAREDNESS INTERVENTIONS TO DECREASE READMISSIONS IN THE ELDERLY

Ms. Catherine Ivash, School of Nursing

Older adults have a high risk of readmission to the hospital after discharge, and readmissions prove to be costly to both patients and institutions. This project examined the effectiveness of best-practice interventions for discharge preparedness, on 30 day all-cause patient readmission rates and related patient satisfaction parameters. Participants included 46 patients over the age of 70 years, being discharged to home from an Acute Care for Elders unit. Interventions included enhancement of the discharge process by training registered nurses to perform teach-back technique, a patient discharge knowledge assessment, followed by remediation with simplified patient education tools, and preparation of a simplified and individualized pill instruction card for home use. Readmission rates for participants were 19.1% lower than readmission rates for the entire unit post implementation. The impact on patient satisfaction showed mixed results. The interventions need further study with participants in varied inpatient practice areas.
A BUNDLE APPROACH TOWARDS AN INSTITUTIONAL RE-COMMITMENT TO NICHE

Ms. Colleen Rose James, Acute Care of the Elderly Clinical Training
Ms. Odette Comeau, Acute Care of the Elderly Clinical Training
Ms. Josette Armendariz-Batiste, Nursing Service
Dr. Erin Hommel, Department of Internal Medicine

Background: The principles and processes of Nurses Improving Care for Healthsystem Elders (NICHE) are intended to improve the care of hospitalized older adults.\textsuperscript{(1-2)} In early 2015, UTMB re-energized an institutional recommitment to NICHE. With strong administrative support, a steering committee was assembled and project efforts were refocused.

Programs and Outcomes: An open department position was converted into a full time NICHE coordinator. The NICHE coordinator role is to provide and maintain NICHE competencies, act as a resource and role model to the healthcare team, enhance quality care to the elderly population through evidence based protocols, and to provide education / training
A multimedia geriatric nursing website was developed to be a central repository of evidence based resources to address the complex needs of older adults. The websites menu includes updates, documents, links, and videos.
A one week geriatric nursing internship program for new graduate nurses was added to an existing four week internship program. In addition to didactic and online education, the nurse interns participated in shadowing experiences of unit staff as well as community resources for the older adult.
Professional development of ACE unit staff has included attendance at the 2015 NICHE conference, a regional geriatric conference, journal club, and incentives for gerontology certification. Five nurses and 5 nursing assistants were sponsored for membership in the National Gerontological Nursing Association.

Conclusions: Through the Geriatric Website, addition to the Nurse Internship program and commitment to professional development, our recommitment processes to date have been shown to be effective in engaging the staff on evidence based care of the older adult. We are recognized nationally as a Senior Friendly organization by the NICHE program.

PILOT STUDY TO ASSESS THE OUTCOME OF TAI CHI EXERCISE PROGRAM ON FALLS, FEAR OF FALLING, AND PATIENT SATISFACTION AMONG NURSING HOME RESIDENT

Dr. Kyu Jana, School of Medicine
Dr. Susan Weller, Preventative Medicine and Community Health
Dr. Bret Howrey, Department of Family Medicine

OBJECTIVE: Assess feasibility of implementing a Tai Chi exercise program in a nursing home and explore effects on falls and patient satisfaction. BACKGROUND: In nursing homes, falls occur at a rate of 1.5 per bed per year with ~25% resulting in significant injury. Falls result in functional decline and reduced quality of life. Tai Chi exercise programs have decreased falls by 40% and decreased fear of falling among community dwelling elderly patients. METHODS: In this prospective, observational study, Satisfaction with Life Scale survey (SLSS), Fear of Falling survey (FFS), Timed Get Up and Go Test (TGUGT), Functional Reach Test (FRT), and rate of falls were measured before and after this 6 months study in a long-term care nursing facility in Galveston, Texas. PARTICIPANTS: Twelve residents completed the study. Mean age was 83 years (range, 62-97 years); 86%, women; 57%, non-Hispanic Caucasian. Mean MMSE score was 19.6 (10-30), 42%, non-ambulatory. RESULTS: Participation rate was 25% (0.05-49%). One patient fell and suffered a hip fracture unrelated to program participation. SLSS were 25 and 21 (Z=1.77, p=0.08) before and after the program. FFS increased from 15 to 21 (Z=2.40, p=0.02). TGUGT were 27 and 23 seconds (Z=1.18, p=0.24). FRT was unchanged, 8.8 cm (Z=0.62, p=0.54). Rate of falls decreased from 1.1 to 0.4 falls/resident/year before and after the program. DISCUSSION: Low participation rate was noted reflecting in part to poor timing of the exercise program classes and effort required to assist patients to the classes. Program was not associated with excess risks to these long term care residents in a nursing home. Benefits cannot be adequately evaluated as a control group was lacking and number of participation was small.
FEASIBILITY OF A POST-HOSPITALIZATION PT INTERVENTION IN PATIENTS WITH PNEUMONIA

Mr. Rodney Welsh, Department of Occupational Therapy
Dr. Lynne Hughes, School of Health Professions
Dr. Adrianna Laprea, School of Health Professions
Ms. Tammy Babcock, School of Health Professions
Dr. Jose Rojas, School of Health Professions

Background: Restrictive lung disease and hyperkyphosis are often diagnosed in older adults and are known to contribute to significant declines in physical functioning and mobility. Evidence indicates the declines are found in decreased gait speed, timed up and go (TUG) test, functional reach, quality of life, strength, flexibility, vital capacity, and balance. Older age is associated with postural stiffness, decreased trunk extensor strength, and progressive kyphosis of about 5 degrees per decade over the age of 50. Little is known about manual therapy improving lung function, posture, or functional level in older adults. We hypothesize that a physical therapy intervention will impact physical functioning and ultimately decrease hospital readmissions. Purpose: The primary purpose of this pilot study is to investigate hospital readmission rates in community dwelling older adults hospitalized with an acute episode of pneumonia and to follow them after discharge using a four week physical therapy out-patient intervention to improve posture, physical function, and pulmonary function. Intervention: The intervention will consist of manual therapy techniques to stretch tight tissues and joints, therapeutic exercise to stretch, strengthen, and improve functional activities, and breathing exercises to improve static and dynamic lung capacities. Measures: Outcome measures include frailty, pulmonary function tests, functional level, balance, postural measures, flexibility, and strength. Lastly, qualitative examination of the patients’ perception of how their health is affecting their quality of life will be assessed using a cognitive mapping technique. Clinical Relevance: This study will establish the feasibility of accessing patients with pneumonia, establish an out-patient PT intervention that will provide initial data on the effectiveness of the intervention, and monitor the preliminary impact of the intervention on readmissions, ED visits, and mortality.
LONGITUDINAL CHANGES IN BODY MASS INDEX IN OLDER MEXICAN AMERICANS

Dr. Soham Al-Snih, Division of Rehabilitation Sciences
Dr. Nai-wei Chen, Preventive Medicine and Community Health
Dr. Kyriakos Markides, Preventive Medicine and Community Health

Objective: To examine changes on body mass index (BMI) over a 17-year period as a function of BMI category at baseline in older Mexican Americans. Methods: Seventeen-year prospective study of Mexican-Americans aged 65 and older residing in five southwestern states in the U.S. Data were collected on socio-demographic variables, BMI, medical conditions, cognitive and physical function, depression, and disability. BMI was grouped according to the National Institutes of Health (NIH) obesity standards (< 18.5 Kg/m² = underweight, 18.5 – 24.9 = normal weight, 25.0 – 29.9 = overweight, 30.0 – 34.9 = obesity category I, and ≥ 35 = obesity category II and extreme obesity). General linear mixed models were used to estimate the effect of baseline BMI categories on BMI over time. Results: Out of 2,769 participants, 1.9% were in the underweight category, 28.6% had normal weight, 39.6% were overweight, 21% had obesity category I, and 8.9% had obesity category II or extreme obesity. The interaction term between baseline BMI categories and time (slope of BMI over 17-years) were statistically significant for overweight (β= -0.09, SE=0.02, p-value < 0.0001), obesity category I (β= -0.14, SE=0.02, p-value < 0.0001), and obesity category II or extreme obese (β= -0.29, SE=0.03, p-value < 0.0001) when compared with normal BMI, after controlling for all covariates. The interaction term between underweight category and time was not statistically significant (β= 0.10, SE=0.13, p-value = 0.4251). Conclusions: Older Mexican Americans with BMI ≥ 25 at baseline were at greater risk for decline in BMI over 17-years of follow-up.
THE FUTURE ELDERLY MODEL FOR MEXICO (FEM-MEXICO): THE CONSEQUENCES OF DIABETES

Dr. Cesar Gonzalez-Gonzalez, Sealy Center on Aging
Dr. Rebeca Wong, Sealy Center on Aging
Dr. Dana Goldman, University of Southern California, Center for Health Policy and Economics
Mr. Bryan Tysinger, University of Southern California, Roybal Center for Health Policy Simulation.

BACKGROUND. Mexico is experiencing one of the fastest aging processes in the world. Diabetes represents a major health problem and a significant burden on the population and on health systems. In 2012 the prevalence (self-reported) of diabetes among the Mexican population aged 60 and older was 41%. A key associated risk factor is body weight; 40.2% of older adults were overweight, 30% obese and 82.4% had abdominal obesity. In 2012, diabetes was the leading cause of mortality in the adult population, with 16.9% of all deaths in this age group. Diabetes is significantly associated with an increased risk of hospitalization, co-morbidity and mortality. OBJECTIVES. The goal of this paper is to estimate the future prevalence of diabetes among Mexico’s older adults in order to assess the current and future health and economic burden of diabetes. RESEARCH DESIGN AND METHODS. To achieve this goal we replicate a version of the Future Elderly Model (FEM) using the three waves of the Mexican Health and Aging Study (MHAS, 2001, 2003 and 2012), a longitudinal survey on a nationally and urban–rural representative sample of adults aged 50 years and older residing in Mexico in 2001. We predict future prevalence of diabetes along with key co-morbidities and mortality. The horizon of estimation will be from 2012 through the year 2050. RESULTS: Preliminary estimates include the simulated cohort population, and the corresponding incidence and prevalence of diabetes from 2012 to 2050, as well as estimates of other related conditions such as physical disability, cognitive impairment, and heart disease. Future work will estimate the costs of health care and long-term care, in order to quantify the economic consequences of diabetes.
Preserving Muscle Mass and Function in Bedridden Older Adults

Dr. Emily Arentson-Lantz, Department of Nutrition and Metabolism
Ms. Sneha Nagamma, Department of Nutrition and Metabolism
Ms. Jessica Spahn, Department of Nutrition and Metabolism
Dr. Shay Robertson, Department of Nutrition and Metabolism
Dr. Jennifer Ellison, Department of Physical Therapy
Dr. Rachel Deer, Sealy Center on Aging
Mr. Syed Husaini, Sealy Center on Aging
Dr. Adam Wacher, Department of Anesthesiology
Dr. Christopher S. Fry, Department of Nutrition and Metabolism
Dr. Doug J. Paddon-Jones, Department of Nutrition and Metabolism

Older adults are at increased risk of being hospitalized or bedridden and experiencing a host of negative health outcomes including impaired insulin action, loss of lean muscle and bone mass and strength and increased morbidity and mortality. We hypothesize that supplementing daily meals with leucine will partially preserve lean muscle mass and function during bed rest and facilitate the recovery of functional and metabolic capacity during rehabilitation. Briefly men and women (11 male, 3 female) between the ages of 60-80 years old were randomized to be supplemented with leucine (LEU, 0.06 g/kg/meal; n=4) or an isonitrogenous control (CON; 0.06 g/kg/meal; n=10), and admitted to the Institute for Translational Sciences’ Clinical Research Center for 7 days of bed rest followed by 7 days of inpatient rehabilitation. Body composition measured using iDEXA, muscle strength measured using dynamometry, aerobic capacity measured via VO2 max testing, histological measures of muscle architecture and indicators of metabolic health including OGTT and blood lipids were assessed prior to bed rest (Pre-BR, after bed rest (Post-BR) and after rehabilitation (Post-RE). Early findings indicate that leucine may exert a protective effect on the loss of lean mass from lower limbs. This research is supported by: RO1 NR012973, The Claude D. Pepper Older Americans Independence Center, Sealy Center on Aging and Institute for Translational Sciences-Clinical Research Center.
14 DAYS OF BED REST INDUCES A DECLINE IN SATELLITE CELL CONTENT AND ROBUST ATROPHY OF SKELETAL MUSCLE FIBERS IN MIDDLE-AGED ADULTS

Dr. Emily Arentson-Lantz, Department of Nutrition and Metabolism
Dr. Kirk L. English, Department of Nutrition and Metabolism
Dr. Doug J. Paddon-Jones, Department of Nutrition and Metabolism
Dr. Christopher S. Fry, Department of Nutrition and Metabolism

We examined the effect of 14 days of bed rest on skeletal muscle satellite cell content and fiber type atrophy and in middle-aged adults. Bed rest, a ground-based spaceflight analog, induces robust atrophy of skeletal muscle, an effect that is exacerbated with increasing age. With the average age of astronauts increasing, we wanted to determine the mechanistic changes during bed rest on an understudied age-cohort. Muscle biopsies were obtained from the vastus lateralis of healthy middle-aged adults (n=7 [4M;3F]; age: 51.0±0.6 y) before (Pre-BR) and after (Post-BR) 14 days of bed rest. Immunohistochemical analyses were used to quantify myosin heavy chain (MyHC) isoform expression, cross-sectional area (CSA), satellite cell and myonuclear content and capillary density. Peak oxygen consumption and body composition were measured Pre- and Post-BR. Post-BR MyHC Type 2a fiber percentage was reduced and mean CSA decreased in all fiber types (25% decrease; P<0.05). Satellite cell content was also reduced Post-BR (41% decrease; P<0.05), while Pre-BR Type 2 satellite cell frequency was correlated with the decline in leg lean mass as measured by DXA scan. A decline in capillary density was observed Post-BR (25% decrease; P<0.05), and Post-BR capillary density was associated with Post-BR peak oxygen consumption. A subtle decline in myonuclear content occurred during bed rest. The rapid maladaptation of skeletal muscle to 14 days of mechanical unloading in middle-aged adults emphasizes the need for appropriate countermeasures to preserve muscle function in astronauts.
ADULT DENTAL REHABILITATION BASED ON DENTAL IMPLANTS TO REVERT AGING

Dr. Cesar A. Guerrero, Department of Surgery
Dr. Roger R. Thondson, Department of Surgery
Dr. Jeffrey E. Aycock, Department of Surgery
Dr. Jeffrey J. Garcia, Department of Surgery

Abstract: Early tooth extractions produce vertical bone loss, subsequent uncomfortable denture wear and inability to masticate a full, normal diet. These patients are forced to ingest an excess of carbohydrates from the soft diet category. Indirectly: obesity, diabetes and hypertension, as well as facial wrinkling and temporo-mandibular joint arthritis are common clinical findings. 45 patients (35-79 y.o.) were treated by dental rehabilitation with implant anchorage based on the concept of “teeth in a day”. Using the all-on-four dental implant design for the mandible or the pentagonal or hexagonal designs for the maxilla to treat the edentulous conditions allowed for regaining of facial vertical height, lip projection, adequate occlusion and ability to chew. A consultation with a nutrition specialist was seldom needed (2/45 patients) as the new fixed dentition allowed for immediate regular diet mastication. All patients felt more secure, younger and confident about themselves, and the esthetic and functional improvements reflected in a much better quality of life.

Programs & Services
EDITORIAL SERVICES IN THE SEALY CENTER ON AGING

Dr. Sarah Toombs Smith, Sealy Center on Aging

Faculty, students & fellows in the Sealy Center on Aging access advanced editorial and development services to help them write grants and produce journal articles. Dr. Toombs Smith uses her extensive experience in writing, grant writing and editorial mentoring to help in development, planning, writing and editing journal articles, as well as such post-submission issues as responding to reviewers’ comments. She helps support large, multi-investigator grants; helps with development and writing of individual proposals; and helps develop and maintain the SCoA communication infrastructure. A SCoA Fellow and board-certified Editor in the Life Sciences, Dr. Toombs Smith (www.toombstext.com) joined the Center in December 2003 after eight years at UTMB as an Institutional Coordinator and Director (Office of Institutional Research). She has lectured and conducted workshops for the UTMB Hispanic Center of Excellence, the Clinical Research Scholars Program (CRSP), the Bridging Interdisciplinary Research Careers in Women’s Health (BIRCWH), Grants for Lunch, and elsewhere. She is author of 12 Week Plan for Verbal Reasoning Success, Introduction to Research for Healthcare Professionals, the MMHI Grant Writing Workbook and free writing tutorials at OpenSesame.com.
Geriatric Medicine Fellowship Program

Mukaila Raji, MD – Director

This program is a fully accredited training program in geriatric medicine for graduates of internal medicine or family medicine residencies. Fellows become board-eligible after completion of the first year of the program that concentrates on clinician education. Clinical training is obtained in various settings including a geriatric outpatient clinic, an acute geriatric inpatient unit, a multidisciplinary consultation service, and a community-based long-term care program. Fellows may pursue a second year in the program with emphasis on geriatric clinical research.

Clinical Training
The Fellowship provides clinical training in various settings including:
- Geriatric Outpatient Clinic
- Acute Geriatric Inpatient Unit
- Community Long-Term Care Program
- Skilled Nursing Facility Service
- Home Visit Program
- Hospice
- Geriatric Psychiatry Service
- Additional training in rehabilitation, rheumatology, wound care

Geriatric Medicine Conferences
The Geriatric Conferences are a series of case conferences, board reviews, journal clubs or lectures designed to provide the Geriatric Medicine Fellows with a broad scope of Geriatric education.

GERIATRIC LECTURE SERIES
The Geriatric Lecture Series is designed to provide trainees with in-depth, formal instruction covering a wide range of topics in Geriatric Medicine. The Geriatric Lecture Series is a detailed, factual and formal lecture series by expert presenters from UTMB which will allow for individual instruction to the fellows. The only required audience will be the fellows in the Geriatric program, although this series will be open to all interested individuals including trainees from other programs, individuals of non-physician disciplines with interests in aging, and faculty in Geriatric Medicine.

GERIATRICS JOURNAL CLUB
The Geriatric Medicine Journal Club is designed to provide trainees with an increased knowledge of recent medical literature related to geriatric medicine and an improved ability to read in a critical manner. The Geriatric Medicine Journal Club is an interactive discussion of recently published literature presented by a fellow and another individual, who will present and lead discussion to an audience of all fellows in the program, trainees from other programs, individuals of non-physician disciplines with interests in aging, and faculty in Geriatric Medicine.

GERIATRIC MEDICINE BOARD REVIEW COURSE
The Geriatric Medicine Board Review Course is designed to provide trainees with a comprehension review of the clinical approach to illnesses of special interest to geriatric medicine and diseases prominent in the elderly. The Geriatric Medicine Board Review Course is an interactive presentation by the fellow in a review format. The audience is all fellows in the program, trainees from other programs, and faculty in Geriatric Medicine.

GERIATRICS CASE CONFERENCE
The Geriatrics Case Conference is designed to provide trainees a meaningful exposure to complex and challenging diagnostic and treatment issues for clinical and psychosocial problems of older patients. The Geriatrics Case Conference is an interactive presentation of actual clinical cases by the fellow or a faculty in the Division of Geriatric Medicine. The audience is all fellows in the program, trainees from other programs, and faculty in Geriatric Medicine.

Contact Vicki Hudson at (409) 772-1756 or vilhudo@utmb.edu for more information.
Medical Student Training in Aging Research (MSTAR)

The Medical Student Training in Aging Research Program (MSTAR) offers an 8-12 week intensive experience in aging research for first-year medical students. The goals are to: 1) include trainees from diverse backgrounds, 2) offer individualized, structured training that includes a mentor, a research project, didactics and supplementary experiences that results, at minimum, in an abstract presentation at AGS or at a National Student Research Forum, 3) promote a sense of identity and membership with the field of aging research, 4) incorporate responsible conduct of research into the experience and 5) develop and refine innovative approaches to promotion, training and evaluation. The program exposes students early in their careers to exciting opportunities and engaging mentors, and offers support to remain engaged after the experience. It helps prepare a new generation of mentors through the supervised junior mentor program. It provides partnerships between aging and numerous medical specialties. It is based on a structured, successful didactic sequence that focuses on the trainee’s concerns as they implement their own project. Training plans are developed for each student to reflect their individual research interests and progress is monitored by mentors chosen specifically with expertise to match the student’s research topic. The training plan includes a preparatory phase, the summer experience and post-experience support.

2010-15 – MSTAR, Grant #: 1 T35 AG038048-01
A collaborative effort between the University of Texas Health Science Center-San Antonio and University of Texas Medical Branch

2010 MSTAR Students, topics & mentors:

1) **Muay C. Hernández Pons** (1st Yr. Medical Student, University of Puerto Rico)  
   Association Between Gait Speed and APR-DRG Illness Severity Measure In Geriatric Patients  
   Mentors: Glenn V. Ostir, PhD, Steve R. Fisher, PhD

2) **Gabriela Montes-Rivera** (1st Yr. Medical Student, University of Puerto Rico)  
   [2010 Forum on Aging Award winner]  
   The Association Between Prescribed Anti-Depressant Medication Use and Depressive Symptoms Among Hospitalized Older Adults  
   Mentors: Glenn V. Ostir, PhD, Steve R. Fisher, PhD

2011 MSTAR Students, topics & mentors:

1) **Garrett Burnett** (UTMB)  
   Adaptive Optics Imaging in Patients with Dry Age-Related Macular Degeneration  
   Mentor: Fredericus Vankuijk, PhD

2) **Jennifer Coben** (UTMB) [2011 Forum on Aging Award winner]  
   Amino acid Transporter Expression in Response to Resistance Exercise and amino Acid Ingestion in Young and Elderly Men  
   Mentors: Blake Rasmussen, PhD, Jared Dickinson, PhD

3) **Matthew Lowery** (UTMB)  
   Regional, Gender and Ethnic Variation in Warfarin Use in Medicare Beneficiaries with Atrial Fibrillation  
   Mentor: Mukaila Raji, MD
4) **Samuel Mathis** (UTMB)  
Continuity of Care and End-of-Life Care among Older Patients with Advanced Lung Cancer  
Mentor: Gulshan Sharma, MD

5) **Jessica Schancupp** (Paul L. Foster School of Medicine in El Paso)  
Association of Comorbidities and Depression on Falls Among Older Adults with Parkinson's Disease  
Mentor: Elizabeth Protas, PhD, PT

6) **Daniel Branch** (UTMB)  
The Survivorship Experience in Pancreatic Cancer: Hospital and Medical Care Days  
Mentor: Taylor Riall, MD, PhD

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2012 MSTAR Students, topics & mentors:

1) **Lydia Cortes** (Recinto Ciencias Medicas, School of Medicine, Puerto Rico)  
Use of Biomarkers as Disease (Chronic and Infectious) Indicators Among Older Adults in a Low Income Setting  
Mentor: Rebeca Wong, PhD

2) **Brian Kauh** (Northeast Ohio Medical University)  
Aerobic Exercise Training Enhances Insulin Sensitivity in Previously Sedentary Older Adults  
Mentors: Elena Volpi, MD, PhD, Melissa M. Markofski, PhD, Jared M. Dickinson, PhD

3) **Anokha Padubidri** (Northeast Ohio Medical University)  
Falls and cognitive decline in older Mexican Americans aged 75 years and older  
Mentors: Mukaila Raji, MD, Soham Al Snih MD, PhD, Rafael Samper-Ternent, MD, PhD

4) **Erik Ding** (Northeast Ohio Medical University)  
Chronic Aerobic Exercise and Essential Amino Acid Supplementation Enhances Functionality in Previously Sedentary Older Adults  
Mentors: Elena Volpi, MD, PhD, Melissa M. Markofski, PhD, Jared M. Dickinson, PhD

5) **Betty La** (UTMB)  
Effect of Brown Adipose Tissue on Thermoregulation in Elderly Individuals  
Mentor: Labros Sidossis, PhD

6) **Christopher Latz** (Texas A &M)  
The effect of acute oral amino acid intake on whole-body fat oxidation  
Mentors: Elisabet Børsheim, PhD, Nicholas Hurren, PhD

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2013 MSTAR Students, topics & mentors:

1) **Chelsea Therrien** (UTMB)  
A Randomized Controlled Double Blind Acute Study Effects of Protein Blends on Muscle Protein Synthesis and Breakdown in Health Older Adults.  
Mentor: Blake Rasmussen, PhD
2) **Cordell Cunningham** (UTMB)
Effect of Aging on Physiologic Responses to Fluid Bolus
Mentor: Michael Kinsky, MD

3) **Linh Do** (Paul L. Foster at El Paso)
Variation in Brown Adipose Tissue Activation Due to Changes in Metabolites and its Effect on Whole Body Metabolic Regulation between Young and Old Adults
Mentors: Labros Sidossis, PhD, Maria Chondronikola, MS, RDN

4) **Ronnie Barakat** (UTMB)
Aerobic Exercise Training Enhances Insulin Secretion in Response to Essential Amino Acids in Older Adults
Mentors: Elena Volpi, MD, PhD and Melissa Markofski, PhD

5) **Sean Mayerik** (Northeast Ohio Medical University)
Reducing Recurrent Falls: Improving Quality of Care in a Skilled Nursing Setting
Mentors: Barbara Doucet, OT, PhD and Steven Fisher, PhD

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2014 MSTAR Students, topics & mentors:

1) **Joseph Gotesman** (MS II at Albert Einstein School of Medicine)
The Effect of Reactivation of Telomerase on the Regenerative Potential of Adult Stem Cells
Mentors: Ronald DePinho, MD, Deepavali Chakravarti, PhD (MD Anderson)

2) **Destiny Pegram** (UTMB)
The Effect of Aging on the Metabolic Response to Severe Burn Injury
Mentors: Maria Chondronikola, MS, RDN, Labros Sidossis, PhD

3) **Amanda Randolph** (UTMB)
Metabolic Effects of Aerobic Exercise and Post-Exercise Amino Acid Supplementation in Healthy Older Adults
Mentors: Melissa Markofski, PhD, Elena Volpi, MD, PhD

4) **Abigail Richison** (UTMB)
A Randomized Controlled Double Blind Acute Study: Effects of Protein Blend Supplementation After Exercise on Muscle Protein Synthesis in Older Adults
Mentors: Michael Borack, MSc, Blake Rasmussen, PhD

5) **Travis Urban** (UTMB)
Developing an Investigational and Screening Assay for Cognitively Enhancing Protein Complexes
Mentors: Kelly Dineley, PhD, Larry Denner, PhD

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2015 MSTAR Students, topics & mentors:

1) Mohammad Ali (UTMB)
   Age-Related Functional and Molecular Changes in White Adipose Tissue
   Mentors: Labros Sidossis, PhD & Maria Chondronikola, PhD, RDN

2) Abida Hasan (A.T. Still University School of Osteopathic Medicine - Mesa, AZ)
   Development of a Pilot Survey: Addressing Patient-Centered Outcomes for Rehabilitation Post Stroke
   Mentors: Timothy Reistetter, OTR, PhD & Shilpa Krishnan, PT, PhD

3) Jacob Moran (UTMB)
   Quality Improvement Project: Improving the Number of Times Geriatric Patients Bring Their Medication Bottles into Clinic
   Mentor: Elizabeth Jaramillo, MD
Research Services

Mission: Facilitate the UTMB research mission, from funding identification through project completion by:

- Providing research-specific resources and education
- Promoting the responsible conduct of research
- Advising and assisting with administrative policies and regulations

Who we are:

- Animal Resources Center (ARC)
- Clinical Research (OCR)
- Institutional Care and Use Committee (IACUC)
- Institutional Review Board (IRB)
- Office of Sponsored Programs
- Post Approval Monitoring (PAM)
- Research Education

How we meet our mission:

Website

The Research Resources website [http://research.utmb.edu/](http://research.utmb.edu/) serves as a portal where researchers can access tools to help them throughout the research process.

These tools include:

- Links to required forms
- Policies & Procedures
- Toolkits
- Find Funding Tools
- Calendar of Workshops
- News & Announcements
- Directory to Personnel
- Much more ...

Blog

The Research Resources blog [https://blogs.utmb.edu/researchresources/](https://blogs.utmb.edu/researchresources/) provides current –updated funding opportunities.

Education/Training

Education and training are offered through programs and monthly forums. For current education/training opportunities, visit [http://research.utmb.edu/Education/Default.aspx](http://research.utmb.edu/Education/Default.aspx)

Updates, reminders & new courses are communicated via the Research Listserv and the UTMB Daily Announcements.
Open Door:

Anyone in Research Services can be contacted at any time. A complete employee list with phone and email information is available at http://research.utmb.edu/aboutus/contact.aspx

Or you may visit our offices:

4.400 Rebecca Sealy Hospital
Mailing Route 0156
(409) 266-9400
Research.office@utmb.edu

Tools on our Website:

Find Funding & Collaborations
http://research.utmb.edu/FindFunding/default.aspx

Influent
http://utmb.influent.utsystem.edu

SciVal Funding
http://www.funding.scival.com/home

Proposal Central
https://proposalcentral.altum.com/

Communicate with UTMB Research Community
UTMB Research Listserv
esearch.utmb.edu/starline/listserv.htm

Effort Reporting
http://research.utmb.edu/Comp-Effort/default.aspx

Institutional Review Board
http://research.utmb.edu/IRB/

Institutional Animal Care and Use Committee
http://research.utmb.edu/IACUC/

Policies & Procedures
http://research.utmb.edu/policies.aspx

Online Forms
http://research.utmb.edu/forms.aspx

Pre-Award Toolkit
http://research.utmb.edu/Toolkits/PreToolkit.aspx

Post-Award Toolkit
http://research.utmb.edu/Toolkits/postToolkit.aspx

Training Grant
http://research.utmb.edu/AskForFunding/Training_Grants.aspx

Research Education Events Calendar
http://research.utmb.edu/Education/cal_activity_nov.aspx

Grants & Contracts Accounting
www.utmb.edu/finance/grantscontracts/default.asp
<table>
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<th>Principal Investigator</th>
<th>Title</th>
<th>Sponsor</th>
<th>Period of Support</th>
<th>Total Amount</th>
<th>Current Year Total</th>
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<td>Berenson, Abbey B</td>
<td>Interdisciplinary Women's Reproductive Health Fellowship</td>
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<td>$920,062</td>
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<td>other NIH Institutes</td>
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<td>Boehning, Darren F.</td>
<td>Mechanisms of Apoptotic Calcium Signaling</td>
<td>NIGMS R01</td>
<td>8/1/07-12/31/16</td>
<td>$2,459,103</td>
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<td>Branski, Ludwik K</td>
<td>Growth Hormone Therapy for Muscle Regeneration in Severely Burned Patients</td>
<td>Army Medical Research Acquisition Activity</td>
<td>04/15/15 - 04/14/20</td>
<td>$2,426,293</td>
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<td>Cai, Jiyang</td>
<td>Mechanisms of Age-Related RPE Dysfunction and CNV</td>
<td>NEI R01</td>
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<td>$1,980,570</td>
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<td>Chen, Yan</td>
<td>mTOR-Mediated Signaling Pathway in Aging of the Retinal Pigment</td>
<td>NEI R00</td>
<td>09/30/12-09/30/15</td>
<td>$747,000</td>
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<td>other NIH Institutes</td>
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<td>Chen, Yan</td>
<td>Interplay between Phagocytic and Autophagic Pathways in the Retinal Pigment</td>
<td>International Retinal Research Foundation</td>
<td>10/01/13 - 09/30/15</td>
<td>$198,111</td>
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<td>Dillon, Edgar L.</td>
<td>Integrated Resistance and Aerobic Exercise Training with Small Compact Exercise Equipment</td>
<td>National Space Biomedical Research Institute</td>
<td>09/01/13 - 08/31/14</td>
<td>$12,182</td>
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<td>Non-NIH funding</td>
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<td>DiNuzzo, Anthony R.*</td>
<td>East Texas Geriatric Education Center - Consortium</td>
<td>Health Resources and Services Admin.</td>
<td>09/08/10-09/30/15</td>
<td>$1,730,582</td>
<td>$446,417</td>
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<td>DiNuzzo, Anthony R.*</td>
<td>Medical Student Training in Aging Research (MSTAR) Subaward</td>
<td>NIA UTHSC-San Antonio-T35 Sub</td>
<td>11/1/10 - 04/30/15</td>
<td>$241,000</td>
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<td>Drummond, Micah J</td>
<td>Nutrient Regulation of Amino Acid Transporters in Aging Human Skeletal Muscle</td>
<td>NIA K01</td>
<td>09/01/11-08/31/15</td>
<td>$488,380</td>
<td>$121,655</td>
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<td>Durham, William</td>
<td>Non-Invasive Assessment of Skeletal Muscle Loss in Cancer Patients - Aubaward</td>
<td>NIAMS R44</td>
<td>09/10/12-06/30/15</td>
<td>$245,477</td>
<td>$98,191</td>
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<td>Eschbach, Karl</td>
<td>Social and Spatial Determinants of Melanoma in Hispanics, A Mixed-methods Study</td>
<td>Hampton University (flow thru from NIMHD)</td>
<td>04/15/15 - 04/14/16</td>
<td>$19,912</td>
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<td>Figueiredo, Marxa L</td>
<td>Pro-Peptide Gene Delivery for Treating Prostate Cancer Bone Metastases</td>
<td>NCI R21</td>
<td>04/01/13-03/31/15</td>
<td>$397,556</td>
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<td>Fujise, Kenichi</td>
<td>Fortilin, P53, and Atherosclerosis</td>
<td>NHLBI</td>
<td>1/5/13-12/31/17</td>
<td>$1,878,050</td>
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<td>Rockefeller Philanthropy Advisors</td>
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<td>Patient Centered Outcomes Research in the Elderly</td>
<td>AHRQ</td>
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<td>$4,970,000</td>
<td>$997,410</td>
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<td>Comparative Effectiveness Research of Cancer in Texas (CERCIT) RP101207</td>
<td>Cancer Prev Res Inst TX (CPRIT)</td>
<td>06/01/10-02/28/16</td>
<td>$4,861,175</td>
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<td>Goodwin, James S. *</td>
<td>Care of the Elder Hospitalized Patient: The Role of Hospitalists</td>
<td>NIA R01</td>
<td>09/01/11-08/31/15</td>
<td>$ 875,231</td>
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<td>Goodwin, James S. *</td>
<td>Established Investigator Award in Cancer Prevention &amp; Control</td>
<td>NCI K05</td>
<td>12/1/08-04/14/20</td>
<td>$ 1,002,989</td>
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<td>Graham, James E.</td>
<td>Archiving Four New Datasets from the Longitudinal Hispanic EPESE Study</td>
<td>NIA R03</td>
<td>09/30/13-06/30/15</td>
<td>$ 492,856</td>
<td>$ 246,428</td>
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<td>Ha, Yonju</td>
<td>The Role of CXCL10/CXCR3 in Neodegeneration during Glaucoma</td>
<td>BrightFocus Foundation</td>
<td>04/15/15-04/14/17</td>
<td>$ 100,000</td>
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<td>Hazra, Tapas K.</td>
<td>Preferential Single-Strand Break Repair in the Active Genes of Mammalian Cells</td>
<td>NIGMS R01</td>
<td>07/01/12-06/30/17</td>
<td>$ 1,673,440</td>
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<td>Hazra, Tapas K.</td>
<td>Preferential Single-Strand Break Repair in the Active Genes of Mammalian Cells</td>
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<td>07/01/12-06/30/17</td>
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<td>Hellmich, Mark</td>
<td>Surgical Research Training in Gastrointestinal Disease</td>
<td>NIDDK T32</td>
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<td>$ 916,195</td>
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<td>Hedge, Muralidhar</td>
<td>Oxidized Amyloid Proteins Induce Genome Damage in Alzheimer's Disease</td>
<td>Alzheimer's Assn New Investigator</td>
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<td>Herndon, David N</td>
<td>Mechanisms of fenofibrate alone or combined with propranolol in burned patients</td>
<td>NIGMS R01</td>
<td>08/05/14-04/30/18</td>
<td>$ 4,346,384</td>
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<td>Kuo, Yong Fang*</td>
<td>Assessing the Role of Nurse Practitioner in Primary Care of Older Adults</td>
<td>AHRQ R01</td>
<td>07/05/12-04/30/15</td>
<td>$ 652,107</td>
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<td>Liu, Hua</td>
<td>The Role of Epac1 in Ischemic Retinopathy</td>
<td>American Heart Association /Southwest American Cancer Society</td>
<td>11/15/14-11/14/17</td>
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<td>Lyons, Elizabeth</td>
<td>Self-Monitoring Activity: A Randomized Trial of Game-Oriented Applications</td>
<td>American Cancer Society</td>
<td>11/15/14-11/14/20</td>
<td>$712,000</td>
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<td>STEP AND GO: A Study of Technology-based Exercise Promotion</td>
<td>American Heart Assn</td>
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<td>$ 140,000</td>
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<td>Nutritional and Contractile Regulation of Muscle Growth</td>
<td>NIAMS R01</td>
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<td>Improving Cervical Cancer Screening and Prevention in the Lower Rio Grande Valley Through Public Outreach, Patient navigation and Tele-mentoring</td>
<td>University of Texas MD Anderson Cancer (flow through from American Association of Nurse Practitioners)</td>
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<td>Assessment and Management of Lymphedema in Adult Female Breast Cancer Patients Post Mastectomy and Axillary Lymph Node Dissection</td>
<td>UT System</td>
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<td>Systems engineering to provide integrated care for patients</td>
<td>NIGMS P50 (Herndon)</td>
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<td>Mitigation of the Catecholamine Surge in Severely Burned Patients</td>
<td>National Inst of Diabetes &amp; Digestive &amp; Kidney Diseases</td>
<td>03/15/15 - 03/14/20</td>
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<td>Early Exercise in the Burn Intensive Care Unit Decreases Hospital Stay, Improves Mental Health and Physical Preference</td>
<td>Army Medical Research</td>
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<td>Oxandrolone and Exercise: A potent therapy in the rehabilitation from burns</td>
<td>National Institute of Child Health &amp; Human Development</td>
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<td>Mitochondrial DNA: a target and effector of pulmonary epithelial cell injury</td>
<td>National Institute of Environmental Health Sciences</td>
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<td>American Lung Association-New York</td>
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<td>Taglialatela, Giulio</td>
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<td>NIA R01</td>
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<td>Urban, Randall J.</td>
<td>Testosterone and Leucine Supplementation as Gender Specific Countermeasures Against Musculoskeletal Losses during Space Exploration</td>
<td>NASA</td>
<td>07/30/10 - 07/29/15</td>
<td>$1,385,754</td>
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<td>Long-Term Testosterone to test continuous versus cycling testosterone to determine if the benefits of treatment are maintained</td>
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<td>Improved Mobility and Physical Activity in the Elderly through the Physical Therapy Management of Incontinence: A Pilot Study</td>
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<td>Volpi, Elena*</td>
<td>Nutrition &amp; Exercise to Improve Protein Metabolism &amp; Prevent Sarcopenia in Aging</td>
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<td>$8,787,810</td>
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<td>Volpi, Elena*</td>
<td>Effects of Post-Exercise Whey Peptide on Muscle mTOR Signaling and Protein Synthesis in Healthy Young and Old Adults</td>
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<td>Whey Protein and Exercise to Accelerate Recovery of Muscle Mass and Function after Acute Hospitalization in Previously Independent Older Adults</td>
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<td>Dynamics of Economic Well-Being and Health in a Rapidly-Aging Society: The Case of Mexico</td>
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<td>Ye, Yumei</td>
<td>DPP-4 inhibition by Saxagliptin prevents inflammation and renal injury by targeting the Nirp3/ASC</td>
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**TOTAL AMOUNTS**  
* Indicates primary appointment in Geriatrics  

$97,564,285 $22,123,299
Aging Funding at UTMB, 2015

NIA
$4,850,751
24.5%

Non-NIH Funding
$7,074,288
34.4%

Other NIH Institutes
$10,198,260
41.1%
## Forum on Aging Student Awards

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<td>Nuha Lackan</td>
<td>Preventive Medicine &amp; Community Health</td>
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<td>Soham Al Snih</td>
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<tr>
<td>Catherine Weikart</td>
<td>Surgery</td>
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<td>Kasie Cole</td>
<td>Anatomy &amp; Neurosciences</td>
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<tr>
<td>Joel Kaufmann</td>
<td>Marine Biomedical Sciences</td>
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<tr>
<td>Michael Thomas</td>
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<tr>
<td>Anthony DiNuzzo</td>
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<td>Soham Al Snih</td>
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<td>Kushang Patel</td>
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<td>Alai Tan</td>
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<td>Takayu Nakamura</td>
<td>Orthopedics and Rehabilitation Sciences</td>
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<td>Mark Madsen</td>
<td>HBC&amp;G</td>
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<td>Michael Thomas</td>
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<td>Joel Kauffman</td>
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<tr>
<td>Darren Lackan</td>
<td>Internal Medicine-Endocrinology</td>
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<td>Carlos Reyes-Ortiz</td>
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<td>Mark Madsen</td>
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<td>Ivonne-Marie Indrikovs</td>
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<tr>
<td>William Hal Boylston</td>
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### Forum on Aging Student Awards

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<th>Academic Year</th>
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<tr>
<td>Melanie Cree</td>
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<tr>
<td>Sonali Singh</td>
<td>Ophthalmology</td>
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<td>Helen L. Rogers</td>
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<tr>
<td>Ruili L. Luo</td>
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<td>Kashyap B. Choksi</td>
<td>HBC&amp;G</td>
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<td>Edna Tirado</td>
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<tr>
<td>Trung P. Nguyen</td>
<td>Pathology</td>
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<tr>
<td>Michelle Sierpina</td>
<td>Osher Life Long Learning Institute</td>
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<tr>
<td>Rosemarie R. Garza</td>
<td>School of Nursing</td>
<td>2006-2007</td>
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<tr>
<td>Rosie Morales</td>
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<td>Figaro Loresto</td>
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<td>Charles Umbaugh</td>
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# Forum on Aging Postdoctoral Student Awards

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<td>Carlos Diaz-Venegas</td>
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SEALY CENTER ON AGING
LEFEBER SCHOLAR IN GERONTOLOGY

The Edward J. and Ellie Weisiger Lefeber, Sr. fund will be used to endow an annual academic prize for students in the School of Medicine at UTMB who earn the privilege of completing a special elective course in gerontology within the Department of Internal Medicine during their fourth year of studies at the School. The endowment will be used to fund a competitive prize of $500.00 with a match of $500 from the Sealy Center on Aging.

The successful applicant for the Lefeber Prize is given to the student who has demonstrated scholarly work in aging research. This may include participating in the Geriatric Research Elective, was a scholar in our Medical Student Training in Aging Research Program (MSTAR), and/or participated in mentored research related to aging.

Faculty members may nominate eligible students by submitting a one-page letter of nomination giving a brief explanation of:

- Student’s interests in Gerontology
- His/her learning objectives for the elective course

Nominations will be judged on the basis of clarity and feasibility by a committee made up of the Director of the Division of Geriatric Medicine, physicians from the Division of Geriatric Medicine, and faculty members from the Sealy Center on Aging.

The selected student shall be known as the Lefeber Scholar in Gerontology.

**Application Deadline: February 1, 2016**

Please forward nominations to Stephanie Burt at (409) 266-6975 or stburt@utmb.edu

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**Lefeber Scholar Awardees**

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<td>Nathaniel DeLaCruz</td>
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