coping with a lack of alternatives to opioids for pain management (22.2%). Previous research points to other factors contributed an opioid prescription than their urban counterparts percentage of rural beneficiaries with COPCs (31.4%) received higher percentages of community-dwelling rural beneficiaries with chronic overlapping pain conditions (COPCs). 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 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,
265 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=1.23, 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**

Gabriele Civiletto, Guillaume Eric Jacot, Federico Sizanno, Kamila Muller, Aurélie Hermant, Umberto De Marchi, Jerome Feige, and Philipp Gut, Nestlé Research, Lausanne, Vaud, Switzerland

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 a 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 agonistic 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 accelerometer-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 accelerometer-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 accelerometer-derived measure of performance fatigability in the Developmental Epidemiologic Cohort Study. Finally, Dr. Urbanek will discuss the role of accelerometer-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 + 3 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,