2. Pharmacotherapy prescriptions and PS adherence
3. 4-week quit rates

Methods A virtual clinic created in March 2023 enabled midwives to refer PS more efficiently to mTDA. Following an effective communication campaign, all staff involved in patient care were encouraged to refer into the new system, implemented and trialled from April 2023. Referral numbers for September 2022 to March 2023 were compared to the post service period.

Results 178 patients, who all underwent carbon monoxide monitoring, were seen mid-Jan to mid-June 2023 within the new service model.

The number referred to mTDA increased significantly when compared to before the new service establishment (figure 1).

4-week quit rates doubled from 15%, March to 33%, May 2023.

Conclusion This novel approach of hospital-based mTDA support in early pregnancy demonstrated improved quit rates and adherence to national targets, empowering staff with confidence to identify and support PS. We hope to replicate this model for other smokers in an out-patient setting.

‘Bad blood’ – Biomarkers and mechanisms in long COVID

AN ALTERED PERIPHERAL BLOOD TRANSCRIPTOME AND IMMUNOPHENOTYPE POST-COVID IS ASSOCIATED WITH INITIAL HOSPITALISATION

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Introduction Post-COVID syndrome is a multiorgan disease characterised by persistent symptoms 12 weeks or more following SARS-CoV2 infection. However, the pathophysiology remains unknown and is likely multifactorial due to the heterogeneity of clinical manifestations. The present study aimed to understand the changes and contribution of the systemic immune response in patients with post-COVID syndrome.

Methods Observational study of hospitalised and non-hospitalised participants 3–16 months post-COVID at a single centre (Dundee, UK). Stabilised peripheral blood was processed for mRNAseq. In a participant subset, immunophenotyping of peripheral blood immune cells was carried out using mass cytometry and Maxpar Direct Immune Profiling kit comprising 35 cell-surface markers. Cytobank platform was used for manual gating for mass cytometry data and dimensionality reduction was carried out using the tsNE-CUDA algorithm.

Results 92 post-COVID participants were included (age 56 ±12.5 years (mean±SD), 46.7% male). Differences in immunophenotype were identified between those initially hospitalised (n=11) or not (n=7); significantly higher proportions of transitional monocytes (Mann-Whitney, p=0.0441), total CD8 αβ cells (p=0.0114) including effector memory (p=0.0185) and terminal effector (p=0.0083) subpopulations, as well as CD4 terminal effector cells (Unpaired T-test, p=0.0330) were found in those hospitalised. Notably, the hospitalised group had significantly more males (Fishers exact test, p=0.0294) and were older (Unpaired T-test, p=0.0005). 28 significantly differentially expressed genes (adjusted pvalue<0.05; Wald test with Benjamini-Hochberg correction) were identified between those initially hospitalised (n=49) or not (n=30). Genes relating to neutrophil activity including neutrophil elastase, MPO, azurocidin-1, defensin alpha 3 (DEFA3) and DEFA4 were upregulated in those who were hospitalised, in addition to lactotransferrin, BPI and CEACAMS, expressed in both neutrophils and monocytes. Those who were hospitalised were more likely to experience dyspnoea/fatigue beyond 12 weeks following acute infection (Fishers exact test, p=0.0021). Further, those with ongoing dyspnoea/fatigue (n=13) had increased neutrophils and a significant increase in T-regulatory cells (Unpaired T-test, p=0.0059), compared to those without (n=7).

Conclusion Post-COVID, an increase in T-cell subsets and neutrophil-associated genes is associated with a more severe initial infection leading to hospitalisation. Neutrophil and T-regulatory cells are further associated with ongoing symptoms post-COVID, suggesting a role for these cell types in post-COVID syndrome.
infection and may be implicated in lung repair. Further work will establish whether these signatures of organ recovery and wound healing are reproducible with the aim to confirm and validate these findings in other patient cohorts.

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ASSESSMENT OF ENDOTHELIAL FUNCTION IN LONG-COVID AND IN PATIENTS WITH RESIDUAL LUNG ABNORMALITIES AFTER COVID-19

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Background Long-COVID is characterised by a heterogenous range of symptoms which persist for more than 12 weeks. Post-COVID breathlessness may occur in the context of normal lung imaging or residual lung abnormalities (RLA); the latter occurring more frequently in patients hospitalised due to SARS-CoV-2 infection. Previous studies have suggested that a proportion of symptomatic post-COVID patients have endothelial dysfunction and we investigated whether this is evident in non-hospitalised Long-COVID and in patients with post-COVID RLA.

Aims To identify differences in endothelial function in post-COVID cohorts stratified by severity of SARS-CoV-2 infection and to assess changes in these parameters over time.

Methods In this observational cohort study, 4 groups of participants provided informed consent: non-hospitalised SARS-CoV-2 infection and fully recovered (NHR, n=22), non-hospitalised Long-COVID with no RLA (NHLC, n=36), previously hospitalised due to SARS-CoV-2 infection and fully recovered (HR, n=9), and previously hospitalised with post-COVID RLA (HLC, n=19). The previously hospitalised groups were assessed at 26 and 52 weeks after infection. The non-hospitalised participants attended for a single visit. EndoPAT® (Itamar medical) was used to assess endothelial function (reactive hyperaemia index (RHI) and augmentation index (AI)).

Results No significant differences in RHI or AI were observed between non-hospitalised groups (NHR and NHLC). Analysis of data collected 26 ±4 weeks after infection demonstrated that endothelial dysfunction (RHI <1.67) was more frequent in the HLC group (10/15) compared to the NHR group (1/17, OR 32.00, 95% CI 3.25–315.31, p=0.0003). Mean RHI was significantly lower in the HLC group (1.63 ±0.72) compared to the NHR group (2.31 ±0.54, p=0.018) but was not significantly different from the HR group (2.15 ±0.79). HLC and NHR groups differed significantly in mean age (37 vs. 62, p<0.001), BMI (26.1 ±3.6 vs. 31.3 ±4.9) and sex (76% female vs. 7%). Mixed-effects analysis found no significant change in RHI or AI between 26 and 52 weeks in the previously hospitalised patients.

Conclusions Patients with residual lung abnormalities after COVID infection had evidence of endothelial dysfunction...