ABSTRACTS

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ORAL PRESENTATIONS

Psychosis: A matter of mental effort?

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Introduction. Disrupted perception, i.e. lack of self-awareness, in psychosis impacts required mental effort during information processing. Mental effort increases when demands of a task increase; previously this relationship has been identified by increased beta band activity over the left parietal cortex in healthy controls. In the current study we hypothesised that individuals with diagnosis of a psychotic disorder will not show this relationship, owing to their lack of self-awareness and insight when reporting subjective measures of mental effort.

Methods. This study included 83 participants with one of three diagnoses: schizophrenia (SZ, *n*=29), bipolar I disorder psychosis (BPD, *n*=28), or methamphetamine-induced psychosis (MPD, *n*=24), and socio-demographic controls (*n*=32). All participants underwent electroencephalography (EEG) and relative band frequency activities were correlated with reported mental effort during three conditions: resting eyes open (REO), resting eyes closed (REC), and during an attention task, a continuous performance task (CPT). In addition several clinical scales were performed to address current symptom presentation.

Results. First, perceived mental effort reported by the BDP group during REO was negatively correlated with relative alpha band power over the frontal and parietal cortices, and with relative beta band power over the cingulate cortex. Relative theta band power was positively correlated with perceived mental effort over the left frontal cortex, relative beta band power over the parietal cortex, and relative delta band power over the cingulate and parietal cortices during REO. Second, perceived mental effort reported by the MPD group was negatively correlated with their Positive and Negative Syndrome Scale (PANSS) scores.

Conclusion. The BPD group showed strong relationships with EEG band frequency activity and perceived mental effort during relaxed wakefulness; we suggest that this may relate to the reported increase in psychosomatic awareness which is present in BPD. The MPD group reported lower perceived mental effort when their psychotic symptomatology was high, suggesting disrupted perception.

In search of an affordable, effective post-discharge intervention: A randomised control trial assessing the influence of a telephone-based intervention on readmissions for patients with severe mental illness in a developing country

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Introduction. The purpose of the study was to assess the effect of a post-discharge, telephone-based intervention on readmissions for patients with severe mental illness in a developing country over a 1-year period. The study was conceptualised in an attempt to find a practical and affordable intervention that would be easy to implement in an under-resourced setting and which could alleviate some of the pressure on inpatient beds. Interventions offering more comprehensive post-discharge support have been successful in reducing readmissions in high-frequency users in this same setting, but may not by justifiable and sustainable in the long run.

Methods. This was a non-blinded, randomised control trial. A hundred patients with established diagnosis of schizophrenia, schizo-affective disorder or bipolar disorder were randomised into a facilitated care group and treatment-as-usual group, respectively. All participants were interviewed prior to discharge and again 12 months after discharge. The facilitated care group received a telephone-based intervention consisting of monthly structured telephonic interviews, motivating patients to attend appointments and offering telephonic support to patients and families. Data were collected for readmissions, and days spent in hospital (DIH), and the Clinical Global Impression (CGI) scale was completed.

Results. Data were analysed for 43 patients in the facilitated care group and 39 patients in the treatment-as-usual group. There were no significant differences in readmissions (p=0.10) and days in hospital (p=0.44) between groups at 12-month follow-up. The Cochran Armitage test for trend was performed to compare CGI and admission experience between groups. To statistically test for significance between the groups for DIH and quality of life (QOL), the numerical scale was retained and the Kruskal-Wallis test was used. Reported use of illicit substance was high in both groups (64%), particularly use of methamphetamine, which was 44% in both groups. The Fisher's exact test was used to assess differences in demographic and substance use patterns between the two groups

Conclusion. Telephone-based facilitation of existing standard care services in this setting did not have any impact on readmission rates or days in hospital. This is an important finding, since more comprehensive services in the same setting have produced different outcomes. There is still a need for further exploration of affordable post-discharge services that impact on readmission rates. Such services would have to be more comprehensive and would have to incorporate a unique approach to support the distinct population of dual-diagnosis patients identified in this study.

The effect of early abstinence from long-term methamphetamine use on brain metabolism using ^{1}H-magnetic resonance spectroscopy (^{1}H-MRS)

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Methamphetamine (MA) is a highly addictive drug which has neurodegenerative properties resulting from changes in neuronal metabolism. A recent proton magnetic resonance spectroscopy (^{1}H-MRS) study by our group found decreased *n*-acetyl-aspartate (NAA) concentration, a measure of neuronal viability and integrity, in the right dorsolateral prefrontal cortex and right anterior cingulate cortex. In the current study we aimed to investigate the effect of early intervention, 2 weeks of rehabilitation with confirmed methamphetamine abstinence, on ^{1}H-MRS metabolite concentrations in these same brain regions. MA-dependent participants and unexposed (non-MA-dependent), locally recruited control participants, matched for age and gender, underwent 2D-chemical shift imaging ^{1}H-MRS, replicating the parameters of our initial study. First, we compare 24 acute MA-dependent participants with 24 non-MA-dependent participants. Second, we compare the 24 acute abstinent MA-dependent participants before and after 2 weeks spent in rehabilitation. We expect to replicate the ^{1}H-MRS differences between MA-dependent and non-MA-dependent participants and to present the ^{1}H-MRS effects of early abstinence.

The effect of *in utero* exposure to methamphetamine on brain metabolism in childhood using ^{1}H-magnetic resonance spectroscopy (^{1}H-MRS)

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Methamphetamine (MA) use among pregnant women is an increasing problem in the Western Cape Province of South Africa. The effects of prenatal methamphetamine exposure (PME) on the developing brain are unclear. A recent study by our group of PME children, aged 6 years old, found changes in cortical thickness and brain volume. The aim of this study was to further understand these changes by investigating neurometabolite changes over time in the anterior cingulate cortex (ACC) and dorsolateral prefrontal cortex (DLPFC) of these children at ages 6 and 8 years. This was achieved by the use of single voxel proton spectroscopy (^{1}H-MRS), a magnetic resonance imaging modality. Eighteen children with PME and 18 non-PME children, matched for age, gender and socioeconomic background, underwent ^{1}H-MRS, 2 years apart. We report the standard ^{1}H-MRS metabolite concentrations, phosphocreatine + creatine (PCr + Cr) for *n*-acetyl-aspartate (NAA), and the concentration of the major excitatory neurotransmitter, glutamate (Glu), and with its precursor, glutamine (Glu + Gln). These data are the first to show the longitudinal effects of PME longitudinally and will be presented.

A prospective study of clinical, biological and functional aspects of outcome in first-episode psychosis: The EONKCS Study

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Introduction. Depot antipsychotics were developed in the 1960s to address the adherence problem in schizophrenia. It can be argued that the greatest benefits of depot antipsychotics would be observed in the earlier phase of illness, in line with public health principles of early intervention and prevention of accruing morbidity. Our aim was to assess the feasibility and effectiveness of depot antipsychotic (flupenthixol decanoate) combined with an assertive monitoring programme (AMP) in first-episode schizophrenia.
Methods. This was a prospective, non-comparative, longitudinal study assessing patient acceptance, adherence, outcome in domains of psychopathology, functionality and quality of life, and tolerability in largely antipsychotic-naive, first-episode schizophrenia patients treated with long-acting injectable flupenthixol decanoate over 12 months.
Results. Of 207 participants, 149 (72%) completed 12 months of treatment. Acceptance of, and adherence to, depot was good. Treatment response was achieved by 170 (82%) participants and remission by 124 (60%). Thirty-three (19%) responders relapsed and 10 (5%) participants met a priori criteria for treatment resistance. Treatment was generally well tolerated.
Conclusion. Combination of depot antipsychotic with an AMP may be an effective and safe intervention in early phases of schizophrenia, and may be particularly suitable for resource-constrained settings.

Stimulants as cognitive enhancers – perceptions v. evidence in a very real world

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There is an increasing awareness of, and use of, stimulant medications for cognitive enhancement in normal healthy people in South Africa, particularly among senior high school learners and tertiary students. The

perception of said students is that these agents will improve academic performance through improvement in concentration, organisation and memory, with the ability to concentrate better while studying, to study more functionally for longer periods and to feel less tired. The limited research in this field does not, however, show these improvements to a significant degree. Said research is, to say the least, ambiguous and, at times, contradictory in respect of concentration, learning, cognitive control, working memory and executive functioning. The evidence base points to small benefits to individuals, rather than to the heterogeneous group, based particularly on pre-existing lower ability, personality and genetic factors. There is also evidence of intra-individual differences, including aspects of task improvement and the use of differing doses of the agents. It has been suggested by some authors that the reasons why the agents may be perceived to be effective link to placebo effects, altered perceptions of the amount and quality of the work accomplished and the enhancement of energy, wakefulness and motivation. The latter will clearly improve the quantity and quality of work produced, with a given unchanged level of cognitive ability. There are, of course, also the significant parallel moral and ethical considerations, related to medical safety, coercion and fairness. Users tend to focus more on potential benefits and the need to achieve a competitive edge in their learning or potential occupational placements. Society, however, places more emphasis on potential harm associated with the use of these agents, as well as such issues as unfair advantage and the importance of evaluation of authentic performance and potential v. pharmacologically enhanced performance. It is important that educational institutions and healthcare providers are aware of the potential for this kind of use of stimulants. We also have a responsibility to educate our own students about the reality of the evidence base, as well as the potential harm that exposure to these agents for non-medical indications can cause.

Pharmacogenomics in antipsychotic drugs

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Antipsychotics are the mainstay treatment for schizophrenia, yet there is a large variability experienced between individuals in their response to antipsychotics in efficacy and adverse effects. Genetics may be a major contributing factor in predicting this variability among individuals. The different pharmacogenetic markers that have been identified to predict response or side-effects in the use of antipsychotics will be highlighted.

Serotonin in anxiety disorders and beyond

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Anxiety disorders are among the most frequent psychiatric disorders, often manifesting early and needing treatment for several years after the onset of symptoms. Research has confirmed the crucial role of the serotonin (5-HT) system in the regulation of anxiety behaviour and traits, and has incorporated it in the pharmacological treatment approaches. Not all patients achieve remission, or experience adequate symptom control. Comorbidities and pharmacogenetics complicate the potential outcomes. Other neurotransmitter systems are implicated in the regulation of anxiety and are already recruited in the treatment of anxiety disorders, yet with a broader understanding of the physiology of anxiety disorders, more treatment options are being explored.

HIV infection results in ventral-striatal reward system hypo-activation during cue processing

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Objective. Functional magnetic resonance imaging (fMRI) has thus far demonstrated that HIV has an impact on frontal-striatal systems involved in executive functioning. The potential impact of HIV on frontal-striatal systems involved in reward processing has yet to be examined by fMRI. This study therefore aims to investigate the effects of HIV infection on reward processing by examining the function of the ventral-striatal reward system during a monetary incentive delay task.
Design. This is a cross-sectional case control study.
Methods. Eighteen combined antiretroviral therapy (cART)-naive HIV-positive (HIV+) participants as well as 16 matched healthy controls performed a monetary incentive delay task. This paradigm assesses behaviour as well as functional brain activity-associated reward anticipation and reward outcome.
Results. HIV+ participants showed a general decrease in activation associated with both neutral as well as potentially rewarding cues in their ventral striatum. We found normal activity related to reward outcome in the orbito-frontal cortex. Despite HIV+ participants' reaction times being significantly slower when independently measured from the reward paradigm, this performance deficit normalised during the performance of the reward task.
Conclusion. HIV caused a decrease in activity during cue processing in the ventral striatum, with normal cortical functioning during reward outcome processing. Our results therefore suggest that HIV not only has an impact on fronto-striatal systems involved in executive functioning, but also has a direct impact on the function of the ventral-striatal reward system.

Disease progression in schizophrenia: Is the illness or the treatment to blame?

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While the evidence for schizophrenia being a neurodevelopmental disorder is overwhelming, an emerging literature indicates that there is also a neuroprogressive component, at least in a subset of patients. Evidence from clinical and brain-imaging studies suggests that, while patients generally respond favourably to treatment in the early years of illness, the course is typically characterised by accruing morbidity including emergent refractoriness, persistence of symptoms and enduring deficits in social and occupational functioning. The early years of illness appear to be when most deterioration occurs. Relapse events may be the critical factor involved in illness progression and relapse prevention is a major treatment goal. Indeed, maintenance treatment with antipsychotic medication is one of the best documented findings in schizophrenia research. On the other hand, excessive, chronic dopamine D2 blockade has been linked to 'supersensitivity psychosis' and treatment refractoriness. Also, recent long-term outcome studies indicate that a substantial number of patients achieve sustained remission in the long term, some of whom had not received antipsychotic treatment over the past 2 years. Furthermore, there are studies suggesting that patients who received less medication actually did better in terms of long-term outcome. Finally, primate studies and longitudinal brain-imaging studies have implicated antipsychotic medication per se in the progressive loss of grey and white matter.

These findings suggest the following: Blockade of the dopamine D2 receptor remains a necessary and sufficient condition for antipsychotic activity. We need to prioritise adherence and relapse prevention. At the same time, we need better ways of modulating D2 and perhaps other receptors. To optimise efficacy and reduce the adverse event burden the following is required: avoid excessive doses; avoid intermittent treatment discontinuation; develop new treatments.

Serotonin transporter variants play a role in anxiety sensitivity in South African adolescents

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Background. Anxiety sensitivity (AS) has predictive potential for the development of anxiety disorders. Genetic and environmental factors play a role in the development of AS. Variants within the serotonin transporter gene (*SLC6A4*) have been widely investigated for their role in anxiety disorders. We investigated the role that gene-environment (GxE) interactions, focusing on childhood trauma (CT) and selected *SLC6A4* variants, play in modulating levels of AS in a South African adolescent population.

Methods. Nine hundred and fifty-one adolescents completed measures of AS and CT. Six *SLC6A4* polymorphisms were genotyped. Genetic and environmental influences on AS levels were assessed using multiple linear regression models. Relevant covariates were included in the analysis.

Results. Black Xhosa (n=634) and coloured (mixed ancestry) (n=317) participants were analysed independently of one another. The *5-HTTLPR S*-allele was associated with increased AS in male coloured participants (p=0.016), while the *5-HTTLPR*-rs25531 *L-G* haplotype was associated with reduced AS among Xhosa adolescents (p=0.010). A GxE interaction effect was also observed among Xhosa adolescents, where the rs1042173 *CC*-genotype was found to be protective against increased levels of AS in participants who had experienced high levels of CT (p=0.038).

Conclusions. To our knowledge, this is the first study to be conducted on AS in adolescents from two ethnically diverse populations. Results indicate that the *L-G* haplotype confers protection against the high AS levels in a Xhosa population. Furthermore, increased childhood trauma was found to protect against high levels of AS in Xhosa rs1042173 *CC*-carriers.

Iron deficiency in two children diagnosed with multiple sclerosis: Report on whole exome sequencing

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Introduction. Analysis of whole exome sequencing (WES) data using bioinformatics software presents a daunting challenge. Not only do the raw data often exceed 50 000 single nucleotide variants (SNVs), the reference genome most often used globally to map the reads (Hg19) is not reliable in all cases owing to the presence of minor alleles. In this study WES was performed for two children diagnosed with multiple sclerosis (MS) using two different reference sequences, with the aim of identifying gene variants that could explain the severe iron deficiency experienced by both the children.

Methods. The two unrelated children were diagnosed before the age of 5 years. Both were also found to have non-anaemic iron deficiency, which was responsive to iron supplementation in both cases. Once the iron had normalised, both children experienced long-term remission. Informed consent was obtained from the parents and assent from the children for WES, to investigate the origin of the iron deficiency. DNA was extracted from blood samples and WES was performed using a proton sequencer. The raw reads were mapped using Hg19 and a major allele reference sequence (MARS). Attention was focused on two genetic variants previously associated with iron deficiency, transferrin (TF) and matriptase (TMPRSS6).

Results. In Child 1, MARS identified heterozygous variants in TF (rs1130459 and rs1880669) as well as TMPRSS6 (rs2543519 and rs855791). Hg19 identified the same variants. In Child 2, MARS identified homozygous variants in TF (rs1130459 and rs1880669) and TMPRSS6 (rs2543519), while TMPRSS6 rs855791 was wild type. Hg19 registered wild type for both TFs, and homozygous SNVs for both TMPRSS6s. Validation using Sanger sequencing in the laboratory revealed that MARS gave the correct results in all cases.

Conclusion. Iron deficiency-causing variants could be identified and verified using WES together with MARS for variant calling.

Benzodiazepines: Practical pharmacokinetics

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Benzodiazepines are widely prescribed drugs in psychiatry and medicine in general. Benzodiazepines have multiple uses. In psychiatry they are mostly (but not only) used as hypnotics, sedatives, anxiolytics, and for managing substance withdrawal. The advantages of the benzodiazepines include relatively rapid onset of action and efficacy for appropriate conditions. Disadvantages are inter alia oversedation, impaired performance, rebound, abuse, tolerance, and withdrawal. Both the therapeutic effects and adverse effects of benzodiazepines are closely related to the pharmacokinetics of these drugs. Thus, understanding the practical implications of benzodiazepine pharmacokinetics is not only of theoretical value, but also of clinical value. The presentation targets the use of benzodiazepines in an adult population. In this presentation such pharmacokinetic aspects as the clinical relevance of absorption, distribution, bioavailability, metabolism, elimination (including elimination half-life), and lipid solubility will be discussed. Where appropriate the interplay between pharmacokinetics and specific pharmocodynamic issues like receptor affinity, will also be addressed.

What to consider when prescribing psychotropic medications

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As clinicians we tend to automatically consider many aspects before prescribing medications. Revising details of many of these aspects is necessary on occasion so as to keep up to date with new medications and remind oneself of details one may have forgotten. A lecture is presented which outlines details which warrant consideration when prescribing psychotropic medications. Aspects covered include: treatment plans; chronicity of conditions; routes of administration; licenced and 'off-label' prescribing; treatment of children, the elderly and professional athletes; treatment during pregnancy or when breastfeeding; comorbidities; drug interactions; contraindications; side-effects; dosages; basic background physiology; pharmacodynamics; pharmacokinetics; special investigations and treatment resistance.

Current prescribing practices for obsessive-compulsive disorder in South Africa: Controversies and consensus

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Introduction. Most treatment guidelines recommend serotonin reuptake inhibitors (SRIs) as first-line pharmacotherapy for obsessive-compulsive disorder (OCD). No reference was made to particular selective SRIs in the latest *Standard Treatment Guidelines and Essential Medicines List* for South Africa (SA), however. The South African Society of Psychiatrists (SASOP) has addressed this gap and provided a detailed treatment algorithm for our unique setting. It would be interesting to ascertain whether actual prescribing practices in SA are in accordance with these published treatment guidelines. Data on existing prescribing practices for OCD in SA may arguably inform more specifically targeted education and training in the management of OCD.
Methods. Data were collected from 554 patients aged 18 years and older with a primary diagnosis of OCD using the SCID-I/P. This was supplemented by a semi-structured questionnaire regarding pharmacotherapy. Descriptive statistics were used on categorical and numerical variables to quantify prescribing patterns for OCD in SA.
Results. Mean age of the sample was 32.48 years (SD 13.27), and 266 (48%) were male. Of the total number of patients referred for treatment, 37% were referred by general practitioners and 28.5% by psychologists. Some patients were not receiving any pharmacological treatment (20.2%). The total number of participants taking any selective SRI (SSRI) was 357 (64.44%), while 31 patients (5.59%) were taking clomipramine. The most common SSRI taken by patients was fluoxetine (39.5%), while one in six patients was on citalopram (17.65%). Few patients were prescribed more than one SSRI simultaneously (4.76%), while some prescriptions were unknown (3.92%).
Conclusion. This study generated preliminary data on the prescribing patterns for OCD in South Africa. Our findings suggest that patients with a primary diagnosis of OCD were taking at least one SSRI at the time of assessment. This is consistent with current official treatment guidelines. Aspects related to choice, dosage and duration of this and other classes of medication – such as age, gender, age of onset of OCD, illness severity, comorbidity with depression and treatment response – will be discussed.

Correlates of emotional and behavioural problems in children with perinatally acquired HIV in Cape Town, South Africa

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Background/objective. In the antiretroviral (ART) era children perinatally infected with HIV (PHIV+) are surviving into adulthood and are at risk for emotional and behavioural problems. Few studies of these problems have been conducted in low- and middle-income countries and even fewer in sub-Saharan Africa, where the burden of the HIV epidemic remains heaviest. The aims of this study were to provide a quantitative description of emotional and behavioural problems in a group of PHIV+ children and adolescents in South Africa compared with a group of well-matched HIV-negative controls and to identify demographic, biological, cognitive and contextual correlates of emotional and behavioural problems.
Methods. A cross-sectional descriptive, analytical study was conducted. Participants were recruited from community and hospital-based clinics. Emotional and behavioural problems were assessed using the Child Behaviour Checklist (CBCL). Several measures were used to assess demographic, biological, cognitive and contextual correlates of problem behaviours. Children were compared by HIV status on demographic, cognitive and contextual variables, as well as the total and subscale scores of the CBCL. Multivariate comparisons of the influence of contextual and cognitive variables on CBCL total problems were performed using a hierarchical step-wise linear regression analytic procedure.
Results. According to the final model greater problems were associated with HIV infection in children and in those who had a

depressed primary caregiver (F=8.57, df=5,102, p<0.01). In the HIV group, children on ART had significantly fewer problems than ART-naive children (β coeff=7.169, p<0.001), or children on ART with encephalopathy (β coeff=8.095, p<0.01).

Conclusion. This study highlights the need for adequate screening of depression in the caregivers of HIV-infected children. Treating caregiver depression may help reduce emotional and behavioural problems in children in our communities. This study also supports the early initiation of ART in order to improve children's quality of life.

The role of non-coding RNAs in fear extinction

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Objectives. Impairments in fear extinction can contribute to the development of anxiety and stress-related disorders. D-cycloserine (DCS) has been found to be effective in facilitating fear extinction in animal and human studies of anxiety; however, the precise molecular mechanism is unknown. This project aimed to identify non-coding RNAs (microRNAs (miRNAs) and long non-coding RNAs (lncRNAs)) that may be involved in DCS-induced fear extinction in a contextual fear coditioning animal model.

Methods. The PTSD animal model described by Siegmund and Wotjak (2007) was followed. Rats were grouped into four groups: Fear + saline (FS), Fear + DCS (FD), Control + Saline (CS) and Control + DCS (CD). Behavioural tests were conducted to determine which rats displayed anxiety-like behaviour. RNA-seq, microRNA (miRNA)-seq and subsequent bioinformatics analyses were performed on RNA extracted from left dorsal hippocampi (LDH) to identify differentially expressed miRNAs and lncRNAS between the groups which might provide information on how DCS facilitates fear extinction. Target enrichment analysis and functional luciferase analysis were performed to determine whether differentially expressed miRNAs targeted any of the differentially expressed genes identified in the RNAseq analysis (performed earlier). The effect of lncRNAs on gene and miRNA expression is under way and will be presented.

Results. Thirty-two miRNAs were differentially expressed between FD well-adapted (FDW) and FS maladpted (FSM) groups; 18 of these miRNAs were predicted to target and regulate 42 genes differentially expressed between the same FSM and FDW animals. The upregulation of rno-mi31a-5p could have facilitated the downregulation of *IL1RN* and *MT1A* as detected in RNAseq. Twenty-two lncRNAs were differentially expressed between FDW and FSM groups. Results suggest that the lncRNA *former* might be involved in fear conditioning and impaired fear extinction. Furthermore, three lncRNAs were predicted to be targeted by three of the differentially expressed miRNAs; these miRNAs could therefore regulate the expression of these lncRANs or the lncRNAs could act as miRNA sponges.

Conclusions. Intricate interconnectivity exists between non-coding RNA species. Non-coding RNAs represent an additional layer of gene regulation and may be one of the mechanisms that mediate DCS-induced fear extinction.

An analysis of the management of HIV-mental illness comorbidity at the psychiatric unit of the Dr George Mukhari Academic Hospital

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Introduction. HIV is the leading infectious killer of adults in the world today. However, the advent of highly active antiretroviral therapy (HAART) has increased the lifespan of HIV-infected patients drastically over recent decades. Consequently, a rise has been observed in the neuropsychiatric manifestations of HIV, and clinicians now face the challenge of managing HIV and mental illness (MI) comorbidity. The complexity of the management of HIV and MI requires an integrated system of care between mental health and general medical care. This study aimed to evaluate the inpatient management of HIV-MI comorbidity in the psychiatric unit at Dr George Mukhari Academic Hospital (DGMAH) and to describe the associated HIV-related infections in these patients.

Methods. A retrospective cross-sectional study was conducted. Records of all patients admitted to the psychiatric unit at DGMAH with a diagnosis of HIV-MI comorbidity from June 2011 to June 2012 were reviewed. Data concerning demographic parameters, associated medical conditions, and management of psychiatric disorders and HIV were recorded using an extraction data sheet.

Results. Hospital records of 75 patients with HIV-MI comorbidity were retrieved and analysed. The management of psychiatric disorders was excellent for all patients. However, challenges were observed in HIV management. Incomplete recording of HAART history was identified and some patients were discharged on HAART regimens not ideal for patients with MI. Screening for opportunistic infections was not conducted upon admission for patients, which led to some patients being diagnosed with opportunistic infections in the ward. Some patients with opportunistic infections were not referred to other disciplines for collaborative management. However, most patients diagnosed with opportunistic infections eventually received treatment in the psychiatric ward. Generally, the coordination of care between psychiatrists and other disciplines was insufficient.

Conclusion. There is a fragmentation of care for patients with HIV-MI comorbidity, although psychiatric care was found to be excellent. Psychiatrists should be empowered with broader knowledge of HIV management, which should be supported by a better referral system.

Integrated management of HIV-MI comorbidity demands effective communication between psychiatrists and HIV clinicians, as well as clinicians from other disciplines.

The identification of novel genes in anxiety disorders: A gene X environment correlation and interaction study

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Introduction. There is clear evidence for a genetic component in anxiety disorders, and increasing focus has been placed on genetic and environmental interaction (GxE) in mediating disorder pathogenesis. Although a number of genetic studies have been conducted on anxiety disorders, no singular gene or genetic abnormality has been explicitly identified. The hypothesis is that a pre-existing genetic vulnerability (or genetic risk) interacts with the impact of adverse life events to result in the development of one or more anxiety disorder(s).

Methods. Sprague Dawley rats exhibiting anxiety-like behaviours in the context of environmental stressors (maternal separation and restraint stress) were used as a model for the identification of novel susceptibility genes for anxiety disorders in humans. The striatum, previously implicated as a candidate in the brain architecture of anxiety pathogenicity, and the synaptic plasticity pathway were investigated in the rat brain using RT Profiler array assays. The human homologues of two susceptibility candidate genes (*MMP9* and *BDNF*) were screened in a human cohort of patients with obsessive-compulsive disorder (OCD), panic disorder (PD) or social anxiety disorder (SAD) (relative to controls) using probe-based genotyping arrays.

Results. Several genes were identified to be aberrantly expressed in 'anxious' rats relative to controls (*Mmp9*, *Bdnf*, *Ntf4*, *Egr2*, *Egr4*, *Grm2* and *Arc*). Three single nucleotide polymorphisms (SNPs) were found to be significantly associated with these conditions (*MMP9*: rs3918242 and *BDNF*: rs6265 and rs10835210) in a case-control association fashion. Three SNPs were also found to significantly interact with the presence and severity of childhood trauma (*BDNF*: rs6265, rs10835210, rs11030107).

Conclusion. This project yielded important findings pertaining to the aetiology of anxiety disorders. The use of a combined anxiety disorders cohort (OCD, PD and SAD) may suggest that the associations found here may hold true for anxiety disorders in general and not only for a particular clinically delineated condition. Several novel susceptibility genes, three significant SNP associations, and three significant SNP-environment interactions were contributed as candidates in the pathogenicity of anxiety disorders. Furthermore, the severity of childhood trauma was confirmed as a risk factor for anxiety disorders.

Collaborations between conventional medicine and traditional healers: Obstacles and possibilities

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Introduction. Developing countries face a severe mental-health treatment gap. Owing to extreme shortages of human resources, the vast majority of patients with mental disorders never see a mental-health professional. Many of these patients, however, do attend traditional healers who offer herbal and ritual treatments. Collaboration between conventional medical services and traditional healers has the potential to improve mental healthcare delivery. However, successful collaboration will need to be informed by the views and attitudes of both conventional and traditional healthcare providers.

Methods. With this goal, the Partnership for Mental Health Development in sub-Saharan Africa (PaM-D), a five-country NIH-funded partnership, initiated focus groups in Kenya, Ghana and Nigeria. Separate focus groups interviewed traditional healers, religious healers, medical practitioners, and patients and care-givers regarding their attitudes to mental illness and views on collaboration between the formal and informal sectors. The focus groups were recorded, transcribed, and the scripts analysed for common themes, focusing on potential models for collaboration, barriers to successful collaboration, and suggested solutions.

Results. All the focus groups were positive about increasing collaboration, and believed it would benefit patient care. However, the type of collaboration envisaged by each group differed somewhat. Conventional healthcare providers believed that collaboration should involve training and supervision of traditional and religious healers. Traditional and religious healers believed that collaboration should involve formal recognition and support for their work. Barriers identified included differences in worldview and philosophy of health, lack of respect between different healthcare providers, and fear of potential harms.

Conclusions. The findings will be used to shape interventions aimed at increasing fruitful collaboration in sub-Saharan Africa. These interventions will be tested in a controlled study to evaluate effectiveness.

Thought disorder and form perception: Relationships with symptoms and cognitive function in first-episode schizophrenia

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Introduction. Neurocognitive deficits and thought disorder in schizophrenia have generally been accepted as core features of the illness, yet their underlying relationship and correlation with clinical symptoms remains unclear. Visual-perceptual deficits have been described elsewhere in schizophrenia research but little is known about its association with clinical and cognitive correlates.

Methods. This was a prospective, non-comparative, open-label, longitudinal study of 42 patients with first-episode psychosis (FEP) all treated with a low-dose flupenthixol decanoate depot formulation. Primary co-measures were the MATRICS Cognitive Consensus Battery (MCCB) and the Rorschach Perceptual Thinking Index (PTI). Assessments were conducted at baseline and repeated at month 6 and

month 12. Spearman correlational analyses were conducted to investigate relationships between Positive and Negative Syndrome Scale (PANSS) factor-derived scores, MCCB composite and domain scores, and PTI total and sub-category scores. A mixed model repeat analysis of variance was done to determine effect sizes for changes in clinical symptoms, cognitive performance, thought disorder and form perception. We established $p<0.05$ as the threshold for statistical significance.

Results. The severity of PANSS factor-derived positive symptoms was inversely correlated with poor form perception (r=-0.42, $p<0.05$). Negative and disorganisation symptoms showed modest correlations (r>-0.32, $p<0.05$) with deficits in attention/vigilance, working memory, speed of processing, visual learning and verbal learning. Good form perception correlated with speed of processing (r=0.59), working memory (r=0.48) and visual learning (r=0.55). PTI measures of thought disorder did not correlate with PANSS symptom scores or cognitive performance. Improvements in cognitive performance and thought disorder covaried with improvement in symptoms from baseline to month 6, with form perception improving independently from clinical symptoms ($F(2.44)=4.3676$, $p=0.01861$)).

Discussion. We found support for the association between negative and disorganisation symptoms with cognitive dysfunction. Poor form perception is related to impairment in executive function and is associated with positive symptoms during acute psychosis. Response to treatment indicated a partial dissociation between improvement in form perception and improvements in cognitive dysfunction and clinical symptoms. We hypothesise that visual-perceptual deficits are relatively stable and indicate a trait factor in schizophrenia.

Investigating the functional significance of genome-wide variants associated with antipsychotic treatment response

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Schizophrenia is a debilitating disorder and treatment is ineffective for approximately 50% of patients. Response to treatment is highly heritable, yet poorly understood. Recently, genome-wide association studies (GWAS) have become popular for complex trait research, but have had minimal success explaining psychiatric drug response. Despite the majority of GWAS 'hits' being located in non-coding regions, functional interpretation is usually restricted to the closest gene. Recent, large-scale studies have shown that non-coding variation is not just a functional proxy of adjacent coding regions, but can have complex regulatory effects.

This study investigated the functionality of non-coding single nucleotide polymorphisms (SNPs) in schizophrenia treatment response by designing a novel bioinformatics pipeline. Firstly, variants previously associated with treatment response via GWAS were identified, and markers in linkage disequilibrium (LD) were obtained from publically available data. The variants were analysed using RegulomeDB, GeneMANIA, and other tools to determine regulatory potential and implicated pathways. In order to investigate the findings further, the top predicted regulatory variants were genotyped in a South African first-episode schizophrenia (FES) cohort and analysed for associations with treatment outcomes.

The bioinformatic portion of this study implicated a region on chromosome 4q24 associated with treatment-refractory schizophrenia through involvement of the nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 (*NFKB1*) gene. This gene is a master regulator involved in immunity, with over 200 identified gene targets. Interestingly, *NFKB1* and immune dysregulation have both been implicated in schizophrenia susceptibility. The two most significantly associated variants at the specified 4q24 locus were both associated with changes in negative symptoms ($p<0.00001$), suggesting a genetic link between variation in this region and persistent negative symptoms. Additionally, a 14-variant haplotype containing these polymorphisms was associated with 4.41% higher positive symptom severity.

Not only do these results illustrate the importance of this 4q24 region in treatment response, but they emphasise the overlap between schizophrenia risk and drug response, and the potential role of genomic dysregulation in poor treatment outcomes. Implicated genes and regions, particularly *NFKB1*, should be investigated as potential biomarkers of schizophrenia treatment response. This has the potential to improve treatment outcomes.

The moral and bioethical determinants of 'futility' in psychiatry

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As mental healthcare workers do we work under the assumption that all mental disorders are treatable and 'futile' treatment in psychiatry does not exist? Is our discipline any different to the rest of somatic medicine? We do experience treatment resistance, but do we acknowledge treatment failure and futile treatment? Can suicidal ideation not be realistic and rational? Should we believe that suicidal ideation is always equal to a mental disorder? Do we as psychiatrists reflect on the above, or do we put a 'lid' on the problem? Do we experience 'burnout' because we do not discuss the above reality? These questions will be discussed using contemporary moral theories and principles such as human rights, virtue ethics, care, respect for autonomy, beneficence, non-maleficence and casuistry.

Single voxel proton magnetic resonance spectroscopy (^{1}H-MRS) and volumetry of the amygdala in social anxiety disorder in the context of early developmental trauma

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Introduction. Early developmental trauma (EDT) has been hypothesised to play a significant role in the pathophysiology of social anxiety disorder (SAD); however, there have been no published neurometabolite studies in SAD in the context of EDT.
Methods. We used single voxel proton magnetic resonance imaging to elucidate the neurometabolite profiles and structural magnetic resonance imaging to acquire volume differences of the left amygdala in 26 individuals with SAD with EDT compared with 20 individuals with SAD without EDT and 22 healthy controls. Bayesian statistical testing was performed to compute between-group differences in probabilities of selected neurometabolites and amygdala volume.
Results. Differences were found in phosphocreatine (PCr) between the SAD with EDT and SAD without EDT groups; however, there were no other neurometabolite differences between these groups. Differences were found in inositol (Ins), PCr, N-acetylaspartate (NAA) and glutamate/glutamine (Glx) in the left amygdala in the SAD with EDT group compared with the control group. Differences were also found in NAA, Gln and Glx in the SAD without EDT compared with the control group. No volume differences were observed in the left amygdala between the three groups.
Discussion. A number of distinct neurometabolites that were dysregulated in SAD with EDT and not SAD without EDT suggested differences in pathophysiology with the occurrence of EDT. The amygdala volume findings are consistent with recent studies investigating volume differences in the amygdala in SAD.

Schizoaffective disorder in an acute psychiatric unit: Profile of users and agreement with Operational Criteria (OPCRIT)

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Background. Schizoaffective disorder is a controversial and poorly understood diagnosis. Experts disagree on whether it is a discrete disorder; whether it is on a spectrum between bipolar disorder and schizophrenia or whether it even exists. Lack of individual research attention given to this disorder, changing diagnostic criteria and hence poor diagnostic stability have all contributed to the dearth of knowledge surrounding schizoaffective disorder.
Objectives. To describe the profile of mental healthcare users (MHCUs) diagnosed with schizoaffective disorder and determine the degree of agreement between the clinicians' diagnosis and Operational Criteria (OPCRIT).
Method. All MHCUs with schizoaffective disorder at Helen Joseph Hospital psychiatric unit between January 2004 and December 2010 were included. The demographic, clinical and treatment profiles, as well as data required for OPCRIT, were extracted from hospital records and discharge summaries.
Results. Most MHCUs with schizoaffective disorder were female, with mean age of illness onset of 25 years and a family history of mood disorders. They also displayed impaired functioning and were non-adherent to treatment on admission. The majority were treated with at least one antipsychotic and one mood stabiliser. No agreement was found between the clinicians' diagnosis and OPCRIT.
Conclusion. While the profile of MHCUs with schizoaffective disorder in this study is similar to other studies, the lack of diagnostic agreement between clinicians and OPCRIT calls for further research using larger population samples and a dimensional approach to diagnoses in order to improve understanding and management of schizoaffective disorder.

The right to privacy and confidentiality: The ethics of expert diagnosis in the public media and the Oscar Pistorius trial

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Introduction. The Oscar Pistorius trial was the first fully televised criminal trial in South Africa. The trial was observed both locally and internationally and had its own dedicated channel. The trial broke media coverage records which included 6.2 million social network posts from a range of media organisations. It is noted that journalists often turn to psychiatrists or psychologists for analysis of public figures involved in high-profile criminal cases. The role of the mental health professional has to be balanced between the public's right to know, the professional's duty to educate and provide the public with psychiatric knowledge v. the public figure's right to privacy and confidentiality. Public commentary on the psychiatric diagnoses of Oscar Pistorius by professionals in the field will be discussed in relation to the ethics of respect for persons and beneficence. The debate as to whether such individuals should lose their right to privacy and confidentiality, be placed at risk for public shame, distress, damage to self, financial standing and/or loss of employment will be discussed. The ethics and accuracy of diagnoses made to the media on such public figures not actually personally assessed by such professionals will be debated.
Conclusion. The HPCSA regulations with regard to patient rights and their privacy and confidentiality are clear, as are the roles and responsibilities of professionals as stipulated in the National Health Act No. 61 of 2003. However, the rights of public figures who are not actual patients of professionals who provide public commentary and diagnosis to the media are less clear. The ethical responsibilities of mental health professionals in their role as media commentators are explored and debated. Recommendations and guidelines for ethical conduct in the media when commenting on public figures are suggested.

A birth cohort study in South Africa: A psychiatric perspective

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Introduction. Prospective birth cohorts have been important in addressing a broad range of questions in medicine and psychiatry. However, very few such cohorts have been undertaken in a low- to middle-income context. Such cohorts may be particularly important in addressing locally relevant scientific questions.

Methods. The Drakenstein Child Health Study (DCHS) is a local study of 1 200 mother-infant pairs, with a particular focus on infant pneumonia. The study is, however, multidisciplinary, and encompasses a range of psychosocial measures. Analyses to date have addressed questions such as predictors of low birth weight and early neurodevelopment.
Results. Key psychosocial findings from the DCHS to date will be reviewed. These include data that maternal smoking is associated with increased incidence of infant pneumonia, that maternal exposure to interpersonal violence is associated with low infant birth weight, and that *in utero* alcohol exposure is associated with altered neuronal integrity at birth.
Conclusions. A broad multidisciplinary approach to studying early development in the local context may be able to ask and answer new questions directly relevant to our burden of disease. Key risk factors in pregnancy, including exposure to smoking, alcohol, and interpersonal violence should be urgently addressed.

'Womb Raiders': Women referred for observation in terms of the Criminal Procedures Act (CPA) charged with fetal abduction and murder

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Introduction. Since 1987, there have been at least 21 incidents worldwide of pregnant women being kidnapped and their fetuses forcibly removed via caesarean section. This usually results in the mother's death. In all cases, the perpetrator was a woman. Unlike pseudo-cyesis, a delusional belief that one is pregnant, the majority of the perpetrators made planned and wilful attempts to feign pregnancy with the idea of claiming that the abducted fetus was actually their natural-born child. The crimes appeared premeditated, with efforts made to conceal the crime and the birth of the child. This is reflected in the disposition of the cases, as none was found to be 'not guilty by reason of insanity' and only one received a 'guilty but mentally ill' verdict. With only three of the perpetrators diagnosed with a major mental illness, this suggests that fetal abduction, though bizarre, is not strongly associated with mental illness.

In South Africa (SA), there have been three such cases noted by the author. In keeping with the current national research interest in the female offender population, this rare and interesting phenomenon warrants further research.
Methods. The case notes (forensic referrals, CPA reports and forensic reports) of women referred for observation to Sterkfontein Hospital were studied. Perpetrator, victim, and crime characteristics were examined where available, as well as perpetrator psychiatric diagnosis and disposition. Reports in terms of section 79(4) were recorded.
Results. In all cases perpetrators were found to be fit to stand trial and criminally responsible. Psychological profiles were ascertained and will be discussed.
Discussion. The cases will be discussed against the background of female offenders and forensic psychiatry, referring to the 22 cases internationally. The uniqueness of the SA context is given special attention.

Psycho-pharmacology of sleep wake disorders: An update

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Pharmacological treatment is continually evolving. From the discovery of chloralhydrate in 1869 to newly developed agents, namely the orexin antagonists and 5HT2A-inverse agonists. The benzodiazepines and non-benzodiazepines are the most widely used treatments for insomnia. There are minimal data on safety and efficacy of use of these drugs for longer than 6 months, and expert opinion advises against long-term use. Intermittent dosing is gaining evidence. Novel drugs to manage insomnia do not act as pure hypnotics, but aim to restore sleep architecture. As novel targets are explored, synergistic combinations may provide alternative strategies. Combining a 5HT2A receptor antagonist/inverse agonist and a benzodiazepine/non-benzodiazepine may be a valid alternative to normalise slow-wave sleep. A great need for a broader dissemination of evidence-based therapies remains.

Refugee post-settlement in South Africa: Role of adjustment challenges and family support in mental health outcomes

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Introduction. Although South Africa (SA) hosts a considerable number of African refugees, there is a dearth of studies examining post-settlement factors that influence their psychological wellbeing. This study aims to explore post-settlement determinants that influence psychological outcomes among refugees in Durban, SA.
Methods. The study was conducted at a non-government organisation that provides refugee support in Durban (between July 2013 and April 2014). A structured questionnaire was administered to 335 African refugees. Depression and anxiety symptomatology were assessed using the 25-item Hopkins Symptom Checklist. Post-traumatic stress symptomatology was assessed using the 30-item Harvard Trauma Questionnaire. We also collected detailed information on migration history and sociodemographic background based on self-report. The interview was conducted by trained psychiatric clinicians. Interpreters were available during the interview. The association between post-settlement factors and mental health outcomes (depression, anxiety and post-traumatic stress) was assessed using adjusted logistic regression models.
Results. Our analysis indicated that refugees who had recently arrived in SA had increased risk of depression (odds ratio (OR)=3.6, p=0.01), anxiety (OR=3.12, p=0.02) and post-traumatic stress (OR=4.16, p<0.01). Older migrants aged 35 years and older were at higher risk of depression (OR=5.64, p=0.01) and anxiety (OR=5.33, p=0.01). Individuals who left family members behind or experienced racism/discrimination in SA had higher depression (OR=2.40, p<0.01 and OR=2.43, p<0.01 respectively) and post-traumatic stress (OR=2.21, p=0.02 and OR=2.13, p=0.01 respectively).
Conclusion. Our study highlights adjustment challenges among newcomers, older refugees and those who lost or lack family (social) support during post-settlement that make them vulnerable to mental illness. There is an urgent need for culturally competent provision of mental health services for this vulnerable population in SA.

Distinguishing ADHD symptoms in psychotic disorders: A new insight in the adult ADHD questionnaire

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Introduction. Attention deficit hyperactivity disorder (ADHD) has been reported to occur comorbidly with psychotic disorders: schizophrenia (SZ), bipolar I disorder (BD), and substance-induced psychoses. However, no clear delineation in the presentation of ADHD symptoms within the different psychotic disorders has been performed. In the current study we delineate the differing presentations of ADHD symptoms in respect of the Adult ADHD Self-Report Scale (ASRS-v1.1).

Methods. Eighty-one participants with diagnosis, as per SCID; SZ (*n*=29), BD (*n*=28) and methamphetamine-induced psychosis (MAP, *n*=24) were recruited, in addition to sociodemographic controls (*n*=32). The participants completed the ASRS-v1.1 scale, which is comprised of 18 questions that address inattention, hyperactivity, and impulsivity.

Results. Thirteen per cent of participants with psychotic disorders met the criteria of adult ADHD, significantly greater than those in the control group. Upon further inspection, it was evident that the SZ group scored significantly higher on specific questions within the ASRS which address hyperactivity, while the BD group scored significantly higher on questions which address impulsivity.

Conclusion. This is the first study which distinguishes the differing presentation of ADHD symptoms across three psychotic disorders and provides further insight in understanding the inability of attention regulation in psychotic disorders.

Oscar Pistorius ethical dilemmas in a trial by media: Does this include psychiatric evaluation by media?

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Introduction. A highly televised case such as the Oscar Pistorius trial results in every piece of evidence, including psychiatric evaluation, being discussed, not only by members of the public, but also by various professionals. This results in a wide range of misinformation and confusion. Individuals who may have a psychiatric diagnosis, in this instance generalised anxiety disorder (GAD), are unable to understand the lack of relationship this has to committing violent crimes. Comparisons are made by members of the public and those individuals with GAD to the violence committed by the accused in the Pistorius trial, leaving patients with GAD confused about their own capacity for violence. This confusion not only adds to misinformation about GAD but leads to further stigmatisation of those undergoing psychiatric treatment. These aspects only arise in an unprotected situation where members of the public are exposed to discussions outside of the consulting room. While access to information helps enrich the public's understanding of psychiatric diagnosis, such access needs to be contextualised and explained by informed professionals who are able to filter the information through knowledge, training and experience.

Conclusion. The ethical dilemmas that are raised through the violation of the accused's loss of privacy and confidentiality through media dissemination of psychiatric reports and evaluation are discussed and recommendations with regard to the rights of forensic patients and the conduct of mental health professionals will be made.

Genetic investigation of appetitive aggression in South African former young offenders: The involvement of serotonin transporter gene

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Introduction. Continuous stress and violence in South African (SA) townships can have adverse effects on psychological development and mental health. Childhood abuse and a cruel environment have been found to promote the development of violent behaviour. Recent research has demonstrated that appetitive aggression (the perpetration of violence for the purpose of experiencing violence-related fascination) can prevent those who perpetrate violence from being traumatised by violence-related cues and facilitate adaptation to a cruel environment. Twin and family studies have indicated that aggression is heritable, and monoaminergic neurotransmitter systems have been found to form part of the molecular mechanisms underlying aggressive behaviour. The aim of this study was to investigate the role that two potentially functional variants in the serotonin transporter gene (*5-HTT*) may play in the development of appetitive aggression, and to investigate whether childhood trauma moderates the risk for developing appetitive aggression.

Methods. Two hundred and ninety-five former young offenders of Xhosa ethnicity were recruited to participate in this study. Standardised clinical questionnaires were administered to assess, among others, exposure to traumatic stress, trauma symptomatology, appetitive aggression (Appetitive Aggression Scale (AAS)), and reactive and proactive aggression. Participants were categorised as having appetitive aggression if AAS ≥8 (*n*=200). *5-HTT* genetic variants in the promoter region (*5-HTTLPR*) and in intron 2 (*STin2*) were genotyped and genetic association analysis was performed using logistic regression models, allowing for inclusion of covariates and interacting variables. All analyses were performed using R statistical software.

Results. No statistically significant association was observed between *5-HTTLPR* and appetitive aggression. However, the *STin2* variant was found to be associated with appetitive aggression when the recessive model of inheritance was considered (p=0.017). The 10-repeat allele of *STin2* was found to be present only in participants with appetitive aggression. No gene-environment interactions were observed for either of the polymorphisms.

Conclusion. This represents one of the first studies investigating the genetic underpinnings of appetitive aggression in a unique SA sample of former young offenders. Although the results require replication, they may shed some light on the molecular underpinnings of appetitive aggression.

POSTER PRESENTATIONS

Effects of HIV and childhood trauma on brain morphometry and neurocognitive function

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Introduction. A wide spectrum of neurocognitive deficits characterise HIV infection in adults. HIV infection is additionally associated with morphological brain abnormalities affecting neural substrates that subserve neurocognitive function. Early-life stress (ELS) also has a direct influence on brain morphology. However, the combined impact of ELS and HIV on brain structure and neurocognitive function has not been examined in an all-female sample with advanced HIV disease.
Method. Structural data were acquired using a 3T Magnetom MRI scanner and a battery of neurocognitive tests was administered to 124 women; HIV-positive with ELS (n=32), HIV-positive without ELS (n=30), HIV-negative with ELS (n=31), HIV-negative without ELS (n=31).
Results. Significant group volumetric differences for right anterior cingulate cortex (ACC), bilateral hippocampi, corpus callosum, left and right caudate, and left and right putamen were found. Mean regional volumes were lowest in HIV-positive women with ELS compared with all other groups. Although causality cannot be inferred, findings also suggest that alterations in the left frontal lobe, right ACC, left hippocampus, corpus callosum, left and right amygdala, and left caudate may be associated with poorer neurocognitive performance in the domains of processing speed, attention/working memory, abstraction/executive functions, motor skills, learning, and language/fluency with these effects more pronounced in women living with both HIV and childhood trauma.
Conclusion. This study highlights the potential contributory role of childhood trauma to brain alterations and neurocognitive decline in HIV-infected individuals.

Measuring intentional behaviour normative data of a newly developed motor task battery

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Introduction. The generation of human actions represents a complex interaction of cognitive, visual and proprioceptive information. In order to act we need to select the effector, conduct an action, while simultaneously determining the target for that action. A better understanding of how goals are influenced may lead us to a better understanding of how cognitive processes (or the dysregulation thereof) make us behave the way we do. The assessment of motor agency could be a valuable tool in the detection of these cognitive processes; however, this has not been systematically investigated.
Methods. A specifically developed motor task battery, consisting of three tasks, was developed (RT/MT task contrasting reaction time v. movement time; flexibility task measuring precision of movement planning and execution; and the Go-NoGo task measuring inhibition of preplanned actions) and tested on a group of 37 healthy Dutch participants in order to derive normative test data.
Results. *RT/MT task*: A significant difference was found in movement times (MT, p<0.00) but not reaction times (RT, p>0.05) in function of increased environmental complexity (1, 2 or 3 targets). Higher environmental complexity caused the participant to move faster, indicating planning of actions. *Flexibility Task*: The Inter Response Interval (IRI) differed significantly (F(8,278)=18.20, p<0.001) with a rhythm of response becoming slower when the tempo of the metronome for this task became slower. The asynchrony differed significantly (F(8,312)=24.35, p<0.001) with an asynchrony most important in the slower tempi. *Go-NoGo task*: Significant differences were found on reaction times on the Go stimuli of the Go-, the Go stimuli of the NoGo- and the NoGo stimuli of the NoGo condition (F(2,64)=176.13, p<0.001). This result indicates that in anticipation of no-go (need to inhibit) stimuli, healthy individuals react slower to avoid error.
Conclusion. The novel motor task battery provides the means to assess the capacity to structure, organise and plan actions in functions of environmental complexity. The motor task battery has shown that while reaction times remain stable in functions of increased environmental complexity, movement times differ significantly. Furthermore, it has been shown that movement planning and execution changes in functions of a changing environment, and reaction times in functions of having to inhibit a preplanned response differ in healthy participants.

Resilience in social anxiety disorder and post-traumatic stress disorder in the context of childhood trauma

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Background. Much of the research on anxiety disorders has focused on associated risk factors with less attention paid to factors such as resilience that may mitigate risk or offer protection in the face of psychopathology. The aim of this study was to compare resilience in post-traumatic stress disorder (PTSD) and social anxiety disorder (SAD) relative to age-, gender- and education-matched individuals with no psychiatric disorder. We hypothesise that there would be a significant difference in resilience between PTSD and SAD compared with controls.
Methods. This cross-sectional study comprised 121 participants, 68 with SAD (28 with no childhood trauma (CHT) and 40 with moderate/

severe CHT), 22 with PTSD with moderate/severe CHT, and 31 with no psychiatric disorder (i.e. healthy matched controls). Participants were administered the Mini-International Neuropsychiatric Interview (MINI) Liebowitz Social Anxiety Scale (LSAS) Clinician-Administered PTSD Scale (CAPS), Childhood Trauma Questionnaire – Short Form (CTQ-SF), and the Connor-Davidson Resilience Scale (CD-RISC). The mean age of participants was 34.04 years (standard deviation (SD) 11). Most were female (54.4%, *n*=67) and caucasian (63.6%, *n*=77). Analysis of variance was used to assess for significant group differences in resilience scores. Non-parametric correlation analyses were conducted for resilience with different types of childhood abuse.

Results. There were significant differences in resilience between SAD and PTSD groups with moderate/severe trauma, and controls. Both disorder groups had significantly lower levels of resilience than healthy controls. In the sample as a whole, childhood emotional abuse, emotional neglect, physical abuse, physical neglect, and total CHT were all significantly negatively correlated with resilience.

Conclusion. Patients who have PTSD and SAD with substantial CHT appear to be significantly less resilient than those with no disorder. Assessing and addressing resilience in these disorders, particularly when childhood trauma is present, may facilitate long-term recovery and warrants further investigation.

The ethical dilemma of seclusion practices in psychiatry

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Background. Seclusion in the psychiatric context is the involuntary confinement of an agitated, unstable person alone in a contained, controlled environment. Differing views on seclusion present clinicians with an ethical dilemma. Significant morbidity and mortality have been associated with seclusion. No data exist in South Africa on rates of seclusion for psychiatric purposes. Consequently neither the need for seclusion nor alternatives to seclusion have been explored.

Objective. To determine the number of patients secluded over 6 months, provide a profile of patients that were secluded, and to ascertain the reasons for seclusion.

Methods. A retrospective record review of patients secluded at Sterkfontein Hospital, over a 6-month period.

Results. A total of 112 patients were secluded over the 6-month period. Users were secluded for a total of 59 415.5 hours and on 4 814 separate occasions; 84.8% of the users secluded were male. The mean age of users secluded was 29 years. Just under half the users (49.1%) were secluded for their own safety and 40% of users were secluded for aggression (either physical or verbal). The commonest diagnosis was schizophrenia (31.4%) followed by cognitive impairment (20.6%) and bipolar mood disorder (13.7%). The most commonly used medication was sodium valproate (17%), followed by haloperidol (11%) and risperidone (11%).

Conclusion. Younger male patients with psychosis were most likely to be secluded. More research should be conducted locally to compare seclusion rates and patient profiles so that we may improve seclusion practices.

Physical activity and neurological soft signs in patients with schizophrenia

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Background. Schizophrenia has been hypothesised to be a neurodegenerative disorder akin to Alzheimer's disease (AD). Physical exercise is beneficial for the management of AD and has been associated with better neurocognitive functioning. Previous correlational studies have suggested that there is a significant relationship between neurocognitive functions and neurological soft signs. The aim of this study was to test for any association between severity of neurological soft signs (NSSs) and the level of physical activity (PA) in patients on treatment for schizophrenia.

Methods. Fifty patients participating in a larger schizophrenia study were recruited. Neurological soft signs were evaluated using a modified Neurological Evaluation Scale (NES), while physical activity (walking, moderate and vigorous intensity) was assessed with the International Physical Activity Questionnaire (IPAQ) - Short Form. Subjects were classified into three levels of physical activity: (i) inactive; (ii) minimally active; and (iii) health-enhancing physical activity (HEPA) active. Strength of the relationships between NES scores and IPAQ was evaluated using Spearman's correlation analysis.

Results. Only 32% of the subjects had HEPA. Mean total NES score was 13.7 while the mean subscales were sensory integration 4.68, motor coordination 1.2, motor sequencing 4.2. We observed no association between severity of NSSs and level of physical activity.

Conclusion. Unlike in dementia, where there is association between level of physical activity and neurological deficit, this study did not find any association between level of physical activity and severity of NSSs.

A retrospective study of completed suicides in the Nelson Mandela Bay Metropolitan Area from 2008 to 2013 – preliminary results

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Introduction. Suicide is defined as 'intentional self-inflicted death'. More than 3 000 suicides occur daily worldwide. In the USA, suicide is the 11th leading cause of death and the 3rd leading cause of death for the age group 15 - 24. The most vulnerable group for committing suicide is between ages 30 and 50. In South Africa (SA), there are few suicide statistics. Although suicides are registered with the state pathologist, no official statistics are kept. It was thus decided to perform a study of suicides using the death registers in each of the four mortuaries in the Nelson Mandela Bay Metropolitan (NMBM) area in an attempt to obtain yearly statistics as well study the profile and demographics of individuals who have died by suicide between 2008 and 2013.

Method. There are four mortuaries in the NMBM, each keeping records. All data related to suspected suicide recorded for the past 5 years (2008-2013) were analysed.

Results. A total of 1 234 suicides took place in the study period. Males accounted for 76% and females 24%. About half (51.6%) were African, 27.1% coloured, 20.5% white and 0.8% Asian. Most suicides were between the ages of 20 and 39 (53%) with 8.2% younger than 20 and 8.5% older than 60 years. With regard to year of death, the results

were fairly consistent except for 2010, which yielded more suicides compared with the other years, 20% v. 16%. The reason for this is unclear. There were no significant differences with regard to season during the time of the suicide. The most popular method was hanging (53.4%) followed by overdose (19.9%).

Conclusion. The results appear to be similar to previous SA studies in terms of findings with regard to sex, race and methods used. Internationally, spring seems to be specifically associated with increased suicides; however, the current study did not replicate this. The reason for more suicides in 2010 remains unclear and needs further interrogation.

Serotonin transporter variants play a role in anxiety sensitivity in South African adolescents

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Background. Anxiety sensitivity (AS) has predictive potential for the development of anxiety disorders. Genetic and environmental factors play a role in the development of AS. Variants within the serotonin transporter gene (*SLC6A4*) have been widely investigated for their role in anxiety disorders. We investigated the role that gene-environment (GxE) interactions, focusing on childhood trauma (CT) and selected *SLC6A4* variants, play in modulating levels of AS in a South African adolescent population.

Methods. Nine hundred and fifty-one adolescents completed measures of AS and CT. Six *SLC6A4* polymorphisms were genotyped. Genetic and environmental influences on AS levels were assessed using multiple linear regression models. Relevant covariates were included in the analysis.

Results. Black Xhosa (n=634) and coloured (mixed ancestry) (n=317) participants were analysed independently of one another. The *5-HTTLPR S*-allele was associated with increased AS in male coloured participants (p=0.016), while the *5-HTTLPR*-rs25531 *L-G* haplotype was associated with reduced AS among Xhosa adolescents (p=0.010). A GxE interaction effect was also observed among Xhosa adolescents, where the rs1042173 *CC*-genotype was found to be protective against increased levels of AS in participants who had experienced high levels of CT (p=0.038).

Conclusions. To our knowledge, this is the first study to be conducted on AS in adolescents from two ethnically diverse populations. Results indicate that the *L-G* haplotype confers protection against the high AS levels in a Xhosa population. Furthermore, increased childhood trauma was found to protect against high levels of AS in Xhosa rs1042173 *CC*-carriers.

Investigation of variants within antipsychotic candidate pharmacogenes associated with treatment outcome

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Background. Antipsychotic treatment of schizophrenia is often accompanied by distressing adverse drug reactions and a high relapse rate. Although antipsychotic pharmacogenetic research has identified some promising candidate pharmacogenes, these remain poorly characterised in South African (SA) populations. Therefore, this study aimed at investigating variants within seven candidate pharmacogenes (*COMT*, *CYP1A2*, *CYP2D6*, *DRD2*, *DRD3*, *HTR2A* and *SOD2*) in an SA first-episode schizophrenia (FES) cohort to identify significant associations with antipsychotic treatment response outcome.

Methods. The cohort comprised 103 SA FES patients treated with a first-generation antipsychotic, flupenthixol decanoate injectable, for at least 12 months. Based on mining of the literature, 32 variants were prioritised for genotyping by PCR-RFLP, long-range PCR and allele-specific PCR assays. A mixed model for repeated measures analysis was used to determine whether any polymorphisms identified were associated with antipsychotic treatment response, as measured by a change in Positive and Negative Syndrome Scale (PANSS) scores over time from the 12-month longitudinal PANSS scores adjusted at baseline. Inheritance models using 95% confidence intervals (CIs) to estimate effects of significant associations were assessed.

Results. Seven single nucleotide polymorphisms (SNPs) were associated with an improved prognosis indicated by a decline in PANSS scores each week across 12 months. These variants occurred in *COMT* (rs737865, p=0.0423, -0.18 95% CI (-0.50 to 0.15); rs4633, p=0.0080, -0.17 95% CI (-0.30 to -0.04)), *DRD2* (rs1799732, p=0.0004, -0.19 95% CI (-0.38 to 0.00); rs6277, p=0.0066, -0.45 95% CI (-0.73 to -0.17)), *HTR2A* (rs6311, p=0.0170, -0.22 95% CI (-0.40 to -0.04)), *CYP1A2* (rs762551, p=0.0027, -0.28 95% CI (-0.46 to -0.10)) and *CYP2D6 (CYP2D6*N*, p=0.0091, -0.60 95% CI (-1.05 to -0.15)).

Conclusion. Several SNP associations were identified to be involved with improved treatment outcome over time in an SA FES cohort. Further studies validating these findings in replication cohorts, as well as functional work to elucidate the functional roles of the identified variants, are warranted.

Effects of diet, smoking and alcohol consumption on disability (EDSS) in people diagnosed with multiple sclerosis

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Introduction. Although the immune system plays a major role in relapses in multiple sclerosis (MS), evidence is accumulating that lifestyle factors may predict disability progression in MS. The present study investigated whether there were associations between lifestyle and disability as measured with the Expanded Disability Status Scale (EDSS) in MS patients in the Western Cape, South Africa.
Methods. Patients with MS (130) were assessed using lifestyle and diet questionnaires as well as biochemical tests to identify markers for disability progression. A diet questionnaire evaluated intake of saturated/trans fats, folate, and fruit/vegetables, as well as smoking and alcohol consumption. Patients indicated how many days a week they ate certain foods. Statistical analysis was performed to evaluate associations between age at diagnosis, lifestyle factors, BMI and total cholesterol.
Results. There was a steady decline in disability as the intake of fruits/vegetables increased. The difference between 0 - 1 day intake and 6 - 7 days intake of at least five fruits/vegetables per day was significant (p=0.048). Intake of avocado and spinach (p=0.03) and citrus (p=0.02) was also significantly associated with an improvement in disability, while the intake of biscuits, cakes and cookies (p=0.03) was associated with an increase in disability. Age of diagnosis was earlier in patients who ate more hamburgers (p=0.02), fried hot potato chips (p=0.01) and full-cream dairy products (p<0.01). Intake of butter and margarine was associated significantly with blood cholesterol concentrations (p=0.03) and BMI (p<0.01). BMI was also associated with intake of red meat (p<0.01), fried chicken (p=0.04), and biscuits, cakes and cookies (p=0.04) and was inversely associated with intake of citrus (p=0.03). Disability was significantly higher in smokers than in non-smokers, while people who stopped smoking had a lower EDSS than active smokers. Alcohol intake followed a J-shaped curve, with people ingesting 1 - 2 units occasionally having a lower EDSS than people who abstain, or ingest 1 - 13 units a week. People who ingested 14 - 21 units had the highest EDSS, although these values were not significant.
Conclusion. Lifestyle factors play a significant role in clinical outcomes in MS.

The clinical utility of neuroimaging in an acute adolescent psychiatric inpatient population

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Background. At Tygerberg Hospital Adolescent Psychiatric Unit, imaging techniques such as computed tomography (CT), magnetic resonance imaging (MRI) and single photon emission computed tomography (SPECT) scans are used in various clinical and diagnostic neuropsychiatric assessments. This study aims to examine the clinical utility of neuroimaging in an acute adolescent psychiatric inpatient population in patients admitted to Tygerberg Hospital during a 2-year period from January 2012 to December 2013. This will be the first study examining neuroimaging in an adolescent-only population and the first to do so in a developing setting.
Methods. A retrospective chart review was conducted. The study population included all adolescent patients admitted to the Tygerberg Hospital adolescent inpatient psychiatric unit during a 2-year period. Clinical information was obtained from the folders and collated with neuroimaging done during the admission.
Results. A total of 120 CT scans, 10 MRI scans and 10 SPECT scans were performed. Nineteen (15.83%) CT scans detected abnormalities, of which 11 (9.16%) were clinically significant/pathological and 8 (6.67%) were incidental. Three (30%) of the MRI scans detected abnormalities. Ten (100%) SPECT scans detected abnormalities. The yield of imaging abnormalities in all three modalities was too low to statistically explore associations with various clinical variables, i.e. HIV status, history of head injury or substance abuse. Only one of the six (5% of total CT scans) of the detected CT abnormalities resulted in a change of management. All three MRI scan abnormalities detected resulted in a change of management for the patients. All SPECT scans conducted revealed abnormalities. However, 9 (90%) of these results were nonspecific abnormalities.
Conclusions. The yield of neuroimaging abnormalities from CT and MRI scans is similarly low when compared with studies conducted in developed countries. However, all detected MRI abnormalities resulted in changes in clinical management. The nature of this study did not allow for direct comparison between the clinical utility of CT and MRI scanning in this population, or for associations between neuroimaging abnormalities and clinical variables. This would necessitate separate prospective design studies. The indications for SPECT scanning need to be specific for future use as a clinical tool.

Relationships between childhood trauma (CT) and premorbid adjustment (PA) in a highly traumatised sample of patients with first-episode schizophrenia (FES)

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Introduction. There is a strong association between childhood trauma (CT) and psychosis, with many studies indicating that CT plays a role in the development of psychotic disorders, such as schizophrenia. Despite the known association between CT and psychosis very few studies have focused on CT in first-episode schizophrenia (FES) patients. Studying CT in FES patients allows for a better understanding of the nature of the association between different forms of CT and schizophrenia without factors such as antipsychotic use and the duration of the illness impacting on clinical features and cognition. The main aim of our study was to investigate the relationship between CT and premorbid adjustment in patients with FES.
Methods. Our sample consisted of 77 FES patients and 52 healthy controls (HC). We used correlation analysis and regression to study the relationship between CT and premorbid adjustment, as well as other indicators such that may moderate the abovementioned associations.
Results. We hypothesised that levels of CT would be higher in FES patients than in controls; CT would be significantly correlated with premorbid adjustment; and that additional factors such as family history of psychiatric illness, pregnancy and birth complications might moderate

the relationship between childhood trauma and premorbid adjustment.
Conclusion. Clinicians need to be more cognisant of the relationship between CT and premorbid adjustment in the treatment of FES patients.

Functional and cognitive outcomes using an mTOR inhibitor in an adolescent with TSC

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The tuberous sclerosis complex (TSC) is a genetic autosomal dominant condition with multi-organ involvement and highly variable clinical manifestations. The neurological manifestions (classically subependymal nodules, cortical tubers, and subependymal giant cell astrocytomas (SEGAs)) are a leading cause of morbidity and mortality leading to cognitive impairment, behavioural disturbances and treatment-refractory seizure disorders. Recent experimental and human evidence suggest that the use of mTOR inhibitors may induce regression of TSC tumour types and provide an alternative to surgical resection of SEGAs. In the EXIST-1 Trial everolimus (mTOR inhibitor) was associated with clinically meaningful increases in the time to progression of SEGAs and skin lesion response rate compared with placebo.

We present a case of a 16-year-old girl (MM) referred to a psychiatric unit following aggressive outbursts, and disruptive and dangerous behaviours not responding to outpatient management. She received multiple trials of anticonvulsants for ongoing seizures and trials of antipsychotic treatments, with poor response. A variety of psychiatric diagnoses were made which included bipolar disorder and attention deficit hyperactivity disorder (ADHD).

On admission, MM was observed to be intrusive, impulsive, inappropriate and sexually disinhibited. She had several seizures with aggression, confusion and behavioural outbursts post- and inter-ictally. Her intrusiveness, sexual disinhibition and lack of response inhibition suggested a picture of frontal lobe dysfunction affecting executive functioning.

She was managed in consultation with liaison services. Seizure control was optimised with anticonvulsants to an acceptable rate. No improvement in social or cognitive functioning was possible due to ongoing behavioural and emotional outbursts. She required individual constant supervision to keep safe and functional. A motivation for a trial of an mTor inhibitor was made and granted by the hospital therapeutics committee.

We report on and compare baseline with 6-month post-medication outcomes as measured by radiological, functional and cognitive testing. We demonstrate the use of an mTor inhibitor for the first time in a patient within a state service, who achieved improvement in cognitive, social and psychiatric functioning with stabilisation of her SEGA. This case will discuss the challenges and potentials in the management of a complex case of TSC.

Perceptions about adolescent body image and eating behaviour

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Introduction. Eating disorders form an important group of mental illness in psychiatry. The aetiology is multifactorial, developing from distorted beliefs around body image and shape, with resultant abnormal eating behaviours. This study explored the views and perceptions of a group of university students regarding their peers' body image and shape and eating behaviours, which they experienced during their senior high school years.
Method. This was an explorative, qualitative cross-sectional study using qualitative methods. A sample of 153 participants was voluntarily recruited from students in the Faculty of Health Sciences at the University of the Witwatersrand. A manually distributed anonymous questionnaire was used, with questions about their high school peers' personality traits, early and late childhood experiences, eating behaviour, and the last three years of high school environment. Questions in each section were deconstructed and categorised into subthemes. These subthemes were compared with the literature.
Results. The most commonly described subtheme of participants' perceptions on high school peers' *personality traits* was 'poor self-confidence'. The most replicated subthemes of views on peers' *childhood experiences* were 'personal conflict with members of the family', 'a disruptive home environment' and 'mother's attitude'. In terms of peers' *eating behaviour,* a subtheme on 'body shapes' included 'fat', 'skinny' and 'fit and muscular' bodies. In terms of the *high school environment*, the subtheme of 'bullying and peer discrimination' was regarded as important, while 'the impact of media' was regarded as extremely important. Fifty per cent of participants viewed body image to be important for social status. There were mixed views on whether specific programmes should be introduced to identify pupils at risk.
Conclusion. Although bullying and peer pressure have been described as contributing factors in the development of eating behaviour problems in their high school peers, as perceived by this group of university students, the most prominent potential contributing factor considered, was the media, specifically social media.

Clinical relevance of FTO rs9939609 as a determinant of cardio-metabolic risk in South African patients with major depressive disorder

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Introduction. A consistent overlap between vascular risk factors and affective disturbances supports the existence of a 'metabolic-mood syndrome' rather than a mere bi-directional pathogenic relationship between cardio-metabolic risk traits and depression. Therefore the identification of genetic factors which could mediate the association between obesity and mental illnesses such as major depressive disorder (MDD) is important. In this context, mounting evidence supports the association between a functional polymorphism (rs9939609 T>A) in the fat mass and obesity-associated gene (FTO) and central obesity, the metabolic syndrome as well as deranged inflammatory biomarkers. Variation in the FTO gene has previously been shown to modulate the association between psychological health and dietary patterns in obese South African (SA) patients.
Objective. To determine whether the association between FTO rs9939609 T>A and obesity evaluated in relation to biochemical

cardio-metabolic risk factors could be replicated in SA MDD patients.
Methods. A total of 98 SA patients on treatment for a confirmed DSM-5 diagnosis of MDD were enrolled in the present study. Clinical data and lifestyle factors were assessed using an ethically approved study questionnaire. Biochemical assessment was performed according to standard laboratory protocols. All patients were genotyped for the FTO rs9939609 variant using allele-specific TaqMan real-time polymerase chain reaction technology.
Results. In the total study group, homozygosity for the FTO rs9939609 minor A-allele was associated with a significantly higher body mass index (BMI) (p=0.041) as well as low-density lipoprotein (LDL) cholesterol (p=0.010) and high-sensitivity C-reactive protein (hs-CRP) levels (p=0.006). The FTO rs9939609 T>A polymorphism was not associated with systolic and diastolic blood pressure, glucose or HbA1C levels (p>0.05).
Conclusion. Findings from this study served to validate the association between FTO rs9939609 T>A and relevant cardio-metabolic risk traits in SA patients with MDD. FTO genotyping performed as part of a multidisciplinary approach to chronic disease risk screening could add value to the management of vascular risk associated with depression.

Childhood abuse and neglect as predictors of deficits in verbal auditory memory in non-clinical adolescents with low anxiety proneness

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Background. Within the existing early developmental trauma literature, childhood trauma (CT), i.e. abuse and neglect, has consistently been shown to be associated with significant impairments in neuropsychological functioning, including deficits in memory, learning and executive functioning.
Objectives. We sought to determine whether CT influences verbal auditory memory in low anxiety prone adolescents with and without high levels of CT. Our objectives were to determine: (i) whether differences in verbal auditory memory were evident between the two groups of adolescents; (ii) whether significant correlations were evident between abuse and neglect and aspects of verbal auditory memory; and (iii) whether abuse and neglect were predictive of deficits in verbal auditory memory.
Methods. Adolescents (n=31; mean age 16.8 years (standard deviation (SD) 0.97) completed the 28-item Childhood Trauma Questionnaire (CTQ), a screening tool for assessing histories of abuse and neglect. The Rey Auditory Verbal Learning Test (RAVLT) was used to assess verbal auditory memory (i.e. immediate recall, recall after interference, words learnt, delayed recall and recognition). The sample was predominantly black (67.7%) and female (64.5%).
Results. Adolescents with low levels of CT overall had significantly higher mean rank scores for delayed recall (U=57.00, p<0.05). Significant correlations were evident between: (i) CT overall and delayed recall (r=-0.414, p<0.05); and (ii) childhood neglect and immediate recall (r=-0.407, p<0.05) and delayed recall (r=-0.504, p<0.01). Childhood abuse did not correlate significantly with any of the RAVLT items assessed. In the regression analysis, CT overall (F(1,29)=5.831, p<0.05, with an R^2 of 0.167) and childhood neglect (F(1,29)=6.909, p<0.05, with an R^2 of 0.192) were found to predict delayed recall. Childhood neglect did not, however, predict immediate recall (F(1,29)=3.837, p>0.05).
Conclusion. Our results suggest that adolescents with high levels of CT fare significantly poorer on delayed recall than those with low levels of CT. Neglect, in particular, has a significant influence on adolescents' verbal auditory memory, especially recall after delay.

The changes of pro-inflammatory cytokines in a prenatally stressed febrile seizure animal model and whether *Rhus chirindensis* may attenuate these changes

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Febrile seizures are convulsions associated with an underlying infection such as chicken pox, middle-ear infections, resulting in an increase in the release of pro-inflammatory cytokines such as interleukin (IL)-1β, IL-6 and tumour necrosis factor alpha (TNF-α). IL-1β has a pivotal role in the occurrence of febrile seizures; however TNF-α and IL-6 have been implicated. Environmental factors such as prenatal stress have been shown to increase febrile seizure severity. Various treatments of febrile seizures have been shown to be ineffective in combating the reoccurrence of the condition and are considered expensive. This has led to research of alternative treatments. Plant extracts such as *Rhus chirindensis (Rhus)* are used as traditional medication in Africa for various conditions such as epilepsy. In our study, we looked at the change in the levels of IL-6 and TNF-α in a febrile seizure animal model exposed to stress and any changes in the levels of IL-6 and TNF-α when treated with *Rhus*. Offspring of Sprague Dawley dams were used in the study. The dams were stressed 1 hour a day for 7 days between gestational days (GND 14 - 20). On postnatal day (PND) 14, the pups were injected with lipopolysaccharide (LPS, 200 µg/kg, i.p) 2.5 hours later kainic (KA, 1.75 mg/kg) and *Rhus chirindensis (Rhus,* 1 000 mg/kg i.p). The animals were decapitated on PND 15, PND 21 and PND 35 and hippocampus was collected and analysed. Our results showed increased levels of IL-6 after exposure to stress; the levels of TNF-α did not change. In *Rhus*-treated animals levels of IL-6 were decreased in non-stressed febrile seizure animals; however in stressed animals the levels were increased. *Rhus* reduced the levels of TNF-α in both non-stressed and stressed animals following febrile seizure. In conclusion, stress in a febrile seizure model seems to increase the levels of IL-6. *Rhus* may attenuate febrile seizures by reducing pro-inflammatory cytokine levels; however, the interaction between *Rhus* and stress needs to be further explored.

Influence of TMPRSS6 A736v and HFE C282y on serum iron parameters and age of onset in patients with multiple sclerosis

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Background. Gene-environment interactions may contribute to iron deficiency in a subgroup of multiple sclerosis (MS) patients found to be responsive to iron supplementation.
Methods. The low-penetrance HFE C282Y and TMPRSS6 A736V mutations shown to be associated with iron overload and iron deficiency, respectively, were investigated in 118 white MS patients and 183 population-matched controls.
Results. MS patients homozygous for the iron-lowering T-allele of TMPRSS6 A736V had significantly lower serum iron levels (p=0.03) and transferrin saturation levels (p=0.03) compared with CC homozygotes. In MS patients the iron-loading minor A-allele of HFE C282Y was also associated with a paradoxical decrease in serum ferritin (p<0.01) compared with GG homozygotes. When considering the combined effect of the risk-associated minor alleles of TMPRSS6 A736V and HFE C282Y, a significant reduction in ferritin levels (p<0.05) was found, independent of age and sex in MS patients. The combined effect of HFE C282Y and TMPRSS6 A736V was also associated with a significantly earlier age of onset of MS when the post hoc test was applied (p=0.04). A positive correlation was observed between red meat intake and serum ferritin levels in 143 controls (p=0.01), but not in the 68 MS patients who completed the nutrition assessment.
Conclusion. Genetic testing is important to identify a subgroup of MS patients with life-long increased requirements of iron in the diet. Variation in the TMPRSS6 gene is very important due to its modifying effect on HFE expression and regulation of hepcidin, the key regulator of iron metabolism and mediator of anaemia of inflammation.

Polypharmacy in pregnant women with serious mental illness

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Background. Safety concerns exist regarding the use of psychotropic agents during pregnancy, more so when multiple medications are prescribed. Little is known about the combined effect of different categories of psychotropic and medical agents. The present descriptive study examined patterns of medication use across pregnancy in a low socioeconomic status population of women who have a serious mental illness as a primary diagnosis.
Methods. A tertiary specialist maternal mental health clinic has been established at Stikland psychiatric hospital, Cape Town. This clinic receives referrals from community health clinics, as well as general practitioners and other specialist departments. Data on the first 105 referrals to this service were analysed as part of an ongoing prospective cohort study
Results. The majority of women were diagnosed with bipolar, depressive or psychotic disorders. Their mean age was 29.7 (standard deviation (SD) 6.3) years, and 38% of women had comorbid medical conditions, most commonly hypertension, diabetes and HIV. The mean gestational age (SD) was 16.8 (9.1) weeks. The mean (SD) number of medications taken during pregnancy was 1.89 (1.3) but ranging between 0 and 8. The most frequently prescribed medications were from the antipsychotic, followed by antidepressant, class of agents.
Conclusion. Multiple medications are frequently prescribed to pregnant women with serious mental illness because of comorbid diagnoses. However, the effects of taking multiple psychotropic and other medications during pregnancy on pregnancy outcome and fetal development are largely unknown. The management and optimal pharmacological treatment of psychiatric illness during pregnancy is complex. Further safety and efficacy data are needed to examine the effects on birth and neonatal outcomes where multiple medications are prescribed.

Infant attachment and maternal depression as predictors of neurodevelopmental and behavioural outcomes at follow-up

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Introduction. The prevalence of postpartum depression is high in low- and medium-income countries and is often associated with HIV status and poverty. Depression is also associated with impairment in mother-child interaction and can lead to poor attachment. Maternal depression and poor attachment can cause long-term disruption of social, emotional, behavioural and neurodevelopmental outcomes in children.
Objectives. To determine if infant attachment at 10 - 12 months, and maternal depression at 10 - 12 months postpartum, were significant predictors of behavioural and neurodevelopmental outcomes at 42 months and 60 months in children.
Methods. The study followed a prospective, longitudinal design. Eighty mother-child dyads infected with HIV participated in the study. Mothers were assessed for depression using the Centre for Epidemiologic Studies Depression scale (CES-D). The Alarm Distress Baby Scale (ADBB) was used to assess attachment style in children. Neurodevelopmental and behavioural outcomes were measured using the Griffiths Mental Development Scales and the Child Behaviour Checklist (CBCL).
Results. Results of the regression models revealed that attachment style and maternal depression were not significant predictors of behavioural outcomes at 42 months and 60 months. However, attachment style and maternal depression were significant predictors of neurodevelopmental outcomes at 42 months. Maternal depression remained a significant predictor of neurodevelopmental outcomes at 60 months. There was no significant relationship between the CD4 counts of children and their attachment style, behavioural outcomes, neurodevelopment and maternal depression.
Conclusion. Our findings underscore the negative impact of poor attachment style, and particularly maternal depression on long-term neurodevelopmental outcomes. In the context of HIV, screening for maternal depression and infant attachment is important, given the significant long-term effects of maternal depression and attachment on neurodevelopment in children.

Differences in abuse, neglect and exposure to community violence in adolescents with and without PTSD

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Introduction. South African (SA) adolescents are exposed to high levels of violence and trauma, including community violence, abuse and neglect. Violence and trauma are associated with negative mental health outcomes, including post-traumatic stress disorder (PTSD) and depression. The type of abuse and neglect and additional exposure to other trauma may place adolescents at greater risk of developing PTSD.
Objectives. To assess differences in the amount and type of abuse/neglect and community violence exposure between trauma-exposed adolescents with and without PTSD. In addition the predictive value of these variables in the development of PTSD was assessed.
Methods. Participants were 228 adolescents who were identified with emotional and/or behavioural problems and were referred from schools in the Western Cape Province of SA to an adolescent trauma clinic. Clinical assessments were undertaken to assess: community violence exposure; physical, sexual and emotional abuse; physical and emotional neglect; and a clinical diagnosis of PTSD and comorbidity.
Results. The rate of clinician-diagnosed PTSD was high in this group, with almost half (49.3%) of the trauma-exposed adolescents meeting criteria for PTSD. Trauma-exposed adolescents with PTSD reported significantly higher levels of emotional abuse, sexual abuse, and community violence exposure in comparison with trauma-exposed adolescents without PTSD. Physical abuse, sexual abuse and community violence exposure were significant predictors of PTSD in regression analysis, with community violence exposure being the most robust predictor. Adolescents with comorbid PTSD and depression, PTSD only and depression only were exposed to significantly higher levels of community violence compared with adolescents without PTSD.
Conclusion. These findings underscore the contribution of different types of trauma in the development of PTSD. Interventions focused on preventing trauma and PTSD should be multifaceted and be targeted at various levels, e.g. individual/interpersonal level (reduce physical and sexual abuse in the household and immediate environment) and community/societal level (reduce crime rates in communities and strengthen conviction policies). Traumatised youth should routinely be screened for a history of abuse and particularly exposure to community violence, given their strong association with PTSD.

Assessment of oxidative stress markers in children with autistic spectrum disorders in Lagos, Nigeria

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Background. Persons with autism have been found increasingly in Western literature to demonstrate differences in oxidative stress (OS) markers which have been implicated in the role of causation among this vulnerable group. Studies suggest that autism spectrum disorders (ASDs) may result from an interaction between genetic, environmental, and immunological factors, with oxidative stress as a mechanism linking these risk factors. Limited data exist about African individuals with autism, either to refute or confirm similar findings in these biochemical studies. The paper reports portions of a larger study; here we measure OS markers, including: reduced glutathione (GSH), superoxidase dismutase (SOD), glutathione S transferase (GST) and malondialdehyde (MDA) from plasma samples of children with ASD in Africa.
Methods. Forty-three study participants aged 14 years or less with a diagnosis of autism were selected during routine clinic visits at two Child & Adolescent Psychiatry Units in Lagos, Nigeria. A diagnosis of autism was confirmed using the *Diagnostic and Statistical Manual for Mental Disorders,* 5th edition (DSM-V), after screening with the MCHAT questionnaires and the autism quotient questionnaire followed by a clinical interview. Twenty-six age-matched children with no known neurodevelopmental challenge selected from the paediatric clinics served as the control group. Institutional ethical approval and parental informed consent were obtained prior to enrolment. Fasting blood samples of 5 mL were collected from each child and OS markers were determined.
Results. Results are shown as median (interquartile range) values and are compared with Mann-Whitney *U*-test. Significance was established as $p<0.05$. Graphpad prism 4.0 software was used. The GSH value was significantly lower in the ASD group (cases) (0.45 (0.3 - 0.63) compared with the controls (0.83 (0.47 - 1.23)($p= 0.0075$)). The SOD value was higher in cases (1.50 (1.10 - 2.10) than the control group (1.20 (0.78 - 2.25), the GST value of the cases (0.030 (0.02 - 0.03) was higher compared with the control group (0.024 (0.02 - 0.04) and cases had higher level of MDA (0.049 (0.031 - 0.066)) compared with the controls (0.043 (0.026 - 0.072); these however, were not statistically significant ($p>0.05$).
Conclusion. This study supports that OS may play an important role in autism in African children. There is need for larger in-depth studies to further uncover other biomarkers as new targets for therapeutic intervention in autism.

Change in diagnosis and management of 'gender identity disorder' in pre-adolescent children

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This talk reviews current understanding of gender identity, the management of pre-adolescent gender-diverse children and their 'prognosis', as well as arguments for and against continuing to give them a pathological diagnosis in ICD-11. Our understanding and the management of children with 'gender identity disorder' has changed radically in the last 15 years. The World Association of Transgender Health (WPATH) has published evidence-based guidelines in their Standards of Care (Version 7 in 2012) which proposes supporting

children in their expression of gender identity, rather than trying to get them to conform to what society expects. Gender variance and fluidity in childhood and adolescence is increasingly seen by clinicians and is being recognised by some as a part of normal development. Our binary understanding of gender is outdated. Increasingly patients are identifying as being somewhere on a spectrum between male and female. Equally, how young people and adults might wish to change their bodies (or not) to align with their gender identity is also very diverse. We need to be aware of these changes in understanding in order to support them in their journey to finding the best outcomes physically and psychologically. About 80% of children meeting the criteria for gender identity disorder of childhood end up gay, and only around 5 - 10% continue to meet the diagnosis after puberty. Partly as a result, continuing to give pre-adolescent children a pathological diagnosis was one of the most contentious issues in drawing up DSM-5 and still is in drawing up ICD-11. Gender identity disorder of childhood has been renamed 'gender identity dysphoria' in DSM-5, where it is still a psychiatric diagnosis. ICD-11 proposals plan to rename the condition as 'gender identity incongruence' and move it out of mental health, but still diagnose these children with a pathological condition, along with adolescents and adults. Arguments for and against the proposal will be discussed.

Brain network connectivity in women exposed to intimate partner violence

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Introduction. Evidence suggests that women who suffer from intimate partner violence (IPV) and post-traumatic stress disorder (PTSD) have structural and functional alterations in specific brain regions. Yet, little is known about how brain connectivity may be altered in individuals with IPV, but without PTSD. The aim of this study was to investigate cortical-subcortical structural connectivity in such women.
Methods. Women exposed to IPV (n=18) and healthy controls (n=17) matched for socio-economic status underwent brain imaging using a Siemens 3T MRI. Global and regional brain network connectivity measures were determined, using graph theory analyses. Structural covariance networks were created with cortical thickness and volumetric data after controlling for intracranial volume, age and alcohol use. Nonparametric permutation tests (1 000 permutations) were used to investigate group differences.
Results. Global network connectivity was greater in IPV compared with controls in the left precuneus, as well as the left orbitofrontal gyrus and left thalamus; while temporal and limbic regions had higher global network connectivity in controls compared with IPV. Regional network connectivity was higher in controls compared with IPV in various brain regions.
Conclusion. To our knowledge, this is the first evidence showing altered brain network connectivity in global and regional networks in women exposed to IPV, and without PTSD. The findings are consistent with involvement of regions in IPV without PTSD that underlie gating of sensory information, and affective appraisal and control. Altered connectivity in IPV may underlie adaptive neural mechanisms in environments characterised by potentially dangerous cues.

Prolonged exposure treatment for PTSD in a Third-World, task-shifting, community-based environment

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Background. Empirical support for cognitive behaviour therapy (CBT) treatment of adults is now quite robust. Despite the high rate of trauma exposure and PTSD in children and adolescents the literature contains surprisingly few outcome studies. The available paediatric and adolescent randomised control trial (RCT) studies will be reviewed. South Africa (SA) is a country with high rates of trauma exposure. In a study conducted in SA and Kenya, 14.5% of students met criteria for PTSD within SA. Given the extremely limited access to public health psychological services, it is crucial to address the gap between need and availability of psychological interventions by making them more readily available to a broader population. In the first step towards that goal, a pilot RCT study was initiated with registered nurses trained to provide adolescents with either Prolonged Exposure for Adolescents (PE-A) PTSD treatment or Supportive Counselling (SC). Pilot data from our adolescent study will be presented.
Objectives. To compare the effectiveness of two treatments, PE-A and SC, in reducing PTSD symptom severity over 10 - 14 weeks of treatment, as administered by counsellors; to assess maintenance of PE-A treatment gains on PTSD symptom severity by conducting follow-up assessments at 12-month follow-up.
Method. The pilot study in 11 adolescents with PTSD utilised a single-blind, randomised, permuted block design. Recruitment of participants and administration of the interventions were undertaken within school settings. Primary outcome measures were the Child PTSD Symptom Scale – Self Report (CPSS) and the Beck Depression Inventory (BDI).
Results. Data were analysed as intent-to-treat. During treatment, participants in both the PE-A and SC treatment arms experienced significant improvements, as determined on the CPSS and the BDI. At the 12-month post-treatment assessment, there was a significant group difference in the maintenance of effects, with the PE-A group retaining post-treatment PTSD and depression scores indicative of subclinical symptoms (p<0.05).
Conclusion. Our results indicate that either intervention, administered by registered nurses who are trained in their delivery, can lead to significant improvements in PTSD and depression symptoms immediately post-treatment. However, only adolescents in the PE-A group maintained treatment gains at 12-month follow-up. These preliminary findings and the challenges and opportunities encountered with the training and delivery of trauma-focused interventions in Third-World community-based settings will be discussed.

Contrasting effects of early-life stress on mitochondrial energy-related proteins in striatum and hippocampus of a rat model of attention-deficit/hyperactivity disorder

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Introduction. Early-life stress is known to increase the risk of developing a psychiatric disorder in later life. Animal models have provided insight into the long-term changes in brain function caused by developmental stress. Maternal separation provides a valid animal model of early-life stress in humans. Several brain areas are affected by maternal separation. The hippocampus is particularly vulnerable to the effects of early-life stress as it is highly receptive to stress-induced elevated circulating glucocorticoids. Attention-deficit/hyperactivity disorder (ADHD) is a developmental disorder characterised by poorly sustained attention, impulsivity and hyperactivity. The spontaneously hypertensive rat (SHR) is the most widely used animal model of ADHD, exhibiting all of the behavioural characteristics of ADHD. We have previously shown that SHRs are resilient to the depression-like effects of maternal separation and that maternal separation produces opposite effects on $GABA_A$ receptor-mediated inhibition of norepinephrine release in the hippocampus of SHRs and Wistar-Kyoto (WKY) rats. The aim of the studies presented in this poster was to determine whether the early-life stress of maternal separation caused similar long-term changes in energy-, structure- and signalling-related proteins in ADHD-related brain areas of SHRs and control rat strains, WKY and Sprague Dawley (SD) rats.
Methods. Brain tissue from rats within each group (non-maternal-separated (nMS) WKY, MS WKY, nMS SD, MS SD, nMS SHR, MS SHR) were pooled and sonicated in 1M triethylammonium bicarbonate buffer, centrifuged at 17 200xg for 30 minutes at 4°C. The supernatant was collected and used for isobaric tagging for relative and absolute quantitation (iTRAQ) of proteins using matrix-assisted laser desorption/ionisation tandem mass spectrometry (MALDI-MS/MS) analysis by the Centre for Proteomic and Genomic Research (CPGR).
Results. We found that mitochondrial production of ATP is decreased in the prefrontal cortex and striatum of non-separated SHRs and increased in hippocampus of non-separated SHRs compared with non-separated control rat strains. The early-life stress of maternal separation did not amplify the differences between SHR and control rat strains. Instead, maternal separation increased the level of mitochondrial enzymes responsible for ATP synthesis in SHR striatum and had the opposite effect of decreasing mitochondrial proteins involved in ATP production in the striatum of WKY and the hippocampus of SHR. In general maternal separation had similar effects in WKY and SD except that SD was similar to SHR in that maternal separation also decreased ATP synthase levels in SD hippocampus and voltage-dependent anion-selective channel protein 1 and calcium transporting ATPase 1 in SD striatum. Maternal separation had opposite effects on GABA and glutamate transmission in SHR and WKY. Maternal separation increased mitochondrial glutamate dehydrogenase and aspartate aminotransferase in SHR striatum while decreasing the levels of these proteins in WKY striatum. Maternal separation also decreased hippocampal levels of the glutamate transporter GLT1B.
Conclusion. The early-life stress of maternal separation did not amplify the differences between SHR and control rat strains. Instead it had the opposite effect on SHR and WKY. The similarity in the effect of maternal separation on striatal proteins suggests that the changes identified in WKY and SD striatum may be related to the anxiogenic/depressive-like effect on these rat strains which is not seen in SHR. In contrast, the disparity between the effect of maternal separation on the hippocampus of WKY and SD suggests that the changes in hippocampal proteins observed in this study may not be related to the behavioural effects of the early-life stress of maternal separation.

Attention-deficit hyperactivity disorder in adults: A South African perspective

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Introduction. Attention-deficit hyperactivity disorder (ADHD) has received increased scientific, clinical and public attention over the past few decades. Unfortunately, many patients suffering from ADHD remain undiagnosed, or if diagnosed, do not receive optimal treatment. Treatment is costly, and access to healthcare not given for many South Africans. This triangulated study consisted of a retrospective claims database analysis, a survey and an in-depth interview component. We aimed to establish the current situation in South Africa with regard to the psychiatric management of, and funding for treatment of adult ADHD (a/ADHD) in the private sector as a basis for a proposal for a new funding model in order to improve access to treatment and quality of life of patients.
Methods. In this electronic survey, all psychiatrists belonging to PsychMG (representing the majority of the 455 psychiatrists rendering private services) were invited to participate. Data collected and analysed included demographics (practitioner, practice and patient profile), diagnostic and treatment practices, and funding experiences.
Results. One-hundred-and-three (22.69%) psychiatrists responded. Psychiatrists consulted a mean of 9.25 (18.21) adults (age 18 - 40 years) with ADHD/week. A combination of clinical impression (80%), the DSM-IV (31%), rating scales (24%), and collateral information (25%) were used during assessment. Comorbidity was common, with anxiety disorders being the most prevalent (40.33%), followed by substance use and mood disorders (19.55%). Controlled-release methylphenidate was considered the treatment of choice (65%), followed by long-acting methylphenidate (41%) and immediate-release methylphenidate (27%). Remuneration for consultations and medication was predominantly out-of-pocket expenses for the patients.
Conclusion. This is the first study of a/ADHD in the South African context. Stimulants formed the cornerstone of treatment, while access to other treatment options was limited. It is crucial that a/ADHD should be recognised as a disorder, and the funding models in South Africa reviewed to improve access to care.

Cognitive function in women with HIV infection and early-life stress

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Introduction. HIV is frequently associated with deficits in higher-order brain function, including deficits in memory, psychomotor speed, executive functions, and attention. Early-life stress (ELS) has also been shown to have a direct influence on neurocognitive performance. However, the combined impact of ELS and HIV on neurocognitive function over time has not been examined in an all-female sample with advanced HIV disease.
Method. A battery of neurocognitive tests was administered to 117 women at baseline and then a year later: HIV-positive with ELS (n=53), HIV-positive without ELS (n=14), HIV-negative with ELS (n=18), HIV-negative without ELS (n=32).
Results. More women were on antiretroviral therapy (ART) at follow-up compared with baseline. Raw scores controlling for age and education at baseline and 12-month follow-up were analysed using a Restricted Maximum Likelihood (REML) approach. Results revealed a significant combined HIV and childhood trauma effect over time on the Wisconsin Card Sorting Test (p=0.003) and a significant individual HIV effect over time on the WAIS-III Digit Symbol Test (p=0.03). For both, mean scores revealed better performance at 12-month follow-up compared with baseline. Being on ART at follow-up was significantly correlated with scores on both tests.
Conclusion. These findings suggest improved performance in abstraction/executive functioning and speed of information processing over time. This improved or preserved cognition may be attributed to increased use of ART at follow-up compared with baseline, although this direct relationship was not explored.

Changes in functional connectivity networks in bipolar disorder patients after mindfulness-based cognitive therapy

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Introduction. Bipolar disorder (BD) is a brain network disorder that affects cognitive and emotional functioning because of prefrontal and/or limbic dysfunction. Functional magnetic resonance imaging (fMRI) allows identification of functional connectivity networks (FCNs), like the default mode network (DMN) and executive control network (ECN). In BD, functional connectivity is abnormal in the DMN and ECN. Mindfulness-based cognitive therapy (MBCT) improves cognitive functioning and emotion regulation in BD, while decreasing amygdala and increasing prefrontal activation on fMRI, suggesting that mindfulness targets core dysfunctions of BD. We evaluate how MBCT affects FCNs in BD, an approach not previously described, to expand understanding of BD, FCNs and mindfulness.
Methods. Fourteen BD patients were scanned before and after 8-week MBCT. Ten control subjects were scanned at baseline but did not undergo MBCT. Changes were evaluated in seven FCNs using an FMRIB Software Library pipeline: MELODIC/ICA-AROMA, dual-regression, randomise and Local False Discovery Rate (FDR).
Results. *Baseline:* Patients with BD showed: decreased connectivity (DC) between cerebellar network (CER) and cortex, especially right precuneus; and increased connectivity (IC) between ECN and left-lateralised cortex including the OFC, and between auditory network (AUD) and bilateral cortical areas (p<0.05 with local FDR). *After MBCT*: Patients with BD showed IC between DMN and cerebellum, CER and cortex including bilateral precuneus (which was the inverse of baseline), and ECN and middle temporal gyri. DC was seen between DMN and hippocampus and between AUD and cortical and sub-cortical structures. Both IC and DC occurred between frontoparietal networks and right-lateralised cortex and cerebellum, and between motor-sensory network (MSN), multiple cortical structures and cerebellum (p<0.05 with local FDR).
Conclusion. The finding of FCN changes in BD in regions involved in cognitive/emotional processes, highlights its complex neurobiology, and suggests that abnormal connectivity may explain the clinical picture. The changes caused by MBCT in FCNs in BD is a novel finding. Additionally, some connectivity changes were inverse in BD at baseline and after MBCT, indicating that MBCT may normalise FCN function, which could explain its clinical utility. These findings should be replicated with larger samples, but may represent an exciting advance in understanding BD, MBCT and FCNs.

Post-traumatic stress disorder, overweight and obesity: A systematic review and meta-analysis

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Introduction. Previous reports have suggested a high prevalence of overweight and obesity among individuals with post-traumatic stress disorder (PTSD). However, there is a lack of studies that systematically analyse the relationship between PTSD and body mass index (BMI). We conducted a systematic review and meta-analysis aimed at estimating the association between PTSD and BMI.
Methods. We systematically searched Ebscohost, Pubmed, Scopus and Web of Science, and reference lists of pertinent articles to identify relevant studies. We included studies assessing BMI in a sample with PTSD and in a comparison group without PTSD (trauma-exposed and/or healthy). Data were analysed using the RevMan package. Standard mean difference (SMD), with 95% confidence intervals, was used as an association measure for pooled analysis, based on a random-effects model.
Results. Fifty-four articles were reviewed, 30 of which (with a total of 191 948 individuals with PTSD and 418 690 controls) were eligible for inclusion in the meta-analysis. The pooled SMD was 0.41 (0.28, 0.54), z=6.26, p<0.001. Statistical heterogeneity between the included studies was high (I2=9%, p<0.001). Our results suggested that BMI differs significantly between individuals with PTSD compared

with those without, with values being higher in those with PTSD. Longitudinal studies also indicated a link between PTSD and the development of overweight/obesity.
Conclusion. Despite limitations, the findings of this systematic review and meta-analysis confirmed our hypothesis that individuals suffering from PTSD have a higher incidence of overweight and obesity. Furthermore, longitudinal studies suggest that PTSD may lead to the development of overweight/obesity, particularly in women. Nonetheless, further prospective studies and research regarding the potential role of factors that could clarify the nature and aetiology of the association are required.

The brain and behaviour in a third-trimester equivalent animal model of fetal alcohol spectrum disorders

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Introduction. Early alcohol-exposure-induced changes in learning and memory, neurotransmission and proteins were measured using an animal model of fetal alcohol spectrum disorders (FASD). It was also investigated whether a memory-enhancing drug (vinpocetine) could alleviate early alcohol-exposure-induced changes, hence providing insight into the mechanisms behind FASD.
Methods. A third-trimester equivalent animal model of FASD was used in which Sprague Dawley rats were administered 12% ethanol (EtOH) solution (4 g/kg/day intraperitoneally (i.p.)) or saline volume control from P4 to P9. From P25 to P31, randomly selected male rats were treated with vinpocetine (Vinp) (20 g/kg/day i.p.) or DMSO vehicle control prior to undergoing behavioural testing in the Open Field and Morris Water Maze (MWM). All rats were decapitated on P31, after which the prefrontal cortex (PFC), dorsal hippocampus (DH) and striatum were removed. The striatum of untreated rats was used in an *in vitro* superfusion experiment to assess glutamatergic receptor and dopaminergic functioning using radioactively labelled [^{3}H] dopamine (DA). The rest of the dissected tissue from treated rats was used in a BDNF ELISA and Western blot analysis.
Results. Behavioural results show that EtOH+Vinp-treated rats learnt better during the acquisition trials of the MWM compared with EtOH+DMSO-treated rats on days 1, 2 and 4. However, during the probe trial no significant difference was observed in the time spent in the platform quadrant between experimental groups. Results from *in vitro* superfusion experiments showed no differences in [^{3}H]DA release between saline- and EtOH-exposed rats. BDNF was significantly decreased in the PFC of EtOH+Vinp-treated rats. MKP-1 was significantly increased in the PFC of EtOH+Vinp-treated rats. P-ERK was significantly decreased in the PFC and significantly increased in the DH of EtOH+DMSO-treated rats. An increase in P-GSK was observed in the DH of EtOH+Vinp-treated rats. Similarly, synaptophysin was increased in the DH of EtOH+Vinp-treated rats.
Conclusion. EtOH induced learning deficits in the MWM during acquisition trials; however, all animals were able to recall the location of the platform during the probe trial. This indicates differential learning between groups; however, memory remains unaffected. EtOH did not affect glutamatergic receptor or dopaminergic function. Therefore, the behavioural results may be explained by differential protein expression between experimental groups in the PFC and DH.

Irritability Assessment Model (IAM) to monitor irritability in child and adolescent psychiatric disorders

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Introduction. Irritability has been an important topic for mental health research, predictive of adverse outcomes 30 years later. Irritability is common and forms part of clinical presentations of several impairing child and adolescent psychiatric disorders. Extreme irritability can put individuals at risk for psychiatric disorders and social maladjustment and has been recognised as the key symptom of the new DSM-5 disruptive mood dysregulation disorder.
Methods. The Irritability Assessment Model (IAM) has been developed to assess irritability on initial assessment with follow-up assessment once stabilised on treatment. The IAM's concepts include: the wider psychiatric and psychological literature on irritability; to identify irritability, the Parent/Guardian- and Child-Rated DSM-5 Level 1 Cross-Cutting Symptom Measures (Child Age 6-17); to measure the severity level of irritability, the Affective Reactivity Index (ARI) (Level 2-Irritability-(Child Age 11-17) (American Psychological Association); to diagnose psychiatric disorders, the Kiddie-SADS-present and Lifetime version (K-SADS-PL), the DSM-5 diagnostic criteria for disruptive mood dysregulation disorder; and to assess the level of functioning, the Children's Global Assessment Scale (CGAS).
Results. The IAM is designed to identify the patient's irritability symptom profile. This includes the identification of irritability, to measure the severity level of irritability, as well as to diagnose one or more comorbid psychiatric disorders and to assess the level of functioning. The presenting irritability symptoms will be compared with the follow-up irritability symptoms once the psychiatric disorders have been treated. Additionally, the presence of initial irritability symptoms will be monitored with regard to their presence or absence following the treatment of the diagnosed psychiatric disorder together with changes in the level of functioning. The IAM monitors the pattern of irritability associated with diagnosed psychiatric disorder(s) and level of functioning on initial assessment and following stabilisation on psychiatric treatment.
Conclusion. The reliability and validity of the IAM need to be examined to authorise its capacity to identify and measure the severity levels of irritability in youth diagnosed with comorbid psychiatric disorders. Likewise, to identify changes (if any) in irritability levels and functioning after stabilisation on treatment.

Outcome of parent-adolescent training in childhood victimisation: Adaptive functioning, psychosocial and physiological variables

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Introduction. South Africa has among the world's highest rates of community violence and household-level abuse. This is often targeted at or witnessed by children, putting children and adolescents at risk of severe and chronic complex post-traumatic stress disorder and contributing to significant immediate and/or long-term psychological

distress and functional impairment. The effect of environmental trauma on the child depends on the quality of the parental attachment and presence of parental psychopathology. Parent training to strengthen their belief in their ability to care for their children is essential. Information on the psychobiological impact of various therapies is lacking.

Methods. Measuring changes in victimised parent-adolescent pairs at baseline and after 3 months of training includes: psychosocial assessments: DSM-5 Level 1 Cross-Cutting Symptom Measure for the parent; Parent/Guardian-Rated DSM-5 Level 1 Cross-Cutting Symptom Measure-Child Age 6-17; the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0) adult, Strength and Difficulties Questionnaire self-report for 11 - 17-year-olds. To identify traumatised adolescents: the UCLA PTSD Index for DSM-IV (Adolescent Version)(University of California, Los Angeles) (Posttraumatic Stress Disorder); Frequency Rating Sheet and the UCLA PTSD INDEX for DSM-IV (Parent Version, Revision1); the parent self-rating PTSD Symptom Scale (PSS); the Conflict Tactics Scale parent-child, Parenting Stress Index and Family Functioning Factors. Physiological assessments include: autonomic nervous system (ANS) responses to psychological and orthostatic challenges and 24-hour urine cortisol excretion.

The tailored PAT (Parent-Adolescent-Training) programme will be constructed for each individual pair based on their clinical profiles and needs. This includes: elements of trauma-focused cognitive behavioural therapy (TF-CBT); parent behaviour management therapy; family therapy; psycho-education; relaxation and exercise therapies; it also incorporates individual strengths and weaknesses, as measured at baseline.

Results. It is predicted the project will provide necessary information on psychosocial and physiological changes of the PAT programme, and changes in psychosocial and physiological variables, from before to after tailored parent-adolescent training, will reflect the success of the training.

Conclusion. It is envisaged the project will lead to establishing an effective tailored PAT programme locally that will improve parent and adolescent adaptive functioning, communication and emotional wellbeing.

The effect of ketamine in the Wistar-Kyoto and Sprague Dawley rat models of depression

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Introduction. The glutamate N-methyl-D-aspartate (NMDA) receptor antagonist, ketamine, at subanaesthetic doses, has recently been used to treat depression. On the other hand, a subanaesthetic dose of ketamine has also been shown to produce symptoms of schizophrenia in healthy individuals and to exacerbate symptoms in patients with schizophrenia as a result of its psychotomimetic effects. Unfortunately, the adverse psychotomimetic effects and abuse potential of ketamine have limited its use as an antidepressant. The acute effects of ketamine have not been previously tested in male Wistar-Kyoto (WKY) or maternally separated (MS) Sprague Dawley (SD) rats and it was therefore decided to study the behavioural effects of ketamine in these rat models of depression. The aim of this study was to determine whether the depression-like behaviour of the rodent models of depression could be reversed by acute treatment with ketamine.

Methods. The WKY and Wistar rats were injected intraperitoneally with a single dose of either saline or ketamine (5, 10 or 15 mg/kg). The SD rats were subjected to MS (pups removed from the dam for 3 hours per day) and both MS and non-MS SD rats were injected intraperitoneally with either saline or 15 mg/kg ketamine. Isolation-induced ultrasonic vocalisations (USVs, 4 days before and 5 hours and 29 hours after injection of ketamine/saline) were recorded as well as their behaviour in the open field test (OFT, 22 hours and 46 hours after injection of ketamine/saline) and forced swim test (FST, 2 hours, 48 hours and 72 hours after injection of ketamine/saline).

Results. The WKY rats displayed depression-like behaviour as evidenced by less activity in the OFT and FST compared with Wistar rats. Contrary to expectation, ketamine at a dose of 10 mg/kg increased immobility and decreased swimming behaviour of WKY in the FST but did not affect Wistar or MS SD rats.

Conclusion. This study supports suggestions that WKY rats are selective in their response to antidepressant drug treatment. Furthermore, the ketamine-induced immobility in WKY rats may be related to their reduced NMDA receptor density previously found in several brain areas of WKY rats.

Investigating *COMT* variants in anxiety sensitivity in South African adolescents

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Anxiety disorders are a broad range of multifactorial disorders characterised by abnormal and inappropriate anxiety as the result of complex interactions between genetic and environmental factors. Anxiety sensitivity (AS) is a well-established anxiety disorder endophenotype that refers to an individual's fear of anxiety-related sensations and symptoms, based on the belief that they have harmful physical, psychological and/or social consequences, which have been reported to be under the influence of genetic and environmental factors as well. Increased AS levels have been linked to complex interactions between childhood maltreatment and multiple gene variants, including variants in the genes encoding BDNF, NPSR and the serotonin transporter. The catechol-O-methyltransferase (*COMT*) gene codes for a protein involved in the monoaminergic systems, shown to influence and be influenced by AS. The aim of this study was to investigate whether *COMT* variants (rs4680, rs362204 and rs165599) play a role in susceptibility to increased levels of AS and to elucidate whether gene-environment interactions influence this increase in a sample of South African (SA) adolescents. Nine-hundred and fifty-one adolescents (634 black, 317 coloured) completed multiple clinical questionnaires and were genotyped using manual (RFLP) (rs362204 and rs165599) and automated (KASP) (rs4680) genotyping methods. Association analysis indicated significant associations between multiple clinical variables; however no associations were observed between AS and the *COMT* variants. In addition, no significant gene-environment interactions were found either. These findings suggest that the *COMT* variants investigated in the present study are not implicated in the increased AS observed in SA black and coloured adolescents.