

CCRN News

Centre for Clinical Research in Neuropsychiatry

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Sleep-Wake Study: a genetic link?

Healthy sleep is important in maintaining physical and mental health, and allowing the body to regenerate. Sleep disturbances are usually related to disruptions of the circadian rhythm, which synchronizes most bodily functions to an approximate 24 hour cycle.

CCRN's **Dr Flavie Waters** (pictured, with the actigraph recording device) and UWA Psychology postdoctoral **Craig Sinclair** are undertaking a pilot study to monitor the sleeping and waking patterns of people with schizophrenia.

Sleep disturbances are observed in 30-80% of people with schizophrenia, and contribute to increased risk of relapse, reduced quality of life, and poor adherence to medications. Dr Waters is hoping to document sleep-wake patterns in people with schizophrenia in their everyday environment.

"Very few studies have attempted to examine sleep-wake patterns longitudinally, and only with hospitalised patients. But it's now possible to obtain a naturalistic and long-term profile of a person's sleep-wake patterns in a way which was not possible before."

Modern technology has come to the rescue with actigraphy, a technique which records an individual's rest-activity patterns and light exposure. The research participant simply wears a small watch-like electronic device on their non-dominant arm, and goes about their normal routine of daily living. The study will supplement this with a brief daily diary to confirm the patterns of activity and rest in people with schizophrenia, their immediate relatives, and in healthy controls.

Why include close relatives? The pilot study hopes to collect some preliminary data on the heritability of sleep disturbances. Poor sleep is a biological trait, and may be evident in first-degree relatives as well. The study will also ask participants to note their subjective experiences, including any psychotic symptoms.

"This is one of the first studies which enables day-to-day scrutiny of the association between sleep and subjective experiences", said Dr Waters.

People interested in participating in the study should phone CCRN on 1 800 648 223 and leave their contact details on the message bank, stating that they are interested in the Sleep-Wake study.



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Seminars and Speakers at CCRN, July-September 2009

On Friday 24 July, **Professor Nikos Stefanis** gave a UWA Psychiatry Research seminar on '**Genes, environment and psychosis vulnerability**'.

Examples of gene-environment interactions are beginning to appear in the research literature, and some environmental factors which may play a part in the development of mental illness include urbanicity, migration, cannabis use, developmental trauma and prenatal environment. There are variables within each of these categories which can confound studies of heritability. The World Health Organisation has just initiated a €12 million study to investigate gene-environment interactions in mental illness.

Previous large-scale studies have produced results indicating that environment may be critical to the development of mental illness in later life. These include a Finnish adoptee study which found that babies with a genetic risk of developing schizophrenia were far less likely to do so in stable families (1.5%) than in unstable families (13%). A Danish study on urbanicity found that family history of schizophrenia increased the urbanicity-related risk of developing the disease in later life, while cannabis studies have found that early exposure increases the likelihood of developing psychosis, more conspicuously in genetically-vulnerable individuals.

A critical factor may be dopamine. Amphetamines and THC both interfere with dopamine production in the brain, and animal studies have demonstrated that stress in early life can predispose the brain to release more dopamine in adulthood. Professor Stefanis' own research indicates that the experience of psychosis or psychotic symptoms is not limited to the population with schizophrenia, and that environment may play a critical role in producing these symptoms in healthy controls.



On Friday 31 July, **Craig Sinclair** (left) gave a CCRN Research Seminar presentation on '**Sleep-wake pattern disturbances in schizophrenia**'.

This study, to be led by Dr Flavie Waters, will use actigraphy, which allows an objective measurement of rest-activity patterns and light exposure; is non-invasive and naturalistic; and enables longitudinal recording

The project aims to document sleep-wake patterns in people with schizophrenia in their everyday environment, using objective measures of sleep, and a longitudinal design; to investigate the heritability of sleep disturbances in people with schizophrenia by recruiting biological first-degree relatives; and to examine association between sleep-wake patterns, subjective experiences (mood/symptoms) and everyday functioning in people with schizophrenia, first degree relatives, and healthy controls.

The project's hypotheses are that: (a) people with schizophrenia will show sleep abnormalities when compared to healthy people; (b) poor sleep is a biological trait which occurs in individuals with schizophrenia and their first-degree relatives; (c) more severe sleep abnormalities in patients, relatives and healthy people will be associated with increased levels of psychotic-like symptoms and negative affect, and decreased levels of everyday functioning.

First, a two-pronged pilot study will be undertaken. This will involve detailed actigraphy and activity diaries in 5 people diagnosed with schizophrenia, 5 first-degree relatives, and 5 healthy controls. Questionnaires dealing with sleep quality, mood, and quality of life will also be mailed to 50 people diagnosed with schizophrenia, 50 first-degree relatives, and 50 healthy controls. A successful pilot study will lead to the development of a more complex project, which will seek NHMRC funding.

People interested in participating in the study should phone CCRN on 1 800 648 223 and leave their contact details on the message bank, stating that they are interested in the Sleep-Wake study.

Hearing voices: new research into auditory hallucinations in schizophrenia

UWA Psychology PhD student **Saruchi Chhabra** (pictured below) will be working on her doctoral project at CCRN, investigating the mechanisms underlying auditory hallucinations in schizophrenia.

74% of individuals with schizophrenia have been estimated to experience auditory hallucinations during the course of their illness. Of those, 70% of voices heard are male, regardless of the gender of the voice-hearer. Why?

This study will assess both short-term and long-term recognition memory in individuals with schizophrenia, and will examine the perception of characteristics of voices in schizophrenia. Impairments in some aspects of voice perception have been reported in individuals with schizophrenia, and may be particularly relevant to understanding the mechanisms underlying auditory verbal hallucinations.

There are two main hypotheses to be tested: that people with schizophrenia experience an impaired perception of speaker identity, and that their ability to integrate the speaker (voice) and what they actually said (message) will also be impaired, compared to people without schizophrenia.

The sample size will consist of 60 people with schizophrenia, 30 of whom have experienced auditory hallucinations in the past two months, and 30 of whom have not recently or never hallucinated. These will be matched with a group of 30 people with no diagnosis or symptoms.

All participants will undergo a routine clinical interview to obtain systematic assessment of psychiatric symptoms and functional status. Both groups will be assessed on the WTAR and the vocabulary and matrix reasoning subtests of the WASI in order to obtain a standardized assessment of current and premorbid intelligence (IQ). All participants will then undertake a continuous recognition task, a pitch perception task, and a voice similarity ratings task.

The findings from this study may shed light on whether schizophrenia is characterized by a deficit in integrating information, or whether it involves more fundamental difficulties in the processing of individual features (i.e., voices).

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People interested in participating in the study in any of the categories above should phone CCRN on 1 800 648 223 and leave their contact details on the message bank, stating that they are interested in the Auditory Hallucinations study.



Hearts and Minds: cardiovascular disease in the mental health population in WA from 1870



Charles Dickens paid a benevolent visit to St. Luke's Lunatic Asylum at Christmas time in 1852 in an attempt to "concern himself with the poor and suffering". Dickens, on this visit, remarked "inactivity occasions a rapid accumulation of flesh . . . hardly a gain of health".

Present-day individuals suffering serious mental illness have significantly higher prevalence of smoking, a sedentary lifestyle, and are more likely to be obese compared to the general population, which impacts significantly on cardiovascular mortality. The *Duty to Care Report* (2001) also identified a disparity between individuals who suffer serious mental illnesses and the general population of Western Australia when reviewing incidences of cardiovascular mortality.

Clinical Applications Unit researcher **Carole Harrison** (right) is undertaking doctoral research into this topic, which dovetails with **Philippa Martyr's** (left) historical research into causes of death at Fremantle Asylum (1865-1909) and Claremont Hospital for the Insane (1903-1950s). Together, they are investigating cardiovascular mortality rates in the population institutionalised in psychiatric hospitals in Western Australia in the nineteenth and early twentieth century (to 1950).

Preliminary findings indicate a far higher rate of cardiovascular mortality in the general Western Australian population than was previously expected, while the rate of cardiovascular mortality in the institutionalised mental health population to 1950 appears to be directly age-related. Western Australia's mental health facilities were used for decades as aged care for older people with no families, or families unable to cope with the symptoms of dementia, and this has influenced the statistical findings for the period.

News and Notes

Staff Changes: **Gayle Corbould** will be leaving the Clinical Applications Unit at the end of August to take up a new position as Senior Research Officer with the Ministerial Council on Suicide Prevention (MSCP) working out of the Telethon Institute for Child Health Research.

Research grants: **Flavie Waters, Daniel Rock, Assen Jablensky** and Katharina Wulff have been awarded an Ada Bartholomew Medical Research Trust Grant of \$30,000 to study 'Sleep-wake disturbances in schizophrenia (see p 2; also *CCRN News* November 2008).

Conferences: CCRN staff will be presenting at the following forthcoming conferences -

- **Association of Neurophysiological Technologists of Australia Inc 31st Annual Scientific Meeting, Perth, 27-29 August 2009**

Avijit Bose 'rTMS and Depression Treatment' (poster presentation)

- **19th theMHS Conference, Perth, 2-4 September 2009**

Daniel Rock, Yvonne Hauck, Vera Morgan: 'The Clinical Applications Unit: applying research findings to care coordination' (workshop). **Deb Faulkner** and **Gayle Corbould** will also give poster presentations on individual CAU projects.

Philippa Martyr, 'The Graylands History Project: community, stories, recovery' (paper)

Vera Morgan, 'Women with severe mental illness and their children: providing an evidence base for clinical intervention', (workshop).

- **Australian Society of the History of Medicine Annual Conference, Perth, 28 September – 2 October 2009**

Philippa Martyr, 'The strange case of Matron Shawcross: an episode in Western Australian mental health history' and "Behaving wildly": diagnoses of lunacy among Indigenous Western Australians, 1870-1908' (papers)

- **Australian Society for Psychiatric Research (ASPR), Canberra, 2-4 December 2009**

Jo Badcock, Georgie Paulik, Murray Maybury, 'Hide and Seek or Show and Tell? How to handle negative emotions when hearing voices' (paper)