

evening. We also recorded an electrocardiogram (ECG) lead I using a VitalPatch for 7 consecutive days. Python scripts were developed to produce HRV timeseries and plot data. ECG frequency domain parameters – low- (LF) (0.05–0.15 Hz) and high-frequency (HF) power (0.15–0.4 Hz) – were calculated for each stimulation period. The LF/HF ratio was used as a marker of autonomic modulation. The Wilcoxon signed-rank test was used to compare LF/HF ratio distributions.

**Results.** Initial data from the wearable sensors were used to develop interpolation scripts to improve the processing of noise, missed R waves and ectopic beats, to reduce errors when estimating HRV from the heart rate signal. Initial results from 97 individual 1-hour long stimulation periods, from 18 participants, show that active stimulation in the morning, when compared with sham stimulation in the same period, significantly reduces the LF/HF ratio. The median and interquartile range (IQR) of the LF/HF ratio for the active and sham periods was, respectively, 1.72 (1.99) and 2.75 (2.82), a statistically significant difference ( $p = 0.043$ ).

**Conclusion.** taVNS modulates HRV frequency domains, suggestive of vagal cardiac effects, and replicates findings from previous taVNS studies. Reductions in the LF/HF ratio are suggestive of increased parasympathetic tone. As the auricular branch of the vagus does not have any direct cardiac efferents, this suggests central ANS modulation using taVNS. Secondly, it suggests that cardiac ANS modulation could be used as a proxy measure of afferent vagal stimulation, which could be of clinical utility. These effects warrant exploration in a larger cohort study, including wider demographics (including age range) and improved processing pipelines.

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## An Exploratory Evaluation of Barriers to Study Leave Application Amongst Psychiatric Trainees in the West Midlands

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**Aims.** Between 2018–2021 there was a downward trend in study leave applications and the total spending on trainee study leave activities. There was concern that trainees may not be maximising educational opportunities. The authors were aware of anecdotal evidence indicating barriers to applying for study leave and therefore sought to objectively explore this. We aimed to evaluate qualitative and quantitative responses amongst psychiatric trainees within the West Midlands deanery regarding study leave applications. We also endeavoured to identify positive aspects and barriers, to improve knowledge and confidence in the process and identify areas for improvement in making the system more accessible.

**Methods.** The authors met with Health Education West Midlands to clarify current processes and gather objective data regarding study leave applications between 2018 and 2021. A survey was distributed to all Psychiatric trainees in the West Midlands in December 2021. The survey was open for three weeks and contained closed and open questions. Data were analysed and a

thematic analysis was completed independently by the authors to allow for triangulation.

**Results.** There were 62 responses (response rate of 27%) from trainees ranging from CT1-ST7+. 55% were unclear about the study leave application process, and of these, 79% said this had prevented them from applying. Only 37% of trainees found the process ‘very’ or ‘moderately easy’, with 23% finding it ‘very difficult’. When exploring barriers, worryingly 69% of trainees did not know where to find the list of approved courses. Other themes included too many signatures being required, long delays in forms being returned and money being reimbursed.

**Conclusion.** The majority of respondents were unclear about the study leave process or found it difficult. This acts as a barrier to application in the majority of cases and may have a knock-on effect on the overall quality of training. By identifying these barriers, we are now able to address these more directly.

The results were presented at a deanery wide level leading to a better understanding of the reduction in spending of study leave funding. Phase two of the project will see the introduction of an electronic application system, aiming for an easier and shorter process, in addition to creating consistency across trusts. There may have been some confounding factors, such as COVID-19 that may have contributed to the decline in study budget being utilised.

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## The New 2022 Curriculum for Postgraduate Training in Psychiatry in the UK – Experiences of Trainees Within a London Deanery

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**Aims.** The Royal College of Psychiatry introduced a new post-graduate training curriculum in August 2022. One of the main changes is the introduction of a new collaborative tool between supervisor and trainee, the placement-specific personal development plan (PSPDP). The aim of this project is to locally explore trainee’s views and experiences with the PSPDP.

**Methods.** We explored the views and experiences of seven psychiatry trainees within the South London and Maudsley NHS Foundation Trust in a single 60-minute focus group, co-facilitated by two authors over Microsoft Teams. The participants were purposively identified to have started core and higher training under the new curricula and a snowballing approach was used to recruit them. The data were recorded, transcribed, and analysed in line with ethical guidelines. The analysis was done by using Clarke and Braun’s approach to thematic analysis.

**Results.** Three overarching themes were identified:

1. Positives of using a collaborative tool with a psychiatric supervisor (PS),
2. Challenges in implementation and
3. Trainees’ perspectives on directions forward.

The most notable subtheme of theme one was the improved curricular alignment between learning opportunities, curriculum content, and assessment tools. As one participant mentioned: “When we were going through [the PSPDP], it definitely guided us, what we wanted to (...) get out of this placement in particular,

and also the kind of workplace-based assessments needed.” The time-effective and structured approach to learning, regular progress follow-up, as well as improved motivation to engage with the placement were further subthemes mentioned. Examples of subthemes emerging from theme two were lack of PS knowledge about the PSPDP, as well as lack of training and information for trainees. Participants commented that “supervisors really didn’t know what they were supposed to do” and that “the information [shared during induction] was outdated”. One example of subthemes from theme three was the need for additional training both for trainees and PSs. As one participant mentioned: “Training is required for supervisors (...) and for us as well to get really used to the system. Because it’s a good system if we know how to use it.”

**Conclusion.** To the best of our knowledge this is the first study exploring trainees’ views on the new PSPDP. Whilst trainees appreciated the potential benefits of working through the PSPDP together with their supervisor, significant challenges remained and may hinder its meaningful use. Our next steps are designing and running a hybrid questionnaire to gather views from a larger sample.

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### Edge-Centric Analysis of Time-Varying Functional Connectivity in Schizophrenia Using the COBRE Dataset

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**Aims.** Differences in static and dynamic resting-state functional connectivity have been identified in patients with schizophrenia, individuals at high risk of psychosis and those with psychotic-like experiences. Analysis of dynamic connectivity is important to understand the temporal fluctuations in functional connectivity. Studies of dynamic functional connectivity have been conducted using methods such as the sliding-window technique and co-activation patterns (CAPs). In this study edge-centric analysis has been used to examine differences in time-varying connectivity in patients with schizophrenia compared to healthy controls. This method overcomes some of the limitations of other methods as it has higher temporal resolution and unwraps the data without applying additional modelling or requiring user-defined specification of parameters.

**Methods.** We analysed resting-state fMRI data from 67 patients with schizophrenia and 81 healthy controls using the Center for Biomedical Research Excellence (COBRE) dataset. The edge-time series for these subjects was calculated by omitting the averaging step when calculating the correlation between time series at each node. This effectively unwrapped the functional connectivity correlations and produced a measure of co-fluctuation at each timeframe. The edge time series can be aggregated into a single measure of dynamic whole brain co-fluctuation by calculating the root sum square (RSS). We analysed the frequency and amplitude of the high amplitude peaks of co-fluctuation and the patterns of activity seen during peaks and troughs.

**Results.** The results showed that mean peak amplitude was lower in patients with schizophrenia compared to controls (t-stat= -3.13,

p = 0.0021). Patients with schizophrenia also had significantly less frequent peaks (t-stat= -2.80, p = 0.0058). The pattern of activation at peaks in controls was more homogenous between control subjects compared to patients with schizophrenia. We identified networks that were significantly less activated in patients than in controls during peaks, troughs and transitional time points.

**Conclusion.** This study suggests that in patients with schizophrenia the whole brain co-fluctuations during resting-state are less frequent and lower in amplitude. This is in keeping with previous studies which have identified that patients with schizophrenia spend significantly less time than healthy controls in states of large-scale connectivity. Further studies looking at larger transdiagnostic samples and antipsychotic naïve patients will be important to build on these results.

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### Hypercalcaemia and Primary Hyperparathyroidism – an Underappreciated Contributor to Psychiatric Presentations

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**Aims.** Hypercalcaemia can lead to many neuropsychiatric symptoms from fatigue, lethargy, anxiety, irritability, and insomnia to impaired concentration and memory, depression, delirium, and psychosis. Primary hyperparathyroidism (PHPT), which is the most common cause of hypercalcaemia, is a relatively common disorder affecting 1 in 500 women and 1 in 2000 men aged over 40 years. A patient, with a diagnosis of Alzheimer’s disease, subtype mixed, had hypercalcaemia on admission which wasn’t corrected until 4 months of the admission had passed. Calcium correction precipitated a marked improvement in the patient’s mental state. In order to learn from this incident, an audit was carried out to look at possible gaps in performing blood tests, and how abnormal calcium levels can affect patients’ mental states.

**Methods.** Retrospective data collection was performed to obtain blood results for all patients -aged 40 years or above- admitted to inpatient wards in South Essex within a six month period (from April 2022 to September 2022). A total number of 333 patients (173 males and 160 females) were identified.

**Results.** Bone Profile was checked in 248 patients (127 males and 121 females). Twelve patients were found to have hypercalcaemia on admission - mean age 65.7 years, female: male ratio of 3:1. No patients were found to have hypocalcaemia.

Hypercalcaemia was addressed in only 2 of 12 patients. Parathyroid hormone (PTH) was tested either before or during admission to mental health services in 6 patients, PTH was found to be elevated (greater than 9.3 pmol/L) in 4 patients (2 males and 2 females), below the midpoint of the reference range in one patient, and below the lower limit of the reference range in one patient.

**Conclusion.** Patients with hypercalcaemia had different diagnoses - anxiety, depression, adjustment disorder, mania, psychosis, and dementia. It was the first admission for three patients with a mean age of 76 years. Six patients were known to services but it appeared that the recent admissions were associated with hypercalcaemia. Active management of