

Title of PhD project / theme	Risk factors of premature cardiovascular and musculoskeletal disease in India and Japan: cross-cohort analysis to improve causal inference
Supervisory team	NU: Hirotomo Yamanashi (lead), Koya Ariyoshi, Takahiro Maeda LSHTM: Sanjay Kinra (lead)
Brief description of project / theme	Global social and economic changes and population ageing are leading to rapid increases in the prevalence of multi-morbidity (co-occurrence of two or more chronic conditions). Cardiovascular and musculoskeletal conditions commonly cluster together, but their shared risk factors are unclear. Several studies suggest that risk factors of cardiovascular disease (diet, activity, blood pressure, inflammation) and subclinical cardiovascular disease and treatment may influence the risk of musculoskeletal conditions, notably sarcopenia, but evidence is inconsistent. The differing confounding structures for cardiovascular and musculoskeletal conditions in Japan and India offer a unique opportunity to strengthen causal inference for potential risk factors by undertaking cross-cohort analysis, providing vital evidence to guide strategies to tackle non-communicable diseases and multi-comorbidity globally.
The role of LSHTM and NU in this collaborative project	<p>The Andhra Pradesh Children and Parents Study (APCAPs; http://apcaps.lshtm.ac.uk) is an intergenerational prospective cohort study in Hyderabad, India (N=7,000). At the last follow-up in 2012, data on a wide range of health conditions and risk factors were collected. The Nagasaki Islands Study (NaIS) is a prospective cohort study, which was started since 2014. It is following >4,000 adults through national medical check-ups. High quality data on vascular physiology, hand-grip strength, skeletal muscle and biomarkers (including inflammation) are available on both cohorts.</p> <p>The investigators of APCAPs and NaIS cohort studies (supervisors of this PhD) are already collaborating with each other. In a previous cross-cohort analysis to date, an inverse association between preclinical atherosclerosis and hand grip strength was noted in both cohorts (1). In the proposed PhD, the candidate will research this topic (or any other of mutual interest to the student and supervisors) further to investigate the shared risk factors (e.g. lifestyle, inflammation, and environment) of premature</p>

	<p>cardiovascular and musculoskeletal disease in these two cohorts and establish their causal relevance.</p> <p>1. Yamanashi H, Kulkarni B, Edwards T, Kinra S, Koyamatsu J, et al. Association between atherosclerosis and handgrip strength in non-hypertensive populations in India and Japan. <i>Geriatr Gerontol Int.</i> 2018;18(7):1071-1078.</p>
Particular <i>prior</i> educational requirements for a student undertaking this project	<p>-A master in Epidemiology or Biostatistics or similar (that has equipped the student with strong understanding of epidemiology principles and quantitative/data analysis skills)</p> <p>-Verbal and written English proficiency</p>
Skills we expect a student to develop/acquire whilst pursuing this project	<ul style="list-style-type: none"> - Research methods and epidemiology - Management and analysis of large datasets - Lifecourse and cross-cohort analysis - Scientific communication and writing skills including paper and grant writing