set of subcortical and limbic regions in which opposite changes are found.

Conclusions: The pathophysiology of major depressive disorder involves a complicated series of networks of frontal, temporal-parietal cortical and limbic brain regions and the cerebellum. Questions remain as to whether one or other of these networks play a primary role in the etiology of the disorder.

An fMRI study of the effects of low- and high-frequency transcranial magnetic stimulation treatment in depression

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Objective: The study aimed to explore the effects of high-frequency, left-sided repetitive transcranial magnetic stimulation (rTMS) (HFL-TMS) and low-frequency stimulation to the right prefrontal cortex (LFR-TMS of HFL-TMS) using functional magnetic resonance imaging (fMRI) before and after a course of rTMS in patients with treatment-resistant depression (TRD).

Methods: The study was a randomized parallel before and after trial using fMRI to study the effects of 3 weeks of daily HFL-TMS and LFR-TMS treatment. Twenty-six patients with TRD underwent rTMS treatment and were scanned with fMRI during a planning task pretreatment and after 3 weeks.

Results: There was a significant reduction in depression severity for patients in both treatment groups [$F(1, 24) = 17.5$, $P = 0.05$). Responders to HFL-TMS showed an increase in task-related activation in prefrontal regions bilaterally. In contrast, responders to LFR-TMS showed a decrease in bilateral prefrontal activity. There were also differences in pretreatment scans between responders and nonresponders.

Conclusions: Changes in task-related brain activation produced by HFL-TMS and LFR-TMS occur bilaterally in frontal brain regions but are opposite in direction, with high-frequency stimulation increasing and low-frequency stimulation decreasing task-related activation.

Outcome in a specialist referral clinic for mood disorders: a qualitative and quantitative review

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Background: The Black Dog Institute Depression Clinic provides comprehensive clinical assessment and management strategies, operating to a subtyping diagnostic model. The study aimed to determine whether baseline clinical assessment was predictive of short-term outcome for patients referred with a depressive disorder. Factors contributing to outcome were identified, and the utility of a subtyping approach was discussed.

Methods: A consecutive series of 85 patients referred to the clinic completed the computerized mood assessment program, followed by interview with the assessing psychiatrist. Prognostic judgments were made reflecting clinical factors (eg disorder type, previous therapy response). Quantitative and qualitative analyses of other contributory factors were undertaken to assess impact on outcome.

Results: Global assessment of outcome at baseline was predictive of short-term outcome, while outcome trajectories were influenced for those who did not receive (or were unable to continue with) recommended treatments. Comparably high rates of improvement were evident in those with bipolar, melancholic and nonmelancholic subtypes, and somewhat lower in those diagnosed with 'secondary depression'. Other factors influencing outcome included referral source (ie psychiatrist vs. general practitioner), degree of recommendation uptake and implementation of psychotropic drug strategies.

Conclusions: Improvement rates were high in a clinic weighting a subtyping diagnostic approach to shaping pluralistic management plans. Nonetheless, the absence of a comparator service disallows firm conclusions. These results will guide further definitive study designs.

First-episode psychosis in the community in NSW: detection and service utilization

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Background: New South Wales has adopted an early psychosis (EP) program based on research that early intervention improves mental health outcomes. EP 'flags' recorded at community contacts are reportedly underused, making it difficult to analyze EP pathways and outcomes. This study aims to measure the number of first-episode psychosis cases in 2004–2005, examine the performance of the EP flags and investigate differences in service utilization.

Methods: Cases were identified based on their recorded contacts with community mental health teams between July 2003 and June 2005. The observed incidence was compared with recently published treated incidence rates through indirect standardization. The sensitivity of the EP flags for identifying cases was calculated. Service utilizati on, as measured by treatment days per quarter, was compared between EP clients and other groups.

Results: There were 2475 cases identified in 2004–2005, which is 40% higher than expected. The EP flags failed to identify these cases (sensitivity 7%–39%). Psychosis clients had a significantly higher level of service utilization: clients with a prior psychosis diagnosis had the highest mean treatment days (7.7), followed by first-episode psychosis (6.5), bipolar/mania (5.7) and other diagnoses (3.5). These differences persisted after controlling for age and AHS ($P < 0.001$ for all contrasts).

Conclusions: The incidence of first-episode psychosis was higher than expected possibly because of inconsistencies in diagnostic recording in 2003–2004. The EP flags are underused and fail to identify clients with first-episode psychosis, whose service utilizations differs from other clients.

A dissociation of structure and function in the auditory cortex of patients with schizophrenia

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Introduction: A number of investigative methods, for example, structural, metabolic and functional, have indicated a role for the auditory cortices in the pathophysiology of schizophrenia. However, few studies have completed multimodal investigations in the same participants. The aim of this study was to explore the structure and function of the auditory cortices in patients with schizophrenia.

Methods: Structural and functional magnetic resonance imaging (fMRI)images were acquired for 27 patients with schizophrenia and 16 normal controls. Heschl's gyrus (HG) and planum temporale (PT) were manually delineated on the structural scans of all subjects in both hemispheres. A structural laterality coefficient was calculated based on region of interest (ROI) volumes. The fMRI data were recorded while the subjects passively listened to semantically neutral words. The functional data were then coregistered with the structural images, and a functional laterality coefficient was calculated based on the number of activated voxels in the ROIs. The structural and functional laterality coefficients were compared across the groups using ANOVA.

Results: For HG, patients showed significantly reduced structural leftward laterality and increased functional rightward laterality in contrast to the control group. For PT, we found no structural differences between the groups, all groups were symmetric, while functionally again we found increased rightward laterality for the patients when compared with controls.

Conclusions: Patients with schizophrenia showed both reduced volume and poor activation of their left hemisphere auditory cortices. It therefore appears to be the case that language functions normally processed in the left hemisphere are processed in the right hemisphere in these individuals.

Reduced interhemispheric connectivity in the central auditory system of patients with auditory hallucinations

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Introduction: Evidence from neuroanatomical, neurophysiological and functional neuroimaging studies has indicated that patients prone to auditory hallucinations (AHs) have structural and functional abnormalities affecting brain regions involved in a number of cognitive and emotional functions. Our previous work has shown deficits in the central auditory system of patients with AHs. In the current study, we hypothesized that this deficit is the result of interhemispheric pathway dysfunctions of the primary and secondary auditory cortices (PAC and SAC). The aim of this study was to investigate the interhemispheric functional connectivity (FC) of PAC and SAC in patients with AHs using functional magnetic resonance imaging (fMRI) data.

Methods: Fourteen patients with schizophrenia with AHs, 13 patients with schizophrenia without AHs (non-AHs) and 16 normal controls were scanned while passively listening to semantically neutral words and at rest. Regions of interest were defined for each subject over PAC and SAC in both hemispheres. For the stimulus data, the stimulus effects were identified and regressed out of these time courses to estimate a 'rest-like' FC.

Results: The interhemispheric FC was significantly reduced for the AHs group both for stimulus and resting-state data, while the non-AHs and controls had similar connectivity values.