Mental Health research @ Cardiff University

Strong focus on integrated, multilevel mechanistic understanding based on inter-disciplinarity
Driven by human genetics, aimed to deliver knowledge spanning from “synapse to society”

MRC Centre for Neuropsychiatric genetics and genomics

MRC Dementia Research Institute (DRI)
Translation Research Centre

Neuroscience and Mental Health Research Institute (NMHRI)

CU Brain Imaging Centre (CUBRIC)

Medicine
Psychology
Biosciences
Social Sciences

CU Centre for Human Developmental Science (CUCHDS)

Social Sciences Research Park (SPARK)

Ranked 2nd in REF2104 for Psychology, Psychiatry & Neuroscience; 5th University REF overall
Childhood and adolescent mental health

1. Attentional deficit hyperactivity disorder (ADHD)

ADHD is the most common childhood neurodevelopmental disorder, affecting 3-5% of children worldwide. Stephan Collishaw and Anita Thapar have shown that genetic, medical and family factors are risks for adverse outcomes, but we need to understand risk and resilience to ADHD.

Project: Compare biological and social risk/protective factors between UK and South African cohorts to develop prediction methods to optimize outcomes for children with ADHD.

2. Removing barriers to de-institutionalisation

Estimated 8 million children grow up in institutional care worldwide (UNICEF, 2009), research show this increases risk of child mental health conditions. Katherine Shelton, in partnership with Hope and Homes for Children, has shown that national attitudes towards vulnerable children influences how services are developed and deployed.

Project: Assessment of local obstacles to de-institutionalisation in South Africa, enabling children to remain with their families or be raised in small community-based alternatives.
Psychiatric disorders

Investigating relapse signatures for psychosis in different cultural settings

Jeremy Hall and James Walters have shown that there is considerable variation in the incidence, course and outcome of schizophrenia between different cultures and geographical regions. There is an urgent need to develop effective strategies to decrease this health burden across these diverse international settings. Key to this is understanding of early warning signs for psychosis associated with patient relapse in different cultural settings.

**Project:** Establish the key symptom measures that are associated with relapse into psychotic in different settings and develop culturally appropriate monitoring methods.

This work will inform the basis for local intervention strategies aimed at preventing relapse and maximising patient recovery.
Aging and dementia

Piloting portable EEG for diagnosis of Alzheimer’s disease

By 2050 there will be 135.5 million people worldwide with dementia, 70 % of whom will live in Low and Middle Income Countries. Currently, Kim Graham, Andrew Lawrence and Katja Umla-Runge are funded by an MRC-ESRC Global Challenges Foundation Award to develop app-based cognitive testing for dementia diagnosis. The diagnostic power of these tests can be greatly enhanced by the simultaneously monitoring brain activity using EEG – “cognitive EEG”

In collaboration, with Mario Parra Rodriguez (Heriot-Watt University) and a company BrainWaveBank, they are developing cheap, portable EEG approaches for brain recording and diagnosis and monitoring in rural clinics.

**Project:** Development of methodologies of portable cognitive EEG testing for dementia that can be applied to the rural setting in South Africa, including preclinical pilot studies.
Intervention Strategies

Enhancing emotional functioning in children at risk of future mental health problems

Child education is an essential component of national strategies to reduce poverty and improve wellbeing and life opportunities. However childhood stress can impair children’s emotional development, leading to anti-social behaviour, adverse mental health and educational problems.

Stephanie van Goozen has identified a child subgroup with abnormal emotion response, who are at risk of antisocial behaviour later in life. Computerised emotional training targeting these children at home or in school, with the aim of diverting their development in a prosocial direction.

Project: This approach is now being assessed in South Africa in 5 Soweto schools.
MINDDS is a European Cooperation in Science and Technology (COST) Action that aims to increase understanding and facilitate research of neurodevelopmental disorders (NDD).

Genetic risk of common NDD (ASD, ADHD, Schizophrenia and intellectual difficulties (ID)) arises through the accumulation of many loci of weak effect. This results in difficulties in assigning specific genes to clinical and biological phenotypes, and creates challenges for genetic testing. Rare individuals carrying chromosomal abnormalities (Copy Number Variants (CNV) have stronger genetic penetrance, offering a route for research and better diagnosis.

MINDDS will:
- Build cohorts
- Standardize methods
- Exchange data

MINDDS offers:
- Conferences/Workshops
- Training Schools
- Short term scientific missions

South Africa can join MINDDS as an International COST Partner, and has funds to support participation (ESASTAP)

http://www.cost.eu/COST_Actions/ca/CA16210