The University of Western Australia
School of Psychiatry and Clinical Neurosciences

Neuropsychiatric Epidemiology Research Unit (NERU)
Annual Report
2015

1995-2014 Historical appendices
NERU.
A mountain in Himavā. All birds settling there become golden

The Neuropsychiatric Epidemiology Research Unit (NERU) is recognised for its expertise in psychiatric epidemiology, and its cross-disciplinary approach to the study of psychotic disorders including schizophrenia and other severe mental illness.

http://www.psychiatry.uwa.edu.au/research/neru
From Head of School, School of Psychiatry and Clinical Neurosciences: Professor Sean Hood

It is again a pleasure to introduce the Neuropsychiatric Epidemiology Research Unit (NERU) for another year. In this time of significant financial uncertainty for research funding locally and nationally, NERU continues to excel with an enviable record of success in competitive grants - including 3 current NHMRC grants. The research and governance leadership provided by Professor Morgan has been formally recognised in the last year by her academic promotion to level E professorial status by the University of Western Australia. At times, external bodies such as the public health system struggles to understand the relevance and significance of academic research. However, NERU has been an exemplar in its multidisciplinary and translational research into patients with severe mental illness, which has been of direct benefit to the mental health of some of the most vulnerable members of our community.

NERU’s challenge now is to expand upon this significant success, to build capacity in the mental health researchers of tomorrow, and to continue to interdigitate with the research needs of local, national and international communities. I look forward to observing their progress!

Professor Sean Hood
Head of School: School of Psychiatry and Clinical Neurosciences
The NERU Strategic Planning Day held at the start of this year provided an excellent opportunity to reflect on what the Unit has achieved since its last major Planning Day in 2011. We have come a long way. In 2011, we were most concerned about finding sufficient funding for the two arms of our research program. We not only found funding then but, today, we have three NHMRC grants that continue to fund those programs through to 2020. We also have some exceptional data to exploit over this period, data that are in excellent shape due to several years of collection, cleaning and operationalising.

The assets that NERU has grown and that it takes with it into the future include:

- An excellent record of winning competitive grants and government contracts totaling $16.8 million since 2000, up from $11.2 million in 2011.
- A growing record of publications, now numbering 205, up from 147 in 2011.
- Breadth of scientific, clinical and methodological expertise among its staff covering: psychopathology; birth defects and intellectual disability; physical health morbidity and mortality, incl. reproductive pathology, obstetric complications and cardiometabolic disease; social determinants of outcome; criminology; epidemiological methods, biostatistics, record linkage; clinical assessment, diagnostic classification; instrument design.
- Its own server holding an Ingres relational database of over 8 million records - and the internal expertise within its academic staff to manage the database.
- Very high quality international, national and local collaborators.

In his wrap-up remarks at the end of our planning session, Professor Thomas McNeil, a long-time colleague and collaborator from Sweden, said: “To be successful, you have to love what you do”. Perhaps NERU’s greatest assets are that we do love the work we do, despite the many challenges that externally-funded research staff face, that we support one another through these challenges and other difficulties as we forge ahead, and that we do so with much humour and much consideration.

Winthrop Professor Vera Morgan
Head: Neuropsychiatric Epidemiology Research Unit
The Neuropsychiatric Epidemiology Research Unit (NERU) is recognised for its expertise in psychiatric epidemiology. The Unit takes a cross-disciplinary approach to the study of neuropsychiatric disorders, especially schizophrenia and other psychotic disorders, that melds epidemiological, psychiatric, criminological and sociological perspectives on aetiology, course and outcome for people burdened with these disorders to help unravel their complex aetiology. The Unit has a long history of success in attracting national, international and government funding to support its program of research. NERU offers excellent infrastructure, including information technology and physical infrastructure to support the work of its staff.

Currently, NERU has 3 NHMRC grants.

OUR RESEARCH TEAM

The Neuropsychiatric Epidemiology Research Unit is made up of committed researchers from a variety of disciplines, including experts in: psychopathology; birth defects and intellectual disability; physical health morbidity and mortality, including reproductive pathology, obstetric complications, and cardiometabolic disease; social determinants of outcome; criminology; epidemiological methods, biostatistics and record linkage; clinical assessment and diagnostic classification; and instrument design.

Winthrop Professor Vera Morgan is the Head of NERU. NERU works very closely with Professor Assen Jablensky, Director of the UWA Centre for Clinical Research in Neuropsychiatry, who is the Chief Scientific Adviser to NERU. Ms Stephanie Gee is the Senior Administrative Officer supporting the work of NERU.

The breadth of scientific, clinical and methodological expertise, professional skills and experience that these staff bring to the Unit are its greatest assets.
OUR PEOPLE 2015

Ms Stephanie Gee
Senior Administrative Officer

Prof Assen Jablensky
Winthrop Professor
Senior Scientific Consultant
Director: UWA Centre for Clinical Research in Neuropsychiatry

Dr Maxine Croft
Assistant Professor
Epidemiologist / Biologist

Ms Patsy Di Prinzio
Research Associate
Biostatistician

Ms Jenny Griffith
Project Manager
SHIP Wave2 deputy coordinator / Mental Health Clinical Research Nurse

Dr Ashleigh Lin
Post-doctoral fellow
Visiting research fellow / Post-doctoral fellow: Telethon Kids Institute

Ms Taryn Major
Assistant Professor
Biostatistician

Dr Sonal Shah
Assistant Professor
Data analyst (SHIP Survey) / Clinical Research Psychologist

Ms Giulietta Valuri
Assistant Professor
Epidemiologist / Criminologist

Ms Anna Waterreus
Assistant Professor
Coordinator SHIP Wave2 / Mental Health Clinical Research Nurse

SHIP Wave2 Survey
Data entry:
Samantha Poulsen
Joshua Castle
Hannah Castle

Software development:
Matt Walsh

Celebrating success and longevity
Figure 1. 
Organisational structure, Neuropsychiatric Epidemiology Research Unit, 2015
One arm of our research relies on linkage of the Western Australian psychiatric case register to an extensive network of other electronic State health and social services registers.

Since 1995, most of this work has focused on the relationship between environmental risk factors and genetic liability for schizophrenia and other neuropsychiatric outcomes including, but not limited to, birth defects, intellectual disability, pervasive developmental disorders, epilepsy, psychiatric illness and psychotic illness. Topics include:

- NHMRC: Impact of social adversity on the developmental trajectory to mental illness
- NHMRC: Life course trajectories and neuropsychiatric outcomes in an e-cohort of high risk children of mothers with psychosis
- NHMRC/March of Dimes/Stanley: Pregnancy, delivery, and neonatal complications in a population cohort of women with schizophrenia and major affective disorders
- NHMRC/March of Dimes/Stanley: Intellectual disability comorbid with schizophrenia and other psychotic disorders
- Stanley: Influenza and season of birth: are these environmental risk factors for schizophrenia?

Several other projects also rely on the use of linked register data:

- NHMRC/Commonwealth contract: The association between schizophrenia, victimisation and criminal offending
- NHMRC Partnership: Evaluation of the impact of Australian perinatal mental health reforms on service utilisation and related cost-effectiveness
- State contracts: Other mental health service evaluation and planning

The second arm of our research is involved in clinical and large-scale epidemiological surveys of the prevalence of psychotic illness in Australia, and the characteristics of those affected.

The Unit has been responsible for leading Australia’s two national surveys of psychotic illness, in 1997-98 and in 2010. Since then, we have received NHMRC funding to follow-up National and State psychosis surveys, both face-to-face and through record-linkage to their health records. The five main projects that we have undertaken are:

- NHMRC: Overcoming barriers to improved physical health in people with severe mental illness (SHIP WAve 2): 2013-2016
- State contract: The 2012 North Metro Survey of High Impact Psychosis (North Metro SHIP)
- Commonwealth contract: The 2010 Australian National Survey of High Impact Psychosis (SHIP)
- Commonwealth contract: The 1997-98 Low Prevalence (Psychotic) Disorders Study (LPDS)
METHODOLOGIES and APPROACHES

Record linkage across population-based registers including multigenerational approach

The Neuropsychiatric Epidemiology Research Unit has extensive experience in the use of multigenerational cross-linked data from the Western Australian psychiatric case register, State health (e.g. morbidity, birth defects, midwives, mortality) and other registers (e.g. criminal; intellectual disability; cerebral palsy; cancer; child protection and education) to study prevalence, incidence, aetiology and risk factors.


Risk factor epidemiology

Record linkage methodology has been the basis of the epidemiological study of risk factors for schizophrenia and other psychosis. These have included: obstetric complications; influenza; and season of birth.


Large scale epidemiological surveys

The Neuropsychiatric Epidemiology Research Unit is experienced in the design, instrument development and coordination of large national multisite surveys and the Unit includes highly skilled research staff with clinical mental health expertise. It has had responsibility for the conduct of Australia’s two national psychosis surveys: in 1997-98, the first national survey of psychosis, the Low Prevalence (Psychotic) Disorders Study and, in 2010, the second national Survey of High Impact Psychosis (SHIP). In 2012, it undertook a SHIP extension study in north metropolitan Perth, the North Metro Survey of High Impact Psychosis (North Metro SHIP).


Clinical assessments and reviews

See section of Instrument Development for approaches to the clinical assessment of psychopathology and physical health, and the conduct of clinical casenotes reviews.
The Neuropsychiatric Epidemiology Research Unit has developed a number of instruments, assessment tools and computer algorithms. Many have been developed in collaboration with the Centre for Clinical Research in Neuropsychiatry. Most of these are available for use by external researchers, subject to certain undertakings.

For more information, contact Stephanie Gee (+61) 8 9224 0290

**Psychosis Screener**

A Psychosis Screener has been developed to identify individuals likely to meet criteria for formal diagnosis of a psychotic disorder. The Psychosis Screener was originally developed for the Low Prevalence (Psychotic) Disorders Study 1997-98 and further modified for the Survey of High Impact Psychosis 2010. It is a brief instrument (one page) covering 8 items and takes 1-2 minutes to complete. There are patient and keyworker versions.


**Diagnostic Interview for Psychosis – Diagnostic module (DIPpc-DM 1.0)**

The Diagnostic Module of the Diagnostic Interview for Psychoses (DIP-DM) is a semi-structured interview consisting of the 97 items of the Operational Criteria for Psychosis (OPCRIT). The DIP-DM uses probes and differential definitions derived and adapted from the WHO Schedules for Clinical Assessment in Neuropsychiatry (SCAN). A computer algorithm generates diagnoses using the underlying OPCRIT algorithm. The development, reliability and applications of the DIP have been published. The current version is DIPpc-DM1.2. The DIP-DM is being used in New Zealand, UK, US and, in translation, in Indonesian, Italy, Spain, France, Greece, Norway, Mongolia, Russia and Bulgaria. A self-executing PC version of the software was developed and distributed in 2013.


**Diagnostic Interview for Psychosis. Complete assessment schedules**

We have available for reference and use the full interview schedules from both Australian National psychosis surveys: The Survey of High Impact Psychosis 2010 (SHIP) and the Low Prevalence (Psychotic) Disorders Study 1997-98 (LPDS). These include the 33 SHIP modules and the three LPDS modules.

The main domains covered by the 2010 SHIP survey include:

- Clinical profile
- Cognitive profile
- Social participation and functioning
- Measures of impairments and disabilities
- Socio-economic profile
- Service utilisation, treatment and perceived need for services
- Measures of quality of life

In the development of the national SHIP survey instruments, the primary consideration was to include measures that: were reliable; were available; were cost and time effective; and allowed comparison with other collected data. Replication of questions from the first survey (LPDS) in 1997-98 has provided a rare opportunity to assess change over time. Use of questions from the 2007 National Mental Health Survey has allowed benchmarking of findings against general population data.

**Brief Cognitive Assessment Tool**

A Brief Cognitive Assessment Tool was developed for the 2010 National SHIP survey to assess cognition and was included in the interview schedule. The selection criteria for inclusion of a task within the tool were that the task should be brief (total testing time of 10 minutes at most), easy to administer in a range of contexts (for example, pen and paper based), not restricted to use by psychologists, and able to provide valid measures of cognitive ability in psychosis.

The two tasks finally selected were: National Adult Reading Test (NART) Revised (Nelson and Willison, 1991); and Digit-Symbol Coding Test (DSCT) from the RBANS battery (Randolph et al.).

The purpose of the NART is to provide an estimate of premorbid intellectual ability (specifically WAIS-R IQ). NART taps into crystallised intelligence and is less likely to be affected by disease processes. There are good population norms for the NART. An additional advantage of the NART is that it is no longer copyrighted and there are no specific user qualifications required.

DSCT taps into non-verbal functions (e.g. attention, flexibility, speed of processing and abstraction) that are much more likely to be affected by disease processes. The DSCT has a number of advantages. Population norms are available, it is well-known and well-regarded, and administration is simple with no requirement for complex equipment. Users must be trained but not necessarily psychologists.


**SIMPAQ**

An International Working Group (clinical and academic experts from more than fifteen countries including Anna Waterreus) has developed a brief, easy to use, physical activity questionnaire which assesses sedentary and low intensity behaviours in people with mental illness - the Simple Physical Activity Questionnaire (SIMPAQ).

The inclusion of physical activity programs into mental health services can improve the health outcomes of people with mental illness, but physical activity is difficult to measure. Existing questionnaires are limited in their ability to measure sedentary behaviour.

The Simple Physical Activity Questionnaire (SIMPAQ) is a newly developed interview-based physical activity measurement tool. It is a five-item questionnaire based on activities undertaken in the previous seven days. SIMPAQ assesses combined physical activity across all domains including leisure time, domestic, work and transport-related activities. It should take between three to eight minutes to complete and can be administered by clinicians or researchers.

It is currently being translated into multiple languages for use and assessment in different cultural contexts (i.e. Portuguese, German, French, Spanish, Icelandic, Norwegian and Chinese).
**McNeil-Sjöström Scale for Obstetric Complications**

The McNeil-Sjöström Scale for Obstetric Complications operationalises the scoring of hundreds of obstetric complications and their treatment, ranging from common to rare. The scale is underpinned by both biological and aetiological considerations and is designed to take a better account of the amount, timing and severity of obstetric complications.

The McNeil-Sjöström Scale was developed by Professors Thomas McNeil and Karen Sjöström in Sweden. It produces separate summated scores indicating the number of complications of a particular severity level for each of three time periods (pregnancy, labour and delivery, and the neonatal period) as well as producing an overall score.

NERU has developed an updated version including complications found in the southern hemisphere and rarely encountered in northern hemisphere countries. We have also written a computer algorithm to automate the scoring of obstetric complications recorded on electronic pregnancy/obstetric databases. These developments were done in close collaboration with Professor McNeil.

**Measures of longitudinal maternal morbidity**

Algorithms have been written using all longitudinal maternal health data on the Midwives Database to produce a full estimate of maternal morbidity at the time of childbirth.

**Children’s Checklist**

Children’s Checklist was developed by the Unit specifically for the collection of children’s data on substance misuse, psychotropic medication use, behavioural problems, neuro-cognitive data and psychopathology not recorded in the Diagnostic Interview for Psychosis.

**Measures of adversity**

Indicators of exposure to adverse life events and adverse social, familial and physical environments are being systematically extracted from the linked electronic records. These indicators will be combined in clinically and mathematically meaningful ways that will allow them to be used as predictors of outcome in our risk factor research.
Environmental and familial risk factors for psychotic illness and other neuropsychiatric outcomes


Study Design: Environmental and familial risk factors for psychotic illness and other neuropsychiatric outcomes

Design to disentangle familial and environmental risk for schizophrenia in “high risk” children of women with schizophrenia

Large program of research initiated by Assen Jablensky in Western Australia in 1995. See Morgan et al 2011, JIE, 40, 1477–1485

Our aim is to integrate genetic and risk factor epidemiology under a developmental perspective in order to examine reproductive pathology in women with severe mental illness and follow-up proximal and distal developmental and neuropsychiatric sequelae in their children.

Children at increased familial risk for severe mental illness are compared with children at no increased familial risk on a wide range of developmental indices and environmental risk factors, including obstetric events, with a view to elucidating the intergenerational transmission of both vulnerability and resilience to adverse neuropsychiatric outcomes.

These outcomes include, among others, birth defects, intellectual disability, pervasive developmental disorders, epilepsy, psychiatric illness and psychotic illness.
We have three overarching hypotheses:

1. Neuropsychiatric disorders including schizophrenia, bipolar disorder, autism spectrum disorder, epilepsy and intellectual disability, as well as certain rare congenital anomalies, will tend to cluster in families.

2. Children of mothers with severe mental illness will be at increased risk of a spectrum of such outcomes.

3. Obstetric complications and other environmental exposures, especially exposure to social adversity, will contribute to the offspring outcomes, either independently or in interaction with the parentally transmitted genetic risk.

This is a whole population record linkage study, using linkage across psychiatric, physical morbidity, mortality and other administrative registers in WA to follow up a large cohort of 467,945 children born between 1980 and 2001 to 246,874 mothers. This includes 15,486 births to 7508 mothers with a psychotic illness.

Currently, we are examining the following outcomes:

- Maternal reproductive morbidity and early neonatal morbidity (lead authors: M Croft/T Major)
- Stillbirths, perinatal and childhood mortality (lead author: S Shah)
- Early neuropsychiatric outcomes including birth defects, intellectual disability and rare syndromes (lead author: P Di Prinzio)
- Educational outcomes (lead author: A Lin)
- Child victimisation (lead author: S Shah)
- Criminal offending (lead author: G Valuri)

We are in the final phase of this project. We have started to explore the role of adversity on risk of developing a psychotic illness, and are in the process of constructing an adversity scale. Once completed, we will be able to address the hypotheses (see above) for our flagship paper examining familial and environmental risks for psychotic illness in these high risk children of mothers with schizophrenia and other psychotic disorders.

The study design has been published:

Work published using a smaller cohort includes:

TRANSLATION

Findings of adverse obstetric outcomes for the offspring of mothers with psychotic disorders resulted, in collaboration with the Clinical Applications Unit, in the development of a care coordination package, leading to implementation of a State care-coordination program for pregnant women with severe mental illness, the first of its kind in Australia. To disseminate findings widely among clinicians, they were published in Directions in Psychiatry ("Exemplary Status" by Accreditation Council for Continuing Medical Education).
Swedish collaborators: Thomas McNeil and Jonas Björk
Intellectual disability and maternal psychotic illness

P Di Prinzio, V Morgan, J Björk, T McNeil, A Jablensky

We have a series of studies that have reported on the prevalence of intellectual disability in people with schizophrenia and explored the nature of the association between psychotic disorders and intellectual disability, including the role of familial liability for neuropsychiatric illness and confounding by obstetric complications.

Ongoing work is re-examining the relationship between maternal psychotic illness and intellectual disability in offspring in a cohort of half a million children.

Publications to date include:

- Epidemiology of intellectual disability co-occurring with schizophrenia and other psychiatric illness: a population-based study

- Intellectual disability comorbid with schizophrenia and other psychotic disorders

**TRANSLATION**

These data added to accumulating evidence of an association between pervasive cognitive deficits and schizophrenia, and support findings of an excess of multiply-affected families. They also highlight the extent to which comorbidity is underestimated due to the administrative divide between mental health and intellectual disability services, leading to poor access to much-needed services. The data have been used by the Department of Health to develop policy for people with these special needs.

Ongoing work will allow us to separate the impact of obstetric complications (and their timing) on risk for intellectual disability in the presence and, separately, absence of maternal severe mental illness and identify targets for intervention.

Influenza and season of birth: Environmental risk factors for schizophrenia?

V Morgan, D Castle, A Jablensky

In addition to obstetric complications, a number of studies have explored the association between other environmental exposures and schizophrenia. Publications to date include:

- Influenza epidemics and incidence of schizophrenia, affective disorders and mental retardation in Western Australia: No evidence of a major effect

- Season of birth in schizophrenia and affective psychoses in Western Australia 1916-61

- Schizophrenia and 1957 Pandemic of Influenza: Meta-analysis
RESEARCH PROJECTS:
SHIP and related clinical and large-scale epidemiological surveys


V Morgan, A Waterreus, A Jablensky, G Valuri, P Di Prinzio and T Major, in collaboration with G Watts, A Tonkin and the SHIP Study Group*

It is well established that physical morbidity and premature mortality are elevated in schizophrenia. However, there is a critical need for longitudinal data. This study builds on a unique opportunity to use an innovative dual-methods strategy. We will extract 17 years (2000-2017) of mortality and physical morbidity outcome data from State and national administrative registers. We will add these register data to previously-collected survey data for a large, nationally representative and comprehensively characterised sample of 2075 people aged 18-64 years with psychotic disorders who took part in SHIP and have already given consent to linkage.

The aims of this study are to:

1. Estimate rates of 7-year mortality and morbidity in people with a psychotic disorder, with separate estimates for:
   - mortality due to natural versus unnatural causes; and
   - potentially avoidable morbidity (i.e. preventable/treatable), in order to establish much needed Australian benchmarks for assessing the impact of changes in public health policies.

2. Examine the impact of sets of risk factors on 7-year mortality and morbidity, in order to move beyond estimation of rates to understanding the aetiology of adverse physical health outcomes in psychotic disorders and informing clinical practice.

3. Develop and validate predictive risk equations for cardiovascular disease (CVD) for use with people with psychotic disorders, in order to address a clinical need for CVD predictive risk equations appropriate for use in this subpopulation.

4. Calculate the economic burden of severe and acute physical morbidity in addition to mental health impacts, in order to meet a service planning need for accurate data on costs of physical morbidity in psychotic disorders.

*Lead investigators of the SHIP Study Group that developed the survey protocol and continue to oversee the management and analysis of the survey data include: V Morgan (convenor), A Jablensky, A Waterreus, V Carr, D Castle, M Cohen, C Galletly, C Harvey, A Mackinnon, P McGorry, J McGrath, P Morgan, A Neil

TRANSLATION

The resultant, consolidated dataset will be an exceptional, cost-effective resource for addressing a diverse range of questions that usually necessitate recourse to multiple samples. These include: point estimates; aetiology; risk prediction; and cost. The sample size permits fine-level analyses, including examination of natural versus unnatural causes of death, and potentially avoidable versus other mortality/morbidity. The sample age structure (18-64 years at time of interview) ensures we can examine excess mortality and morbidity in early adulthood and middle age, as well as in older age. The findings will inform policy planning and clinical practice.
Simple Physical Activity Questionnaire (SIMPAQ)

A Waterreus in collaboration with the SIMPAQ International Working Group*

An International Working Group (clinical and academic experts from more than fifteen countries including NERU’s Anna Waterreus) has developed a brief, easy to use, physical activity questionnaire which assesses sedentary and low intensity behaviours in people with mental illness - the Simple Physical Activity Questionnaire (SIMPAQ).

The SIMPAQ has undergone several stages of development and testing and, in 2016, a large multi-country reliability and validity study will be undertaken. A total of 40 people will be recruited at the UWA site to participate in this reliability and validity study.


TRANSLATION

This collaboration has brought together clinicians and researchers concerned about the physical health of people with mental illness. SIMPAQ is designed as a tool which can be used within mental health services to assist in obtaining a relevant exercise history and for evaluating physical activity interventions. It identifies even small amounts of activity which is useful in providing positive feedback to patients participating in physical activity interventions and due to the brevity of the questionnaire it will not require much time or prove difficult for people with mental health problems to complete. It will be freely available for everyone to use.

2010
Australian National Survey of High Impact Psychosis (SHIP)

2012
North Metro Survey of High Impact Psychosis (North Metro SHIP)

2013-2016
NHMRC Survey of High Impact Psychosis WAve 2 (SHIP WAve 2)

2016-2020
NHMRC An empirical framework for assessing mortality and morbidity in people with psychotic disorders (SHIP follow-up)
This NHMRC-funded study builds on a rare opportunity to collect longitudinal data on a population-based sample of people with psychotic illness, first assessed comprehensively between 2010 and 2013. Its objective is to fill the knowledge gap on cardiometabolic disease risk modification in people with psychotic illness.

To achieve this, its aims are to:

1. Determine factors associated with improvement and deterioration in cardiometabolic profiles in people with psychotic illness;
2. Examine impediments to the uptake of interventions for cardiometabolic disorders by people with psychotic illness; and
3. Work with services towards the development of a clinical service model for the implementation of targeted interventions within mental health services.

The study is following up, from 2013 to 2016, over 600 Western Australians with psychosis, thoroughly assessed in south metropolitan Perth as part of the 2010 National Survey of High Impact Psychosis (South Metro SHIP) and in 2012 in north metropolitan Perth in a SHIP expansion survey (North Metro SHIP). Follow up includes a face-to-face interview and a physical health assessment, augmented with data from health and prescribing registers.

**Translation**

This observational study will provide unique information from an unbiased cohort followed up over two time points. The natural experimental design offers advantages over a clinical trial by capturing the range of people with psychosis and assessing behaviour in real world individual and service contexts. As such, it has a very high utility value for mental health service planning.

**Survey of High Impact Psychosis:**

**Findings on Physical Health of Participants with Psychotic Illness**

<table>
<thead>
<tr>
<th>Physical health conditions</th>
<th>Cardiometabolic profile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chronic back, neck or other pain</strong></td>
<td>Metabolic syndrome* (%)</td>
</tr>
<tr>
<td>31.8</td>
<td>(harmonised criteria)</td>
</tr>
<tr>
<td>27.9</td>
<td>57.7</td>
</tr>
<tr>
<td><strong>Asthma</strong></td>
<td></td>
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<tr>
<td>30.1</td>
<td></td>
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<tr>
<td><strong>Heart or circulatory condition</strong></td>
<td>28.6</td>
</tr>
<tr>
<td>20.2</td>
<td></td>
</tr>
<tr>
<td><strong>Severe headaches/migraines</strong></td>
<td>18.2</td>
</tr>
<tr>
<td>16.7</td>
<td></td>
</tr>
<tr>
<td><strong>Arthritis</strong></td>
<td></td>
</tr>
<tr>
<td>9.9</td>
<td></td>
</tr>
<tr>
<td><strong>Diabetes</strong></td>
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</tr>
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<td>6.2</td>
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<tr>
<td><strong>Epilepsy</strong></td>
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<tr>
<td>0.9</td>
<td></td>
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<tr>
<td><strong>Cancer</strong></td>
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<td>4.9</td>
<td></td>
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<tr>
<td><strong>Kidney disease</strong></td>
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<tr>
<td>3.1</td>
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</tr>
<tr>
<td><strong>Stoke</strong></td>
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<tr>
<td>2.1</td>
<td></td>
</tr>
</tbody>
</table>

**Proportion reporting physical condition, lifetime (%)**

**Cardiovascular profile**

| Metabolic syndrome* (%) |
| (harmonised criteria)   |
| 57.7                    |

28.6% Australians aged 25+ years have ICF metabolic syndrome (Aoodshab, 2009)

Met threshold criteria for individual measures (%)

<table>
<thead>
<tr>
<th>Abdominal obesity</th>
<th>82.1</th>
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</thead>
<tbody>
<tr>
<td>High density lipoproteins*</td>
<td>56.7</td>
</tr>
<tr>
<td>Triglycerides*</td>
<td>53.5</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>52.8</td>
</tr>
<tr>
<td>Plasma glucose*</td>
<td>33.2</td>
</tr>
</tbody>
</table>

*fasting

Rates for almost all physical health conditions were higher in people with psychosis compared to the general population aged 18-84 years.
The aims of this survey were:

1. To describe the prevalence and profile of psychosis in Australia and
2. To identify factors associated with good outcome in psychosis that are amenable to change and critical to recovery with the intention of informing policy development and service planning.

SHIP took place in 2010 at seven sites in five states across Australia: NSW, QLD, SA, VIC and WA. It included questions about: symptoms, utilisation of mental health and other services; perceived need; education; cognition; social participation (work and skill development; activities of daily living; family responsibilities; other social engagement and community integration); living circumstances; support networks; physical well-being (including a physical health assessment; physical activity; nutrition; risk factors for metabolic syndrome and cardiovascular disease; smoking); and drug and alcohol use.

The survey was an initiative of psychosis researchers and clinicians across Australia in partnership with the Australia Government Department of Health and Ageing.

This is the largest and most comprehensive assessment of psychotic disorders undertaken in Australia, and one of the most detailed undertaken internationally. The survey has provided a snapshot of people living with psychotic illness, the circumstances in which they live and the services they receive.

Among other findings, SHIP data demonstrated the very poor physical health of people with a psychotic disorder. The results also confirm that psychosis is associated with substantial and persistent disability. Apart from the psychiatric features of psychosis, these disorders impact on physical health, education, employment, and housing. Yet, in the face of disability, disadvantage, stigma and social isolation, people with psychotic disorder display resilience and tenacity.

Over 50 papers have been produced from this survey to date, with many more in preparation. Key papers and reports from this study are available at:


*Lead investigators of the SHIP Study Group that developed the survey protocol and continue to oversee the management and analysis of the survey data include: V Morgan (convenor), A Jablensky, A Waterreus, V Carr, D Castle, M Cohen, C Galletly, C Harvey, A Mackinnon, P McGorry, J McGrath, P Morgan, A Neil

**TRANSLATION**

The survey was unique in that it included data items not previously assessed contemporaneously and in depth in a large, unbiased sample. These included cognitive tests, a physical health assessment with fasting blood tests, detailed socio-demographic data, and data on the NGO sector. To date, there have been over 50 publications. Data are being used by government bodies, mental health services and NGOs to inform policy development, resource distribution and service planning.
North Metro Survey of High Impact Psychosis (North Metro SHIP)

V Morgan, A Waterreus, J Griffith, A Jablensky, P Di Prinzio, S Shah, in collaboration with North Metropolitan Health Services Mental Health and the Mental Health Commission

North Metro SHIP is an extension of the national SHIP survey, in WA North Metropolitan Health Services Mental Health (NMHS MH). Its aims were to:

1. Estimate the local prevalence of psychosis in North Metropolitan Health Service (NMHS);
2. Describe the social and economic circumstances of people living with psychosis within NMHS, their mental and physical health profiles, and their use of services; and
3. Develop a local evidence base to help inform mental health policy development in NMHS and to enable service providers to develop services to meet specific local needs to the benefit of people living with psychosis, their family, friends, carers and the services supporting them.

The survey census month was March 2012 with interviews taking place from April 2012 to April 2013. North Metro SHIP was funded by the Mental Health Commission and the Western Australian Department of Health. NERU is collaborating with NMHS MH Clinical Research Centre in the production of Fact Sheets to inform policy and planning. A cost analysis using the data collection has also been completed.


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The 1997-98 Study of Low Prevalence (Psychotic) Disorders (LPDS)

A Jablensky, V Morgan, A Waterreus, J Griffith, in collaboration with the LPDS Study Group*

This was Australia's first national survey of psychosis. Of note, this survey included marginalised people not in contact with treatment services in its sampling and those solely in contact with private psychiatrists and GPs, in addition to those attending public mental health inpatient and outpatient services.

In addition to generating point prevalence data for psychotic disorders in urban areas in Australia for the first time, the study was unique in ascertaining symptom profiles, rates of functional impairments and disability, indices of quality of life, substance use comorbidity, service utilisation patterns, and side effects of medication. Subsequent economic analyses provided estimates of direct and indirect costs associated with psychotic disorders.

Key papers and reports from this study are available at:


*Lead investigators of the LPDS Study Group that developed the survey protocol and oversaw the collection and analysis of the survey data included: A Jablensky (convenor), J McGrath, H Herrman, D Castle, O Gureje, M Evans, V Carr, V Morgan, A Korten, C Harvey, A Waterreus

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The association between psychotic illness, criminal offending and victimisation

V Morgan, F Morgan, G Valuri, S Shah, A Ferrante, D Castle, A Jablensky

Criminal offending
The study *The prevalence and patterns of criminal offending in schizophrenia and other psychiatric disorders* indicated that the vast majority (89%) of offenders arrested 1986-1996 did not have a mental illness. Comorbid substance abuse disorder significantly increased risk of a violent offence for people with schizophrenia. For the majority of offenders with a mental illness, their first arrest preceded their first contact with mental health services. A peak in the pattern of arrests 1991-1993 for people with schizophrenia coincided with a period when community mental health services were poorly resourced to meet demands created by deinstitutionalisation of patients from psychiatric institutions.


The study *Area of residence and the impact of social disorganisation and urbanicity on offending by people with schizophrenia* showed that the same area-level characteristics that generate high arrest rates for the population as a whole also generate high arrest rates for people with schizophrenia. These include: disadvantage, inequality, ethnic homogeneity and residential mobility. There is no evidence of a multiplier effect. However, compared to the general population, individuals with schizophrenia are more likely to be exposed to social disadvantage and other neighbourhood-level risk factors that predict offending in non-psychotic populations.


Victimisation
As part of the 2010 Australian National Survey of Psychotic Disorder, we have collected and analysed data on childhood and adult victimization of people with a psychotic illness.

The prevalence of *childhood abuse* (using Department of Child Protection criteria) was 31%, twice the rate in the general community. Women were almost three-times more likely to report childhood abuse compared to men. People with psychotic illness who had experienced childhood abuse were significantly more likely to have attempted suicide compared to those who had not. They were also more likely to have subjective thought disorder, premorbid personality disorder (females only) and anxiety (males only).


Rates of *adult victimisation* were also high. Over a period of 12 months, 39% of people with a psychotic illness had been victimised. Assault victimisation was 17%, five-times the level found in the general community. Rates of assault victimisation were higher for women compared to men, the reverse of the pattern found in the general community. Rates did not show the same attenuation with increasing age that is seen in the general community.


These criminological findings have important implications for policy and program development in both criminal justice and mental health. They suggest that geographic areas characterised by high levels of social disorganisation require more investment in crime prevention, mental-health services and criminal justice responses.
The Australian perinatal mental health reforms: using population data to evaluate their impact on service utilisation and related cost-effectiveness

M-P Austin, E Sullivan, N Hight, V Morgan, C Mihalopoulos, M Croft and T Major, in partnership with beyondblue.

This study fills a significant gap in the evidence-base on how key Australian perinatal mental health initiatives have met their goals of increasing service utilisation at this critical time for mother, infant and family. It uses population health data to examine the impact of National Perinatal Depression Initiative reforms on maternal health outcomes, service utilisation and the likely cost-effectiveness of these reforms.

It employs four key methodologies:
1. Data linkage;
2. Generation of perinatal-specific Medicare Benefits Schedule summary data;
3. Economic and policy analyses; and
4. Key stakeholder consultations in a consideration of the further implementation and evaluation of the National Perinatal Depression Initiative.

The NHMRC Partnership grant funding the study involves researchers from the University of New South Wales, University of Western Australia and Deakin University in partnership with beyondblue and the Centre of Perinatal Excellence.

Projects in collaboration with WA Centre for Mental Health Policy Research

G Smith, T Williams, V Morgan, A Jablensky, D Young

Two studies have been undertaken in partnership with WA Centre for Mental Health Policy Research:
- Patterns of service use for people who have had a psychiatric inpatient admission; and
- Long-term treatment outcomes in early psychosis specialist services.
## RESEARCH FUNDING RECEIVED/ 2012 ONWARDS ($)

See Appendices 1a and 1b for funding 1995-2011

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<td>Waterreus A</td>
<td>Simple Physical Activity Questionnaire (SIMPAQ): an international validation study</td>
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<td>NHMRC APP1064582</td>
<td>Jablensky A, Moses E, McCarthy N, Melton P, Dragovic M, Morgan VA, Badcock J, Waters F</td>
<td>Schizophrenia under the genomic lens: next generation sequencing of Western Australian families with schizophrenia</td>
<td>423,437 178,437 358,437</td>
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<td>UWA Faculty of Medicine, Dentistry and Health Sciences Near Miss Grant</td>
<td>Croft M</td>
<td>Healthy pregnancy outcomes for mothers with severe mental illness needing psychotropic medications during pregnancy</td>
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<td>WA Department of Health Merit Award</td>
<td>Croft M Morgan VA Jablensky A Duke J</td>
<td>The location, scope and utility for use in research purposes of the WA Health Department’s inpatient pharmacy data</td>
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<td>NH&amp;MRC APP1046729</td>
<td>Morgan VA Jablensky A Watts G Badcock J Cox K Stefanis N</td>
<td>Overcoming barriers to improved physical health in people with severe mental illness</td>
<td>228,912</td>
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<td>NH&amp;MRC Partnership Grant APP1028554</td>
<td>Austin M-P Sullivan E Higiet N Morgan VA Mihalopoulos C Croft M</td>
<td>The Australian perinatal mental health reforms: using population data to evaluate their impact on service utilisation and related cost-effectiveness</td>
<td>NHMRC 184,040 162,340 162,340</td>
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<td>NH&amp;MRC APP1002259</td>
<td>Jablensky A Morgan VA McNeil T Abel K Morgan F</td>
<td>Life course trajectories and neuro-psychiatric outcomes in an e-cohort of high risk children of mothers with psychosis</td>
<td>304,701</td>
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</table>
PUBLICATIONS 2015

*Only publications related to the work of the unit are included. A person may have publications in other research areas.

Journal Articles


Sodhi-Berry N, Knuiman M, Alan J, Morgan VA, Preen D. Pre- and post-sentence mental health service use by a population cohort of older adult offenders (≥45 years) in Western Australia *Social Psychiatry and Psychiatric Epidemiology*, 2015, 50, 1097-1110.


**Published Abstracts**


**Reports**


POSTER PRESENTATIONS 2015

Badcock JC, Clark M, Peduzzi R, Morgan VA, Jablensky A.

OTHER TALKS AND PRESENTATIONS 2015


Ashleigh Lin  The at-risk mental state: past, present and future - headspace Youth Early Psychosis Program (HYEPP), Perth, 25 March 2015

Vera Morgan  Using State and National Surveys of High Impact Psychosis (SHIP) to develop an integrated approach to the multifaceted needs of people with psychotic illness. Osborne Park Clinical Learning Seminar, Perth, 11 March 2015

Vera Morgan  Revisiting “high risk” for psychosis in a Western Australian cohort of children at high familial risk for psychotic illness. Research Colloquium, Orygen National Centre of Excellence in Youth Mental Health, Melbourne, 29 May 2015


Vera Morgan  NHMRC Project Grant rebuttals seminar. The University of Western Australia, Perth, 10 June 2015


Anna Waterreus  DIP training for Queensland researchers and clinicians
<table>
<thead>
<tr>
<th>Student</th>
<th>Degree</th>
<th>Topic</th>
<th>Start date</th>
<th>NERU supervisor</th>
<th>Supervisor(s)</th>
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<tr>
<td>C. Harrison</td>
<td>PhD</td>
<td>Epidemiology of cardiovascular disease risk factors in the psychiatric population of WA</td>
<td>Part-time 2009</td>
<td>Vera Morgan</td>
<td>VA Morgan (co-ordinating) M Dragovic AJ Jablensky J Laugharne</td>
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<tr>
<td>G. Valuri</td>
<td>PhD</td>
<td>Criminal offending, victimization and schizophrenia</td>
<td>Part-time 17 Sept 2010</td>
<td>Vera Morgan</td>
<td>VA Morgan (co-ordinating) FH Morgan AJ Jablensky</td>
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<td>A Waterreus</td>
<td>PhD</td>
<td>The effects of cannabis use on physical health, cognitive function and functional outcome by people with a psychotic illness</td>
<td>Part-time 12 Mar 2015</td>
<td>Vera Morgan</td>
<td>VA Morgan (co-ordinating) J Badcock AJ Jablensky M Martin-Iversen</td>
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<td>P. Di Prinzio</td>
<td>M.Biostats</td>
<td>Investigating the association of maternal severe mental illness and exposure to obstetric complications with rates of intellectual disability</td>
<td>Part-time Sept 2011</td>
<td>Vera Morgan</td>
<td>J Björk</td>
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Gascoyne House, Graylands Hospital
Site of ongoing collaboration with North Metropolitan Health Services Mental Health
## RESEARCH COLLABORATIONS AND ACTIVITIES 2015

### International

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<tr>
<th>External Collaborators</th>
<th>Affiliation</th>
<th>NERU collaborators</th>
<th>Area of collaboration</th>
<th>Outcomes 2015</th>
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<tr>
<td>Prof Tom McNeil</td>
<td>University of Lund, Sweden</td>
<td>All</td>
<td>Developmental pathways for the children of women with severe mental illness</td>
<td>Ongoing collaboration</td>
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<td>Advice on changes to the McNeil-Sjöström Scale</td>
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<td>Paper in early neurodevelopmental outcomes in progress</td>
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<td>Joint NHMRC grant 2015-2019</td>
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<td>Prof Jonas Björk</td>
<td>University of Lund, Sweden</td>
<td>All</td>
<td>Developmental pathways for the children of women with severe mental illness</td>
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<td>Paper in early neurodevelopmental outcomes in progress</td>
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<td>Joint NHMRC grant 2015-2019</td>
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<tr>
<td>Prof Mary Cannon</td>
<td>Institute of Psychiatry, Royal College of Surgeons in Ireland</td>
<td>V Morgan</td>
<td>Adversity and psychosis</td>
<td>Joint NHMRC grant 2015-2019</td>
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<tr>
<td>Prof Kathryn Abel</td>
<td>University of Manchester</td>
<td>V Morgan A Jablensky</td>
<td>Developmental pathways for the children of women with severe mental illness</td>
<td>Investigators on successful European Research Council Consolidator Grant 2015 (K Abel person support)</td>
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### International Physical Activity Measurement Group


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<th>Area of collaboration</th>
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<td>Measuring Physical Activity in people with Mental Health Problems. Establishing an international consortium for a multinational effort to develop and validate a new questionnaire</td>
<td>Ongoing collaboration</td>
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<td>Meeting London England, June 2015</td>
<td>Joint publication</td>
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### National

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<th>NERU collaborators</th>
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<th>Outcomes 2015</th>
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<tr>
<td>Dr Simon Rosenbaum A/Prof Philip Ward</td>
<td>University of New South Wales</td>
<td>Anna Waterreus</td>
<td>Physical activity questionnaire development</td>
<td>Joint publication SIMPAQ study International meeting</td>
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<td>Prof John McGrath</td>
<td>University of QLD</td>
<td>V Morgan A Jablensky</td>
<td>Risk factor epidemiology</td>
<td>Joint NHMRC grant 2015-2019</td>
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<td>Psychosis Australia Trust</td>
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<td>V Morgan A Jablensky</td>
<td>Psychosis research network</td>
<td>Executive committee member Preparation of summary fact sheets</td>
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<td>Survey of High Impact Psychosis (SHIP) Study Group: Prof Vaughan Carr Prof David Castle Prof Cherrie Galletly Prof Carol Harvey Prof Assen Jablensky Prof John McGrath Prof Andrew Mackinnon Prof Pat McGorry Prof Vera Morgan (Chair) Dr Amanda Neil Dr Paul Morgan A/Prof Anna Waterreus</td>
<td>Universities and health services in WA, NSW, QLD, SA, VIC</td>
<td>V Morgan A Jablensky A Waterreus J Griffith</td>
<td>Survey of High Impact Psychosis (SHIP)</td>
<td>Joint NHMRC grant 2016-2020 Joint publications</td>
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<td>Other SHIP investigators: Dr Helen Stain (UK) Dr Debra Foley (VIC)</td>
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<td>V Morgan A Jablensky A Waterreus</td>
<td>Survey of High Impact Psychosis (SHIP)</td>
<td>Joint publications</td>
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<td>Prof Andrew Tonkin (VIC)</td>
<td>Monash University</td>
<td>V Morgan A Jablensky A Waterreus</td>
<td>Follow-up to the Survey of High Impact Psychosis (SHIP)</td>
<td>Joint NHMRC grant 2016-2020</td>
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<td>A/Prof Nadia Badawi</td>
<td>University of Sydney / The Children’s Hospital at Westmead</td>
<td>M Croft</td>
<td>Revisions of McNeil Sjöström Scale (Perth version) Development of algorithm for neonatal encephalopathy</td>
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<td>Dr John Keogh</td>
<td>Consultant Obstetrician and Gynaecologist, Sydney Adventist Hospital</td>
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<td>Validation of neonatal encephalopathy Revision of McNeil Sjöström Scale (Perth version)</td>
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<td>Anna Ferrante</td>
<td>PHRN Centre for Data Linkage, Curtin University</td>
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<td>A/Prof Frank Morgan</td>
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<td>V Morgan</td>
<td>Victimisation and offending in people with psychosis</td>
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<td>Prof David Preen</td>
<td>University of WA School of Population Health</td>
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<td>Mental illness and crime</td>
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<td>Nita Sodhi-Berry</td>
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<td>Operational epidemiology</td>
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<td>V Morgan A Waterreus J Griffith A Jablensky</td>
<td>Longitudinal study following up physical health of SHIP participants</td>
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<td>Prof Gerald Watts</td>
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<td>V Morgan A Waterreus J Griffith A Jablensky</td>
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<td>A/Prof Kay Cox</td>
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<td>Prof A Jablensky*</td>
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<td>V Morgan</td>
<td>WA Family Study of Schizophrenia</td>
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<td>Prof J Badcock</td>
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*A Jablensky appears as both external and internal NERU collaborator for those projects that straddle his dual roles as Senior Scientific Consultant: Neuropsychiatric Epidemiology Research Unit and Director: Centre for Clinical Research in Neuropsychiatry*
NERU collaboration with UWA Centre for Clinical Research in Neuropsychiatry and UWA Centre for Genetic Origins of Health and Disease
**STAFF: AWARDS AND PRIZES 2015**

Royal Perth Hospital Medical Research Foundation Best Research Paper (senior category)  
Vera Morgan

**STAFF: FORMAL OFFICES HELD 2015**

Board of Management (casual member and Board representative on the Scientific Advisory Committee)  
SIDS and Kids WA  
Maxine Croft

**STAFF: CONFERENCE ORGANISING COMMITTEES 2015**

Co-Chair: Symposium. At risk from conception: epidemiological evidence for early risk factors for psychosis  
International Congress on Schizophrenia Research, Colorado Springs 2015  
Vera Morgan

Member, Scientific Committee  
Australasian Schizophrenia Conference 2015  
Vera Morgan

Chair: Symposium. An update on new findings and potential interventions from the Australian national survey of psychotic disorders, the Survey of High Impact Psychosis—SHIP  
Australasian Schizophrenia Conference 2015  
Vera Morgan

**STAFF: EDITORIAL COMMITTEES 2015**

Member, Advisory Board  
Australian and New Zealand Journal of Psychiatry  
Vera Morgan

Member, Editorial Board  
Social Psychiatry and Psychiatric Epidemiology  
Vera Morgan
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<th>Role</th>
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<th>Member</th>
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<tr>
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<td>Information Technology Reference Group, Ngala, WA</td>
<td>Maxine Croft</td>
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<td>Researcher representative</td>
<td>School of Psychiatry and Clinical Neurosciences</td>
<td>Maxine Croft</td>
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<tr>
<td>Academic representative</td>
<td>Youth Mental Health Network Implementation Subcommittee, WA Department of Health</td>
<td>Ashleigh Lin</td>
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<td>Advisor</td>
<td>Meeting for Minds</td>
<td>Ashleigh Lin</td>
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<td>Chair</td>
<td>National Survey of High Impact Psychosis (SHIP) Study Group</td>
<td>Vera Morgan</td>
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<td>Member</td>
<td>North Metropolitan Health Service Mental Health. Data Informatics Committee / North Metro SHIP Committee</td>
<td>Vera Morgan</td>
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<td>Member</td>
<td>Intellectual Disability Exploring Answers (IDEA) Advisory Council and Ethics Committee</td>
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<td>School of Psychiatry and Clinical Neurosciences: Research and Publications Committee</td>
<td>Vera Morgan</td>
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<td>Schizophrenia Research Institute (NSW): Epidemiology and Population Health Panel</td>
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<td>Australian Schizophrenia Research Bank: Access Committee</td>
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<td>Australian Rotary Health Research Committee</td>
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<td>Member</td>
<td>Society for Mental Health Research. Early Career Researcher Fellowship Review Panel</td>
<td>Vera Morgan</td>
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<td>Member</td>
<td>Mental Health Needs of WA Reception Prisoners Steering Group</td>
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<td>Member</td>
<td>Psychosis Australian Trust Research Committee</td>
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<td>Scientific and Research Advisor</td>
<td>Meeting for Minds</td>
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<td>Member</td>
<td>National Health and Medical Research Council Practitioner Fellowships Peer Review Panel</td>
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<td>SANE Australia Clinical Expert Advisory Group</td>
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<td>Cockburn Community Health Feasibility Study. Steering group / Working Group 4: Indigenous health/ Mental health/ Migrant health</td>
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<td>Member</td>
<td>National Survey of High Impact Psychosis (SHIP) Study Group</td>
<td>Anna Waterreus</td>
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<tr>
<td>Member</td>
<td>International SIMPAQ Working Group</td>
<td>Anna Waterreus</td>
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</table>
Maxine CROFT  

**BApPSc PhD**  
Maxine Croft is a computer scientist and epidemiologist who has been a consultant to WHO on database design. As a consultant to the Federal government on diabetes research, she proposed the (now accepted) recording of Medicare numbers on PBS prescriptions. Her doctoral research resulted in creation of the WA Twin Child Health registry and she uses linked population data to measure risk of recurrence of reproductive outcomes. She has modified an electronic version of the McNeil Sjöström scoring system to include a broader range of maternal diseases. This Perth version will also include longitudinal measures of maternal chronic disease.

**Research interests**
- Perinatal epidemiology
- Schizophrenia
- Longitudinal measures of maternal health
- Obstetric complications
- Database management

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Patsy Di PRINZIO  

**BSc(Hons) BAppSci**  
Patsy Di Prinzio is a biostatistician with high level mathematical and statistical computing skills and excellent written communication abilities. She has extensive knowledge of most appropriate statistical techniques to analyse a wide range of data and the ability to present resultant information in a form which is most accessible to broad audiences. Her experience includes consulting in applied statistics in private, government, and university sectors, as well as teaching experience in government and university.

**Research interests**
- Applied statistics
- Epidemiology of schizophrenia and other psychotic disorders
- Automation of data management, analysis and results presentation as a linked process

---
Jenny GRIFFITH
RN  RMHN  BAAppSc(Nursing)
GradDipArtsCounselling
PGDipMentalHealthNursing

Jenny Griffith is Deputy Coordinator for the Survey of High Impact Psychosis (SHIP) Wave2. She was Deputy Coordinator for North Metro SHIP and the WA site Coordinator for National SHIP. Jenny was an interviewer in the 1998 National Survey of Low Prevalence (Psychotic) Disorders. Since 2004, she has also managed the collection of qualitative mental health data in the Pathways study, including the review of clinical casenotes, to complete the Diagnostic Interview for Psychosis (DIP), the Children’s Checklist and Life Histories.

Research interests
- Life histories of people with severe mental illness
- Metabolic syndrome in people with severe mental illness
- Role of mental health nurses in research

Assen JABLENSKY
MD  DMedSc  FRCPsych
FRANZCPsych

Assen Jablensky completed his medical degree and training as a psychiatrist in Bulgaria and the UK, and has worked as a researcher and clinician in Switzerland (WHO, Geneva), the US (Stanford University) and, since 1993, Australia, where he is director of the Centre for Clinical Research in Neuropsychiatry of the University of Western Australia in Perth. He has over 370 publications, including articles in peer-reviewed journals, book chapters and monographs. He was awarded the Strömgren Prize and medal for psychiatric epidemiology; the Australasian Society for Psychiatric Research Founders Medal, the Organon Senior Research Award, and several other distinctions including Honorary Fellowship of the Royal College of Psychiatrists (UK).

Research interests
- psychiatric epidemiology
- genetics of schizophrenia
- classification of mental disorders
Ashleigh LIN

VISITING RESEARCH FELLOW / POST-DOCTORAL FELLOW: Telethon Kids Institute

+61 8 9489 7772
Ashleigh.Lin@telethonkids.org.au

BSc(hons) MClinNeuropsychology PhD

Ashleigh Lin is a NHMRC Early Career Fellow at the Telethon Kids Institute in Perth. She completed her training as a clinical neuropsychologist and her PhD in Melbourne before working as a research fellow in the UK. Ashleigh’s research interest is in youth mental health, with a particular focus on risk for schizophrenia. Ashleigh is undertaking a component of her post-doctoral research with the NERU team, examining educational outcome as a predictor for psychotic illness.

Research interests
- Youth mental health
- Risk for schizophrenia
- Clinical staging of mental illness
- Neurocognition

Taryn MAJOR

BSc BEng MApplStat MBiostat

Taryn Major is a biostatistician who completed her Master of Biostatistics in 2015. She is currently working on record linked data across two projects: reproductive pathology and obstetric complications in WA mothers with schizophrenia and other psychotic disorders, and reproductive pathology as a risk factor for mental health services utilisation by women in WA and NSW. In 2016, Taryn will also join the SHIP team, helping with data harmonisation across waves. Taryn continues to work as a consultant statistician at Data Analysis Australia, where she has responsibility for complex statistical analyses across a variety of industries and applications. Her areas of expertise include modelling, survey design and analysis, forecasting and biostatistics.

Research interests
- Applied statistics / Biostatistics
- Epidemiology of schizophrenia and other psychotic disorders
- Reproductive pathology and mental health services utilisation
Vera MORGAN

HEAD: Neuropsychiatric Epidemiology Research Unit / DEPUTY DIRECTOR: Centre for Clinical Research in Neuropsychiatry
+61 8 9224 0235
vera.morgan@uwa.edu.au

Vera Morgan is a psychiatric epidemiologist with a special interest in the epidemiology of schizophrenia and other psychotic disorders. Her current program of research focuses on environmental (especially obstetric) and genetic contributions to the risk of schizophrenia, as well as physical health comorbidity, including metabolic syndrome and cardiovascular disease, in people with psychotic illness. Her expertise is in the area of epidemiological data design, management and analysis, and she has wide experience using record-linked population health and criminological databases. She was project director and convenor of the Technical Advisory group for the 2010 national psychosis survey. Her professional roles have included: President of the Australasian Society for Psychiatric Research, Vice-President of the Australasian Epidemiological Association and Chair of the Research Committee of the Mental Health Council of Australia.

Research interests
- Epidemiology of schizophrenia and other psychoses
- Risk factor epidemiology
- Cardiometabolic disease and psychotic illness
- Intellectual disability and psychotic disorders
- Criminal offending and mental illness

Sonal SHAH

DATA ANALYST (SHIP SURVEY) / CLINICAL RESEARCH PSYCHOLOGIST:
Neuropsychiatric Epidemiology Research Unit
+61 8 9224 0288
sonal.shah@uwa.edu.au

Dr Shah’s main interest and research focus is in the identification of adverse risk factors associated with schizophrenia. Within the Pathways project, her aim is to investigate outcomes for offspring of mothers with schizophrenia using both register data and clinical casenotes. She has developed an effective method for the manual mapping of affected children’s life histories using register and clinical casenotes data. She also plays a key role in management and analysis of data for the national Survey of High Impact Psychosis (SHIP), North Metro SHIP and SHIP Wave2. Prior to her work in NERU, Sonal was involved in a large study (as part of her PhD project) on hormonal and non hormonal factors associated with cognitive function. An important and novel finding was the association between circulating androgen levels and cognitive function. She was awarded the AMS award for the most meritorious contribution to the field of menopause in 2006 and best overall presentation in 2001.

Research interests
- Childhood abuse and mental illness
- Offspring mortality for mothers with mental illness
- Cognitive reserve and psychosis
- Inflammatory markers and hormonal influences on cognitive function
Giulietta VALURI

EPIDEMIOLOGIST / CRIMINOLOGIST: Neuropsychiatric Epidemiology Research Unit
+61 8 9224 0288
giulietta.valuri@uwa.edu.au

Giulietta Valuri is a computer scientist and an epidemiologist who has worked in injury prevention research and with linked WA population databases in both criminology (patterns of offending) and mental health. Her research has included validating mental health diagnoses and studying patterns of offending in people with a mental illness. Her current research focuses on measuring and mapping children’s health status using WA data from linked statewide health registers and constructing offending profiles for these children using criminal offending data. Her expertise is in the areas of database management and design, and analytical techniques.

Research interests
- Epidemiology of schizophrenia and other psychotic disorders
- High risk children of parents with severe mental illness
- Criminal offending and mental illness

Anna WATERREUS

DipNursingStudies NZRN GradDipClinEpid

COORDINATOR FOR SHIP WAve2: Neuropsychiatric Epidemiology Research Unit
+61 8 9347 6438
anna.waterreus@uwa.edu.au

Anna Waterreus is a Nurse who has a Post Graduate Diploma in Clinical Epidemiology and has been involved in psychiatric research for the last 25 years. Currently she is the Coordinator for the NHMRC Survey of High Impact Psychosis WAve2. She also had a coordinating role in the first and second Australian surveys of psychosis (the Low Prevalence (Psychotic) Disorders Survey and the Survey of High Impact Psychosis (SHIP). She is a member of an International working group which has developed a new physical activity questionnaire (SIMPAQ) which will undergo validation in 2016. Previously she worked in Epidemiology and General Practice at the Institute of Psychiatry, London.

Research interests
- Metabolic syndrome and physical health
- Cannabis and mental health
- Mental health surveys
- Mental health nursing
Stephanie GEE (BA)

Senior Administrative Officer:
School of Psychiatry and Clinical Neurosciences

+61 8 9224 0290

stephanie.gee@uwa.edu.au

Stephanie has worked in administration in the University sector for nearly 20 years. Her primary focus is on the administration of teaching programs and student clinical placements. She also provides administrative support to NERU and the wider School for travel and financial matters.
## APPENDIX 1a. Research Funding 2004-2011 ($)

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<th>Funding</th>
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<td>NH&amp;MRC APP1002259</td>
<td>Jublensky A, Morgan VA, McNeil T, Abel K, Morgan F</td>
<td>Life course trajectories and neuropsychiatric outcomes in an e-cohort of high risk children of mothers with psychosis</td>
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<td>Jublensky A, Kalaydjieva L, Segal M, Badcock J, Wiltshire S, Price G, Morgan VA</td>
<td>Memory synaptic plasticity and gene networks in schizophrenia</td>
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<td>National survey of high impact psychosis (SHIP): Phase 2</td>
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<td>Schizophrenia and offending: area of residence and the impact of social disorganisation and disadvantage</td>
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## APPENDIX 1b. Research Funding 1995-2003 ($)

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<td>Commonwealth Dept of Health and Aged Care</td>
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<td>Stanley Foundation</td>
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<td>Pathways of risk from conception to disease: A population-based study of the offspring of women with bipolar disorder and schizophrenia</td>
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<td>NHMRC (PHRDC)</td>
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<td>Criminal behaviour as an outcome in schizophrenia</td>
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<td>Reproductive pathology in women with schizophrenia and bipolar affective disorder: An epidemiological &amp; clinical study</td>
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<td>Royal Perth Hospital Medical Research Foundation</td>
<td>Jablensky A, Castle D, Page A, Petterson B</td>
<td>Influenza epidemics and incidence of CNS disorders in Western Australia</td>
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**APPENDIX 2. SELECTED PUBLICATIONS 1995-2014 (Epidemiology)**

**2014**

**Journal Articles**


Published abstracts


Journal Articles


Morgan VA, Morgan F, Valuri G, Ferrante A, Castle D and Jablensky A. A whole-of-population study of the prevalence and patterns of criminal offending in schizophrenia and other psychiatric disorders. Psychological Medicine, 2013, 43, 1869 - 1880


Books and Chapters

Published abstracts


Other publications


Journal Articles


Books and Chapters

Published abstracts


Reports and other publications


Journal Articles


Books and Chapters


Published abstracts


Reports

2010

**Journal Articles**


**Published abstracts**


2009

Journal Articles


Swanson PB, Kane RT, Pearsall-Jones JG, Swanson CF, Croft ML. How couples cope with the death of a twin or higher order multiple. Twin Research and Human Genetics, 2009, Vol 12(4), 392-402.


Published abstracts

Jablensky, AV. The future of high risk research. Schizophrenia Bulletin 2009. 35 Suppl. 1: 73-74


Books and Chapters


2008

Journal Articles


Books and Chapters


Reports


Published abstracts


2007

Journal Articles

Jablensky, A. Does psychiatry need an overarching concept of “mental disorder”? World Psychiatry, 2007, 6, 157-158.


Books and Chapters


2006

Journal Articles


Jablensky, A. Historical dictionary of psychiatry, Psychological Medicine, 2006, 36, 277-278.


Shah, S, Bell, RJ, Davis SR. Homocysteine and cognitive decline after menopause. Climacteric, 2006 9 (2) 77-87.

2005

**Journal Articles**


**Books and Chapters**


**Reports**


2004

**Journal Articles**


**Reports**


2003

**Journal Articles**


**Books and Chapters**


**Reports**


2002

**Journal Articles**


**Books and Chapters**


Reports

Journal Articles

Books and Chapters
Reports


Journal Articles


Jablensky A. The concept of schizophrenia: pro et contra. Epidemiologia e Psichiatria Sociale 2000, 8, 242-247


Lawrence D, Almeida O, Hulse G, Jablensky A Suicide and attempted suicide among older adults in Western Australia. Psychological Medicine 2000, 30, 813-821

Morgan V, Janca A. Revisiting the journal impact factor. Australasian Psychiatry 2000, 8, 230-235

Books and Chapters


1999

Journal Articles

Blanchard MR, Waterreus A, Mann AH. Can a brief intervention have a longer-term benefit? The case of the research nurse and depressed older people in the community. International Journal of Geriatric Psychiatry. 1999, 14(9):733-8


Jablensky A. The conflict of the nosologists: views on schizophrenia and manic depressive illness in the early part of the 20th century. Schizophrenia Research 1999, 39, 95-100


Jablensky A. The nature of psychiatric classification: issues beyond ICD-10 and DSM-IV. Australian and New Zealand Journal of Psychiatry 1999, 33, 137-144


Jablensky A. Psychiatric epidemiology and the global public health agenda. International Journal of Mental Health 1999, 28, 6-14

Books and Chapters


Reports

Croft M. Creation of a Patient Master Index for Tasmania’s Mental Health Services. Commissioned by Tasmania’s Department of Health and Human Services 1999


1998

Journal Articles

Reports
Croft M. Record linkage of the NSW Registrar General’s registrations of deaths to the NSW Inpatient statistics collection records for 1995/96 coronary artery bypass graft patients. Commissioned by NSW Health Department 1998

1997

Journal Articles
Jablensky A. The 100-year epidemiology of schizophrenia. Schizophrenia Research 1997, 28, 111-125
Stanley F, Read A, Kurinczuk J, Croft M, Bower C. A population maternal and child health research data base for research and policy evaluation in Western Australia. Seminars in neonatology 1997, 2, 195-201

Published conference proceedings

Books and Chapters

Reports
Croft M, Ferrante A. The corporate data warehouse project data matching project. Commissioned by WA Ministry of Justice 1997
Croft M. A description of the availability, accessibility and utility of the major health data bases relevant to research into the incidence, prevalence, management and health outcomes of diabetes in Western Australia. Commissioned by Diabetes Australia (WA) 1997
Croft M. A Proposal to establish a diabetes registry in Western Australia using record linkage. Commissioned by Diabetes Australia (WA) 1997

1996

**Journal Articles**


**Books and Chapters**


**Reports**

Croft M. A feasibility study of the probabilistic record linkage of the NSW Road Traffic Authority’s Road Traffic Accident data base to the NSW Inpatient statistics collection records for 1993/94. Commissioned by NSW Health Department 1996.

1995

**Journal Articles**


**Books and Chapters**


**Reports**

Croft M. Report on the linkage of the NSW Neonatal Intensive Care Unit Study data base to the 1992 NSW Midwives’ Data Collection. Commissioned by NSW Health Department 1995


Neuropsychiatric Epidemiology Research Unit

School of Psychiatry & Clinical Neurosciences
University of Western Australia M571
Level 3,
Medical Research Foundation (MRF) Building,
Rear 50 Murray Street
Perth, Western Australia 6000

Contact details
Ms Stephanie Gee
PH: +61-(0)8-9224-0290
FAX: +61-(0)8-9224-0285
EMAIL: stephanie.gee@uwa.edu.au

http://www.psychiatry.uwa.edu.au/research/neru

See Orange Zone No. 5 on the map below.