

insight, it is suggested that AR inhibited myostatin expression transcriptionally, which downregulates IL-6/pSTAT3 pathway and thus contributes to the prevention of muscle degradation.

#### THE EFFECTS OF FRAILTY, POLYPHARMACY, AND COGNITION ON HEALTH OUTCOMES: A STUDY ON INTERRAI RESIDENTIAL CARE DATA

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Frailty Index (FI), polypharmacy and cognition status are significant health concerns in older adults. We conducted this study to investigate the interplay of frailty, polypharmacy, and cognition, in determining health outcomes. InterRAI Residential Care (RAI-RC MDS2.0) data were retrieved from residential care homes in Surrey, BC, Canada. Older residents (65+ years) who had RAI-RC records between 2016 and 2018 were used in the analysis (n=976). A deficit accumulation-based FI was generated using 36 variables. Information on polypharmacy and cognition were obtained by accounting the total number of medications and the cognitive performance scale. Information on falls, emergency visits, and mortality were followed. Multivariate Cox proportional hazard models were used to examine the effects of these variables on different outcomes. The FI showed a near Gaussian distribution (median= 0.370 mean= 0.372 SD= 0.143), and increased linearly with age on a logarithm scale (R=0.75, p<0.001). Residents with cognitive impairment showed a higher level of the FI (KW= 863.3, p<0.001). A higher FI was associated with an increased risk of death (HR=15.2 p=0.006) and emergency visits (HR=2.72 p=0.048), adjusting for age, sex, medications, and education levels. Frailty, polypharmacy, and cognition levels are associated and have interactive effects on health outcomes. Ongoing research is to validate the findings with large samples in different health settings, and to understand the underlying processes of the effect. The close relationships between frailty, polypharmacy, and cognition with health outcomes call for effective integrated strategies for healthcare of older adults with multiple complex health problems.

#### ANTIBIOTIC EXPOSURE IN LONG-TERM CARE FACILITIES IS ASSOCIATED WITH URINARY MICROBIOME PERTURBATIONS

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The discovery of the human urinary microbiome, defined as the microbial communities which colonize the human urinary tract, has shed new light on the meaning and clinical significance of bacteriuria. The prevalence of asymptomatic bacteriuria has been reported to be as high

as 50% in healthy older adults living in long term care facilities, yet the urinary microbiome of this population has not been reported. The aim of this pilot study was to describe the urinary microbiome of this population and explore the cross-sectional relationship with recent antibiotic exposure. Voided urine samples were obtained from healthy, institutionalized older adults (ages 79 to 95), including non-catheterized men and women without any urinary symptoms. The bacterial genomic content of each urine sample was assessed by 16S rRNA sequencing. Among the 77 genera found across 16 urine samples, there was no significant difference in the microbial diversity across age groups. When grouped by antibiotic exposure, those recently exposed had a significantly lower diversity (Shannon's index of 2.16 vs. 2.61, p = 0.029), and lower evenness (Pielou's evenness of 0.58 vs. 0.69, p= 0.017) relative to those who were not recently exposed. Enrichment analysis showed that recent antibiotic exposure was associated with an increased abundance of the genus *Bacteroides* and decreased abundance of the genus *Streptococcus*. To our knowledge, this is the first report describing the urinary microbiome of institutionalized older adults and suggests that recent antibiotic exposure should be accounted for in future studies of the urinary microbiome in this population.

#### PROTEIN SUPPLEMENTATION DOES NOT RESCUE MUSCLE MASS AND FUNCTION—HEAVY RESISTANCE TRAINING IS REQUIRED

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The requirement of an enhanced dietary protein intake to counteract the age-related loss of muscle mass is still debated. Further, the dinner meal generally contains the majority of protein and energy and since, the muscle of older adults responds less to protein intake than that of younger adults it is hypothesized that older adults would benefit from taking more protein in at other meals. The aim of this study was to investigate whether the provision of protein supplements for breakfast and lunch meals over the course of a year would make healthy, older, home-dwelling adults (N=136) take in more protein and whether that then would affect their muscle mass (primary outcome) and a number of metabolic health parameters, muscle strength parameters and functional capabilities. More than 77% ingested more than 75% of the provided supplements, irrespective of supplementation type (isocaloric carbohydrate; collagen hydrolysate low quality protein; whey hydrolysate high quality protein). Providing supplementation for a year among older adults makes them comply very well. However, provision of extra protein has no impact on the muscle mass or strength or on the functional parameters. Further, we studied the impact of adding resistance training on top of WHEY protein supplementation and found that heavy more than light-load resistance training affects fat-free mass and maximal-voluntary contraction. Daily protein intake can be enhanced by supplementation but do not impact muscle mass and function over the course of a year, where heavy resistance training on top benefits, but to a lesser than expected degree.