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The low rate of vaccine efficacy in the older adult population poses a major challenge to public health. Previous investigation has found acute exercise can enhance immune responses to vaccines within a young adult population. To date, no study has investigated the effect of exercise on vaccine responses in immune-compromised groups such as older adults, a group who could potentially benefit from enhanced responses. Forty-six healthy older adults (mean age = 73 ± 7 years, BMI = 27.2 ± 5 kg m^2, male = 23) were randomly assigned to complete a control or exercise task prior to administration of the seasonal influenza vaccine. The exercise group performed resistance exercises using upper and lower body muscle groups at an intensity of 60-percent one repetition maximum. Antigen-specific serum antibody titres were measured at baseline and one-month and six-months post-vaccination. Exercise task elicited expected changes in inflammatory markers, but for all three viral strains of the influenza vaccine, changes in antibody titre from baseline to one-month and six-months post vaccination were similar between groups who exercised prior to vaccination and those who rested. Control participants suffered a higher rate of systemic adverse events in the 48 h following vaccination. To our knowledge, this was the first randomised controlled trial (RCT) investigating the effects of resistance exercise on vaccine response in the older adult population, limitations include sample size and intensity of exercise task which may have contributed to the null finding.

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Abstract # 1601

Salivary cortisol/plasma CRP and neutrophil/lymphocyte ratios in distressed caregivers

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Homeostasis is reflected by interactions of the hypothalamic pituitary adrenal axis and inflammation. Indirect insights may be gained from ratios of plasma cortisol/C-reactive protein (Cort/CRP) as well as neutrophils/lymphocytes (N/L). However, can diurnal salivary cortisol be substituted in this relationship and do these ratios relate to psychological distress? 105 caregivers (75% women) of patients undergoing allogeneic stem cell transplant (Mage = 51.4;*SD* = 11.8 years) provided blood samples on a single occasion prior to transplant as well as saliva samples for cortisol at 4 time points across 3 days to compute the area under the curve with respect to ground (AUCg). CBCs were determined electronically, CRP was assessed by high sensitivity EIA, and salivary cortisol by EIA. Psychological measures included the CESD, STAI, and PSQI. State anxiety scores were significantly related to N/L ($r = .24$, $p < .05$); CORT_AUCg/CRP and N/L ratios were unrelated ($r = .11$); CORT_AUC/CRP was highly correlated with poor sleep ($r = -31$; $p < .01$) and approached significance with greater depressive symptoms ($r = -.17$; $p = .08$). The relationship with sleep remained after adjusting for multiple comparisons and controlling for age and gender in regression ($\beta = -.32$; $p < .01$). These exploratory analyses suggest that diurnal cortisol represented as AUCg may also serve as a useful indicator in these ratios. Future research should examine potential mediators of this relationship as well as associations in longitudinal study designs of larger samples. (Funding from NIH CA126971(MLL); T32AG044296(TS): DA034604(SMG) and PCORI CE-1304–6208(MLL).

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Abstract # 1602

Telomere length in caregivers of allogeneic hematopoietic stem cell transplant patients: Relationship to psychological distress and aging

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Caregivers are well known to carry psychological burden that is often associated with immune and neuroendocrine disruption. We recently reported that caregivers of allogeneic hematopoietic stem cell transplant (Allo-HSCT) patients are quite distressed prior to transplantation. Conversely their immune and endocrine biomarkers were remarkably conserved and unrelated to psychological distress. Older age might promote vulnerability to caregiver stress, or more resiliency due to greater life experience. Mononuclear blood cell telomere length is related to both age and distress. Telomere length (TL) was assessed in fifty-nine caregivers of Allo-HSCT patients prior to transplant as well as a battery of psychological measures of distress inclining the CESD (depression), PSS (stress), STAI (anxiety), and PSQI (sleep). Age was treated as a dichotomous variable based on a median spilt of 55. As expected, all caregivers showed elevated measures of distress. Regression analyses revealed main effects of CESD and STAI on telomere length (beta's = −.27, $p < .05$). A significant interaction emerged between CESD and age (beta=−.29, $p < .05$), but not for STAI (beta = .15, $p = .31$). Probing this interaction suggested that the negative relationship between CESD and telomere length was significant for younger (<55) but not for the older participants. In some situations, age may be protective for telomeres conferring increased resilience related to lifelong experience. Supported by NIH CA126971, NIA T32AG044296, and PCORI contract CE-1304-6208.

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Abstract # 1603

Prevention of chemotherapy-induced peripheral neuropathy by the small-molecule inhibitor Pifithrin-mu in a mouse model

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Chemotherapy-induced peripheral neuropathy (CIPN) is a common side effect of cancer treatment and a frequent cause of treatment discontinuation. No FDA-approved treatments for CIPN are