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Medication Use Patterns Associated with Post-COVID-19 Condition: Results from a Longitudinal Cohort Study

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OBJECTIVES: While the pandemic has increased spending on vaccination and healthcare, medication use patterns remain less well understood and warrant investigation. This is particularly challenging to estimate in populations affected by post-COVID-19 condition (PCC), where unique healthcare needs and prolonged symptoms may impact medication usage trends. Therefore, in this study, we aimed to investigate medication use, with special interest in individuals with PCC, to better understand and address the evolving needs of this population.

METHODS: Data from the Dutch Lifelines COVID-19 cohort (N=76,503) was analysed to assess medication use among adults (Figure 1). Participants completed three waves of questionnaires (June 2021, February/March 2022, May/June 2022) including questions regarding medication use over the past three months. The following medication groups were examined: antihypertensives, cholesterol medication, corticosteroids (tablets and non-tablet-form), cough medication, diabetes medication, inhalers, and painkillers. We compared participants without COVID-19, with COVID-19, and with PCC.

RESULTS: Results indicate increased medication use in the COVID-19 and PCC groups compared to the group without COVID-19, with up to 3 additional days of use per patient over a period of nine months (Figure 2).
Antihypertensives and corticosteroid (non-tablet-form) use increased equally in COVID-19 and PCC groups, when both compared to the group without COVID-19. Corticosteroid and cholesterol tablets were more frequently used by the COVID-19 group than in the PCC group, when both compared to the group without COVID-19. Conversely, cough, painkillers inhalers, and diabetes medications were more commonly used by the PCC group than the COVID-19 group, with both groups exceeding the usage of the group without COVID-19. Specifically, paracetamol was the most used painkiller in the PCC-group, averaging 14 days per patient, compared to eight days in the COVID-19 group and three days in the control group (Figure 3). Among diabetes medications, metformin was the most commonly used in the PCC-group, averaging seven days per patient over the three waves, compared to four and two days in the COVID-19 and no-COVID-19 group, respectively (Figure 4).

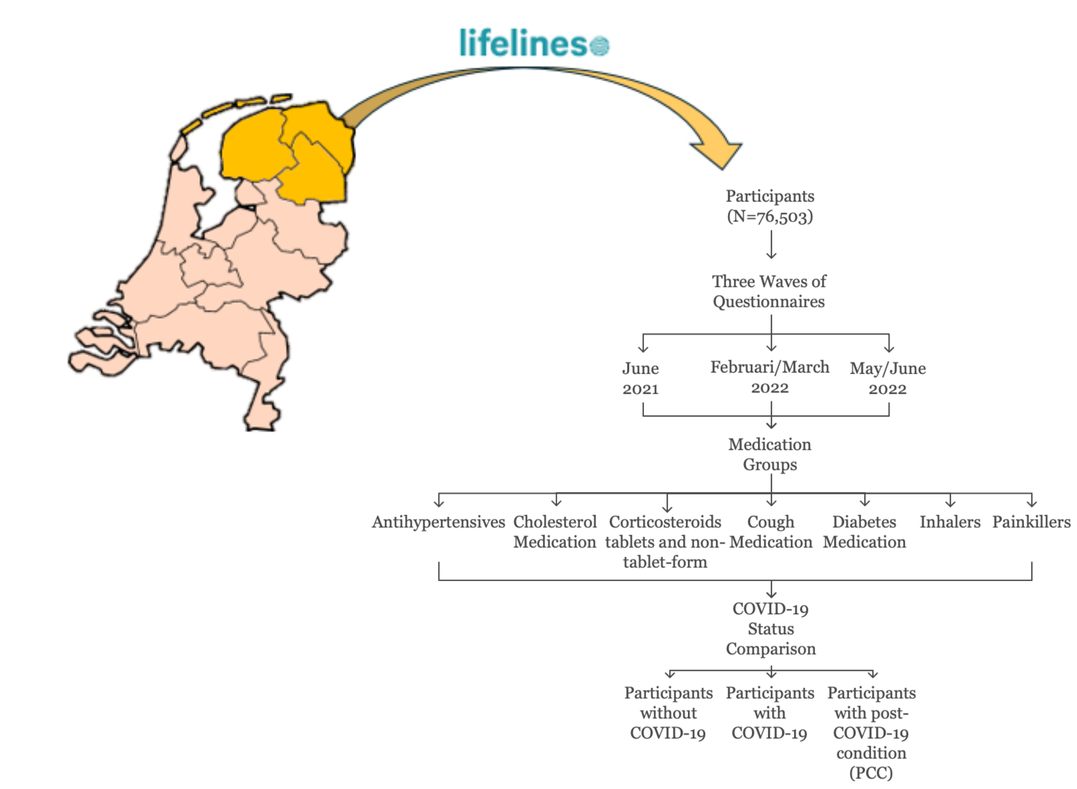

Figure 1. Schematic representation of study and medication groups identified from the COVID-19 sub-cohort within the Lifelines prospective population cohort.

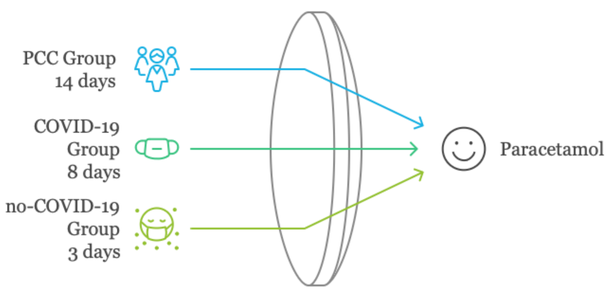

Figure 3. Paracetamol use averages over a period of nine months, across three study groups: COVID-19 patients, Post-COVID Condition (PCC) patients, and a control group without COVID-19.

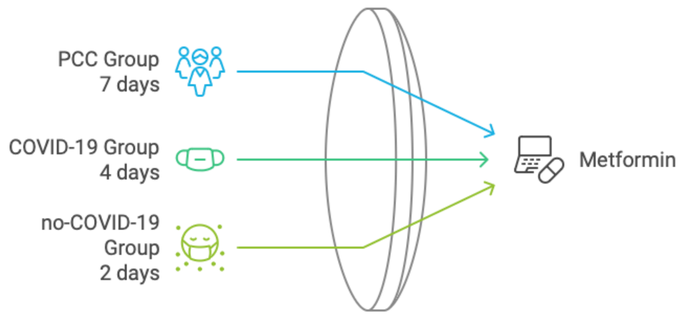

Figure 4. Metformin use averages over a period of nine months, across three study groups: COVID-19 patients, Post-COVID Condition (PCC) patients, and a control group without COVID-19.

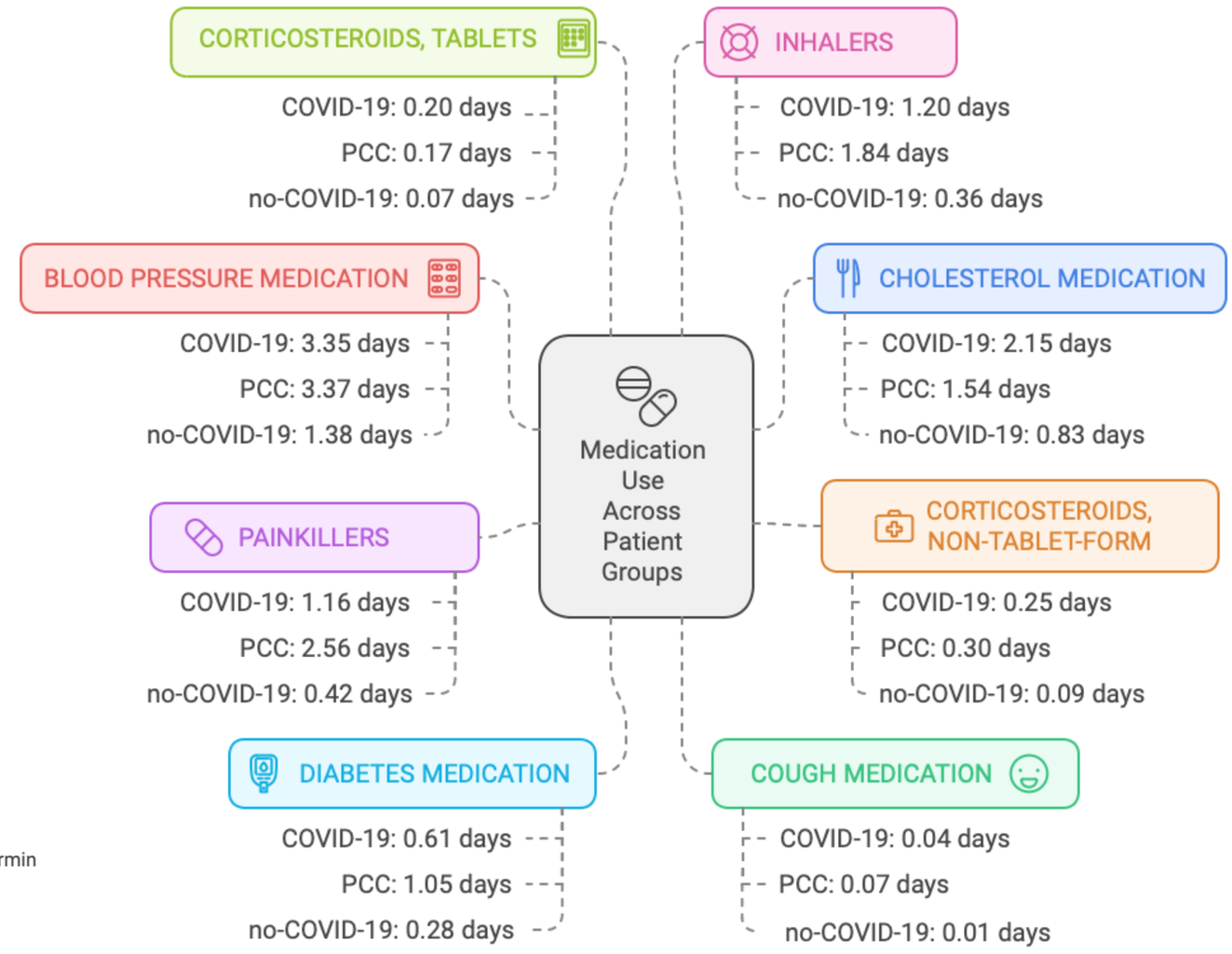

Figure 2. Medication use averages over a period of nine months, across three study groups: COVID-19 patients, Post-COVID Condition (PCC) patients, and a control group without COVID-19.

CONCLUSIONS: Further research is needed to analyse medication costs using a methodology that accurately accounts for indication, distinguishing between medication use specifically due to PCC and use associated with pre-existing conditions that may also be risk factors for PCC. Correcting for these factors is essential, as it enables a clearer understanding of the economic impact of PCC-related healthcare utilization and medication patterns. This study provides preliminary insights that highlight the importance of such differentiation, suggesting a need for deeper research into the costs and medication utilization patterns linked to PCC. With this refined approach, stakeholders can gain the information necessary to make evidence-based decisions aimed at improving health outcomes and managing healthcare resources effectively.

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