



Royal College of General Practitioners Midland Faculty
Annual Education, Research and Innovation Symposium
Thursday 18th April 2024

Ref. 20
Abstract Submission Form

PRESENTER'S DETAILS					
Title (Prof, Dr, Mr, Mrs, Miss) Dr		First Name Richard		Surname Hotham	
Department or organisation name University of Birmingham, Applied Health Sciences					
Category (please select)					
Audit	Research	Education Project	Quality Improvement		
Presentation Preference (please select)					
I prefer an oral presentation only	<input type="checkbox"/>	I prefer a poster or poster presentation only	<input checked="" type="checkbox"/>	I have no presentation preferences	<input type="checkbox"/>
PRESENTATION DETAILS (max 300 words in total not including title or authors)					
Names of Authors Dr Richard Hotham, Dr Anuradhaa Subramanian, Dr Rasiah Thayakaran, Dr Shamil Haroon			Title of Study Cardiovascular events, Venous Thromboembolism and Hospitalisation Risk in Long COVID: A retrospective cohort study		
I am a student and wish to be considered for the student prize				Yes	No
Background – <i>What's the problem you are tackling?</i> In the wake of the COVID-19 pandemic, there is much research into the acute effects of COVID-19, particularly in those experiencing severe infection requiring hospitalisation. However, the majority of those who suffer from COVID do not need hospitalisation and with widespread vaccination and community immunity this proportion is growing. A sizeable minority of those with acute COVID develop a syndrome of persistent symptoms, beyond 12 weeks post-infection called Long COVID. Complications such as requiring hospitalisation, developing cardiovascular disease and hypercoagulability are well known in the acute phase of disease, but the risks in Long COVID are less clear. At the last update in March 2023, just under 2 million people in the UK suffered with Long COVID, so any marginal increase in baseline risk could have a substantial impact on healthcare resources. This study investigated the incidence of medial complications in individuals with Long COVID, focussed around hospitalisation, cardiovascular disease, venous thromboembolism and death.					

Method

How did/will you do it?

A retrospective cohort design was chosen using data from the Clinical Practice Research Datalink (CPRD) Aurum, an electronic database of UK general practice patient records. All adults over 18 who tested positive for SARS-CoV-2 between January 2020 and January 2021 were recruited to the study. Individuals who were hospitalised in the peri-COVID period were removed. Individuals who presented more than 12 weeks after infection with persistent definition Long COVID symptoms (i.e. cough, fatigue, anosmia) were identified as having Long COVID, with the remainder forming a control group with no Long COVID.

The Long COVID group was further subdivided into symptomatic clusters generated using latent class analysis in previous research, Class 1 – broad spectrum, Class 2 – respiratory, Class 3 – cognitive/mental health.

Primary Outcome - All cause hospitalisation.

Secondary outcomes - new incident cardiovascular disease (CVD), new incident venous thromboembolic (VTE) disease, all-cause mortality.

Participants were followed up for 12 months post infection. All outcomes assessed between 12 weeks and 12 months post infection.

Statistical analysis, primary outcome – Negative binomial regression, offset for time at risk. Secondary outcomes – Poisson regression, offset for time at risk. All analyses adjusted for covariates including age, sex, BMI, smoking status, ethnicity, deprivation, geographic location, comorbidities, and pre-index hospitalisation rate.

Results (if applicable)

What did you find?

383,862 Individuals were identified for inclusion into the study, including 50,789 identified as having Long COVID. When split by Long COVID class, there were 40,641 in Class 1 (Broad spectrum), 2,922 in Class 2 (Respiratory) and 7,226 in Class 3 (Cognitive/Mental Health).

Compared to those with no Long COVID, individuals with Long COVID had increased rates of hospitalisation, with an incident rate ratio (IRR) of 1.96, and 95% confidence interval (95% CI) 1.90-2.01. The finding was consistent across all three Long COVID classes, with IRR of 2.02, 1.88 and 1.61 for Class 1, 2 and 3 respectively.

Mortality in the Long COVID group was slightly higher than that of the no Long COVID group, with an IRR of 1.29 (95% CI 1.13-1.36). When split by class only class 1 had a significant increase in mortality rate (IRR 1.26, 95% CI 1.14-1.38).

Individuals with Long COVID experienced new diagnoses of Cardiovascular disease at twice the rate as those without Long COVID (IRR 2.09, 95% CI 1.80 – 2.42). This finding was consistent across classes with statistically significant increase in IRR of 2.17, 1.91 and 2.22 for class 1,2 and 3 respectively.

New diagnoses of venous thromboembolic disease occurred at a significantly higher rate in the Long COVID group (IRR 2.97, 95% CI 2.45-3.62). However, this risk was concentrated in class 1 and 2 (IRR 3.21 and 2.91 respectively). Class 3 experienced no increase in the rate of venous thromboembolism (IRR 1.37, 95% CI 0.68 – 2.77).

Discussion

Why does this matter?

Individuals with Long COVID have increased rates of hospitalisation, death, CVD and VTE. When split by Long COVID class there appear to be significant differences in some outcomes for different classes. The results indicate the potentially large impact Long COVID has on individuals and the health system at large. This study highlights the need for further investigations into the mechanisms behind these clinical outcomes and whether current funding is appropriate for the level of healthcare impact caused by Long COVID.

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Closing date Monday 26th February 2024