

cohort study to evaluate the incidence and predictors of deprescribing of antihypertensive medication among VA long-term care residents ≥ 65 years admitted between 2006 and 2017. Data were extracted from the VA electronic health record, CMS Minimum Data Set, and Bar Code Medication Administration. Deprescribing was defined as a reduction in the number of antihypertensive medications, sustained for 2 weeks. Potentially triggering events for deprescribing included low blood pressure ($<90/60$ mmHg), acute renal impairment (creatinine increase of 50%), electrolyte imbalance (potassium below 3.5 mEq/L, sodium decrease by 5 mEq/L), and fall in the past 30 days. Among 22,826 VA nursing home residents on antihypertensive medication, 57% had describing event during their stay (median length of stay = 6 months). Deprescribing events were most common in the first 4 weeks after admission and the last 4 weeks of life. Among potentially triggering events, acute renal impairment was associated with greatest increase in the likelihood of deprescribing over the subsequent 4 weeks: among residents with this event, 32.7% were described compared to 7.3% in those without (risk difference = 25.5%, $p < 0.001$). Falls were associated with the smallest increased risk of deprescribing (risk difference = 2.1%, $p < 0.001$) of the events considered. Deprescribing of antihypertensive medications is common among VA nursing home residents, especially after a potential renal adverse event.

OPIOID USE AMONG RURAL MEDICARE BENEFICIARIES

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This study examines differences in opioid prescribing rates among a nationally representative sample of Medicare beneficiaries across rural and urban areas, as well as among beneficiaries with chronic overlapping pain conditions (COPCs). We assess whether prescribing patterns exceed the Centers for Disease Control and Prevention guidelines for dose and duration, and identify socioeconomic and health risk factors associated with opioid prescribing using logistic regression analyses. Data were from the 2010-2017 Medicare Current Beneficiary Survey files. Rural-Urban Commuting Area codes were used to identify patients' residential location. The Area Health Resource Files were used to identify market characteristics such as primary care and mental health shortage areas. With the exception of 2010, over years 2011-2017, higher percentages of community-dwelling rural beneficiaries received opioid prescriptions (21.8-25.4%) compared to their urban counterparts (19.1-23.7%). During the same time period, facility-dwelling rural beneficiaries were more likely to receive opioid prescriptions (39.8-47.2%) compared to their urban counterparts (28.8-35.0%). Higher percentages (18.8%) of the community dwelling population in rural had COPCs compared to urban (15.2%), and a higher percentage of rural beneficiaries with COPCs (31.4%) received an opioid prescription than their urban counterparts (22.2%). Previous research points to other factors contributing to a lack of alternatives to opioids for pain management

in rural areas, including greater reliance on primary care providers, lack of access to chronic pain specialists and alternative therapies, and travel barriers. Improving the capacity of rural primary care to deal with COPCs and expanding access to specialists via telehealth warrants further attention from policymakers.

PHARMACIST-LED INTERVENTIONS TO IMPROVE MEDICATION ADHERENCE IN OLDER ADULTS: A META-ANALYSIS

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As pharmacists work to ensure reimbursement for chronic disease management services on the national (e.g., Medicare) level, summative evidence of their impact on important health metrics, such as medication adherence, is needed. The objective of this study was to assess the effectiveness of pharmacist-led interventions on medication adherence in older adults. In April 2020, a comprehensive search was conducted in six databases for publications of randomized clinical trials of pharmacist-led interventions to improve medication adherence in older adults. English-language studies with codable data on medication adherence and diverse adherence-promoting interventions targeting older adults (age 65+) were eligible. A standardized mean difference effect size (intervention vs. control) was calculated for the medication adherence outcome in each study. Study effect sizes were pooled using a random-effects meta-analysis model. Moderator analyses were then conducted to explore for differences in effect size due to intervention, sample, and study characteristics. The primary outcome was medication adherence using any method of measurement. This meta-analysis included 40 unique randomized trials of pharmacist-led interventions with data from 8,822 unique patients (mean age, range: 65 to 85 years). The mean effect size was 0.57 (95% Confidence Interval [CI]: 0.38-0.76). When two outlier studies were excluded from the analysis, the mean effect size decreased to 0.41 (95% CI: 0.27-0.54). Moderator analyses showed larger effect sizes for interventions containing medication education and when interventions had components delivered at least partly in patients' homes. In conclusion, this meta-analysis found a significant improvement in medication adherence among older adults receiving pharmacist-led interventions.

SEX DIFFERENCES IN POTENTIALLY INAPPROPRIATE PRESCRIBING AMONG OLDER ADULTS WITH MULTIMORBIDITY

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Sex differences in prescribing potentially inappropriate medications (PIMs) for various multimorbidity patterns are not well understood. This study sought to identify sex specific risk of PIMs in older adults with cardiovascular-metabolic patterns. Secondary analysis of the Health and Retirement Study interview data (2004-2014; n=6,341,

≥65 y/o) linked to Medicare claims data was conducted. Four multimorbidity patterns were identified based on the list of 20 chronic conditions and included: ‘cardiovascular-metabolic only’, ‘cardiovascular-metabolic plus other physical conditions’, ‘cardiovascular-metabolic plus mental conditions’, and ‘no cardiovascular-metabolic disease’ patterns. Presence of PIM prescribing was identified using the 2015 American Geriatrics Society Beers Criteria, limited to the list of medications to avoid in older adults. Chi-square tests and logistic regressions were used to identify sex differences in prescribing PIMs across multimorbidity patterns: (1) for PIMs overall and (2) for each PIM drug class. Results indicate that on average women were prescribed PIMs more often than men (39.4% and 32.8%, respectively). Women with cardiovascular-metabolic plus other physical patterns (Adj.OR=1.25, 95% CI: 1.07-1.45) and cardiovascular-metabolic plus mental patterns (Adj.OR=1.25, 95% CI: 1.06-1.48) had higher odds of PIM compared to men, however, there were no sex differences in PIM prescribing in the cardiovascular-metabolic only patterns (Adj.OR=1.13, 95% CI: 0.79-1.62). There was variation by sex across different PIM drug classes. Our study emphasizes the need to further reduce PIM prescribing among older adults, and identifies target populations for potential interventions to improve medication prescribing practices.

THYME AND OREGANO TERPENOIDS ACTIVATE AUTOPHAGY AND PROTECT AGAINST HEPATIC STEATOSIS

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Caloric restriction has been shown to reduce chronic illness in aging and increase life expectancy in most living organisms including mammals. Autophagy, a ubiquitous catabolic pathway of cellular quality control, is a key mechanism mediating the benefits of caloric restriction. In addition, mutations in genes involved in autophagy have been associated with the early onset of age-related diseases such as neurodegeneration, highlighting autophagy as a potential therapeutic target. Here, we aimed to discover autophagy inducers from a library of edible molecules for potential use in food applications. To this end, we developed a novel in vivo high-content screening strategy using fluorescent reporter zebrafish that monitor autophagy flux in skeletal muscle. We identify the thyme and oregano constituent thymol as a novel potent autophagy inducer in zebrafish, human cells and mouse tissues. Mechanistically, thymol triggers an hormetic effect on mitochondria in synergism with a calcium-dependent autophagy response which, in turn, leads to mobilization of intracellular lipid stores. We tested the effects of chronic thymol supplementation in mice fed a high-fat diet and showed that thymol mobilizes fatty acids, reduces liver triglycerides and improves markers of liver damage. In sum, we validate the use of zebrafish screening as a discovery model for autophagy-based therapeutics and demonstrate that thymol is an autophagy inducer with potential for the prevention of chronic metabolic diseases and other age-related conditions.

Session 3290 (Symposium)

NOVEL APPLICATIONS OF ACCELEROMETRY DATA FOR HEALTH OUTCOMES IN OLDER ADULTS: THINKING BEYOND MVPA

Chair: Jennifer Schrack Co-Chair: Jacek Urbanek
Discussant: Manini Manini

Physical activity is a well-established predictor of health and longevity. Wearable accelerometers produce high-frequency, time series data that capture multiple aspects of daily physical activity across the spectrum of intensity. Historically, the majority of accelerometry-based physical activity research has employed summary threshold metrics such as moderate-to-vigorous physical activity, or “MVPA.” Although these measures are important for understanding compliance with physical activity guidelines, they underutilize the potential of this data. To advance the science of physical activity in older adults, more sensitive, clinically translatable measures are needed. This symposium will examine the associations between novel measures of accelerometry-derived physical activity and various aging-related health outcomes. Dr. Wanigatunga will discuss the association of physical activity volume and fragmentation with the frailty phenotype in the Study to Understand Vitamin D and Fall Reduction in You (STURDY). Dr. Cai will present evidence on the association of physical activity quantities and patterns with measures of visual impairment in the Baltimore Longitudinal Study of Aging. Ms. Qiao will present a novel accelerometry-derived measure of performance fatigability in the Developmental Epidemiologic Cohort Study. Finally, Dr. Urbanek will discuss the role of accelerometry-derived free-living gait cadence in defining fall risk in STURDY. Collectively, these presentations highlight critical associations between objective measures of physical activity and health outcomes in older adults and illuminate the need for thinking beyond MVPA to improve prevention and intervention efforts.

ACCELEROMETER-DERIVED PATTERNS OF PHYSICAL ACTIVITY AND INCIDENT FRAILTY

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Low physical activity (PA) is a common phenotype of frailty, but whether disengagement of daily lifestyle PA signals impending frailty remains unexplored. Using STURDY (Study to Understand Fall Reduction and Vitamin D in You) data from 499 robust/prefrail adults (mean age=76 + 5 years; 42% women), we examined whether accelerometer patterns (activity counts/day, active minutes/day, and activity fragmentation) were prospectively associated with incident frailty over 2 years of follow-up; 48 (10%) participants developed frailty. In Discrete-Cox hazard models adjusted for demographics, medical conditions, and device wear days,