# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTENTS</td>
<td>3</td>
</tr>
<tr>
<td>OVERVIEW</td>
<td>7</td>
</tr>
<tr>
<td>STRUCTURE 2008</td>
<td>8</td>
</tr>
<tr>
<td>STAFF 2008</td>
<td>9</td>
</tr>
<tr>
<td>AWARDS AND PRIZES 2008</td>
<td>9</td>
</tr>
<tr>
<td>RESEARCH PROGRAMS</td>
<td>10</td>
</tr>
<tr>
<td>METHODOLOGIES</td>
<td>15</td>
</tr>
<tr>
<td>INSTRUMENT DEVELOPMENT</td>
<td>17</td>
</tr>
<tr>
<td>RESEARCH FUNDING RECEIVED/COMMITTED 2008 ONWARDS ($)</td>
<td>20</td>
</tr>
<tr>
<td>PUBLICATIONS 2008</td>
<td>21</td>
</tr>
<tr>
<td>CONFERENCE PRESENTATIONS 2008</td>
<td>23</td>
</tr>
<tr>
<td>RESEARCH COLLABORATIONS AND ACTIVITIES 2008</td>
<td>24</td>
</tr>
<tr>
<td>VISITORS 2008: INTERNATIONAL AND NATIONAL</td>
<td>27</td>
</tr>
<tr>
<td>VISITORS 2008: TALKS AND RELATED</td>
<td>30</td>
</tr>
<tr>
<td>STAFF: PROFILES</td>
<td>31</td>
</tr>
<tr>
<td>STAFF: FORMAL OFFICES HELD 2008</td>
<td>28</td>
</tr>
<tr>
<td>STAFF: CONFERENCE ORGANISING COMMITTEES 2008</td>
<td>28</td>
</tr>
<tr>
<td>STAFF: OTHER COMMITTEE MEMBERSHIP 2008</td>
<td>29</td>
</tr>
<tr>
<td>Appendix 1: Research Funding 1995-2007 ($)</td>
<td>36</td>
</tr>
<tr>
<td>Appendix 2. Selected publications 1995-2007 (Epidemiology)</td>
<td>38</td>
</tr>
<tr>
<td>Contact details</td>
<td>43</td>
</tr>
</tbody>
</table>
NERU.
A mountain in Himavā
All birds settling there become golden
The Neuropsychiatric Epidemiology Research Unit was established as a unit within the School of Psychiatry and Clinical Neurosciences at the University of Western Australia early in 2008. This formalised a de facto structure dating back to the early 1990s when Professor Assen Jablensky arrived from overseas to take the inaugural University of Western Australia Chair of Psychiatry at Royal Perth Hospital. Professor Jablensky was already renowned as a world expert in the epidemiology of schizophrenia (playing a lead role in the influential WHO 10-Country Study) as well as in the classification of psychiatric illness. In 1994, he was awarded his first Australian grant to study the epidemiology of schizophrenia, using the Western Australia psychiatric case register in an ecological study examining the risk of schizophrenia following in utero exposure to influenza epidemics. Other grants and contracts followed, allowing him to develop his two streams of interest: the genetics of schizophrenia and the epidemiology of schizophrenia. The clinical and genetic arm of research was realised through a stream of National competitive grants at the Centre for Clinical Research in Neuropsychiatry at Graylands Hospital that Professor Jablensky established. Other grants supported the epidemiological work at the Royal Perth Hospital location. This included a US Stanley Foundation grant in 1996 to examine reproductive pathology in mothers with psychoses where the focus was on the interaction between environmental and genetic risk factors for schizophrenia. At the same time, a large Commonwealth contract to lead the first National survey on the prevalence and profile of psychosis in Australia, the Low Prevalence (Psychotic) Disorders Study. Most of the current staff in the Unit have a long history of working in schizophrenia epidemiology with Professor Jablensky including Anna Waterreus (since 1994), Vera Morgan (since 1995), Giulietta Valuri (since 1997) and Jenny Griffith (in 1997-98, then again since 2004).

In 2008, the Neuropsychiatric Epidemiology Research Unit remains concerned primarily with research into the epidemiology of schizophrenia and other neuropsychiatric disorders including their genetic and environmental risk factors, course and outcome. The Unit has a long history of success in attracting national competitive and international funding to undertake its core program of research including the continuing study of obstetric pathology in women with severe mental illness; the association between genetic risks and obstetric complications in the aetiology of schizophrenia; developmental trajectories for the children of parents with severe mental illness; criminal offending and psychosis; intellectual disability and co-occurring psychiatric illness. Most studies have been designed to allow some assessment of the specificity of findings to schizophrenia compared to other psychotic disorders. Unit staff have also been very successful in attracting government contracts. Currently, they are working closely with the Commonwealth Department of Health and Ageing to undertake a second national survey of psychosis and have also entered into fruitful collaboration with the Western Australian Department of Health. The Head of Unit has a formal role as an operational epidemiologist within North Metropolitan Mental Health Services in Western Australia, while a research collaboration has been established with the Department of Health to investigate factors affecting inpatient demand in this State. In recent years, the Neuropsychiatric Epidemiology Research Unit and the Centre for Clinical Research in Neuropsychiatry have explored opportunities for working together in order to realise Professor Jablensky’s original vision of bringing together epidemiological and clinical streams of research to further our understanding of the aetiology of schizophrenia.

Much of the work of the unit is undertaken using the Western Australian psychiatric case register and linking this to the extensive network of other electronic State registers of morbidity and mortality. Linked register data are supplemented with data from clinical casenotes in a number of studies. The Unit is also experienced in the use of survey methodologies, especially the design and coordination of multisite epidemiological surveys. The Unit has developed and refined a number of instruments, described in the report.

The Neuropsychiatric Epidemiology Research Unit is made up of committed researchers from a variety of disciplines. The breadth of scientific and clinical expertise, professional skills and human experience and engagement that they bring to the Unit is its greatest asset.
Neuropsychiatric Epidemiology Research Unit

Figure 1.
Organisational structure, Neuropsychiatric Epidemiology Research Unit, 2008

- **Head of School**: A Janca
- **Head of Neuropsychiatric Epidemiology Research Unit**: V Morgan
- **Senior scientific consultant / Director: Centre for Clinical Research in Neuropsychiatry**: A Jablensky
- **Statistics and database management**: M Croft, G Valuri, R Agung, S Shah
- **Clinical research**: A Waterreus, J Griffith, C Simpson
- **Instrument development and training**: A Waterreus, J Griffith, J Dean
- **School support**: Administrative: S Gee, IT: D Brown
STAFF 2008

Dr Vera Morgan  
Research Associate Professor  
Unit Head / Operational Epidemiologist

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

Dr Maxine Croft  
Research Assistant Professor  
Epidemiologist / Biologist

Mr John Dean  
Research Nurse Consultant  
Research Nurse Consultant

Ms Jenny Griffith  
Senior Research Officer  
Mental Health Clinical Research Nurse / WA Site Coordinator for National SHIP Survey

Dr Agung Riono  
Research Assistant Professor  
Epidemiologist

Dr Sonal Shah  
Research Associate  
Medical and Vital Statistics

Ms Cate Simpson, OAM  
Research Officer  
Mental Health Clinical Researcher Nurse

Ms Giulietta Valuri  
Research Assistant Professor  
Epidemiologist / Criminologist

Ms Anna Waterreus  
Research Assistant Professor  
National Coordinator for SHIP Survey

AWARDS AND PRIZES 2008

Jenny Griffith  
2008 University of Western Australia Staff Development Award

Agung Riono  
Lions Institute Dr John Hoffman Scholarship (2007-2008)

Giulietta Valuri  
2008 Schizophrenia International Research Society Travel Award
**RESEARCH PROGRAMS**

Pathways to schizophrenia from conception to disease: The children of parents with severe mental illness

This study is designed to untangle genetic and environmental contributions to the risk for schizophrenia and other adverse outcomes in the children of mothers with schizophrenia and other severe mental illness using Western Australian whole-of-population health databases.

**Phase 1.**
The first phase of this program of work was concerned with reproductive pathology in mothers with schizophrenia, bipolar disorder and unipolar major depression, and early outcomes for their offspring. Records for 79,599 women on the Western Australian psychiatric case register were cross-linked to 308,022 birth records on the midwives database. Women with psychosis who had given birth in Western Australia between 1980 and 1992 were identified. Comparison mothers were randomly selected from mothers with no record of psychiatric illness. Fathers were identified using birth registrations. There were 3174 high risk children born 1980-1992 to mothers with schizophrenia, bipolar disorder or unipolar depression and 3129 comparison children born to unaffected mothers. Full psychiatric histories for mothers, fathers and children were extracted, and data collected on obstetric complications and other childhood morbidities. The study aims were to: (i) determine the frequency and distribution of obstetric complications in women with schizophrenia compared to a non-psychiatric comparison group of mothers; (ii) explore the spectrum of outcomes for the children born to women with schizophrenia; (iii) assess specificity of findings to maternal schizophrenia compared to maternal bipolar disorder and unipolar major depression; and (iv) examine the relationship between familial psychiatric status, obstetric complications and mental health outcomes for children (work in progress). This study found that women with schizophrenia, bipolar disorder, and unipolar depression experience an increased overall incidence of obstetric complications, relative to the nonpsychiatric comparison group. A major factor contributing to the increased risk of obstetric complications in women with schizophrenia and, to a lesser degree, in women with affective disorders appears to be the clustering of adverse maternal characteristics. Moreover, it is likely that behavioural disorganisation and environmental exposures including poor nutrition and substance use may play an important role in the excess of obstetric complications in births that occur after the onset of psychosis only. This is supported by the finding that the incidence of adverse outcomes in all three diagnostic groups was significantly increased only in pregnancies occurring after the onset of psychiatric illness. Some obstetric complications showed no pre-onset / post-onset differences. These occurred only in women with schizophrenia, and included placentaation abnormalities, low birthweight, minor physical anomalies and cardiovascular birth defects. This constancy in rates suggests a diagnosis-specific pre-existing susceptibility that may involve both genetic and environmental components.

**Phase 2.**
The second phase of this program of work develops our earlier research. In this current program of work, we have extended the study cohort to 249,119 mothers with 472,722 children born 1980-2001, including 14,418 high-risk children born to women with psychoses. Fathers have been identified and their mental health status ascertained. All children have been followed up on the health registers (psychiatric, midwives, hospital morbidity, mortality, birth defects, intellectual disability, cerebral palsy, cancer); 19,762 have had an in- or outpatient contact with mental health services including 1314 with a recorded diagnosis of psychosis (303 with schizophrenia). In addition, detailed diagnostic and developmental data are being extracted manually from the clinical case notes of children with a diagnosis of psychosis. Data analysis models will use: generalised estimating
equations for binary outcomes to obtain population averaged estimates for the influence of environmental and genetic risk factors and their interaction; and structural equation models to assess likely causal and non-causal pathways. The specificity of findings to schizophrenia will be assessed. Follow-up of this cohort of children will increase substantially our capacity to provide definitive answers to unresolved questions about the relative contributions of reproductive pathology and genetic liability to the incidence of major mental disorders. The study will also provide a unique evidence base for better informed preventative interventions and management strategies including risk reduction through targeted antenatal and postnatal interventions.

In 2008:
• Work continued on analysis and paper preparation based on data from the Phase 1 program of research (N=6303 children) focusing on neuropsychiatric outcomes in the children.
• For the Phase 2 program of work, the design and construction of data model was completed, constructs were developed and scales were refined (see Methodologies on page 15 and Instrument Development on page 17). Data cleaning and manipulation was ongoing.
• Findings from Phase 1 and the design and methodologies employed in Phase 2 were presented at national and international fora.
Schizophrenia prevalence: National Survey of High Impact Psychosis (SHIP)

The Survey of High Impact Psychosis (SHIP) is the planned second national population-based survey of the prevalence and profile of psychosis in Australia. It will be conducted in catchments across five States: QLD, NSW, SA, VIC and WA. It is the follow-up to the first national survey of psychosis in 1997-1998: Australian National Survey of Mental Health and Wellbeing. Study of Low Prevalence (Psychotic) Disorders (LPDS). The premise underlying SHIP is that the social milieu in which people with psychosis find themselves plays a critical role in their functioning and recovery, and that the breakdown in the interaction between a person and their environment is a useful target for intervention in the management of psychosis. The mission of SHIP is to identify those factors associated with good outcome in psychosis that are amenable to change and critical to recovery with a particular focus on the assessment of measures related to social participation, living circumstances, and physical well-being. Unique to the survey will be the identification of facets of role support associated with positive social integration and the evaluation of domains of cognitive function in order to determine appropriate targets for rehabilitation and skills development. The convenor of the SHIP Technical Advisory Committee, the national Survey Coordinator and the Chief Scientific Advisor to the survey are from the Neuropsychiatric Epidemiology Research Unit.

In 2008:
- Phase 1 work on instrument development and survey design was completed.
- Phase 2 funding to bring the survey close to enumeration-readiness was secured from the Commonwealth.
- There were several meetings of the national Technical Advisory Committee.
- Consultation commenced with services in the Western Australian catchment.
Study of High Users of Psychiatric Inpatient Services

This project has two components. The first component is to establish a database of the health history of people admitted to a psychiatric inpatient facility during the years 1990 to 2006. The second is a specific study of patterns of use of inpatient psychiatric facilities using the constructed database. This work is being undertaken with the Western Australian Mental Health Policy Research Centre in the Western Australian Department of Health.

In 2008:
- An application was made for linked data (psychiatric, hospital morbidity, mortality and emergency department)

Criminal offending, schizophrenia and other psychiatric illness

In the Western Australian study, Criminal offending and psychosis, 219,052 individuals on the psychiatric case register were linked to 388,370 individuals on the criminal arrests database. The total number of cross-linked individuals was 52,091, comprising 23.8% of persons on the psychiatric register and 13.4% of persons on the arrests database. Prevalence and profile of offending in persons with schizophrenia was compared with that for persons with other psychiatric disorders and those with no psychiatric history. Analysis of the total study population indicates differential contact with the justice system by diagnostic group. Overall 48.5% of individuals with drug and/or alcohol-related diagnoses and 39.1% of individuals with personality disorders had contact with the justice system, compared to 32.5% of those with schizophrenia. The majority of offenders with a psychiatric history had been arrested prior to contact with psychiatric services, and survival analysis demonstrated that first contact with psychiatric services was most likely to occur within the first year of arrest, highlighting the role of police as potential gatekeepers for the mental health system. Using subsample data, compared to persons with no psychiatric history, persons with a psychiatric illness were more likely to offend alone, to have no relationship with their victim, and to offend outside their region of residence. Additional analysis of area-level data for disadvantage, inequality, ethnic homogeneity, residential mobility and urbanicity indicated that the same neighbourhood-level variables that are risk factors for offending in the general population are also risk factors for individuals with schizophrenia. 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. Therefore it is possible 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. In sum, from a psychiatric perspective, there are indications that early offending and/or a history of substance abuse may be early manifestations of schizophrenic illness confounding the determination of first onset of psychosis. From a criminological perspective, shared community factors related to social disorganisation may influence the timing and nature of offending, substance misuse and the expression of schizophrenia in those people with vulnerabilities.

In 2008:
- The first draft of the main paper from this study was completed. This identified a number of changes that needed to be made to the study database; work on the required changes has commenced.
- Analyses for the sub-project on social disorganisation and offending patterns in schizophrenia compared to the general population were completed. The results were presented internationally and were published in Trends and Issues in Crime and Criminal Justice.
Intellectual disability and co-occurring schizophrenia and other psychiatric illness

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. Yet one of the more consistent findings in the literature is an elevated lifetime risk of schizophrenia among individuals with intellectual disability. Kraepelin estimated that the basis of some 3.5% of cases of dementia praecox is intellectual disability resulting in an early onset form of psychosis which he called “Přropschizophrenie” (literally “engrafted schizophrenia”). Current estimates still put the risk of schizophrenia in intellectually disabled populations at around 3%, compared to a lifetime risk of around 1% in the general population. However the evidence base for this estimate is limited, with methodological and nosological issues affecting the reliability of estimates. In this study, two Statewide registers, the intellectual disability and the psychiatric case registers, were cross-linked in order to estimate the prevalence of dual diagnosis and describe its clinical profile, with a total study population of 245,749. Two birth cohorts (1950-64 and 1965-79) were identified for intensive analysis. Overall, 31.7% of persons with an intellectual disability had a psychiatric disorder; 1.8% of persons with a psychiatric illness had an intellectual disability. Schizophrenia, but not bipolar disorder and unipolar depression, were greatly over-represented among cases of dual diagnosis: depending on birth cohort, 3.7-5.2% of persons with an intellectual disability had a schizophrenia-spectrum disorder. Pervasive developmental disorder was more common among cases of dual diagnosis than among cases of intellectual disability alone. Down syndrome was much less prevalent among dual diagnosis cases despite being the most predominant cause of intellectual disability. Dual diagnosis cases had a different aetiological basis compared to cases of intellectual disablement alone, and presented a more serious clinical profile compared to cases of psychiatric morbidity alone. The facility to combine records across two separate administrative jurisdictions in this study is having a marked impact on our understanding of the epidemiology of dual diagnosis, its clinical manifestations and aetiological implications. In particular, our results are suggestive of a common pathogenesis in intellectual disability co-occurring with schizophrenia.

In 2008:
- A PhD based on this study was awarded with distinction.
- The findings of the study were published in British Journal of Psychiatry.

Schizophrenia incidence: Western Australia and Verona

This study will enable us to estimate the annual treated incidence of schizophrenia in Verona and Western Australia over a period of two decades, and to compare these rates between the two sites with a view to: getting an estimate of annual incidence in South Verona and Western Australia; assessing whether the incidence rate is changing over time and whether the rate is stable across different geographic regions; calculating the lag between first contact for any reason with in- or out-patient mental health services and first recorded diagnosis of a psychotic disorder; mapping changes in the profile of persons on first presentation to services with a psychotic disorder over time; examine whether a higher level of urbanization is associated with an increased risk of developing schizophrenia for both women and men, after adjustment for individual demographic and socioeconomic characteristics. The study design is a 24-year retrospective epidemiological survey. It will use data on the South Verona Psychiatric Case Register and the Western Australia Mental Health Information System in order to determine the annual rates of new cases of schizophrenia in Verona and Western Australia over the study period.

In 2008:
- Study collaborators from Verona and Perth met to revised the protocol to cover more recent years of first contact with services and to incorporate a better range of social indicators that are available on both psychiatric case registers.
METHODOLOGIES

Research utilising record linkage across registers and through generations

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) to study prevalence, incidence, aetiology and risk factors. See Figure 2 below for an example based on the study of Pathways to Schizophrenia study. 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.

In 2008:
• The design and construction of the data model was completed.
• A construct for neonatal encephalopathy was developed and is currently being validated.
• A protocol was developed for mapping graphically children’s developmental trajectories and milestones from register data.

Figure 2. Model of record linkage for the Pathways to Schizophrenia study. The database includes 249,119 mothers and 472,722 children (born 1980-2001).
Clinical casenotes review

Register data are supplemented by psychiatric data extracted from clinical casenotes by experienced mental health nursing 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.

In 2008:
- A protocol was established for standardising the extraction of life histories from clinical casenotes and for presenting them in summary form.
- A protocol was established for the independent review of register-based diagnoses for children. Two expert diagnosticians began reviewing cases. This work is ongoing.

Survey-based research

The Neuropsychiatric Epidemiology Research Unit is experienced in the design, instrument development and coordination of large national multisite surveys including, in 1997-98, the first national survey the Study of Low Prevalence (Psychotic) Disorders and the planned national Survey of High Impact Psychosis (SHIP) 2010. See Figure 3 below for the methodology for both surveys.

Figure 3. Two-phase methodology employed in the first national survey, LPDS 1997-98, and the planned national Survey of High Impact Psychosis 2010.
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, and service utilisation. The DIP was developed specifically for the National Mental Health Survey - Low Prevalence (Psychotic) Disorders Study (LPDS), conducted in Australia from 1997 to 1998. The original version of this clinical interview includes three modules: (i) Demography and Social Functioning Module (DIP-DSFM); (ii) Diagnostic Module (DIP-DM); and (iii) Service Utilisation Module (DIP-SUM). The Diagnostic Module is described in a separate section below.

In 2008:
- In preparation for the national Survey of High Impact Psychosis (SHIP), all modules of the DIP, other than the Diagnostic Module, underwent substantial redevelopment. The revised Demography and Social Functioning Module covers: basic demographic information; education; employment; housing; finances; activities of daily living; child care; caring; socialising; self harm; victimisation & offending; satisfaction with life. The revised Service Utilisation Module covers: 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, alcohol and smoking, and physical health assessment modules have been added. This work is still in progress.

Diagnostic Interview for Psychosis – Diagnostic module (DIP-DM 4.0.11)

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). Items cover: depression, mania, hallucinations, subjective thought disorder, delusions, behaviour and affect. The DIP-DM is designed for administration by mental health professionals and training is required. User-friendly Windows-based software is available that allows the data entry of information from the diagnostic module into a database, which then generates 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 and Bulgaria.

In 2008:
- DIP-DM manual was revised (DIP-DM 4.0.11) to include DSM-IV as well as ICD-10, DSM-III-R, RDC and other diagnostic criteria.
- A comprehensive drug and alcohol section was included.
- DIP-DM prompts were modified to include instructions for its use solely with good-quality casenotes.
- Work began on Norwegian and Greek translations of the DIP-DM.
Psychosis Screen (revised)

The Psychosis Screen was also developed specifically for the LPDS. It is a brief instrument (one page) covering 8 items and takes 1-2 minutes to complete. There are two versions: a Key Worker Form and a Patient Form. A revised version of the Psychosis Screen will be used in the Survey of High Impact Psychosis (SHIP).

In 2008:
- The Psychosis Screen was revised to remove redundancies, to streamline the flow of questions and to improve its psychometric properties.

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. In 1996, a PhD student within the Unit, Dr Li-Anne Yellachich, wrote and validated a computer algorithm to automate the scoring of obstetric complications recorded on the electronic Midwives register. The original algorithm covered 6303 birth records. Our project data now include almost 500,000 birth records necessitating changes to the algorithm and at times, to the underlying scale elements.

In 2008:
- Revisions to the scale to incorporate conditions not covered by the original listing of disorders and conditions were continuing.
- Revision of the original computer algorithm to include the many new ICD codes in 500,000 birth records was in progress.

Measures of longitudinal maternal morbidity

Current methods of calculating estimates of risk for adverse birth outcomes such as the McNeil-Sjöström Scale for Obstetric Complications generally use a birth as the outcome measured and assume that each birth is a random event independent of prior events for the mother. Such methods of calculation using cross-sectional data are flawed by the lack of accurate longitudinal, population data on outcomes based on the mother and her reproductive history as the unit of measurement. In previous research by Dr Maxine Croft on risk factors for two birth outcomes (sudden infant death syndrome and birth defects), the use of cross-sectional maternal health data was compared with the use of longitudinal maternal health data. New risk factors were identified using longitudinal maternal health data and, for some known risk factors, significantly different odds ratios resulted when compared with cross-sectional data. Work is in progress to determine whether the McNeil-Sjöström Scale algorithm should use all available longitudinal maternal health data or whether the mother’s current birth record provides the best estimate of the mother’s health.

In 2008:
- Dr Maxine Croft undertook further investigations through her study of mothers of singletons compared to mothers of twins. This provided an ideal opportunity for assessing whether there were biases in the recording of maternal health and determining whether cross-sectional or longitudinal data gave the best estimate of maternal health.
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.

In 2008:
- No revisions were required. Clinical and reliability data collection using the instrument were ongoing.

Instrument validity and reliability

Testing the psychometric 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.
### RESEARCH FUNDING RECEIVED/COMMitted 2008 ONWARDS ($)

*Note: As this is the first annual report for the Unit, archival material on the Unit’s income from research grants and contracts prior to 2008 is provided in Appendix 1.*

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<td>Children of parents with mental illness: a population-based study</td>
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<td>National survey of high impact psychosis (SHIP): Phase 2</td>
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Neuropsychiatric Epidemiology Research Unit ANNUAL REPORT 2008
*Note: As this is the first annual report for the Unit, archival material on the Unit’s publications prior to 2008 is provided in Appendix 2.*

**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 (accepted July 2008) [IF 2007: 1.525]

**Books and Chapters**


**Reports**


**Published abstracts**


CONFERENCE PRESENTATIONS 2008

Oral presentations


Poster presentations


Laugharne J and Waterreus A. Screening for the metabolic syndrome in psychiatric patients: evidence of current practice at a major psychiatric teaching hospital in Western Australia. Australasian Physical And Mental Health Interface Conference Melbourne, 15-16 August 2008


# RESEARCH COLLABORATIONS AND ACTIVITIES 2008

## International

<table>
<thead>
<tr>
<th>External Collaborators</th>
<th>Affiliation</th>
<th>NERU collaborators</th>
<th>Area of collaboration</th>
<th>Outcomes 2008</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 Advice on changes to the McNeil-Sjöström Scale</td>
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<tr>
<td>Jean-Paul Selten</td>
<td>University of Maastricht, The Netherlands</td>
<td>V Morgan</td>
<td>Environmental risk factors for schizophrenia</td>
<td>Joint paper (under review)</td>
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<tr>
<td>A/Prof Kathryn Abel</td>
<td>University of Manchester, UK</td>
<td>V Morgan</td>
<td>Obstetric complications in women with severe mental illness</td>
<td>Joint publication (letter)</td>
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<tr>
<td>Dr Alberto Rossi</td>
<td>University of Verona, Italy</td>
<td>A Jablensky V Morgan</td>
<td>Diagnostic Instrument for Psychosis (DIP) Italian version</td>
<td>Joint paper (in draft)</td>
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<tr>
<td>Dr Alberto Rossi</td>
<td>University of Verona, Italy</td>
<td>A Jablensky V Morgan</td>
<td>Incidence of schizophrenia</td>
<td>Planning meeting held for revised protocol</td>
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<tr>
<td>Prof Christina Hultman</td>
<td>Karolinska Institute, Sweden</td>
<td>V Morgan A Jablensky</td>
<td>Obstetric complications in women with severe mental illness</td>
<td>Joint book chapter (accepted)</td>
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<tr>
<td>Peter McGuffin</td>
<td>Institute of Psychiatry, UK</td>
<td>A Jablensky V Morgan</td>
<td>Diagnostic Instrument for Psychosis (DIP)</td>
<td>DSM-4 version finalised</td>
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<tr>
<td>Prof David Castle</td>
<td>University of Melbourne</td>
<td>V Morgan, A Jablensky</td>
<td>Offending patterns and psychiatric illness</td>
<td>Joint publication; Paper in draft; Joint conference presentations</td>
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<td>Prof David Castle</td>
<td>University of Melbourne</td>
<td>V Morgan, A Jablensky</td>
<td>Women and psychosis</td>
<td>Joint publication</td>
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<td>Prof David Castle</td>
<td>University of Melbourne</td>
<td>A Waterreus</td>
<td>Metabolic Syndrome</td>
<td>National metabolic survey of Australian psychiatrists completed; Paper in draft</td>
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<td>Prof David Castle</td>
<td>University of Melbourne</td>
<td>V Morgan</td>
<td>Epidemiology of schizophrenia</td>
<td>Joint book chapter</td>
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<td>Prof John McGrath</td>
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<td>Joint book chapter (accepted)</td>
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<td>Survey of High Impact Psychosis (SHIP) Technical Advisory Committee:</td>
<td>Universities and health services in NSW, QLD, SA, VIC, WA</td>
<td>V Morgan, A Waterreus, A Jablensky</td>
<td>Survey of High Impact Psychosis (SHIP)</td>
<td>Completion of SHIP Phase 1 work; SHIP Phase 2 funding from Commonwealth secured</td>
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<td>Australian Schizophrenia Research Bank (ASRB). Investigators in NSW, QLD, VIC, WA</td>
<td>Universities in NSW, QLD, VIC, WA</td>
<td>A Jablensky, V Morgan</td>
<td>Genetic basis of schizophrenia</td>
<td>Input through membership of ASRB scientific and other committees</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); Validation of neonatal encephalopathy</td>
<td>Protocol developed for cerebral palsy study; Development of algorithm for neonatal encephalopathy in progress; Revision of McNeil Sjöström Scale (Perth version) in progress</td>
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<td>Dr John Keogh</td>
<td>John Keogh, Consultant Obstetrician and Gynaecologist, Sydney Adventist Hospital</td>
<td>M Croft</td>
<td>Revisions of McNeil Sjöström Scale (Perth version)</td>
<td>Revision of McNeil Sjöström Scale (Perth version) in progress</td>
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## State

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<th>Area of collaboration</th>
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<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>A protocol for validation has been developed</td>
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<td>Dr Frank Morgan&lt;br&gt;Anna Ferrante&lt;br&gt;Dr Joe Clare</td>
<td>University of WA Crime Research Centre</td>
<td>V Morgan&lt;br&gt;G Valuri&lt;br&gt;A Jablensky</td>
<td>Offending patterns and psychiatric illness</td>
<td>Joint publication</td>
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<tr>
<td>Max Maller</td>
<td>University of WA Crime Research Centre</td>
<td>V Morgan&lt;br&gt;A Jablensky</td>
<td>Software development</td>
<td>Diagnostic Instrument for Psychosis (DIP) software upgraded</td>
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<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</td>
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<tr>
<td>Dr Danny Rock&lt;br&gt;A/Prof Yvonne Hauke&lt;br&gt;Prof A Jablensky*</td>
<td>Dept of Health Western Australia / Centre for Clinical Research in Neuropsychiatry</td>
<td>A Jablensky*&lt;br&gt;V Morgan</td>
<td>Follow-up to the 2005 publication in the American Journal of Psychiatry on obstetric complications in women with psychosis</td>
<td>The Centre for Clinical Research in Neuropsychiatry was funded to design and evaluate an antenatal care program for women with severe mental illness. It was successfully launched in 2008 as part of clinical practice</td>
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<tr>
<td>Prof Steve Zubrick</td>
<td>Institute for Child Health Research</td>
<td>V Morgan&lt;br&gt;A Jablensky</td>
<td>Scoping survey of severe mental illness in indigenous communities</td>
<td>Funding from Commonwealth</td>
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<tr>
<td>Dr Helen Leonard&lt;br&gt;Jenny Bourke</td>
<td>Institute for Child Health Research</td>
<td>V Morgan&lt;br&gt;A Jablensky</td>
<td>Intellectual disability and psychiatric illness</td>
<td>Joint publication</td>
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<td>Dr Geoff Smith&lt;br&gt;Dr Theresa Williams</td>
<td>Dept of Health Western Australia</td>
<td>V Morgan&lt;br&gt;A Jablensky</td>
<td>Survey of High Impact Psychosis (SHIP) - WA Catchment</td>
<td>Agreement from services heads for inclusion of their catchments</td>
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<td>Dept of Health Western Australia (South Metro)</td>
<td>Dept of Health Western Australia</td>
<td>V Morgan&lt;br&gt;A Waterreus&lt;br&gt;J Griffith&lt;br&gt;A Jablensky</td>
<td>Operational epidemiology</td>
<td>In principle agreement for move to SLA-based catchments</td>
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<tr>
<td>Dept of Health Western Australia (North Metro)</td>
<td>Dept of Health Western Australia</td>
<td>V Morgan</td>
<td>Operational epidemiology</td>
<td>In principle agreement for move to SLA-based catchments</td>
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<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>Revised protocol and application for register data collection</td>
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<td>Dr Jon Laugharne</td>
<td>School of Psychiatry and Clinical Neurosciences</td>
<td>A Waterreus</td>
<td>Metabolic Syndrome</td>
<td>Joint Paper (accepted) National metabolic survey of Australian psychiatrists completed Paper in draft</td>
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</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 2008: INTERNATIONAL AND NATIONAL

Feb 2008  Prof Tom McNeil
Professor and Chairman, Department of Psychiatric Epidemiology, University Hospital, Lund, Sweden / Adjunct Clinical Professor, School of Psychiatry and Clinical Neurosciences

Mar 2008  Prof Andrew Mackinnon
Professor and Head, Statistics Unit, ORYGEN Research Centre, University of Melbourne, Australia

Oct 2008  A/Prof Kathryn Abel
Reader (Associate Professor) in Psychiatry, Honorary Consultant Psychiatrist and Director of the Centre for Women’s Mental Health at the University of Manchester, UK

Nov 2008  Prof Tom McNeil
Professor and Chairman, Department of Psychiatric Epidemiology, University Hospital, Lund, Sweden / Adjunct Clinical Professor, School of Psychiatry and Clinical Neurosciences
### STAFF: FORMAL OFFICES HELD 2008

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Position</th>
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<tr>
<td>WA Neuroscience Inc</td>
<td>Board member</td>
<td>Assen Jablensky</td>
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<tr>
<td>University of Western Australia Senate</td>
<td>Senator</td>
<td>Vera Morgan</td>
</tr>
<tr>
<td>Australasian Society for Psychiatric Research</td>
<td>WA representative</td>
<td>Giulietta Valuri</td>
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### STAFF: CONFERENCE ORGANISING COMMITTEES 2008

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<th>Conference</th>
<th>Committee</th>
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<tr>
<td>3rd World Congress on Women’s Mental Health, Melbourne 16-20 Mar 2008</td>
<td>Organising Committee</td>
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### STAFF: OTHER COMMITTEE MEMBERSHIP 2008

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<tr>
<td>Ingres User Group Inc (WA)</td>
<td>Committee Member</td>
<td>Maxine Croft</td>
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<tr>
<td>National Survey of High Impact Psychosis (SHIP) Phase 2 Technical Advisory Committee</td>
<td>Chair</td>
<td>Vera Morgan</td>
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<tr>
<td>National Survey of High Impact Psychosis (SHIP) Phase 1 Technical Advisory Committee</td>
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<tr>
<td>North Metropolitan Area Health Service Mental Health Clinical Services Planning Reference Group</td>
<td>Member</td>
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<td>NTEU National Research Policy Committee</td>
<td>Committee member</td>
<td>Vera Morgan</td>
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<td>Intellectual Disability Exploring Answers (IDEA) Advisory Council and Ethics Committee</td>
<td>Committee member</td>
<td>Vera Morgan</td>
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<td>School of Psychiatry and Clinical Neurosciences: School Review Research Activities working group</td>
<td>Committee member</td>
<td>Vera Morgan</td>
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<tr>
<td>Australasian Society for Psychiatric Research</td>
<td>Webmaster</td>
<td>Giulietta Valuri</td>
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<td>Australasian Epidemiology Association, Perth Chapter</td>
<td>Committee member</td>
<td>Giulietta Valuri</td>
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<tr>
<td>Perth Epidemiology Group</td>
<td>PEGnet mailing list administrator</td>
<td>Giulietta Valuri</td>
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<td>18 Feb 2008</td>
<td>Prof Tom McNeil</td>
<td>Workshop Assessing neuromotor deviation on psychopathology, from infancy to adulthood:</td>
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<td>background and hands-on practice</td>
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<td>27 Feb 2008</td>
<td>Prof Tom McNeil</td>
<td>Abnormal neurodevelopment in schizophrenia; past, present and future: Challenges and</td>
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<td>directions for future research</td>
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<td>13 May 2008</td>
<td>Ms Anna Ferrante</td>
<td>Developmental Pathways in WA Children: A Holistic Approach to inform Early Intervention</td>
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<td>12 Aug 2008</td>
<td>Associate Professor Yvonne Hauck</td>
<td>Healthy Babies for Mothers with Serious Mental Illness: two initiatives</td>
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<td>3 Oct 2008</td>
<td>A/Prof Kathryn Abel</td>
<td>Birth weight and adult mental disorder: Combining Scandinavian cohorts</td>
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<td>14 Oct 2008</td>
<td>Dr Natalia Bilyk</td>
<td>Round table: Research directions</td>
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<td>21 Nov 2008</td>
<td>Prof Tom McNeil</td>
<td>Fish’s Concept of “Pandysmaturation” and its Physical and Mental Correlates: Investigation</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 Mc Neil 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

**Jenny GRIFFITH**  BAappSc(Nursing) GradDipArtsCounselling PGDipMentalHealthNursing

Jenny Griffith is a registered nurse with 20 years clinical experience, mostly in mental health, over a variety of settings, both rural and urban. Since 1997 Jenny has been mainly working in mental health research. She was an interviewer in the 1998 national Survey of Low Prevalence (Psychotic) Disorders. From 2004, Jenny has been part of the Pathways Study Team, involved in the collection of qualitative mental health data. Jenny is highly experienced in the use of the Diagnostic Interview for Psychosis (DIP).

**Research interests**
- Levels of adversity for children with a mentally ill parent
- The experience of severe mental illness, schizophrenia in particular
- Community mental health nursing
- Recovery from severe mental illness
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 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
BA GradDipEd MSocSc PhD

Vera Morgan is a psychiatric epidemiologist with a special interest in the epidemiology of schizophrenia and other psychotic disorders. Her current program of research includes a special focus on environmental (especially obstetric) and genetic contributions to the risk of schizophrenia. 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. 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 psychotic disorders
• Risk factor epidemiology
• Intellectual disability / cognitive deficit
• Criminal offending and mental illness
• High risk children of parents with severe mental illness
Agung RIONO  PhD

EPIDEMIOLOGIST: Neuropsychiatric Epidemiology Research Unit

Agung Riono comes from Indonesia where he had experience in the teaching of medical physiology and in administration. He started his career in Australia as a research associate at the Lions Eye Institute and School of Medicine and Pharmacology at UWA. His special interest in Epidemiology led him to do a Master in Public Health at UWA. His research interests are minor physical anomalies, their anthropometric study, and risk factors and biological markers (medical screening) for minor physical anomalies. His expertise is in the area of clinical research, epidemiological study and data analysis, and screening program evaluation.

Research interests
- Epidemiology of minor physical anomalies
- Risk factor epidemiology
- Screening evaluation for non communicable diseases

Sonal SHAH  PhD BA(HonsPsych)

RESEARCH ASSOCIATE - MEDICAL AND VITAL STATISTICS: Neuropsychiatric Epidemiology Research Unit

Sonal Shah recently completed her PhD in the National Health and Medical Research Council Centre of Clinical Research Excellence for the Study of Women’s Health. In 2003 she was the recipient of a PhD scholarship within the NHMRC Centre of Clinical Research Excellence. She has a double major in Psychology. She then obtained her Honours degree from the University of Western Australia in the field of cognition. Her honours project was the first to investigate the efficiency of language switching and speaking in Trilinguals. Sonal has received an academic award for the presentation of her work. Her PhD project specifically investigated “Cognition in healthy Australian women and factors affecting change in cognition over time”.

Research interests
- Impact of early childhood events in the development of schizophrenia
- Obstetric complications
- Statistical data management
- Women’s health and well being
- Cognitive function (impact of factors)
Cate SIMPSON  
BN PGDipClinicalNursing(Midwidency)  
PGDipPsychiatricNursing GestaltPsychotherapist

Cate Simpson is a mental health nursing professional and a Gestalt psychotherapist. Her current role within the Unit involves the application of her clinical expertise to the extraction, assessment and coding of clinical casenotes

Research interests
- Impact of early childhood events on the development of schizophrenia

Giulietta VALURI  
BBus GradDipEpi

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 current research focuses on validating mental health diagnoses and measuring and mapping children’s health status using WA data from linked statewide health registers. 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 has been involved in psychiatric research for the last 19 years. Currently she is the National Coordinator for the Survey of High Impact Psychosis. She was also involved in the first Australian survey of psychosis (Low Prevalence Psychotic Disorders Survey). Previously she worked in Old Age Psychiatry and has an interest in depression in general practice and the role of nurses. In 2008, with the support of the Royal Australian and New Zealand College of Psychiatrists, she conducted a National survey of psychiatrists and their attitudes to metabolic syndrome.

Research interests

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

Denis Brown (IT) and Stephanie Gee (Administrative Officer)
### Appendix 1: Research Funding 1995-2007 ($) 

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<td>March of Dimes Research Foundation</td>
<td>Jablensky A Morgan V Bower C Zubrick S Croft M</td>
<td>A population-based study of obstetric, developmental and neuropsychiatric outcomes in the offspring of women with severe mental disorders</td>
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<td>Jablensky A Morgan V</td>
<td>Children of parents with mental illness: a population-based study</td>
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<td>Jablensky A, Morgan V, Bower C, Zubrick S</td>
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<td>Pathways of risk from conception to disease: A population-based study of the offspring of women with mental disorder and schizophrenia</td>
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<td>Royal Perth Hospital Medical Research Foundation</td>
<td>Jablensky A, Castle D, Petterson B</td>
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Appendix 2. Selected publications 1995-2007 (Epidemiology)

2007

Journal Articles

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


Morgan, V.A. and Jablensky, A.V. Exploring the role of reproductive pathology in the etiology of schizophrenia: What happens when mothers with schizophrenia give birth?, *Directions in Psychiatry*, 2006, 26, 1-15

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


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2006

Journal Articles


2005

Journal Articles

Jablensky, A. Categories, dimensions and prototypes: Critical issues for psychiatric classification, *Psychopathology*, 2005, 38, 201-205

Jablensky, A. The long and winding road of schizophrenia research, *Epidemiologia E Psichiatria Sociale*, 2005, 14, 179-183

Jablensky, A. Boundaries of mental disorders, *Current Opinion in Psychiatry*, 2005, 18, 653-658


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**Reports**


2004

**Journal Articles**


Hansen J, Alessandri, PT, Croft ML, Burton, PR, de Klerk NH. The Western Australian Register of childhood multiples: Effects of questionnaire design and follow-up protocols on response rates and representativeness. *Twin Research* 2004, 7, 149-161

Jablensky A. Researching psychiatry in Western Australia. *Australian and New Zealand Journal of Psychiatry* 2004, 38, 306-315

Jablensky A. The syndrome - an antidote to spurious comorbidity? *World Psychiatry* 2004, 3, 24-25


Croft M and Ferrante A. A Review of the Data Matching Processes of the Cervical Cytology Registry for the Western Australian Cervical Cancer Prevention Program. Commissioned by the Women’s Cancer Prevention Program of the WA Department of Health 2004


2003

**Journal Articles**


Morgan, V., Janca, A. and Jablensky, A. Psychotic disorders in Australia: patients respond to national survey results, *European Psychiatry*, 2003, 18, 142

Morgan, V. Two-phase sampling designs for rare outcomes, *Australasian Epidemiologist*, 2003, 10, 2-3


2002

**Journal Articles**


Morgan V. What can record linkage contribute to psychiatric epidemiology? *Australasian Epidemiologist* 2002, 9 (2), 25-29


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**Reports**


### 2001

**Journal Articles**


**Books and Chapters**


**Reports**


### 2000

**Journal Articles**


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


Jablensky A. Epidemiology of
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. 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

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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

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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

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