The University of Western Australia
School of Psychiatry and Clinical Neurosciences

Neuropsychiatric Epidemiology Research Unit (NERU) Annual Report
2012

1995-2011 Historical appendices
NERU.
A mountain in Himavā. All birds settling there become golden
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Neuropsychiatric Epidemiology Research Unit

Figure 1. Organisational structure, Neuropsychiatric Epidemiology Research Unit, 2012
RESEARCH PROGRAMS

Pathways of risk from conception to disease: a population-based study of the offspring of women with schizophrenia, bipolar disorder and other psychotic disorders

V Morgan, G Valuri, M Croft, J Griffith, S Shah, P Di Prinzio, S Zubrick, C Bower, T McNeil, D Young, F Morgan, K Abel, A Jablensky

Our aim in this study 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 psychosis.

This is a whole-of-population record linkage study, using linkage across psychiatric, physical morbidity, mortality and other administrative registers in Western Australia to follow up a large whole-of-population 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.

In the course of this study, we have developed and refined a number of instruments, including the Diagnostic Interview for Psychoses (casenotes version) and the Children’s Checklist, extended the McNeil-Sjöström Scale for Obstetric Complications; and developed measures of neonatal encephalopathy and of maternal morbidity over time. We are also developing measures of adversity across individual, familial and ecological settings using our record linked data. Using quantitative and qualitative data, we are constructing developmental life course histories for a subsample of the children in our study.

Currently, we are examining the following outcomes;

- maternal reproductive morbidity and early neonatal morbidity;
- stillbirths, perinatal and childhood mortality
- sudden infant death syndrome;
- early neuropsychiatric outcomes including birth defects, intellectual disability and rare syndromes;
- education outcomes;
- childhood victimisation (using prospectively collected child protection data); and
- criminal offending, including offending trajectories.

In work in progress, the children’s mental health outcomes are being reviewed. We are working towards our flagship paper that will examine familial and environmental risks for psychosis in these high risk children of mothers with psychosis.

Pregnancy, Delivery, and Neonatal Complications in a Population Cohort of Women with Schizophrenia and Major Affective Disorders

A Jablensky, V Morgan, S Zubrick, C Bower, L-A Yellachich

The Pathways of Risk project builds on an earlier study of the same design but utilising a smaller cohort of 6303 children born 1980-1992. This was also a population-based study with record linkage across several morbidity case registers and databases in Western Australia. The aims of the study were to determine the frequency, nature, and severity of obstetric complications experienced by women with schizophrenia compared to women with affective disorders and women without a diagnosed psychiatric disorder, to investigate the temporal relationship between pregnancies and the onset of maternal psychiatric illness, and to explore a range of pregnancy outcomes in relation to maternal risk factors.

The study found the mothers with both schizophrenia and affective disorder had increased risks of pregnancy, birth, and neonatal complications, including placental abnormalities, antepartum hemorrhages, and fetal distress. Women with schizophrenia were significantly more likely to have placental abruption, to give birth to infants in the lowest weight/growth population decile, and to have children with cardiovascular congenital anomalies. Neonatal complications were significantly more likely to occur in winter; low birth weight peaked in spring. Complications other than low birth weight and congenital anomalies were higher in pregnancies after psychiatric illness than in pregnancies preceding the diagnosis.

Table.

Significant findings: Obstetric complications (OR, 95% CI)

<table>
<thead>
<tr>
<th>Complication</th>
<th>Schizophrenia</th>
<th>Bipolar</th>
<th>Unipolar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite scale score: PC</td>
<td>1.4 (1.3-1.8)</td>
<td>1.2 (1.1-1.4)</td>
<td>-</td>
</tr>
<tr>
<td>Placenta previa</td>
<td>-</td>
<td>2.0 (1.3-3.7)</td>
<td>-</td>
</tr>
<tr>
<td>Abruption of the placenta</td>
<td>2.8 (1.3-5.7)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other antepartum hemorrhage</td>
<td>1.6 (1.0-2.7)</td>
<td>1.7 (1.2-2.4)</td>
<td>-</td>
</tr>
<tr>
<td>Side effects of street drugs</td>
<td>3.8 (1.1-12.3)</td>
<td>3.9 (1.5-10.6)</td>
<td>-</td>
</tr>
<tr>
<td>Labour / delivery complications</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Composite scale score: LDC</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Early neonatal complications</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Composite scale score: NC</td>
<td>1.3 (1.3-1.5)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fetal distress</td>
<td>1.4 (1.1-1.8)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Narcotic antagonist used</td>
<td>1.9 (1.2-2.6)</td>
<td>-</td>
<td>1.6 (1.1-2.3)</td>
</tr>
<tr>
<td>% of expected birthweight &lt;10th/90th</td>
<td>1.4 (1.0-1.9)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Women with schizophrenia were more likely to have lower socio-economic status, to be single, to have an unemployed partner, to be in oldest and in youngest age groups, and to be Aboriginal.

While genetic liability and gene-environment interactions may account for some outcomes, maternal risk factors and biological and behavioral concomitants of severe mental illness appear to be major determinants of increases in reproductive pathology in this cohort. Risk reduction in these vulnerable groups may be achievable through antenatal and postnatal interventions.

Intellectual disability comorbid with schizophrenia and other psychotic disorders

Study 1: Intellectual disability and other neuropsychiatric outcomes in high-risk children of mothers with schizophrenia, bipolar disorder and unipolar major depression

V Morgan, M Croft, G Valuri, S Zubrick, C Bower, T McNeil, A Jablensky

This study used the data collected as part of the study of Pregnancy, Delivery, and Neonatal Complications in a Population Cohort of Women with Schizophrenia and Major Affective Disorders.

The aims of this study were:
(a) to determine the risk of intellectual disability, rare syndromes, pervasive developmental disorders, convulsions and epilepsy in a population-based cohort of children of women with schizophrenia compared with children of women with no recorded psychiatric history;
(b) to examine the role of obstetric complications in mediating the risk of intellectual disability; and
(c) to assess the specificity of findings to maternal schizophrenia compared with maternal bipolar disorder and unipolar depression.

Our findings provide epidemiological support for clustering of neuropsychiatric disorders in children of women with psychotic illness. Children were at significantly increased risk of intellectual disability with odds ratios (ORs) of 3.2 (95% CI 1.8-5.7), 3.1 (95% CI 1.9-4.9) and 2.9 (95% CI 1.8-4.7) in the maternal schizophrenia, bipolar disorder and unipolar depression groups respectively. Multivariate analysis suggests familial and obstetric factors may contribute independently to the risk. Although summated labour/delivery complications (OR = 1.4, 95% CI 1.0-2.0) just failed to reach significance, neonatal encephalopathy (OR = 7.7, 95% CI 3.0-20.2) and fetal distress (OR = 1.8, 95% CI 1.1-2.7) were independent significant predictors. Rates of rare syndromes in children of mothers with mental disorder were well above population rates. Risk of pervasive developmental disorders, including autism, was significantly elevated for children of mothers with bipolar disorder. Risk of epilepsy was doubled for children of mothers with unipolar depression.


Table. Intellectual disability; pervasive developmental disorders, rare syndromes, convulsions and epilepsy in children, by maternal psychiatric status (N=6303)

<table>
<thead>
<tr>
<th>Unadjusted Odds Ratios</th>
<th>Schizophrenia v. comparison offspring</th>
<th>Bipolar v. comparison offspring</th>
<th>Unipolar v. comparison offspring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds Ratio</td>
<td>95% CI</td>
<td>Odds Ratio</td>
</tr>
<tr>
<td>Intellectual disability</td>
<td>3.2</td>
<td>1.8 - 5.7*</td>
<td>3.1</td>
</tr>
<tr>
<td>Any rare syndrome†</td>
<td>8.5</td>
<td>2.0 - 35.7*</td>
<td>4.0</td>
</tr>
<tr>
<td>Pervasive developmental disorders ‡</td>
<td>5.1</td>
<td>0.3 - 81.2</td>
<td>9.6</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>1.4</td>
<td>0.9 - 2.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Convulsions</td>
<td>0.7</td>
<td>0.2 - 2.3</td>
<td>1.8</td>
</tr>
</tbody>
</table>

* Confidence interval does not straddle 1. Does not include confidence intervals where the lower limit has been rounded up to 1.
† Includes Hurler, Klinefelter, Moebius, Noonan, Prader-Willi, Rett, Rubinstein-Taybi, VATER Association and Turner
‡ Pervasive developmental disorders (including autism) with co-occurring intellectual disability
Study 2: Intellectual disability co-occurring with schizophrenia and other psychiatric illness: population-based study

V Morgan, H Leonard, J Bourke, A Jablensky

The epidemiology of intellectual disability co-occurring with schizophrenia and other psychiatric illness is poorly understood. The separation of mental health from intellectual disability services has led to a serious underestimation of the prevalence of dual diagnosis, with clinicians ill-equipped to treat affected individuals. The aim of this study was to use record linkage across population-based psychiatric and intellectual disability registers in order to estimate the prevalence of dual diagnosis and describe its clinical profile.

This study highlights the extent to which dual diagnosis is underestimated as a result of the administrative divide that has existed historically between services for people who are intellectually disabled and those for people with psychiatric illness. We found that, overall, 31.7% of people with an intellectual disability had a psychiatric disorder; 1.8% of people with a psychiatric illness had an intellectual disability. Had the study relied on single register data, the figures would have been much lower, seriously underestimating the size of the problem of dual diagnosis in the population.

Our results are suggestive of a common pathogenesis in intellectual disability co-occurring with schizophrenia. Total psychiatric morbidity in intellectually disabled populations is comparable with general population estimates of lifetime prevalence of 41.2%. However, schizophrenia, but not bipolar disorder and unipolar depression, was greatly overrepresented among individuals with a dual diagnosis: depending on birth cohort, 3.7–5.2% of those with intellectual disability had co-occurring schizophrenia (4.4% across both cohorts). This is at least three times higher than population lifetime estimates (most recently 1.26%), but also higher than the commonly quoted estimate of 3% for schizophrenia among intellectually disabled populations.

Individuals with a dual diagnosis, compared to those with intellectual disability only appeared to have a different presumed aetiology: they were significantly less likely to have a genetic or other known biomedical basis to their disorder, significantly less likely to have Down syndrome, and significantly more likely to have pervasive developmental disorder. Individuals with a dual diagnosis, compared to those with psychiatric illness only, had a more severe psychiatric illness, and earlier age at first contact with mental health services, more inpatient admissions, more inpatient days, and a higher mortality rates.


Table. Dual diagnosis as a percentage of total number of persons with (i) specified psychiatric illness (PI) and (ii) any intellectual disability (ID)

<table>
<thead>
<tr>
<th></th>
<th>Dual diagnosis (N)</th>
<th>Specified PI (N)</th>
<th>Dual diagnosis as % of specified PI</th>
<th>Dual diagnosis with specified PI as % of all ID (N=13,295)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>485</td>
<td>11,520</td>
<td>4.2</td>
<td>3.6</td>
</tr>
<tr>
<td>Bipolar disorder</td>
<td>112</td>
<td>8556</td>
<td>1.3</td>
<td>0.8</td>
</tr>
<tr>
<td>Unipolar depression</td>
<td>95</td>
<td>15,000</td>
<td>0.6</td>
<td>0.7</td>
</tr>
<tr>
<td>Psychosis (lifetime)</td>
<td>1115</td>
<td>60,206</td>
<td>1.9</td>
<td>8.4</td>
</tr>
<tr>
<td>Any psychiatric illness</td>
<td>4221</td>
<td>236,675</td>
<td>1.8</td>
<td>31.7</td>
</tr>
</tbody>
</table>
Other environmental risk factors for schizophrenia: Influenza and season of birth

Study 1: Influenza epidemics and incidence of schizophrenia, affective disorders and mental retardation in Western Australia: No evidence of a major effect

V Morgan, D Castle, A Page, S Fazio, L Gurrin, P Burton, P Montgomery, A Jablensky

In utero exposure to influenza has been implicated as a risk factor for developmental CNS damage. This ecological study tested the hypothesis that in utero exposure to influenza: (1) in the second gestational trimester is associated with an increased risk of schizophrenia and affective psychoses; (2) in the first gestational trimester is associated with an increased risk of mental retardation.

The data were examined for effects associated with six influenza epidemics in the period 1950-1960. Using relative risk ratios for individual epidemics as well as Poisson regression and a proportional hazards model to examine systematic effects for the whole period, no major effect could be identified for maternal influenza on the incidence of schizophrenia, affective psychoses and neurotic depression, despite sufficient statistical power to detect an effect. However, a possible effect was found for mental retardation in males exposed in the first and second gestational trimester.

www.ncbi.nlm.nih.gov/pubmed/9376335

See also: Schizophrenia and 1957 Pandemic of Influenza: Meta-analysis

J-P Selten, A Frissen, G Lensvelt-Mulders, and V Morgan

This is a more recent meta-analysis that included the original data. It did not support the hypothesis of maternal influenza as a risk factor for schizophrenia.


Study 2: Season of birth in schizophrenia and affective psychoses in Western Australia 1916-61

V Morgan, A Jablensky, D Castle

This study examined seasonality birth effects in schizophrenia and affective psychoses in the southern hemisphere, given possible confounding of age-incidence effects with winter birth peaks in northern hemisphere data.

We found no association between season of birth and schizophrenia, affective psychoses or neurotic depression. For schizophrenia, the pattern of risks by quarter reflects northern hemisphere trends, with the risk increased in the third quarter (covering late winter, early spring) for females only (RR 1.15, CI 1.01-1.32) and decreased in the fourth quarter for females (RR 0.81, CI 0.70-0.94), and for males and females combined (RR 0.87, CI 0.79-0.96). These results are in the direction of trends in northern hemisphere data. However, using a more stringent epidemiological criterion of a relative risk of 2 or more (or 0.5 or less) with the confidence interval not straddling unity, the magnitude of the calculated relative risks would not be regarded as substantial.

While age-incidence effects had no impact on the distribution of risk, we found an artefactual increase in January births due to routine imputation of missing birth dates. Adjusting for artefacts in the data produced a pattern analogous to northern hemisphere trends.

www.ncbi.nlm.nih.gov/pubmed/11473508
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, K Brameld in partnership with beyondblue.

Mental health problems associated with the perinatal period - defined as from conception to the end of the first postnatal year - are recognised as a major public health issue with significant morbidity and costs for mother, infant, and family. Left untreated they may impact on the health of the next generation. The last decade has seen a burgeoning of perinatal mental health initiatives in Australia, including the National Perinatal Depression Initiative (NPDI), yet there is currently a gap in our understanding of how these initiatives have met their goal of improving maternal mental health outcomes through improved uptake of services, at this critical time. This project is using population health data to examine the impact of the reforms on maternal health outcomes, service utilisation and the likely cost-effectiveness of these reforms.

This project employs four key methodologies: i) data linkage; ii) generation of perinatal-specific Medicare Benefits Schedule summary data; iii) economic and policy analyses; and, iv) key stakeholder consultations in a consideration of the further implementation and evaluation of the Depression Initiative NPDI.

The findings from this project will facilitate improvements in the recognition, prevention, and treatment of mental health morbidity among perinatal women. It will provide information for the provision of effective mental health services to this vulnerable and eminently accessible population. This project will empower beyondblue, as its Partner Organisation, to use the findings to strengthen collaborations, advocate for a cohesive approach to the future implementation of the NPDI, and influence policy and decision making at jurisdictional and national levels. From an international perspective, this project will put Australia at the forefront of policy planning, analysis and cost-effectiveness evaluation in the field of perinatal mental health.
Survey of High Impact Psychosis WAve 2 (SHIP WAve 2)

V Morgan, A Jablensky, Gerald Watts, Johanna Badcock, Kay Cox, Nikos Stefanis, A Waterreus, J Griffith

People with severe mental illness have high rates of cardiometabolic disease and reduced life-expectancy compared to the general population. Our primary objective is to improve physical health in people with severe mental illness who are already burdened by the severe symptoms of their mental illness and the multiple side effects of psychotropic medication used to treat those symptoms. Unfortunately, public intervention campaigns have had little impact on component risks for cardiometabolic disease (for example, obesity, smoking, substance abuse, low levels of physical activity and poor nutrition) in people with severe mental illness. We argue that targeted interventions embedded within mental health service delivery are essential. To be effective, these interventions must (i) take into account factors associated with severe mental illness including the side-effect profile of psychotropic medication use, cognitive biases and psychopathology, and (ii) be informed by specific person- and system-related impediments to risk modification in this group.

Aims

This 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.

Overview

The study will follow 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). Almost all participants (98%) have agreed to being recontacted for participation in a follow up interview. By staggering the interviews, follow up time will be 3-5 years.

Follow up will include a face-to-face interview during which the interviewer will collect data on:

- lifestyle risk factor profiles and cardiometabolic outcomes including change over time;
- other known predictors of cardiometabolic outcomes including medication use and family history;
- individual level impediments to the uptake of risk modification measures and potential correlates of cardiovascular risk (e.g. cognitive functioning; loneliness; motivation; work and other community participation; health literacy);
- mental health service level factors that may impede/facilitate effective physical health monitoring and management (e.g. case management, rehabilitation programs, personal helper programs, access to primary care);
- potential correlates of improved health including independent functioning, satisfaction and quality of life; and
- symptomatology.

There will also be a physical health assessment including fasting blood tests and the taking of measures for blood pressure, pulse, waist circumference, height and weight.
We will augment interview data with electronic data from population health registers. This includes linking to Commonwealth pharmaceutical benefits scheme and medical benefits scheme data for a detailed, longitudinal history of pharmaceutical prescriptions and of general practice and specialist service use, as well as data held on Western Australian health registers.

We will ask participants’ general practitioners to complete a questionnaire about the participant on: physical health treatment, tests and referrals; barriers to treatment take-up; and stigma/discrimination in the general practice setting.

The Wave 2 follow up will allow us to distinguish prevalent cases of metabolic syndrome first assessed at Wave 1 from new incident cases identified at Wave 2, and to examine the association between changes in risk factor profiles and cardiometabolic outcomes separately for these two groups.

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, this study has a very high utility value for mental health service planning.

The 2010 Australian National Survey of High Impact Psychosis (SHIP)

V Morgan, A Jablensky, A Waterreus, J Griffith, Patsy Di Prinzio, Sonal Shah

The aims of this survey were (i) to describe the prevalence and profile of psychosis in Australia and (ii) 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. The survey is an initiative of psychosis researchers and clinicians across Australia in partnership with the Australia Government Department of Health and Ageing. It is a follow-up to the first Australian National Survey of Low Prevalence (Psychotic) Disorders, conducted in 1997-98 by Prof Assen Jablensky. It has collected national data that provided an evidence base for understanding barriers to good outcomes for people with psychosis, including their social and economic integration.

SHIP asks 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.

SHIP took place at seven sites in five states across Australia: NSW, QLD, SA, VIC and WA. It used a two-phase sampling design. Phase 1 screening for psychosis took place in the census month which was March 2010. In Phase 2, 2000 individuals aged 18-64 were randomly selected for participation, from those screen-positive for psychosis, to be interviewed and assessed. The interview phase was completed at the end of 2010. The report to the Australian Government Department of Health and Ageing was completed in 2011 and the first series of papers, including an overview paper, was published in 2012.

Papers from this study are available for downloading at: 
http://www.psychiatry.uwa.edu.au/research/neru/survey/researchers
North Metro Survey of High Impact Psychosis (North Metro SHIP)

V Morgan, A Waterreus, J Griffith, A Jablensky, Patsy Di Prinzio, Sonal Shah

This extension of the national SHIP survey, in North Metropolitan Area Health Services Mental Health, was funded by the Mental Health Commission and the Western Australian Department of Health. The survey census month was March 2012 with interviews taking place from April 2012 to April 2013. The aims were to:

- estimate the local prevalence of psychosis in North Metropolitan Area Health Service;
- describe the social and economic circumstances of people living with psychosis within North Metro, as well as their mental and physical health profiles and their use of services;
- develop a local evidence base to help inform mental health policy development and service providers in North Metro,
- develop services to meet specific local needs to benefit people living with psychosis, their friends, family, carers and services supporting them.

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

This survey, Australia’s first national survey of psychosis, followed several years of discussion and consultation before a major decision was made in late 1994 by the Australian Health Ministers’ Advisory Council to proceed. The rational planning of mental health services, in accordance with the adopted National Strategy, required an epidemiological database, and such information could only be provided by a nationally representative survey. A core group of individuals, including Harvey Whiteford, Gavin Andrews, Scott Henderson and Wayne Hall, formulated the broad parameters of a survey that would encompass three interrelated, yet relatively independent studies: a representative national sample of the adult population, a catchment-area based investigation of psychotic (“low prevalence”) disorders, and a school-based sample of children and adolescents.

Assen Jablensky was invited to submit proposals for the design of the low-prevalence arm of this national endeavour to the Steering Committee, chaired by Scott Henderson. It was to be a major undertaking. Intense Discussions with Helen Herrman, John McGrath, Scott Henderson and other researchers helped towards agreement on a plan that envisaged selection of geographical catchment areas in the Australian Capital Territory, Queensland, Victoria and Western Australia for a two-phase survey involving a census and screening of all contacts with the mental services and a selected number of general and private practices, to be followed by interviewing of a sample of people with psychotic illnesses. The team at The University of Western Australia, including Assen Jablensky, David Castle, Vera Morgan and Anna Wattereus, was entrusted with the coordination of the multi-centre research network and worked with interstate colleagues and field interviewers, including NERU’s Jenny Griffith, over the next two years to get the survey ready.

The results of the Low Prevalence (Psychotic) Disorders Study were published in a major report and a number of journal articles. Apart from 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 co-morbidity, service utilisation patterns, and side effects of medication. Subsequent economic analyses coordinated by Vaughan Carr provided estimates of direct and indirect costs associated with psychotic disorders. One of the “best selling” products of the study was the research instrument, the Diagnostic Interview for Psychosis (DIP), which was designed by the Western Australian group.

Key papers and reports from this study are available for downloading at:
Schizophrenia and criminal offending

Study 1: A whole-of-population study of the prevalence and patterns of criminal offending in schizophrenia and other psychiatric disorders

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

This study employed a methodologically sound, population-based research design to provide reliable data on the association between offending and serious mental illness. Its aims were: to (i) estimate the prevalence of offending in people with a mental illness compared to the general population; (ii) to describe patterns of offending in people with a mental illness compared to the general population; and (iii) to compare findings for people with schizophrenia with those with other mental illness.

- The vast majority (89%) of offenders arrested between 1986 and 1996 did not have a mental illness. Eighty percent of those arrested for a violent offence did not have a mental illness, 6% had a substance abuse disorder, 2% had a personality disorder and 2% had schizophrenia. Seventy percent of those arrested for homicide in the same period did not have a mental illness, 9% had a substance abuse disorder, 3% had a personality disorder and 3% had schizophrenia.
- Among people with a mental illness, the prevalence of offending over a 12 year period from 1986-1996 was 32% overall. The prevalence was differentially distributed, depending on diagnosis, and was highest for substance abuse disorders (59%). The prevalence for schizophrenia was 39%.
- A comorbid substance abuse disorder significantly increased the 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. This proportion had increased to 66% over time for people with schizophrenia.
- The annual change in the number of arrests over a 12 year period from 1986-1996 for the cohort born 1955-1969 decreased significantly for people with no mental illness and increased significantly for those with a mental illness other than schizophrenia. There was no overall change for people with schizophrenia but there was a peak in the pattern of arrests in 1991-1993, coinciding with a period when community mental health services were poorly resourced to meet demands created by deinstitutionalisation of patients from psychiatric institutions.


Study 2: Schizophrenia and offending: area of residence and the impact of social disorganisation and urbanicity

F Morgan, V Morgan, J Clare, G Valuri, R Woodman, A Ferrante, D Castle and A Jablensky

This study investigated the correlation between socio-structural characteristics of postcodes and the prevalence of (a) arrest, (b) schizophrenia diagnosis and (c) the joint prevalence of schizophrenia diagnosis and arrest.

- This study found a high prevalence of general population arrest in Western Australia: 14.4 percent of the population had been arrested over a 12-year period. The prevalence of schizophrenia was low, and the joint prevalence of having a diagnosis of schizophrenia and an arrest, at 0.1 percent, was rarer still.
- 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. For example, the first and second Australian national psychosis surveys have found that the life histories of people with psychosis are marked by long-term educational and economic disadvantage, homelessness, social marginalisation, and levels of victimisation were well above population levels. Therefore it is likely that a large component of the risk of offending in persons with schizophrenia stems from their living circumstances rather than as a direct consequence of their mental health status.

- These 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.

Service utilisation projects in collaboration with WA Centre for Mental Health Policy Research

Study 1. Patterns of service use for people who have had a psychiatric inpatient admission

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

This project has constructed a database for exploring inpatient demand within the mental health system. Its aim is to determine groups/subgroups of persons who use inpatient services based on their socio-demographic and clinical characteristics and identify trends and changes in patterns of care over time. A key objective is to use the data to identify existing and potential strategies for reducing demand on inpatient services.

Study 2. Long-term treatment outcomes in early psychosis specialist services

G Smith, T Williams, V Morgan, D Young

The aim of this study has been to evaluate the long-term effects of treatment in a specialist early intervention in psychosis (EIP) service—specifically, whether people in an EIP service have better short- and long-term outcomes when compared with people in standard treatment services. The study will obtain up to 10 years of data on people in the Bentley and Rockingham/ Kwinana specialist EIP services and a matched comparison control group that has received standard treatment in generic mental health services in metropolitan Perth. The study uses a retrospective design, with the key outcome measures including psychiatric admissions, time to re-admission, service use and death.
METHODOLOGIES and APPROACHES

Record linkage across population-based registers

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. To the end, it has established an e-Cohort of high risk children born to mothers with schizophrenia and other psychoses. Unit researchers are expert at designing and developing sophisticated hierarchical data models for linking, interrogating and analysing data across registers and through generations. Operationalising and validating key constructs using register data (e.g. diagnosis; neonatal encephalopathy; socioeconomic status; adversity) is a priority.


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.


Multigenerational approach

In work utilising the e-Cohort of high risk children of mothers with psychosis, the focus has been on the role of genetic and environment risk factors, and their interaction, in the onset of schizophrenia and other psychoses. Sibships among offspring have been constructed and determination of the family relationship (for example, full sibling or half sibling) is possible. Some children have become parents themselves, so we are now collecting data for three generations. A sophisticated hierarchical data model has been implemented to reflect the multiple relationships in the data.

Survey-based research

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 began work on a SHIP extension study in north metropolitan Perth, the North Metro Survey of High Impact Psychosis (North Metro SHIP).


In 2012, the Unit was awarded a large NHMRC grant to follow up Western Australian SHIP North Metro SHIP participants in order to determine factors associated with changes in cardiometabolic profiles in people with severe mental illness, examine impediments to risk
modification, and develop targeted interventions for implementation within mental health services

**Clinical casenotes review**

Register data are supplemented by psychiatric data extracted from clinical casenotes by experienced mental health clinical professionals. Several instruments have been developed for this purpose including an adaptation of the *Diagnostic Interview for Psychosis* for use with children’s casenote data, and the *Children’s Checklist* that was developed internally specifically for the collection of data for children on substance misuse, psychotropic medication use, behavioural problems, neurocognitive data and psychopathology not recorded in the Diagnostic Interview for Psychosis.
INSTRUMENT DEVELOPMENT

Diagnostic Interview for Psychosis (full versions: LPDS and SHIP)

The Diagnostic Interview for Psychoses (DIP) is a semi-structured interview for psychoses for use in epidemiological and clinical settings. It is designed to provide a diagnosis, as well as to assess symptom profiles (present state, past year and lifetime), social functioning, disablement, service utilisation and need. The DIP was developed specifically for the Low Prevalence (Psychotic) Disorders Study (LPDS) 1997-98 and greatly expanded for the Survey of High Impact Psychosis (SHIP) 2010. A Diagnostic Module, described separately below, is central to the DIP. The revised (SHIP) version includes modules on: social demographics; education; employment; housing; finances; activities of daily living; child care; caring; socialising; self harm; victimisation and offending; satisfaction with life; inpatient treatment; emergency/casualty treatment; outpatient treatment; public community mental health; community rehabilitation and day therapy; general practice service; non government agencies; medication use; mental health care & unmet need; other psychopathology and cognition; drug and alcohol use and smoking, and physical health.

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 has been written to generate diagnoses using the underlying Operational Criteria For Psychosis (OPCRIT) algorithm. The development, reliability and applications of the DIP have been published. The DIP-DM is being used in New Zealand, UK, US and, in translation, in Indonesian, Italy, Spain, France, Greece, Norway and Bulgaria. A self-executing PC version of the software has been developed and is currently undergoing beta testing before release in 2013.


Psychosis Screen

The Psychosis Screen was developed specifically 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.

Brief Cognitive Assessment Tool

As part of the Survey of High Impact Psychosis 2010, a need was identified for a Brief Cognitive Assessment Tool that could be used in a number of research settings. In 2009, the assessment tool was completed and psychometric properties were examined. The tool was employed successfully in the 2010 Survey of High Impact Psychosis (SHIP) and the 2012 North Metro SHIP.
**McNeil-Sjöström Scale for Obstetric Complications**

The McNeil-Sjöström Scale operationalises the scoring of hundreds of obstetric complications and their treatment, including the range of potential complications 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. 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. A computer algorithm automates the scoring of obstetric complications recorded on the electronic Midwives Database.

**Measures of longitudinal maternal morbidity**

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

**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.

**Children’s Checklist**

Children’s Checklist is an instrument developed within the Unit specifically for the collection of children’s data on substance misuse, psychotropic medication use, behavioural problems, neurocognitive data and psychopathology not recorded in the Diagnostic Interview for Psychosis.

**Instrument validity and reliability**

Testing the psychomteric properties of instruments used and/or developed including their validity and inter-rater reliability where appropriate, and assessing the reliability and validity of key constructs is an ongoing priority for the Unit.
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof Vera Morgan</td>
<td>Professor</td>
<td>Unit Head / Operational Epidemiologist</td>
</tr>
<tr>
<td>Prof Assen Jablensky</td>
<td>Winthrop Professor</td>
<td>Senior Scientific Consultant / Director: Centre for Clinical Research in Neuropsychiatry</td>
</tr>
<tr>
<td>Dr Maxine Croft</td>
<td>Assistant Professor</td>
<td>Epidemiologist / Biologist</td>
</tr>
<tr>
<td>Ms Patsy Di Prinzio</td>
<td>Research Associate</td>
<td>Statistician</td>
</tr>
<tr>
<td>Ms Jenny Griffith</td>
<td>Project Manager</td>
<td>North Metro SHIP deputy coordinator / Mental Health Clinical Research Nurse</td>
</tr>
<tr>
<td>Dr Sonal Shah</td>
<td>Assistant Professor</td>
<td>Data analyst (SHIP Survey) / Clinical Research Psychologist</td>
</tr>
<tr>
<td>Ms Giulietta Valuri</td>
<td>Assistant Professor</td>
<td>Epidemiologist / Criminologist</td>
</tr>
<tr>
<td>Ms Anna Waterreus</td>
<td>Assistant Professor</td>
<td>National Coordinator for SHIP Survey / North Metro SHIP coordinator</td>
</tr>
</tbody>
</table>

Interviewers: North Metro SHIP Survey  
John Dean  
Rochelle Jones  
Kim Pedler  
Mike Sommer  

Data entry: North Metro SHIP Survey  
Hannah Castle
### RESEARCH FUNDING RECEIVED/COMMITTED 2012 ONWARDS ($)

<table>
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<tr>
<th>Funding Source</th>
<th>Investigators</th>
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<tr>
<td>NH&amp;MRC APP1046729</td>
<td>Morgan V 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>NHMRC Partnership Grant APP1028554</td>
<td>Austin M-P Sullivan E Highet N Morgan V 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>184,040</td>
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<td>NHMRC Partnership Grant APP1028554: beyondblue partnership contribution</td>
<td>Austin M-P Sullivan E Highet N Morgan V 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>
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<td>WA Dept of Health</td>
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<td>NH&amp;MRC APP1002259</td>
<td>Jablensky A Morgan V 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>
<td>Continuing from previous year</td>
<td>304,701</td>
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</table>
PUBLICATIONS 2012

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

**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*, 2012, FirstView (online preprint version), 1-12


Stefanis NC, Milan Dragovic M, Power BD, Jablensky A, Castle D, Morgan VA. Age at initiation of cannabis use predicts age at onset of psychosis: The 7-8 year trend. *Schizophrenia Bulletin*, Accepted 14/12/2012


**Books and Chapters**


**Published abstracts**


**Other publications**

Morgan V. National psychosis survey: mapping use of services. *New Paradigm* 2012, Autumn, 30-36
ORAL CONFERENCE PRESENTATIONS 2012


POSTER PRESENTATIONS 2012


OTHER TALKS AND PRESENTATIONS 2012

Vera Morgan


The Pathways Study: The potential of data linkage as a research tool for discovery and applications. Centre for Clinical Research in Neuropsychiatry Seminar Series, 9 July 2012

A profile of Australians with psychosis. Findings from the 2010 Australian National Survey of High Impact Psychosis (SHIP). The University of Western Australia School of Psychology Colloquium, 25 May 2012

People living with psychotic illness in 2010. Findings from the 2010 Australian National Survey of High Impact Psychosis (SHIP). Royal Perth Hospital Psychiatry Forum, 22 May 2012

What did we learn from the 2010 National Survey of High Impact Psychosis (SHIP). Fremantle Hospital Staff Forum, 9 May 2012

People living with psychotic illness in 2010 and the North Metro Survey of High Impact Psychosis (SHIP). North Metropolitan Area Health Service Mental Health: Mental Health Executive Group, 14 March 2012

People living with psychotic illness in 2010. Findings from the 2010 Australian National Survey of High Impact Psychosis (SHIP). Fremantle Hospital, 7 March 2012

People living with psychotic illness in 2010 and the North Metro Survey of High Impact Psychosis (SHIP). Joondalup Community Mental Health Clinic, 23 February 2012

A profile of Australians with psychosis: Findings from the 2010 Australian National Survey of High Impact Psychosis (SHIP). Peel and Rockingham-Kwinana Mental Health Service, 8 February 2012

The North Metro Survey of High Impact Psychosis (SHIP). Inner City Mental Health Services, 1 February 2012
<table>
<thead>
<tr>
<th>Student</th>
<th>Degree</th>
<th>Topic</th>
<th>Dates</th>
<th>NERU superviser</th>
<th>Supervisor(s)</th>
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<tbody>
<tr>
<td>G. Valuri</td>
<td>PhD</td>
<td>Criminal offending, victimization and schizophrenia</td>
<td>Started part-time 27 June 2011 (8 yrs p/time)</td>
<td>Prof Vera Morgan</td>
<td>VA Morgan (co-ordinating) FH Morgan AJ Jablensky</td>
</tr>
<tr>
<td>C. Harrison</td>
<td>PhD</td>
<td>Epidemiology of cardiovascular disease risk factors in the psychiatric population of WA</td>
<td>Started part-time 2009 (8 yrs p/time)</td>
<td>Prof Vera Morgan</td>
<td>VA Morgan (co-ordinating) M Dragovic AJ Jablensky J Laugharne</td>
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## RESEARCH COLLABORATIONS AND ACTIVITIES 2012

### International

<table>
<thead>
<tr>
<th>External Collaborators</th>
<th>Affiliation</th>
<th>NERU collaborators</th>
<th>Area of collaboration</th>
<th>Outcomes 2012</th>
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<tbody>
<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&lt;br&gt;Advice on changes to the McNeil-Sjöström Scale&lt;br&gt;Paper in early neurodevelopmental outcomes</td>
</tr>
<tr>
<td>Prof Jonas Bjork</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&lt;br&gt;Paper in early neurodevelopmental outcomes</td>
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<tr>
<td>A/Prof Kathryn Abel</td>
<td>University of Manchester, UK&lt;br&gt;V Morgan&lt;br&gt;M Croft</td>
<td>Obstetric complications in women with severe mental illness</td>
<td>Paper on SIDS outcomes for offspring of women with severe mental illness&lt;br&gt;Analysis commenced.&lt;br&gt;Joint book chapter</td>
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<tr>
<td>Prof Vidje Hansen/Dr Ingunn Skre</td>
<td>Institute for Psychology, University of Tromsø, Norway&lt;br&gt;A Jablensky&lt;br&gt;V Morgan</td>
<td>Validation of Norwegian translation of the Diagnostic Interview for Psychosis.</td>
<td>Co-investigators on Norwegian research collaboration funding application</td>
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## National

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<th>External Collaborators</th>
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<th>NERU collaborators</th>
<th>Area of collaboration</th>
<th>Outcomes 2012</th>
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</thead>
<tbody>
<tr>
<td>Prof Stan Catts</td>
<td>Psychosis Australia</td>
<td>V Morgan A Jablensky</td>
<td>Psychosis research network</td>
<td>Executive committee member</td>
</tr>
<tr>
<td>Prof John McGrath</td>
<td>University of Queensland</td>
<td>V Morgan A Jablensky</td>
<td>Environmental risk factors for schizophrenia</td>
<td>Meetings 2012</td>
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<tr>
<td></td>
<td>Prof Vaughan Carr</td>
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<td></td>
<td>Prof David Castle</td>
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<td></td>
<td>Assoc. Prof Cherrie Galletly</td>
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<td></td>
<td>Prof Carol Harvey</td>
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<td></td>
<td>Barbara Hocking</td>
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<td></td>
<td>Prof Assen Jablensky</td>
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<td></td>
<td>Prof John McGrath</td>
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<td></td>
<td>Prof Andrew Mackinnon</td>
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<td></td>
<td>Prof Pat McGorry</td>
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<tr>
<td></td>
<td>Prof Vera Morgan (Chair)</td>
<td></td>
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<tr>
<td></td>
<td>Dr Amanda Neil</td>
<td></td>
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<tr>
<td></td>
<td>Dr Helen Stain</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Assist. Prof Anna Waterreus</td>
<td></td>
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<tr>
<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)</td>
<td>Protocol developed for cerebral palsy study Development of algorithm for neonatal encephalopathy Revision of McNeil Sjöström Scale (Perth version)</td>
</tr>
<tr>
<td>Dr John Keogh</td>
<td>Consultant Obstetrician and Gynaecologist, Sydney Adventist Hospital</td>
<td></td>
<td>Validation of neonatal encephalopathy</td>
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<tr>
<td>SANE Australia</td>
<td></td>
<td>A Waterreus V Morgan</td>
<td>Survey of High Impact Psychosis (SHIP)</td>
<td>Brochure for stakeholders</td>
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</table>

**NERU collaborators**

- V Morgan
- A Jablensky
- A Waterreus
- J Griffith
- A/Prof Anna Waterreus
### State

<table>
<thead>
<tr>
<th><strong>External Collaborators</strong></th>
<th><strong>Affiliation</strong></th>
<th><strong>NERU collaborators</strong></th>
<th><strong>Area of collaboration</strong></th>
<th><strong>Outcomes 2012</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Eve Blair&lt;br&gt; Jan de Groot&lt;br&gt; Linda Watson</td>
<td>Institute for Child Health Research</td>
<td>M Croft</td>
<td>Validation of the Australian version of the McNeil Sjöström Scale Scoring System using clinical case notes from the Cerebral Palsy International Case Control Study.</td>
<td>Protocol for validation has been developed and scores have been calculated for all children with cerebral palsy.</td>
</tr>
<tr>
<td>A/Prof Frank Morgan&lt;br&gt; Anna Ferrante</td>
<td>University of WA Crime Research Centre</td>
<td>V Morgan G Valuri A Jablensky</td>
<td>Offending patterns and psychiatric illness</td>
<td>Joint publication (in draft) and conference presentations</td>
</tr>
<tr>
<td>Max Maller&lt;br&gt; Matt Walsh</td>
<td>University of WA Crime Research Centre</td>
<td>V Morgan A Waterreus A Jablensky</td>
<td>Software development</td>
<td>Diagnostic Instrument for Psychosis (DIP) software revised. DIPpc version - beta completed. North Metro SHIP software developed</td>
</tr>
<tr>
<td>Prof Carol Bower&lt;br&gt; Prof Steve Zubrick</td>
<td>Institute for Child Health Research</td>
<td>All</td>
<td>Environmental risk factors and developmental pathways in schizophrenia</td>
<td>Joint conference presentations and papers</td>
</tr>
<tr>
<td>Dr Geoff Smith&lt;br&gt; A/Prof Theresa Williams</td>
<td>Dept of Health Western Australia</td>
<td>V Morgan A Jablensky</td>
<td>Study of High Users of Psychiatric Services</td>
<td>Analyses underway.</td>
</tr>
<tr>
<td>Dr Geoff Smith&lt;br&gt; A/Prof Theresa Williams</td>
<td>Dept of Health Western Australia</td>
<td>V Morgan</td>
<td>Long-term outcomes of early intervention in psychosis</td>
<td>Funding from Mental Health Commission. Commenced.</td>
</tr>
<tr>
<td>Dept of Health Western Australia (North Metro)</td>
<td>NMAH MH Health Informatics Committee</td>
<td>V Morgan</td>
<td>Operational epidemiology</td>
<td>NMAH MH Health Informatics Committee member</td>
</tr>
<tr>
<td>Dept of Health Western Australia (North Metro)</td>
<td>Dept of Health Western Australia / Mental Health Commission</td>
<td>V Morgan A Waterreus J Griffith A Jablensky N Stefanis</td>
<td>Operational epidemiology</td>
<td>North Metro SHIP survey</td>
</tr>
<tr>
<td>Prof A Jablensky*</td>
<td>Centre for Clinical Research in Neuropsychiatry</td>
<td>A Jablensky*</td>
<td>WA Family Study of Schizophrenia</td>
<td>Joint work on linked data for study participants</td>
</tr>
<tr>
<td>Dr Jon Laugharne</td>
<td>School of Psychiatry and Clinical Neurosciences</td>
<td>A Waterreus</td>
<td>Metabolic Syndrome</td>
<td>Joint Paper National metabolic survey of Australian psychiatrists completed</td>
</tr>
<tr>
<td>Prof Jonathan Rampono</td>
<td>Health Department of Western Australia</td>
<td>M Croft</td>
<td>Perinatal and infant mental health.</td>
<td>Model of Care document</td>
</tr>
</tbody>
</table>

* 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
## VISITORS: INTERNATIONAL AND NATIONAL  2012

<table>
<thead>
<tr>
<th>Date</th>
<th>Visitor Details</th>
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<tbody>
<tr>
<td>7 Aug 2012</td>
<td>Prof John McGrath, University of Queensland: Round table</td>
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<tr>
<td>10-14 Sep 2012</td>
<td>Prof Tom McNeil, Lund University, Sweden: Research visit and round tables</td>
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<td>4 Dec 2012</td>
<td>SHIP Technical Advisory Group: National meeting</td>
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## VISITORS: TALKS AND RELATED  2012

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<tr>
<td>10 Sep 2012</td>
<td>Prof Tom McNeil, Lund University, Sweden</td>
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<td>16 Oct 2012</td>
<td>Dr Monique Robinson, Telethon Institute for Child Health Research</td>
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<tr>
<td></td>
<td>Talk. <em>[Early life predictors of increased risk of adult psychopathology]</em></td>
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<td></td>
<td><em>at: Centre for Clinical Research in Neuropsychiatry</em></td>
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<tr>
<td></td>
<td>Talk. <em>[How the first nine months shape our mental health: Latest findings and new directions for translation]</em></td>
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<tr>
<td></td>
<td><em>at: Neuropsychiatric Epidemiology Research Unit</em></td>
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STAFF: AWARDS AND PRIZES 2012

STAFF: FORMAL OFFICES HELD 2012

Board of Management (casual member and Board representative on the Scientific Advisory Committee)

SIDS and Kids WA

Maxine Croft

STAFF: CONFERENCE ORGANISING COMMITTEES 2012

Organising / Scientific Committee

Australasian Society for Psychiatric Research, Perth, 5-7 Dec 2012

Maxine Croft

Organising / Scientific Committee

Australasian Society for Psychiatric Research, Perth, 5-7 Dec 2012

Vera Morgan
## STAFF: OTHER COMMITTEE MEMBERSHIP 2012

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<thead>
<tr>
<th>Title</th>
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<tr>
<td>Honorary Member</td>
<td>Information Technology Reference Group for Ngala, WA</td>
<td>Maxine Croft</td>
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<tr>
<td>Chair</td>
<td>North Metro Survey of High Impact Psychosis (North Metro SHIP) Phase 3 Technical Advisory Group</td>
<td>Vera Morgan</td>
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<tr>
<td>Chair</td>
<td>National Survey of High Impact Psychosis (SHIP) Phase 3 Technical Advisory Group</td>
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<tr>
<td>Member</td>
<td>North Metropolitan Area Health Service Mental Health Data Management Working Group</td>
<td>Vera Morgan</td>
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<tr>
<td>Committee member</td>
<td>Intellectual Disability Exploring Answers (IDEA) Advisory Council and Ethics Committee</td>
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<tr>
<td>Committee member</td>
<td>School of Psychiatry and Clinical Neurosciences: Research, Publications and Postgraduate Studies Committee</td>
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<td>Member</td>
<td>National Health and Medical Research Council Grant Review Panel for Psychology/Psychiatry and Cognitive Sciences</td>
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<td>Member</td>
<td>North Metro Survey of High Impact Psychosis (North Metro SHIP) Phase 3 Technical Advisory Group</td>
<td>Anna Waterreus</td>
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<tr>
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</table>
Maxine CROFT

Epidemiologist / Biologist:
Neuropsychiatric Epidemiology Research Unit/ Honorary Research Fellow, Centre for Child Health Research, University of Western Australia
+61 8 9224 0288
Maxine.Croft@uwa.edu.au

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

Patsy Di PRINZIO

Statistician: Neuropsychiatric Epidemiology Research Unit
+61 8 9224 0231
patsy.diprinzio@uwa.edu.au

Patsy Di Prinzio is a statistician 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 Griffth is Deputy Coordinator for North Metro Survey of High Impact Psychosis (SHIP). She was 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
- Adversity and children with a mentally ill parent
- Severe mental illness
- Metabolic syndrome
- Role of mental health nurses in research

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 290 publications, including articles in peer-reviewed journals, book chapters and monographs. He has been award 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
Vera MORGAN

HEAD: Neuropsychiatric Epidemiology Research Unit / OPERATIONAL EPIDEMIOLOGIST: Centre for Clinical Research in Neuropsychiatry
+61 8 9224 0235
vmorgan@cyllene.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 incl. high risk children of parents with severe mental illness
• Metabolic syndrome and cardiovascular disease in people with psychotic illness
• Intellectual disability / cognitive deficit
• Criminal offending and mental illness

Sonal SHAH

DATA ANALYST (SHIP SURVEY) / CLINICAL RESEARCH PSYCHOLOGIST: Neuropsychiatric Epidemiology Research Unit
+61 8 9224 0231

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 the management and analysis of data for the Survey of High Impact Psychosis (SHIP). Prior to her work in NERU, Sonal was involved in a large study (as part of her PhD project) investigating hormonal and non hormonal factors associated with cognitive function. An important and novel finding of this project 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
• Adversity and schizophrenia
• Cognitive reserve and psychosis
• Inflammatory markers and hormonal influences on cognitive function
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 is a Nurse who has a Post Graduate Diploma in Clinical Epidemiology and has been involved in psychiatric research for the last 20 years. Currently she is the Coordinator for the North Metro Survey of High Impact Psychosis. She was also involved in the first and second Australian surveys of psychosis (the Low Prevalence (Psychotic) Disorders Survey and the Survey of High Impact Psychosis (SHIP)). Previously she worked in Old Age Psychiatry, UWA and the Institute of Psychiatry London and has an interest in depression in general practice and the role of nurses in metabolic syndrome.

Research interests
- Metabolic syndrome
- Depression & old age
- Mental health surveys
- Mental health nursing
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

Orange zone No. 5 on the map below.

Contact details
Ms Stephanie Gee
PH: +61-(0)8-9224-0290
FAX: +61-(0)8-9224-0285
EMAIL: stephanie.gee@uwa.edu.au
## APPENDIX 1a. Research Funding 2004-2011 ($)

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<td>A population-based study of obstetric, developmental and neuropsychiatric outcomes in the offspring of women with severe mental disorders. Round 2</td>
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### APPENDIX 1b. Research Funding 1995-2003 ($)  

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APPENDIX 2. SELECTED PUBLICATIONS 1995-2011 (Epidemiology)

2011

Journal Articles


Books and Chapters


Published abstracts


Reports


2010

Journal Articles

Croft ML, Morgan VA, Read A, Jablensky AV. Recorded pregnancy histories of the mothers of singletons and the mothers of twins: a longitudinal comparison. Twin Research and Human Genetics. 2010, 13(6) Invited paper


Morgan VA and Jablensky AV. From inventory to benchmark: quality of psychiatric case registers in research. British Journal of Psychiatry. 2010, 197, 8-10


Selten J-P and Morgan VA. Prenatal Exposure to Influenza and Major Affective Disorder. Bipolar Disorders. 2010, 12, 753-754


Published abstracts


Books and Chapters


2009

Journal Articles


Published abstracts

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


2008

Journal Articles


Hauck, Y., Rock, D.J.T., Jackiewicz, T. and Jablensky, A.V. Healthy babies for mothers with serious mental illness: a case management framework for mental health clinicians. International Journal of Mental Health Nursing, 17(6), 383-391.[Not in Thomson ISI]


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