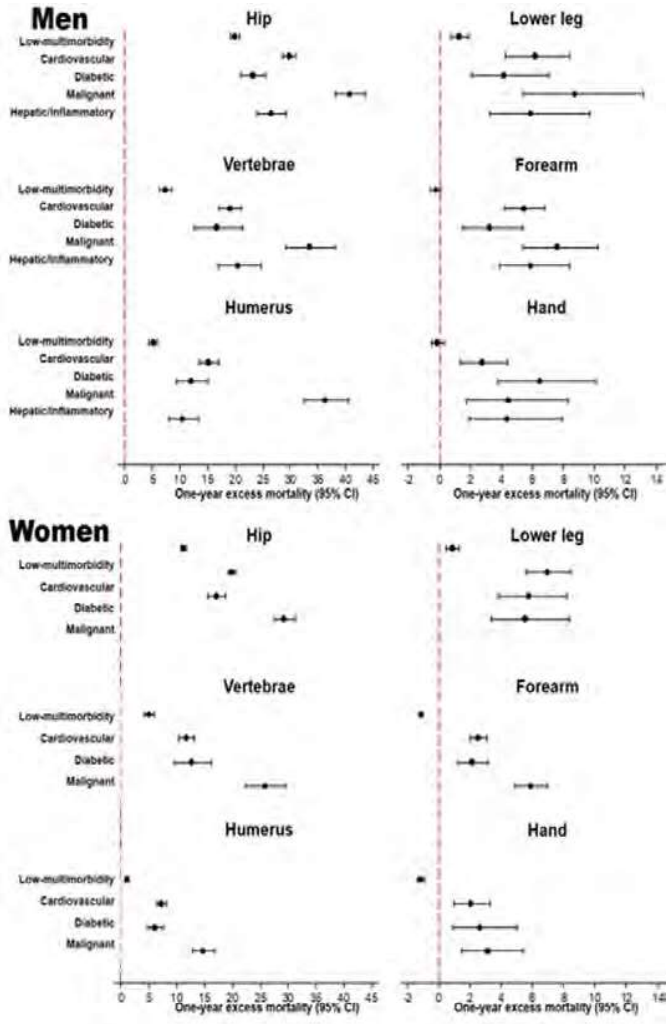
# FRI-521

**Multimorbidity compounds excess mortality following proximal fractures: A nationwide cohort study** *Thach Tran[1], Dana Bliuc[1], Thao Ho-Le[2], Bo Abrahamsen[3], Joop van den Bergh[4], Weiwen Chen[5], John Eisman[6], Piet Geusens[7], Louise Hansen[8], Peter Vestergaard[9], Tuan Nguyen[10], Robert Blank[11], Jacqueline Center[6]. [1]Garvan Institute of Medical Research, NSW; Faculty of Medicine, UNSW Sydney, NSW, Australia, [2]Ha Tinh University, Ha Tinh, Viet Nam, [3]Department of Medicine, Holbæk Hospital, Holbæk; Department of Clinical Research, Odense Patient Data Explorative Network, University of Southern Denmark, Odense., Denmark, [4]Maastricht University Medical Center, Research School Nutrim, Department of Internal Medicine, Subdivision of Rheumatology, Maastricht; VieCuri Medical Center of Noord-Limburg, Department of Internal Medicine, Venlo, Netherlands, [5]Garvan Institute of Medical Research, NSW., Australia, [6]Garvan Institute of Medical Research, Sydney, NSW; Faculty of Medicine, UNSW Sydney, NSW; School of Medicine Sydney, University of Notre Dame Australia, Sydney., Australia, [7]Maastricht University Medical Center, Research School CAPHRI, Department of Internal Medicine, Subdivision of Rheumatology, Maastricht, Netherlands; University Hasselt, Biomedical Research Institute, Hasselt, Belgium., Netherlands, [8]Kontraktenheden, North Denmark Region., Denmark, [9]Department of Clinical Medicine, Aalborg University, Aalborg; Department of Endocrinology, Aalborg University Hospital, Aalborg; Steno Diabetes Center North Jutland, Aalborg., Denmark, [10]School of Medicine Sydney, University of Notre Dame Australia, Sydney; School of Biomedical Engineering, University of Technology, Sydney, Australia, [11]Garvan Institute of Medical Research, Sydney, NSW, Australia

Multimorbidity, the presence of 2 or more chronic diseases, poses a major challenge to public health because it is highly prevalent in the elderly population. It is hypothesized that multimorbidity contributes to the increased risk of post-fracture mortality. In this study, we sought to identify the pattern of multimorbidity and its relationship to post-fracture excess mortality.This nationwide population-based cohort study involved 307,870 adults in Denmark born on or before 1 January 1950 with an incident low-trauma fracture between 2001 and 2014 who were followed through 2016. Fracture and 32 predefined chronic diseases recorded within 5 years prior to the index fracture were identified using ICD-10 codes from the Danish National Hospital Discharge Register. Death was ascertained from the Danish Register on Causes of Death. Because most diseases are correlated, latent class analysis was conducted to identify clusters of comorbidities. Relative survival analysis was then employed to quantify excess mortality attributable to the combination of multimorbidity and specific fracture sites.There were 95,372 men (age at fracture: 72+/- 11 years) and 212,498 women (75+/- 11 years) with incident fractures. During a median of 6.5 years of follow-up (IQR: 3, 11), 41,017 men and 81,727 women died. Almost half of fracture patients had multimorbidity. At the time of fracture, the co-occurrence of diseases could be grouped into: a low-multimorbidity (60.5% in men, 66.5% in women), cardiovascular (23.7%, 23.5%), diabetic (5.6%, 5.0%), malignant (5.1%, 5.0%) and mixed hepatic/inflammatory clusters (5.1%, men only). These clusters distinguished individuals with advanced, complex, or late-stage disease from those having earlier stage disease. Multimorbidity and proximal or lower leg fractures were associated with significantly increased mortality risk, with the highest excess mortality found in hip fracture patients in the malignant cluster. Importantly, the combination of multimorbidity and fracture compounded mortality, conferring much greater risk than either alone (Figure).Concomitant illnesses were common and clustered into distinct multimorbidity clusters that imparted excess mortality post fracture. The compound contribution of multimorbidity to post-fracture excess mortality highlights the need for more comprehensive approaches in these high-risk patients. The analytical approach we have applied to fracture could be also used to examine other sentinel health events.




***Disclosures: Thach Tran**, None*

# FRI-523

**One- and five-year survival after fragility fracture: Real-world retrospective matched-cohort study in Ontario, Canada** *Geneviève Vincent[1], Jonathan D. Adachi[2], Emil Schemitsch[3], Jean-Eric Tarride[4], Mathew Luen[1], Rajvi J. Wani[1], Jacques P. Brown[5]. [1]Amgen Canada Inc., Canada, [2]Department of Medicine, McMaster University, Canada, [3]Division of Orthopaedic Surgery, Western University, Canada, [4]Department of Health Research Methods, Evidence and Impact (HEI), McMaster University, Canada, [5]CHU de Québec Research Centre and Laval University, Canada

Background: Fragility fractures are associated with high mortality, yet survival data by patient demographics and fracture type are limited. This study aimed to characterize the survival rates among men and women with an index hip, vertebral or proximal or distal non-hip and non-vertebral (NHNV) fragility fracture. Methods: This retrospective, population-based study used public healthcare records in the ICES Data Repository from Ontario, Canada. Men and women aged >=66 years with an index fragility fracture between January 2011 and March 2015 were matched 1:1 with non-fracture controls based on date, age, sex, geography and comorbidities. Patients were followed between 2 to 6 years post-index date.Results: Of 98 474 fracture patients (73.0% women, median age 80 [IQR 73-87] years), 9.2% of men vs 35.3% of women received osteoporosis treatment prior to their fracture. The worst 1- and 5-year absolute survival rates were observed after hip fractures in men (67.7% and 32.3%), followed by vertebral fractures in men (75.5% and 37.6%), hip fractures in women (78.5% and 44.7%) and vertebral fractures in women (84.9% and 54.1%). In both sexes, survival probability decreased markedly within 1 year of hip, vertebral and proximal NHNV fractures, with persistent decreases during follow-up across all fracture types relative to matched controls (Figure 1). Within the 66-75 age group, 5-year relative survival rates in women were similar for those with a hip (79.0%) or vertebral (79.8%) fracture, yet distinct for men with a hip (63.9%) vs vertebral (69.4%) fracture. However, within the 76-85 age group, 5-year relative survival rates in men were similar between those with a hip (51.9%) or vertebral