

PROJECT PROPOSAL

2023 Academic Entry Year – Cohort 2

Supervisory Team

Primary Supervisor

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Project Details

Title: Pharmacotherapy and obesity in younger adults with multiple long term conditions: examining the added value of exercise

Summary: The prevalence of multiple long term conditions (MLTCs) in young adults (<40 years old) is dramatically increasing and is associated with an extreme risk phenotype, longer disease exposure and increased risk for chronic complications (including cancer). Moreover, MLTCs affect more individuals from deprived areas, minority ethnic groups and those living with obesity. The vast majority of research underpinning MLTCs has been conducted in older populations, meaning it is largely unknown whether established therapies are efficacious in younger adults. In particular, despite pharmacotherapy and exercise training being important therapies in the management of MLTCs, there is limited evidence examining their combination. This studentship proposes exploring the therapeutic ability of pharmacotherapy, combined with personalised modes of exercise delivery to improve fitness, lean mass preservation and overall health in young adults with MLTCs. This will be achieved via epidemiology, experimental, mechanistic and digital health methodologies. This project represents an unmet clinical need and is an essential strategy to improve health outcomes in this burgeoning patient population. **This studentship offers the unique opportunity to:** *Engage with an underrepresented patient population, delivering patient-centred, coordinated care *Undertake cross-cutting and multidisciplinary research in an internationally-renowned clinical and academic environment

Theme(s) the project most closely aligns to: Lifestyle and Respiratory

How the PhD project and training would be appropriate for NMAHPs or GPs: The DRC has an excellent track-record of supporting PGRs from various disciplines through programmes of clinical research. This project encompasses elements of pharmacotherapy, cardiometabolic health, and exercise medicine, thus appealing to a broad spectrum of specialities who are instrumental in its delivery (e.g. nurse/GP/physiotherapist/pharmacist). It also offers bespoke research training to address a pressing healthcare need, by combining elements of evidence synthesis, experimental medicine, mechanistic exploration, behavioural science and digital health. Training will be tailored to the applicant, working alongside physiotherapists/clinicians/nurses/ lifestyle and basic science experts to deliver the project and upskill the PGR in the pre-identified areas of need.

How the project addresses health inequalities: Young adults (18-40) with MLTCs are more likely to live in deprived areas, be from minority ethnic groups and be living with obesity, thus highlighting the health inequalities in this high-risk group. There is also a growing recognition that the health and care system may not work for this increasingly prominent group of patients. This is often underpinned by a feeling of stigmatisation; which may precipitate inadequate self-care practices, higher non-attendance rates and poorer health outcomes. Moreover, the vast majority of research underpinning MLTCs is conducted in older populations, with younger adults poorly represented in prominent clinical trials [1]. It is largely unknown whether the combination of established therapies is efficacious for this group (i.e. pharmacotherapy plus exercise). As such, there is a scarcity of evidence investigating how weight loss can be optimised with a specific focus on lean mass preservation. Addressing these inequalities will ensure that care is tailored to their needs (patient-centred, coordinated care with patient voice at the heart) and contains the most effective evidence-based interventions.

Leicestershire Healthcare Inequalities Improvement DTP

Aim: To investigate whether exercise, in combination with pharmacotherapy, can maximise health outcomes in younger, obese adults with MLTCs.

Background: Recently, there have been exciting pharmacological developments in the treatment of obesity (e.g. semaglutide 2.4mg once weekly). However, despite inducing 10-20% weight loss, these therapies are also associated with reductions in lean mass (both quantity and quality) and absolute fitness [2, 3]. This is particularly important in young adults with MLTCs, who already exhibit low fitness, muscle strength and symptoms of frailty, often exacerbated by lower socioeconomic status [4]. Exercise is an important therapy in the management of MLTCs, providing profound whole body benefits (including lean mass preservation). However, the added benefit of exercise, alongside pharmacotherapy in younger adults living with obesity and MLTCs is unknown.

References

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